20th WIMC

WARSAW INTERNATIONAL MEDICAL CONGRESS

ABSTRACT BOOK

Ministry of Science and Higher Education
Republic of Poland

Doskonała Nauka

20th WIMC is a project funded by the state budget of the Republic of Poland, granted by the Minister of Science under the „Doskonała nauka II" program.

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A Novel Strategy For Treating Chronic Diabetic Wounds In Experimental Mouse Models

Authors

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Introduction

Diabetes is a growing global concern, with diabetic foot ulcers (DFUs) affecting 15–25% of patients. These wounds result from neuropathy, vascular insufficiency, and immune dysfunction, leading to delayed healing and infection risks. If untreated, DFUs can cause severe infections, necrosis, and amputations. Standard treatments often fall short, emphasizing the need for advanced therapies like skin substitutes and acellular dermal matrices (ADM) to accelerate healing.

Aim of the study

Therefore, here we aimed to evaluate the efficacy of novel ADMs in improving the healing process in the hard-healing wounds in experimental diabetes mice model.

Materials and methods

Post-bariatric skin tissue fold resected during abdominoplasty surgery was decellularized using three methods, namely hADM1 (1M NaCl + SDS), hADM2 (2M NaCl + SDS), and hADM3 (Trypsin + Triton X-100). Extracellular matrix integrity was evaluated post-decellularization. WT and db/db mice underwent wound healing experiments with optimized hADMs, with daily wound measurements. Wound tissues were collected at different healing phases, followed by the analysis of gene expression and protein levels related to re-epithelialization, collagen synthesis, and inflammatory responses. Finally, we evaluated the cytotoxicity and genotoxicity of hADM according to ISO-10993-3 and ISO-10993-5 protocols.

Results

Our findings demonstrated that all decellularization methods effectively preserved the extracellular matrix structure. However, the hADM1 method showed lower immunogenicity compared to hADM2 and hADM3. Moreover, wound closure kinetics in the proliferation phase was significantly increased in hADM1 treatment. The application of hADM1 in the db/db mice model resulted in increased expression of genes encoding collagens (Col1a1, Col3a1) and metalloproteinase 9 (Mmp9) during the inflammation and late proliferation phases. Furthermore, we found the upregulation of the epithelial growth factor gene (Egf) in the early proliferation phase, while increased interleukin-4 gene expression in the early and late proliferation phases might suggest a modulation of the inflammatory response. Finally, the cytotoxicity and genotoxicity tests confirmed the safety of hADM1 following ISO guidelines.

Conclusions

Our results confirmed hADM1 efficacy in promoting wound closure in experimental mice models, which might be associated with enhancing collagen synthesis and modulation of immune response pathways. However, further research is needed to assess hADM1's clinical efficacy.

The research was conducted under the project "Student Scientific Clubs Create Innovations (No. SKN/SP/569995/2023) funded by the Ministry of Science and Higher Education.

Autologous Bone Marrow Mesenchymal Stem Cells Use in ACL and Chondral Lesions regeneration - Preclinical Study on Animal Model

Authors

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Introduction

We present a preclinical study on the implantation of bone marrow-derived mesenchymal stem cells (BM MSCs) for treating ACL tears and cartilage lesions in an animal model.

Aim of the study

To assess the technical aspects of the procedure of injection of the BM MSC's suspended on the fibrin glue; the safety of MSC's application for ACL and cartilage repair; and the potential influence of MSC's on ACL and cartilage healing by histological analysis.

Materials and methods

Six animals (12 knees) were used. The animals were divided into the ACL (3) and cartilage (3) groups. In the ACL group, iatrogenic damage of the ACL by its detachment at femoral insertion and reinsertion with the Internal Brace technique during arthroscopic procedure was performed bilaterally. ACLs in all the right knees were injected with pure fibrin glue. ACLs in the left knees were injected with fibrin glue mixed with 5 x 10^6 expanded, autologous BM MSC's. In the cartilage group, iatrogenic damages of the cartilage at the weightbearing surface of the medial femoral condyle were created. The lesions were filled with hyaluronic scaffold injected with fibrin glue in the right knees and with fibrin glue mixed with 5 x 106 expanded, autologous BM MSCs in the left knees in arthroscopic procedures bilaterally. The animals were euthanized after three months follow up.

Results

Angiogenesis was observed in the experimental group treated with autologous BM MSCs, whereas no such process occurred in the control group that received only fibrin glue. Similarly, angiogenesis was detected in cartilage samples from the BM MSC-treated group but not in the control group.

Conclusions

Injecting MSCs suspended in fibrin glue is a safe and straightforward procedure, ensuring cell retention within the treated structure. The observed angiogenesis in treated cartilage has not been previously described in the literature and warrants further investigation.

Presented paper is a part of EXPLORE ME project sponsored by National Center of Research and Development

Betaine Ameliorates Doxorubicin-induced Cardiorenal Toxicity in Rats.

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Introduction

Doxorubicin (DOX) is an effective and widely used chemotherapeutic agent; however, it is associated with severe adverse effects, including cardiomyopathy and renal injury. Current strategies to protect patients from the detrimental effects of DOX therapy remain insufficient. Betaine is an organic osmolyte that is synthesized endogenously and obtained through the diet. Studies suggest that betaine exerts nephroprotective and cardioprotective effects.

Aim of the study

To evaluate the effects of oral betaine supplementation on DOX-induced renal and cardiac damage in rats.

Materials and methods

Male Sprague-Dawley rats were divided into four groups (n=8–10): (1) control group receiving water, (2) betaine group receiving betaine solution, (3) DOX group receiving water, and (4) DOX + betaine group receiving betaine solution. After eight weeks of treatment, hemodynamic parameters were assessed, and echocardiography was performed. Plasma, tissue, and urine betaine levels were measured using mass spectrometry. NT-proBNP and KIM-1 levels were quantified using ELISA. Histopathological analyses of the heart and kidney tissues were conducted.

Results

Doxorubicin exposure was associated with increased blood pressure, elevated plasma NT-proBNP levels, increased urinary KIM-1, proteinuria, and morphological damage to renal and cardiac tissues. Betaine supplementation significantly reduced proteinuria and urinary KIM-1 levels, partially attenuated the increase in NT-proBNP levels and blood pressure, and alleviated pathological alterations in renal and cardiac tissue morphology. However, betaine had no significant effect on urine output.

Conclusions

Betaine mitigated DOX-induced nephrotoxicity and cardiotoxicity. These findings suggest that dietary betaine supplementation may be an effective strategy for preventing anthracycline-associated adverse effects, likely through mechanisms unrelated to diuresis or hemodynamic modulation. Further research is warranted to explore non-pharmacological strategies for reducing DOX toxicity, with a particular focus on dietary betaine.

Characterization of Podophyllotoxin Derivatives with a Fluorescent Group in HeLa Cancer Cells

Authors

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Introduction

Podophyllotoxin (PPT) is well known for its pharmacological properties as an anticancer agent, however due to its high systemic toxicity, its application is limited to topical treatment of skin lesions. Less toxic PPT derivatives, such as etoposide and teniposide, are administered intravenously as anticancer agents. The widespread use of these derivatives highlights the high potential of PPT as a lead compound for the synthesis of new therapeutic substances.

Aim of the study

In our study, we analysed PPT, its derivative KL-3 and KL-3-bodypi with an attached fluorescent bodypi group. KL-3-bodypi has been obtained by demethylation of KL-3, followed by reaction with the bodypi group. The fluorescent group in KL-3-bodypi has allowed us to track and monitor the intracellular distribution of this compounds in HeLa cancer cells.

Materials and methods

Using cell crystal violet viability assays, we determined the half-maximal inhibitory concentration (IC50) of KL-3, KL-3-bodypi and podophyllotoxin in HeLa cells. We then tracked intracellular localization and distribution kinetics of KL-3-bodypi, using the July-Stage epifluorescence microscope and confocal microscopy in collaboration with the Mossakowski Institute. We also performed molecular docking of the studied PPT derivatives to compare their affinity for different binding sites within the tubulin. In particular, we focused on investigating KL-3 and its analogue with an attached bodipy group (KL-3-bodipy). In foreseeable future, we are planning to perform flow cytometry-based cell cycle assay, using KL-3 and KL-3-bodypi.

Results

We found that podophyllotoxin, KL-3 and its KL-3-bodipy derivative exhibited concentration-dependent reductions HeLa cell viability. Intracellularly, KL-3-bodypi derivative remained stable and emitted a strong signal, allowing for in situ observations. Molecular docking analysis revealed that both the fluorescent (KL-3-bodipy) and nonfluorescent KL-3 bind to tubulin.

Conclusions

In conclusion, our research group has demonstrated characteristics for podophyllotoxin derivatives. What's more, the group has developed a comprehensive methodology for characterizing podophyllotoxin derivatives in human cells, which may contribute to more translational studies on PPT derivatives in the search for potential therapeutic strategies.

Characterization of a New Granulocytic-like Cellular Model Based on the K562 Cell Line, Showing Inducible Expression of CEBPα

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Introduction

Studies on neutrophils are burdened with certain limitations. The half-life of neutrophils in the bloodstream is up to 8 hours, and after isolation, the cells rapidly undergo apoptosis. Granulocytes are not capable of proliferation which makes long term in vitro culture impossible. Research on isolated neutrophils introduces donor-dependent variability of experimental data. Therefore, development of a granulocytic-like cellular models are warranted. A research model we have developed is based on the K562 cell line with inducible expression of the CEBPα. The K562 is an immortalized cell line of undifferentiated blast cells derived from chronic myeloid leukaemia. CEBPα is a transcription factor belonging to a group of proteins that regulate the proliferation and differentiation of stem cells towards neutrophils. Using the doxycycline-inducible Tet-ON lentiviral system, plasmid vector containing the gene sequence encoding CEBPα was introduced into the cells of the K562 line. Incubation of these cells with doxycycline results in the induction of CEBPA gene expression, followed by differentiation of K562 cells into granulocyte-like cells. After obtaining, stably expressing CEBPα, K562 cell line, clonal selection was performed.

Aim of the study

The aim of our research is to characterize a new granulocytic-like cellular model based on the K562 cell line, showing inducible expression of CEBPα.

Materials and methods

The degree of K562-CEBPa cell differentiation was assessed based on CD11b expression. Cells were stained with fluorescently labelled antibodies directed against CD11b and analysed by flow cytometry. In order to analyse the ability of NETs formation, CD11b positive cells were isolated using the EasySep Cell Separation method. The acquired cells were stimulated for 3 hours with PMA, PAF, LPS and CI and stained SytoxGreen. A qualitative analysis of NETs was performed using a fluorescent microscope.

Results

The percentage of the CD11b positive population in individual clones is as follows: 8.1 – 41.0% ; 8.2 – 57.2% ; 8.3 – 30.0% ; 8.15 – 79.5% ; 8.17 – 95.4% ; 8.18 – 84.4%. Microscopic analysis revealed that obtained differentiated K562-CEBPα cells are able to release NETs after stimulation.

Conclusions

Obtained results indicate that a certain percentage of K562-CEBPα cells undergo differentiation into granulocyte-like cells. The degree of differentiation is dependent on the selected clone. Moreover, obtained K562-CEBPα cell line after differentiation is able to form NETs upon stimulation.

The work was carried out as part of the Project "Characterization of a new granulocytic-like cellular model, created on the basis of the K562 cell line showing inducible expression of the CEBPα gene" no. 14/M/MG/N/24, financed from the subsidy for science, obtained by the Medical University of Warsaw

Delivery of mRNA for Perforin 2 to Dendritic Cells Increases Cross-presentation of Antigens in vitro

Authors

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Introduction

Dendritic cells (DCs) are the only cells of the immune system capable of activation of naïve T cells. They present in the secondary immune organs endo- and exogenous antigens to T cells and provide necessary signals to activate antigen-specific immune response. One of the unique features attributed to the DCs is so called antigen cross-presentation when exogenous antigens acquired by a DC are presented in class I MHC molecules to CD8+ T cells. This process involves endosomal escape of the DC antigens acquired involving perforin 2 protein function and is indispensable to activate cytotoxic T cells for effective killing of virus-infected or cancer cells. Delivery of in vitro transcribed (IVT) mRNA for viral antigens to humans has recently been shown as an effective way of vaccination. As DCs and macrophages are the primary target cells for IVT mRNA-lipid nanoparticles (mRNA-LNPs) delivery, we decided to take advantage of this process and deliver perforin 2 IVT mRNA to DCs to increase their cross-presentation capabilities.

Aim of the study

The aim of the study was to assess if delivery of IVT mRNA for perforin 2 to dendritic cells would increase their antigen cross presentation capabilities.

Materials and methods

We designed the DNA template for perforin 2 mRNA synthesis, produced mRNA by IVT, purified it and ran quality control tests. We have also established the optimal conditions for primary murine bone marrow-derived dendritic cells (BMDCs) culture and confirmed their physiological phenotype in flow cytometry. Next we transfected IVT mRNA to DCs and evaluated perforin 2 protein levels in time in western blotting. Finally, we designed and set up an in vitro assay to evaluate the efficacy of a model antigen (chicken egg white albumin – ovalbumin) cross-presentation by DCs.

Results

We obtained good quality IVT mRNA of a correct sequence and function. In BMDCs transfected with perforin 2 mRNA we observed peak perforin 2 protein expression at 9 hours post transfection, followed by continuous decrease. mRNA-transfected DCs more efficiently cross-presented exogenous OVA-protein derived SIINFEKL antigen to transgenic CD8+ OT-I T cells, as evidenced by mRNA dose-dependent increase in OT-I T cells proliferation rate.

Conclusions

Our preliminary studies show that delivery of perforin 2 IVT mRNA to dendritic cells improves antigen cross-presentation and enhances CD8+ T cells functions. This approach should be further validated in vivo as a promising method to ameliorate CD8+ cytotoxic T cells-mediated anti-tumor immune response.

Minigrant studencki nr. 21/M/MG/N/24

Distinct Airway Remodeling Patterns Across House Dust Induced Inflammatory Phenotypes in Experimental Asthma

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Introduction

Asthma is recognized as a complex and heterogeneous disease affecting approximately 262 million people worldwide. Around half of individuals presenting Type 2 (T2) inflammatory phenotype achieve optimal symptoms control with corticosteroids or biologicals. Unfortunately, T2-low or non-T2 asthma is more frequently associated with increased rates of exacerbations and suboptimal or even lack of response to available treatment. Persistent and uncontrolled asthmatic inflammation can lead to dysregulated tissue repair processes within the airways and structural changes, referred to as airway remodeling. However, the interplay between immune and structural cells in this process remains incompletely understood, partly due to the limited availability of clinically relevant preclinical models that accurately recapitulate airway remodeling features.

Aim of the study

Therefore, here we aimed to characterize airway remodeling-related changes in house dust mite (HDM)-extract induced asthmatic airway inflammation model reflecting acute T2-low and chronic non-T2-mediated airway inflammation.

Materials and methods

C57BL6 mice were challenged intranasally with varying HDM doses (10 or 100 μg) for 2 weeks or 12 weeks to induce T2-low and non-T2-airway inflammation, respectively. The lungs were subjected to histological analyses, transcriptomic profiling, and flow cytometry.

Results

Varying doses of HDM combined with different model durations resulted in the induction of distinct inflammatory phenotypes. Notably, the 12-week model exhibited a substantial increase in IL-17-producing T cells (non-T2 inflammation), whereas acute models were characterized by a higher frequency of IL-4 and IL-10 T cells. Surprisingly, increased numbers of lung-resident fibroblast numbers and elevated αSMA levels were observed exclusively in acute T2-low models. Furthermore, all analyzed models displayed dysregulated expression of genes encoding collagens (Col), proteoglycans, matrix metalloproteinases, and their tissue inhibitors. Immunohistochemical staining revealed phenotype-dependent subepithelial deposition patterns of Col1a1, Col3a1, and Col4a1.

Conclusions

To summarize, we confirmed the differential regulation of airway remodeling-related features in varying inflammatory phenotypes. Our findings help to better understand distinct mechanisms of asthmatic airway remodeling associated disease.

The study was supported by: the Polish/Turkish Turkish/Polish projects co-funded jointly by the National Centre for Research and Development, Poland (NCBIR, POLTUR3/MT-REMOD/2/2019) and Scientific and Technological Research Council of Turkey (TUBITAK, Project no: 218S757).

Engineered Multifunctional Nanoparticles for Enhanced Radiation Therapy: Three-in-one Approach for Cancer Treatment

Authors

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Introduction

Clinical cancer treatment modalities include radiation as one of the first-line therapies used for treating almost two-thirds of cancer patients. Combinational therapy for cancer is becoming extremely popular, with multiple therapies and their pharmacological effects expected to provide a synergistic outcome.

Aim of the study

The objective is to investigate the efficacy of a nanotechnology-based combinational therapeutic approach that integrates radiotherapy and chemotherapy using a multifunctional lipo-polymeric hybrid gold-coated nanosystem.

Materials and methods

In this study, lipo-polymeric hybrid nanoparticles were synthesized via a modified hydrogel isolation technique and coated with gold through in-situ reduction with ascorbic acid. The natural plant-derived anticancer agent “Caflanone” was encapsulated and the nanosystem was characterized for size, charge, morphology, and X-ray/CT contrast. Its radiation-triggered drug release was assessed. In vitro, the nanoparticles' cytotoxicity, radiosensitization, and ROS generation were evaluated in breast, pancreatic, and glioblastoma cells. In vivo, breast and pancreatic tumor-bearing mice received intratumoral injections followed by 12 Gy radiation, with tumor volume, survival, and potential abscopal effects monitored. X-ray/CT imaging assessed nanoparticle retention, and safety was evaluated via hematological and histopathological analysis. Statistical analysis was performed using GraphPad Prism.

Results

In vitro studies demonstrated that gold-coated lipo-polymeric nanoparticles significantly enhanced radiosensitization and radiation-triggered Caflanone release, leading to increased cytotoxicity in breast ($p=0.0114$), pancreatic ($p<0.0001$), and glioblastoma ($p=0.0178$) cancer cells. Clonogenic assays showed a marked reduction in colony formation, while MTT assays confirmed decreased cell viability ($p<0.0001$). In vivo, X-ray/CT imaging validated nanoparticle retention in tumors, and combinational treatment with 12 Gy radiation led to significant tumor volume reduction ($p=0.0008$) and prolonged survival in breast cancer models ($p=0.0128$). Safety assessments showed no adverse effects, confirming the biocompatibility and therapeutic potential of the nanosystem.

Conclusions

A three-in-one approach for cancer therapy has been demonstrated using a multifunctional nanosystem. The nanotechnology-based combinational therapy offers enhanced efficacy by enabling multi-drug loading, targeted delivery, and integration of physical and chemical treatments.

EZH2 Downregulation Controls Microglia-mediated Neuroinflammation and Mitigates Neuronal Apoptosis in an in vitro Model of Alzheimer's Disease.

Authors

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Introduction

Microglia activation and ensuing neuroinflammation is central to the pathogenesis of Alzheimer's disease (AD). Histone methyltransferase Enhancer of zeste homolog 2 (EZH2) was recently found to mediate neuroinflammation and restrict the clearance activity of microglia in AD. Therefore, targeting EZH2 activity or expression may alleviate the microglial-mediated neurodegeneration in AD.

Aim of the study

The study aimed to investigate the influence of EZH2 inhibition/knockdown on microglial activation and accompanying neurodegeneration in an in vitro model of AD.

Materials and methods

Experiments were conducted on HMC3 human microglia and SH-SY5Y-derived neurons. HMC3 cells were treated with LPS (100ng) and Aβ1-42 aggregates (2.5μM) to induce an AD phenotype. Aβ aggregation was confirmed using Thioflavin T (ThT) assay. The role of EZH2 in activated HMC3 cells was assessed by treatment with EZH2 inhibitor EPZ6438 (5μM) or degrader MS1943 (4μM). Groups included control, LPS+Aβ (AD), LPS+Aβ+EPZ (EPZ) and LPS+Aβ+MS (MS). The relative expression of EZH2, cytokines (TNFα, IL-1β, IL-6, TGFβ, IL-10), and ER stress genes (ATF4, Nrf2, DDIT3) was assessed by qRT-PCR. SH-SY5Y-derived neurons were treated with conditioned media from HMC3 groups, and neuronal apoptosis was evaluated by Annexin-V/PI/Hoechst staining.

Results

Fluorescent ThT assay confirmed Aβ aggregation in a concentration-dependent manner. LPS+Aβ treatment significantly increased the expression of EZH2 and pro-inflammatory cytokines (TNFα, IL-1β and IL-6). After 24h, MS induced ER stress in AD microglia, elevating ATF4, Nrf2, and DDIT3, and triggering a massive increase in IL-1β and IL-6 expression. However, after 48h, ER stress was alleviated, and both EPZ and MS downregulated EZH2 expression and attenuated the pro-inflammatory microglia response. EPZ also markedly increased the expression of anti-inflammatory TGFβ and IL-10. SH-SY5Y-derived neurons exposed to AD-conditioned media showed enhanced Annexin-V/PI signal, while EPZ- and MS-conditioned media decreased the signal, suggesting limited neuronal apoptosis.

Conclusions

EZH2 inhibition/knockdown modulated microglial pro-inflammatory activation and mitigated microglia-mediated neurodegeneration in an in vitro model of AD.

The project was funded by grant no. SKN\SP\602622\2024 from the state budget allocated by the Minister of Science within the program 'Student Scientific Circles Create Innovations'.

Evaluation of the Influence of Diabetes Mellitus on Alterations in Morphological Appearance of Ligaments and Influence of Melatonin Supplementation on Oxidative Stress in the Tissue

Authors

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Introduction

Lack of physiological action of insulin in DM induces an impaired metabolism of carbohydrates, fat and proteins. Those are the necessary components for cellular homeostasis and tissue activities. Altered glucose metabolism impacts on all the basic processes taking place in the organism and remains the reason for impaired body functioning and regenerative abilities.

Aim of the study

Analysis of differences in concentration of the biochemical markers of oxidative stress between the groups with normoglycemia and hyperglycemia undergoing ligament surgery.

Materials and methods

The study was conducted on 40 male Sprague-Dawley rats. The animals were randomized into four equal groups, the I and II groups received saline subcutaneously and continued to function as controls. The III and IV groups were injected with a single dose of streptozotocin (STZ) to induce the DM. All animals underwent surgery to cut the left tibial collateral ligament in the hind limb and suture it and suture the access site to provoke an inflammation in order to study the regenerative abbilities of animals with induced DM. Each animal then underwent sham surgery to access and suture the right tibial collateral ligament in the hindlimb without ligament intervention. After the animals had undergone surgeries, groups II and IV were given melatonin supplementation for 4 weeks. After 6 weeks, connective tissue was collected from each model's two observed ligaments.

Results

Significant fibrosis was observed in the left MCL compared to the right MCL in group III. In the dissected MCL, an increased loss of elastin fibers was observed in all groups. The melatonin supplemented group showed little loss of elastin fibers compared to the control group, with scores of 0 and 0.5 ± 0.2, respectively, for the right MCL and 0 and 1.05 ± 0.55, for the left MCL. The non-diabetic group presented calcifications in the dissected MCL (1.05, ± 1.7) and no signs of calcifications in the right MCL. Compared to control group, plasma chemistry studies in diabetic rats showed elevated plasma markers of oxidative damage. Melatonin treatment significantly increased total antioxidant activity in the tissues of animals and decreased the activity of pro-inflammatory molecules.

Conclusions

The study proves that diabetes inhibits the physiological protective mechanism against oxidative stress. Melatonin supplementation significantly increases antioxidant activity in rats with induced diabetes.

Identification of Intracellular Signal Transduction Pathways Regulated by TrkB Receptors in Medial Prefrontal Cortex Pyramidal Neurons

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Introduction

Depression is a common mental health disorder characterized by a persistent low mood and a loss of interest or pleasure in activities. Suicide is the fourth leading cause of death among individuals aged 15 to 29. The exact mechanisms of depression remain unclear, but key contributing factors include oxidative stress and neuroinflammation, which lead to dysfunction within the BDNF/TrkB signaling pathway. A reduction in brain-derived neurotrophic factor (BDNF) levels negatively affects TrkB receptors, ultimately disrupting signaling pathways activity. The intracellular signal transduction pathways regulated by the TrkB receptor in pyramidal neurons of the medial prefrontal cortex (mPFC) are not fully understood.

Aim of the study

The aim of the study was to identify intracellular signal transduction pathways, specifically those involving protein kinase A (PKA), phosphoinositide 3-kinase (PI3K), and protein kinase C (PKC).

Materials and methods

Experiments were performed in synaptically isolated layer V mPFC pyramidal neurons in slices obtained from young adult male rats. Recordings of membrane potential were performed in whole-cell current-clamp configuration.

Results

After the administration of the TrkB receptor agonist (HIOC), a change in membrane potential was observed, with an average amplitude of 2.6 mV (n=8). Subsequently, HIOC was co-administered with kinase blockers, and change in neuronal membrane potential were recorded. Following the administration of chelerythrine, a PKC antagonist, the membrane potential changed with an average amplitude of -3.1 mV (n=6). The administration of H-89, a PKA antagonist, resulted in hyperpolarization with an average amplitude of -3.8 mV (n=3). After the administration of PI828, a PI3K antagonist, the change in membrane potential had an average amplitude of -1.7 mV (n=6).

Conclusions

The TrkB receptor regulated the activity of pyramidal neurons in the medial prefrontal cortex. It also modulates the activity of the kinases PKA, PI3K, and PKC, which, with further research, may serve as potential targets for novel antidepressants.

Lifelong TMAO Exposure Exerts Hypotensive Effects in Aged Spontaneously Hypertensive Rats

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Introduction

Trimethylamine N-oxide (TMAO) is a gut bacteria metabolite associated with cardiovascular risk, yet its role in pathophysiology remains unclear. Some studies suggest that, as an osmolyte, it may have a protective role in the circulatory system.

Aim of the study

To evaluate the effect of long-term TMAO supplementation on survival and the development of cardiovascular pathologies in hypertensive rats, with particular focus on its impact on the tissue renin-angiotensin system (RAS).

Materials and methods

Spontaneously hypertensive rats (SHR), aged 10 weeks, were divided into two groups: (1) drinking water (SHR-Water), and (2) drinking water supplemented with TMAO (SHR-TMAO, 333 mg/L) for 80 weeks. Cardiovascular parameters (blood pressure, echocardiography), biomarkers (NT-proBNP), and gene expression of the RAS system using RT-qPCR in various tissues were assessed, along with histopathological analysis of the heart and kidneys.

Results

Rats exposed to TMAO exhibited lower NT-proBNP levels, reduced systolic and mean arterial pressure, and numerically increased diuresis and natriuresis compared to SHR-Water rats. No pathological effects of TMAO on the cardiovascular system were observed. Echocardiographic parameters and pathological changes, including cardiac and renal fibrosis, were comparable between groups. The SHR-TMAO group showed increased expression of RAS components, including angiotensinogen and AT1 and AT2 receptors, in the heart, kidneys, and colon. SHR-TMAO rats had higher blood TMAO levels and increased urinary excretion of TMAO. This increase was accompanied by elevated levels of its toxic precursor, trimethylamine (TMA).

Conclusions

Prolonged exposure to TMAO exerts beneficial effects on the cardiovascular system in hypertension, including lowering blood pressure. Increased RAS expression may reflect a compensatory mechanism for blood pressure reduction and enhanced natriuresis. These findings highlight the beneficial effects of TMAO; however, the simultaneous increase in TMA levels warrants further studies to understand the balance between the protective role of TMAO and the potential toxicity of TMA.

Prevalence and Genomic Characteristics of Mupirocin-resistance in Methicillin-resistant Staphylococcus Aureus Clinical Isolates

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Introduction

Mupirocin, a potent isoleucyl-tRNA synthetase (IleS) inhibitor, is widely used for topical decolonisation and empirical therapy of patients with methicillin-resistant Staphylococcus aureus (MRSA). Even though recent studies have shown an increase in the prevalence of mupirocin-resistant MRSA (MupR-MRSA) with rates rising up to 60%, mupirocin susceptibility testing is not yet a standard practise. The mechanism of resistance to mupirocin can be related to both chromosomal point mutations in the internal ileS gene or to the acquisition of mobile genetic elements (MGEs), which deliver alternative IleS2 synthetase genes (mupA or mupB).

Aim of the study

To assess the prevalence of MupRSA strains among MRSA obtained from clinical settings at the Warsaw Clinical Center (WCC) and characterize the genetic background of resistance.

Materials and methods

102 MRSA strains, collected from patients hospitalised at the WCC during the period 2014-2020, mainly from colonisation and severe systemic infections, were analyzed. The strains were identified using mass spectrometry platform VITEK_MS (BioMerieux). Susceptibility to 17 antibiotics was determined using disc-diffusion, E-test and D-test methods, according to the EUCAST guidelines. PCR technique was used to detect the presence of mupA/B genes. Genomic DNA sequencing of the SA1802/4 isolate was performed using short-read bacterial whole genome sequencing on an Illumina MiSeq platform (Illumina Inc.,USA). Annotation of DNA was carried out using the RASTtk bioinformatic tool and adjusted manually.

Results

Among 102 analysed MRSA strains, 3 (2.94%) were found to be mupirocin-resistant. Of these, one exhibited low-level resistance (MIC 6 mg/L), two displayed high-level resistance (MIC>1024 mg/L, HL-MupR-MRSA). The mupA gene was confirmed in both HL-MupR isolates. Genomic sequencing of the SA1802/4 (HL-MupR-MRSA) strain revealed the presence of SCCmec cassette type IVa (2B). The strain was classified to sequence type, ST 1; clonal complex, CC1; spa-type t127 and represented community-associated MRSA. The mupA gene (3075 bp) was located on two MGEs: conjugative (tra genes), self-mobilizing (mob genes) plasmid (rep15 replicon type, mostly similar to pMupA, 32.8 kb) and within potential transposable element (TE) flanked by direct repeat IS257 insertion sequences.

Conclusions

The location of the mupA gene on two MGEs increases the risk of both intracellular and intercellular spread of mupirocin resistance. Intensive monitoring of this resistance and laboratory testing should be prioritized.

The Effects of Cannabigerol (CBG) Exerted on Sphingolipid Metabolism in the Brain Cortex of Insulin Resistant Rats

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Introduction

Western diet, rich in simple sugars and saturated fats, is the key contributing factor to the development of obesity and diabetes. Recently, more attention has been paid to the insulin resistance of the brain, which is associated with disturbances in the sphingolipid pathway. Cannabigerol (CBG) is a cannabinoid with proven antiimflammatory, anticancer and antioxidant properties. Although the impact of other cannabinoids on the sphinolipid metabolism have been described, the effects of CBG on the cerebral sphingolipidome remain elusive.

Aim of the study

In our study we aimed to evaluate the effects of CBG treatment on the sphingolipid metabolism in the brain cortex in the rat model of diet – induced insulin resistance.

Materials and methods

Male Wistar rats were divided into four groups: standard diet group (control), group on a standard diet receiving CBG (CBG), group receiving a high-fat diet and 20% drinking sucrose solution (HFHS- high-fat-high-sucrose) and the HFHS diet group also receiving CBG (HFHS + CBG). Diets were maintained for 6 weeks; CBG was administered intragastricly for the last 2 weeks. After the animals were sacrificed, the cerebral cortex was collected and divided into frontal part and posterior part. Sphingolipid levels and the protein expression were analyzed using high performance liquid chromatography (HPLC) and Western Blot methods, respectively.

Results

After the implementation of CBG to HFHS group, the level of ceramide was increased in posterior and decreased in frontal cortex. We discovered a reduced expression of serine palmitoyltransferases 1 and 2 (SPTLC 1 and SPTLC 2) in both of the analyzed brain locations. However, in posterior cortex the inhibition of de novo ceramide synthesis pathway was also confirmed by the reduction in sphinganine content. We also disclosed that after the administration of CBG the catabolism of the sphingolipids in the frontal cortex is inhibited at its three consecutive stages while in posterior parts only the first stage is hindered.

Conclusions

CBG is a substance with a multidirectional impact on the sphingolipidome of the rat brain cortex. Its ability to inhibit de novo ceramide synthesis pathway emerges as one of its most important properties, since ceramide is involved in the pathogenesis of various neurological conditions. However, it should be noted, that the effects of CBG in the frontal cortex are different than in the posterior parts of the cerebral cortex.

Unveiling the Anticancer Potential of Salinomycin Conjugates: Insights from Cancer Cell Line Studies

Authors

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Introduction

Salinomycin is a polyether ionophore antibiotic that exhibits potent anticancer properties by altering intracellular ionic balance, leading to cellular stress and apoptosis. Moreover, chemical modifications of salinomycin have enhanced its antiproliferative efficacy through improved cytotoxic and cytostatic effects, making it a promising candidate for cancer treatment.

Aim of the study

The study of the biochemical effects of salinomycin and its conjugates based on cytotoxic, cytostatic, and apoptotic effects on cancer cells.

Materials and methods

Salinomycin derivatives were synthesized through chemical modifications and evaluated on five cancer (SW480, SW620, PC3, MDA-MB-231, A549) and two non-cancer cell lines (HaCaT and V79). Meanwhile, doxorubicin was included as a reference drug in this biological study. Cytotoxicity was assessed using the MTT assay and two phosphonium ester derivatives (3a and 3f) and one benzyl ester derivative (6) were selected for further evaluation. Cell cycle distribution was analyzed using PI-stained fixed cells, while apoptosis was assessed by PI and Annexin V staining assay through flow cytometry. Reactive oxygen species (ROS) level was measured using a fluorescence assay with CellROX reagent.

Results

Salinomycin conjugates showed high cytotoxicity against cancer cells, especially in SW480, MDA-MB-231 and A549 cell lines, with IC50 values lower than 1 μM. G0/G1 phase arrest was noted in A549 and MDA-MB-231 cells treated with salinomycin derivatives, whereas only MDA-MB-231 cells were inhibited by unmodified salinomycin. A reduction in S- and G2-phase cells was also observed, indicating a disruption in cell proliferation . Apoptosis assay showed an increase in both early and late apoptotic cell numbers, with up to a 35-fold increase in early apoptosis for triphenylphosphate derivative (3a) in A549 cells. Elevated ROS level was observed for 3a and 3f compounds in both cancer cell lines suggesting enhanced efficacy in inducing oxidative stress and promoting cancer cell death.

Conclusions

Salinomycin and its newly synthesized phosphonium salts exhibit potent anticancer activity through cell cycle arrest, and apoptosis induction. Their promising anticancer effects and selectivity indicate their potential in clinical practice. Further studies should explore detailed molecular interactions, optimize derivatives for enhanced efficacy, and assess combination therapies with existing anticancer agents.

This research was funded by the Polish National Science Centre (NCN), grant number 2021/41/B/ST4/00088.

Using AI-driven Protein Interaction Prediction to Investigate the Connection Between Arylsulfatase B and the Canonical Wnt/β-catenin Pathway

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Introduction

Previous studies have shown the potential involvement of arylsulfatase B (ARSB) in the pathogenesis of malignant tumours, such as colorectal and prostate cancer. The Wnt/β-catenin signalling pathway has been identified as one of the primary molecular mechanisms driving tumourigenesis, for example, in colorectal cancer. In silico prediction of protein-protein interactions using deep-learning technology provides a cost-effective and intuitive solution, which can guide experimental research.

Aim of the study

The aim of our research was to investigate the potential link between ARSB and the canonical Wnt/β-catenin pathway using artificial intelligence-based protein interaction predictions.

Materials and methods

The interaction network of ARSB was analysed to identify potential interactions with members of the Wnt/β-catenin pathway using the STRING bioinformatic database. The confidence threshold for interaction strength was set to the recommended value of 0.400. The PEPPI tool was used to predict the likelihood of interaction between individual proteins based on their amino acid sequences. The AlphaFold Server was employed to further analyse the most optimal interaction sites between the examined proteins based on their tertiary structures.

Results

The STRING database indicated that the strongest interaction pathway between ARSB and members of the Wnt/β-catenin pathway involves GUSB (0.778) and HSP90AB1 (0.626). HSP90AB1 was predicted to interact with three proteins involved in the Wnt/β-catenin pathway: CTNNB1, TLE3, and GSK3B, with confidence scores of 0.759, 0.625, and 0.920, respectively. The PEPPI tool predicted the likelihood of interaction of these proteins with HSP90AB1 as follows: CTNNB1 (log(LR) = -2.326), TLE3 (log(LR) = -2.475), and GSK3B (log(LR) = 1.212). The AlphaFold Server predicted the following template modelling (pTM) scores: 0.43 (CTNNB1), 0.41 (TLE3), and 0.47 (GSK3B).

Conclusions

The most probable interaction pathway linking ARSB to proteins of the Wnt/β-catenin pathway appears to involve GUSB and HSP90AB1. GSK3B is the most likely candidate for interaction with HSP90AB1. This protein is a central element of the Wnt/β-catenin pathway, which forms a multimeric complex with APC, AXIN1, and CTNNB1. The interaction between HSP90AB1 and GSK3B has been previously validated using co-immunoprecipitation and mass spectrometry assays. This computational approach holds promise for future biomedical research, providing potential candidates for experimental validation.

This work was supported by the Collegium Talentum Programme of Hungary.

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"Beyond the Broken Heart – a Case of Intraventricular Thrombus Formation in a Patient with Takotsubo Syndrome"

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Background

Intraventricular thrombus is observed in 2% to 8% of Takotsubo syndrome (TTS) patients and can potentially lead to further thromboembolic events, including cerebral ischemic stroke. Oral anticoagulation is recommended if intraventricular thrombus is detected in the absence of high bleeding risk. However, therapeutic low-molecular-weight heparin can be considered in cases with extensive segmental akinesia or atrial fibrillation. Here, we present a case of TTS complicated by intraventricular thrombus.

Case Report

A 44-year-old female with a medical history of untreated hypertension, nicotine use, congenital adrenal hyperplasia, type 2 diabetes, and obesity, was admitted to the hospital with chest pain. She reported several days of recurrent left subcostal pain, initially relieved with drotaverine but persistent since the morning of admission. She denied acute stress but admitted chronic occupational stress. On admission, BP was 153/65 mmHg, a chest X-ray and abdominal ultrasound were unremarkable. Laboratory analysis revealed elevated troponin I (296 and 899 ng/L), NT-proBNP (4642 pg/ml), hyperglycemia (297 mg/dL), increased CRP (29 mg/L) and D-Dimer (1332 ng/ml). ECG showed lateral ST-segment depression. Cardiac catheterization revealed no significant coronary stenosis and left ventriculography confirmed apical hypokinesis. Transthoracic echocardiography (TTE) showed mid and apical akinesis of the anterior LV wall, apical hypokinesis of all other LV walls (LVEF 40%), mild tricuspid regurgitation and two apical LV thrombi (20x13 mm and 20x11 mm). The patient was transferred to the intensive care unit and continuous IV heparin was administered. Serial TTEs were performed every 2-3 days. By day 10, TTE demonstrated one mobile apical thrombus (11x12 mm) with LVEF improvement to 55%. Cardiovascular surgeons opted for conservative treatment of the thrombus. By day 17, TTE showed complete resolution of LV dysfunction (LVEF 52%) with no intraventricular thrombus. The patient was discharged on apixaban and referred for thrombophilia screening. At the 2-week follow-up, cardiac MRI showed no signs of myocarditis. At the 4-week follow-up, TTE confirmed no residual LV dysfunction (LVEF 59%) with no intraventricular thrombi.

Conclusions

This case highlights the importance of serial echocardiographic monitoring in TTS patients, particularly those with extensive wall motion abnormalities. It also reinforces the critical role of anticoagulation therapy in preventing thromboembolic complications.

A Bridge to Survival: A Case of Total Artificial Heart Implantation in End-Stage Heart Failure

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Background

End-stage heart failure remains a significant challenge in modern cardiology, particularly in patients refractory to conventional therapies. The advent of total artificial hearts (TAH) has provided an alternative for patients ineligible for heart transplantation.

Case Report

A 53-year-old male with a long history of chronic heart failure (NYHA IV), progressive deterioration, and multiple hospitalizations was admitted due to worsening of dyspnea, and systemic congestion. Despite intensive pharmacological treatment, including inotropes, vasopressors and diuretics, his condition continued to decline. Imaging revealed severe biventricular dysfunction with LV ejection fraction of 13% and global hypokinesia, as well as thrombus formation in the left and right ventricular apexes. Given his worsening condition, leading to cardiogenic shock, veno-arterial extracorporeal membrane oxygenation (VA-ECMO) was initiated as a bridge to further therapy. Mechanical circulatory support and prior vasopressor dependence precluded right heart catheterization. Therefore, without the possibility of diagnosing pulmonary hypertension, the patient was disqualified from heart transplantation. Following multidisciplinary team discussions, the patient underwent implantation of the CARMAT Aeson total artificial heart, a novel device designed for complete circulatory support. Initially, his condition improved with restoration of cognitive functions and stabilization of hemodynamics, which led to the withdrawal of ECMO and extubation. During the subsequent recovery period, the patient suffered multiple episodes of lung infections resulting in sepsis. After long treatment in the ICU, he became clinically stable and began rehabilitation under close monitoring. Unfortunately, Seventy-six days post-implantation the patient experienced a sudden deterioration due to unexpected device malfunction, ultimately resulting in his death.

Conclusions

This case underscores the potential of total artificial hearts to stabilize critically ill patients and the ongoing challenges of infection control, long-term device durability, and post-implantation surveillance. Further advancements in mechanical circulatory support technology are essential for improving survival rates and long-term outcomes in patients with end-stage heart failure.

Acute Aortic Regurgitation due to Aortic Valve Leaflet Injury as a Complication of Percutaneous Coronary Intervention.

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Background

Iatrogenic aortic valve perforation is an extremely rare complication of percutaneous coronary intervention (PCI), with approximate prevalence of 0,0001%. We report a case of iatrogenic severe aortic regurgitation (AR) resulting from aortic leaflet injury, as a complication of PCI in a patient with anterior STEMI.

Case Report

An 85-year-old patient was admitted after 5 hours of chest pain, with ST segment elevation in precordial leads. Past medical history included persistent atrial fibrillation, chronic heart failure with preserved ejection fraction, arterial hypertension and diabetes. Echocardiography was performed one week before and it revealed EF of the left ventricle 50%, without any valvular defect. The patient was referred for urgent coronary angiography, which revealed single-vessel disease with tandem critical stenosis and massive calcification in segment 7 of LAD, TIMI 1/2. Decision was made for PCI with rotablation. The procedure was performed with good results, 2 stents were implanted, TIMI 3 flow was achieved. After the procedure, due to low blood pressure, dobutamine infusion was started. Over the following hours, the patient's condition worsened, with the onset of left ventricular circulatory failure, eventually leading to pulmonary edema. The patient required intubation and ventilation support. Echo showed impaired EF-25% and features of severe AR, with a suspected ballooning structure on a non-coronary aortic leaflet. Transesopheagal echocardiography confirmed acute aortic regurgitation and non-coronary leaflet rupture. The next day the patient experienced two episodes of sudden cardiac arrest in asystole – resuscitated, endocavitary lead was placed. Patient was cardio-surgically consulted and recognized as not suitable for cardiac surgery. He died on day 9 due to multiple organ failure.

Conclusions

We report a case of an iatrogenic aortic valve injury, which is an extremely rare occurrence. We propose a potential mechanism of that injury, namely damage with a guide catheter, that collapsed in the opposite coronary sinus.

An Unusual Angiographic Finding: A Rare Case of Anomalous Left Coronary Artery from the Pulmonary Artery (ALCAPA) with Mechanical Mitral Valve and CRT-D Implantation

Authors

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Background

Anomalous Left Coronary Artery from the Pulmonary Artery (ALCAPA), or Bland–White–Garland syndrome, is a rare congenital defect occurring in 1 in 300,000 live births. Without surgical correction, severe myocardial ischemia leads to high infant mortality. Surviving adults typically develop collateral circulation between the right coronary artery (RCA) and left coronary artery (LCA), preserving myocardial perfusion but predisposing them to long-term complications, including left ventricular dilation, mitral valve dysfunction, and heart failure. ALCAPA often presents in adults with exertional angina, dyspnea, and heart failure, with a high risk of sudden cardiac death before age 35. Surgical correction is essential to restore a two-coronary artery system, commonly via LCA re-implantation or grafting. Despite revascularization, ventricular dysfunction and mitral disease often persist, requiring long-term monitoring.

Case Report

A 69-year-old male with a history of Bland-White-Garland syndrome was admitted for coronary angiography due to chronic coronary syndrome symptoms. At age 58, he underwent LCA ligation at its pulmonary artery origin and left internal mammary artery (LIMA) grafting to the distal LCA. Concurrently, a mechanical mitral valve was implanted for mitral regurgitation due to left ventricular dysfunction. Over time, he developed heart failure with an ejection fraction of 27%. A cardiac resynchronization therapy defibrillator (CRT-D) was implanted for ventricular arrhythmias. In recent months, he reported worsening exercise tolerance, NYHA II dyspnea, atypical chest pain, and two presyncopal episodes with dizziness but no loss of consciousness. CRT-D interrogation revealed VT/VF episodes without atrial fibrillation and phrenic nerve stimulation, requiring left ventricular lead reprogramming. Coronary angiography showed no significant stenoses, ruling out PCI. However, a markedly dilated RCA (>1 cm) was noted, likely due to compensatory remodeling. Despite surgical repair, the patient developed typical ALCAPA complications, including chronic mitral regurgitation and heart failure, affecting his clinical status.

Conclusions

ALCAPA requires surgical correction to prevent early mortality. However, even after revascularization, heart failure and mitral valve disease often persist. This case underscores the need for lifelong surveillance and individualized management of heart failure and arrhythmic risks in post-surgical ALCAPA patients.

Candida Parapsilosis Fungemia as a Cause of Endocarditis in Non-Immunocompromised Patient

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Background

Fungal endocarditis is a rare but severe cause of endocarditis, with a high mortality rate. It is commonly associated with prosthetic valve colonization and intravenous drug use. The majority of cases are caused by Candida species, with half of them caused by non-albicans species. The clinical symptoms may be non-specific potentially delaying the diagnosis.

Case Report

A 31-year-old man was admitted to our department with a three-month history of subfebrile condition following a cervical spine injury caused by a traffic accident. Before admission, the patient was diagnosed with inflammation of the surrounding tissues of the left external carotid artery and had received intermittent antibiotic therapy for approximately two months without achieving full recovery. On admission, the patient had partial paresis of the right arm and limited neck mobility due to atlanto-occipital stabilizer. The patient denied drug use and did not have a prosthetic valve. Serum antibodies for: EBV, CMV, HIV, HBV and HCV were all negative. Blood tests revealed elevated levels of D-dimer (1035.6 ng/ml), CRP (19.0 mg/l), and PCT (0.7 ng/ml) levels. Ultrasonography showed a reservoir of thick fluid with enlarged lymph nodes on the left side of the neck. Echocardiography showed a large vegetation on the aortic valve. Blood culture was positive for Candida parapsilosis. The patient was started on amphotericin B and was transferred to the cardiology ward. During further hospitalization, the patient developed massive embolism in the lower limbs, requiring two embolectomies. The culture of embolic material revealed Candida parapsilosis and Pseudomonas putida. The patient was additionally treated with ceftazidime. Despite treatment, the vegetation size did not decrease on follow-up echocardiography, and the patient was qualified for aortic valve replacement. Cultures from the valve vegetation revealed Candida parapsilosis and Staphylococcus epidermidis. Vancomycin was added to current treatment. Subsequent blood cultures were negative, and the patient's temperature normalized. The patient was discharged from the hospital.

Conclusions

In patients with chronic febrile conditions and with history of prolonged antibiotic therapy, echocardiography should be included in the diagnostic panel, even in those without any known immunodeficiencies. Early diagnosis of fungal endocarditis allows for more effective therapy and better prognosis, reducing the risk of complications.

Case Description of a Patient Diagnosed with Hypertrophic Cardiomyopathy and Left Ventricular Outflow Tract Obstruction, Harboring a Mutation in the MYBPC3 Gene

Authors

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Background

Hypertrophic cardiomyopathy (HCM) is the most common genetically inherited cardiomyopathy, following an autosomal dominant inheritance pattern. The majority of HCM cases are attributed to mutations in the MYBPC3 gene, which encodes the cMyBP-C protein. It plays a crucial role in the structural organization of cardiac muscle, contributing to the assembly and stabilization of thick filaments and regulating the formation of actomyosin cross-bridges.

Case Report

To report a 21-year-old male with a history of HCM and left ventricular outflow tract obstruction. He was admitted to the Department of Cardiology due to deepening of HCM diagnosis. Over the past two years, the patient has experienced a worsening of exercise tolerance (NYHA II), but denies symptoms of angina, palpitations, or resting dyspnea. Upon admission, the patient was in stable general condition and reported no resting symptoms. The pre-admission physical examination revealed a loud systolic murmur over the heart, radiating to the carotid arteries, but no other significant findings. In the laboratory tests, no significant deviations were observed, except for bilirubin (1.5 mg/dL).The echocardiography revealed left ventricular hypertrophy with a maximum thickness of 13 mm and features of outflow tract obstruction (PGmax 80 mmHg). What was noteworthy was the hyperkinesis of the left ventricular muscle. There were no any more significant abmnormalities. Cardiac magnetic resonance imaging (MRI) showed mild segmental hypertrophy of the left ventricle (max 15 mm) with mild outflow tract obstruction, increased flow velocity, enhanced turbulence, and positive systolic anterior motion (SAM). No significant arrhythmic disturbances were recorded on the Holter ECG. Genetic testing confirmed a mutation in the MYBPC3 gene. Patient's previous pharmacological treatment was adjusted: disopyramide was discontinued, and bisoprolol was introduced at a dose of 2.5 mg, which was later reduced to 1.25 mg due to bradycardia (45/min) and dizziness. The patient was considered for the mavacamten treatment program and discharged home.

Conclusions

HCM can result from both common conditions such as hypertension and genetic mutations, particularly those in the MYBPC3. Given the complexity of the patient's condition, close monitoring and personalized, targeted therapies are essential for optimal management of HCM. Based on these factors, the patient was initially considered for the mavacamten treatment program.

Delayed Surgical Repair in Post-Myocardial Infarction Ventricular Septal Defect: A Case Report

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Background

Post-myocardial infarction ventricular septal defect (VSD) occurs in 0.2% of acute myocardial infarction cases (Giblett et al., 2022). While surgery is the standard treatment, the optimal timing for closure remains debated due to high mortality rates (Damluji et al., 2021). Some experts advocate early surgery to prevent cardiogenic shock, while others argue that a delayed approach allows for better clinical and tissue conditions (Magro et al., 2023).

Case Report

An 83-year-old male with worsening chest pain since the night before arrived at the emergency department. On examination, he was hemodynamically stable. His medical history included long-term smoking, hypertension, prostate cancer, and a prior ischaemic stroke. Electrocardiography (ECG) results were consistent with an inferior ST-elevation myocardial infarction (STEMI). Laboratory results showed elevated high-sensitivity troponin I (7344.5 ng/L), brain natriuretic peptide (639.5 ng/L), dyslipidemia, stable renal function, and normal electrolyte levels. The patient was administered treatment for STEMI as per protocol before admission to the cardiac intensive care unit. Coronary angiography revealed significant stenosis in the proximal right coronary artery. Thus, percutaneous coronary intervention was performed, with embolisation of the posterior descending artery requiring additional heparin therapy. Post-procedure, the patient admitted that his chest pain had started a week prior rather than the previous day, prompting a clinical reassessment. Echocardiography revealed a hemodynamically significant oblique VSD at the junction of the inferior wall and septum, with high-flow shunting into the right ventricle. Surgical repair was delayed for 18 days to optimise surgical outcome. Preoperatively, the patient had renal insufficiency that improved with treatment, along with anxiety and insomnia requiring psychotropic medication. The VSD was repaired using continuous sutures and a Teflon strip to approximate the right septal wall. Postoperatively, the patient developed cardiogenic shock and acute kidney injury but stabilised within a week. No significant residual shunting was detected with transesophageal echocardiography. The patient is currently undergoing rehabilitation.

Conclusions

While early surgical repair for post-myocardial VSD is commonly recommended, a delayed approach can also lead to favorable outcomes. Ultimately, a patient-tailored strategy is required for optimal management of this high-risk clinical scenario.

ECMO Use in the Treatment of Iatrogenic Aortic Perforation During Conventional Mitral Repair

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Background

Iatrogenic aortic dissection or perforation is a rare but well-known potentially fatal complication of conventional cardiac operations under cardiopulmonary bypass. Surgical repair by replacing the ascending aorta is the most effective treatment modality. Despite that, complicated postoperative sequelae may increase the risk of morbidity and mortality. We present a case of canulation-related iatrogenic perforation with subsequent progression of Standford Type A dissection and a massive false lumen formation in the dorsal part of the ascending aorta.

Case Report

A 48-year-old male presented with symptoms of heart failure caused by severe mitral regurgitation due to anterior mitral leaflet chordal rupture. He underwent mitral valve repair with concomitant tricuspid annuloplasty. Surgery was complicated by the iatrogenic formation of a massive dorsal ascending aorta hematoma due to Type A dissection caused by accidental perforation of the aortic wall during cannulation for cardiopulmonary bypass. Intraoperative transoesophageal echocardiography revealed a massive hematoma severely compressing the left atrium, obstructing blood flow to the left ventricle, and preventing weaning from bypass. After cooling the patient to deep hypothermia, circulatory arrest was initiated. Upon removing the cross-clamp, a tear in the dorsal aortic wall was sutured with a pledged reinforced 3-0 polypropylene suture. After rewarming, left atrial compression persisted. Expecting hematoma resorption a central venoarterial ECMO was initiated. To avoid sternum compression on cardiac structures, it was left open, and the patient was transferred to intensive care. On postoperative day (POD) 2, the sternum was closed. An echo-guided weaning protocol was followed, and ECMO was discontinued on POD 5. Despite a rather complicated postoperative course due to multiple organ dysfunction syndrome (MODS) and MRSE sepsis the patient made a recovery and was discharged after 29 days.

Conclusions

This case illustrates the complexity of postoperative recovery after mitral valve repair, especially with severe complications such as aortic perforation. It also demonstrates an unusual use of ECMO support to solve complex sequelae of iatrogenic intraoperative aorta perforation complications.

Emergency Treatment of Cardiogenic Shock in the Course of Aortic Valve Stenosis

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Background

Aortic valve stenosis is progressive and irreversible acquired heart disease that can lead to cardiogenic shock. Standard treatment of this disease is cardiac surgery; however transcatheter aortic valve implantation (TAVI) is increasingly being used in patients with increased perioperative risk. Patients with progressive cardiogenic shock require the use of left ventricular assist devices.

Case Report

63-year-old man, a smoker with a history of stroke (2 years prior) was transferred to our facility from another hospital due to cardiogenic shock in the course of severe aortic valve stenosis despite the use of conventional treatment. After admission he was consulted by The Shock Team and qualified for urgent balloon valvuloplasty and left ventricular assist device (LVAD) support. Patient was immediately transferred to the Hemodynamics Laboratory, intubated and placed on mechanical ventilation. Critical stenosis of biscupid aortic valve with a planimetric area of opening (AVA) of 0.5-0.6 cm2 and decreased ejection fraction was confirmed with transesophageal echocardiogram. Valvuloplasty was performed, using access through the right femoral artery, which resulted in an increase in the valve's surface area. Due to persistent features of cardiogenic shock, the left ventricular assist device (Impella CP) was implanted. As a result of successful treatment, over the following days, stabilization of the patient's clinical condition was achieved. After the consultation by The Heart Team, the patient was qualified for Transcatheter Aortic Valve Implantation (TAVI). Valve Sapien 26 mm was implanted with simultaneous removal of the Impella pump. Patient's condition improved and after two days he was extubated. In the follow-up echocardiography, an increase in the left ventricular ejection fraction to 52% was observed. Patient was discharged home in good condition after 36 days from admission.

Conclusions

Treatment of cardiogenic shock in severe aortic valve stenosis using balloon valvuloplasty, left ventricular assist device support and subsequent transcatheter aortic valve implantation is highly effective.

Fractured Balloon Retrieval from the Radial Artery Using a Snare During PCI in a Myocardial Infarction Patient

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Background

Percutaneous coronary intervention (PCI) is a widely used revascularization technique, but unforeseen complications can pose significant challenges. Balloon catheter fracture and retention are rare but serious events that may lead to acute vessel occlusion or embolization.

Case Report

A 70-year-old male with generalized atherosclerosis, severe coronary artery disease, implantable cardioverter-defibrillator, type 2 diabetes, and bilateral above-knee amputations was admitted due to worsening heart failure and resting dyspnea. On admission, Troponin T was markedly elevated (1068.0 ng/L), indicating ongoing myocardial injury. ECG showed sinus tachycardia (119 bpm), absent R-wave progression (V1–V4), and isolated ventricular extrasystoles, consistent with NSTEMI. Coronary angiography via the left radial artery revealed severe multivessel disease, including a 50–60% stenosis in the left main (LM) and in the ostium of the left anterior descending artery (LAD), an ostial critical 95% stenosis of the circumflex artery (CX), and near-total occlusion of the distal right coronary artery with retrograde filling. Intravascular ultrasound confirmed a minimal cross-sectional area of 5.0 mm^2 in the LM. Predilation of the LAD and CX was performed using noncompliant balloons. Drug-eluting stent was implanted at the CX ostium with proximal optimization. During removal of the post-stent balloon catheter, a shaft rupture occurred, leaving residual balloon fragments at the catheter tip within the CX. The entire system was extracted en bloc to the radial artery. Standard retrieval techniques, including guidewire twisting and small balloon inflation, were unsuccessful. A 4 mm snare loop was ultimately used to retrieve the fragments. Subsequently, the left coronary artery was re-catheterized, and drug-coated balloon (DCB) angioplasty was performed within the LM and LAD. Post-procedure, the patient remained hemodynamically stable but continued to experience dyspnea. Echocardiography the following day showed no pericardial effusion, though heart failure persisted (LVEF 30%). He was later transferred to the internal medicine department in stable condition.

Conclusions

Snare devices provided an effective retrieval strategy, preventing surgical intervention. If left untreated, retained balloon fragments can lead to acute thrombosis, embolization, or vessel perforation, emphasizing the need for prompt recognition and percutaneous retrieval techniques to ensure procedural safety.

Leadless Pacemakers as a Game-Changer in Modern Electrophysiology – A Case Report

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Background

Leadless pacemakers (LLPs) have emerged as a valuable alternative to conventional transvenous pacemakers (TVPs), answering the current challenges in cardiac electrotherapy. On one hand, they eliminate the risk of pocket-related complications, lead-related complications, i.e. venous obstruction, and reduce the incidence of cardiac device-related infective endocarditis (CDRIE), a life-threatening condition characterized by high mortality rate. On the other hand, patient comfort is increased, predominantly by the absence of a generator in the subclavian region. This case highlights the successful use of an LLP in a patient with CDRIE, significant cardiac comorbidities, and a history of TVP-related complications.

Case Report

An 88-year-old male with paroxysmal 2:1 atrioventricular block and recurrent Stokes-Adams syndrome was admitted for LLP implantation. His medical history included prior lead extraction due to CDRIE complicated by high-grade aortic regurgitation, urosepsis, and chronic heart failure with mildly reduced ejection fraction (47%). The patient also experienced myocardial infarction and suffered from atrial fibrillation and multiple urological infections. On admission, he was hemodynamically stable, reporting palpitations and presyncope. Cardiac examination revealed an irregular heart rate of 60 beats-per-minute (bpm) with a combined systolic/diastolic murmur. The blood pressure was 139/59 mmHg. An LLP was implanted successfully. Intra-procedural imaging confirmed correct device placement. Echocardiography showed a small pericardial effusion without signs of tamponade, which gradually resolved on follow-up. Device interrogation confirmed appropriate function. The patient remained stable postoperatively, and follow-up ECG demonstrated sinus rhythm and regular heart rate at 74 bpm, with no significant ST-T abnormalities. He was discharged in good condition. During 6-month follow-up no complications occurred.

Conclusions

This case highlights the efficacy of LLPs in patients with recurrent device-associated complications. LLPs provide effective pacing while preventing lead-related infections. However, potential complications such as pericardial effusion should be allowed for. Given their minimally invasive nature and growing evidence supporting their safety, LLPs should be considered as the preferred option for high-risk patients requiring permanent pacing. Close post-implantation monitoring remains essential to ensure optimal patient outcomes.

Lipid disorder in a Patient with Cardiovascular Disease

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Background

Familial hypercholesterolemia (FH) is a lipid disorder that leads to early-onset atherosclerosis in young patients. Sitosterolemia, on the other hand, is a rare autosomal recessive disorder of lipid metabolism caused by mutations in the ABCG5 or ABCG8 genes. These mutations result in excessive intestinal absorption and reduced biliary excretion of plant sterols, leading to severe hypercholesterolemia, premature atherosclerosis, and characteristic xanthomas. Dyslipidemia, particularly in the context of cardiovascular disease (CVD), presents significant therapeutic challenges, especially when genetic factors contribute to lipid abnormalities.

Case Report

A 50-year-old male with a history of inferior wall STEMI, two percutaneous transluminal angioplasties (PTA) of the right common iliac artery, and prior percutaneous coronary intervention (PCI) of the right coronary artery (RCA) presented with persistently elevated LDL cholesterol (7.9 mmol/L), lipoprotein(a) (1.25 g/L), and triglycerides (3.59 mmol/L). He also had type 2 diabetes, hypertension, and obesity. Corneal arcus was observed. The Dutch Lipid Clinic Network (DLCN) score was 8 points. Genetic analysis identified a heterozygous ABCG8 c.1267G>A (p.Glu423Lys) variant, previously associated with sitosterolemia but of uncertain pathogenicity. Additionally, laboratory tests revealed prolonged activated partial thromboplastin time (APTT) and a positive lupus anticoagulant, indicating an increased thrombotic risk. Given the genetic findings and clinical phenotype, further metabolic evaluation and consideration of alternative lipid-lowering strategies were recommended

Conclusions

The patient's high cardiovascular risk necessitates a combination of ezetimibe and the maximum statin dose of rosuvastatin or atorvastatin to achieve an LDL level below 1.4 mmol/L, or ideally below 1.0 mmol/L. An independent risk factor for cardiovascular disease is the elevated lipoprotein(a) level. Given the coexisting thrombophilia, sitosterolemia, and multilevel atherosclerosis (including myocardial infarction and peripheral artery disease), careful risk stratification and an individualized treatment approach are crucial to optimizing cardiovascular risk reduction while minimizing potential complications associated with combined lipid-lowering therapy.

Long QT Syndrome (LQTS) in a 21-Year-Old Female

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Background

Long QT syndrome (LQTS) is a cardiac channelopathy characterized by delayed ventricular repolarization, increasing the risk of life-threatening arrhythmias such as torsades de pointes (TdP). It may be congenital (mutations in KCNQ1, KCNH2, SCN5A) or acquired (due to drugs, electrolyte imbalances, or structural heart disease). Symptoms include syncope, seizures, or sudden cardiac arrest, often triggered by stress or exercise. Diagnosis relies on ECG (QTc prolongation), clinical history, genetic testing, and the assessment of Schwartz score. Management includes beta-blockers, lifestyle modifications, and ICDs for high-risk cases. Many commonly used medications can prolong the QT interval, making ECG monitoring essential when prescribing these drugs.

Case Report

A 21-year-old female with epilepsy on levetiracetam for 6 weeks presented with recurrent ventricular tachycardia and syncope (7-10 episodes/day). She noted that these episodes differed from her epileptic seizures, as they were preceded by palpitations and dyspnea, whereas her seizures never started with such symptoms. ECG showed QTc of 600 ms, and ECHO revealed no structural abnormalities. She was hemodynamically stable but experienced an in-hospital TdP episode requiring IV magnesium and temporary pacing. Levetiracetam was discontinued due to QT-prolonging effects. Further evaluation revealed an LQTS-associated KCNH2 mutation, and recurrent TdP episodes warranted bilateral thoracoscopic sympathectomy (T1-T4). Postoperatively, she experienced mild bradycardia but no recurrent ventricular arrhythmias. Temporary pacing was reduced, and nadolol was initiated. Transient pneumomediastinum and a Gram-positive bloodstream infection were managed conservatively. An ICD was later implanted due to her high-risk status. Her epilepsy treatment was re-evaluated, and lamotrigine was introduced as an alternative therapy with a more favorable cardiac safety profile.

Conclusions

This case highlights the importance of considering LQTS in young patients with unexplained syncope. LQT2 is associated with arrhythmic events triggered by stress or auditory stimuli. Early diagnosis via ECG and genetic testing enables timely intervention. Beta-blockers are first-line therapy, with ICD placement for high-risk patients. Family screening is crucial for early detection and prevention. Additionally, careful selection of medications, particularly in patients with known QT prolongation, is necessary to prevent arrhythmic complications.

Managing PCI Complications in a Single-Kidney Patient with Prior TAVR and LAAO

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Background

Percutaneous coronary intervention (PCI) in patients with chronic kidney disease (CKD) presents challenges, as contrast-induced nephropathy (CIN) accelerates renal dysfunction, increasing the risk of dialysis. This is particularly concerning in single-kidney patients, necessitating contrast minimization and hydration strategies.

Case Report

A 76-year-old male with heart failure and single-kidney CKD was admitted for PCI of the circumflex artery (CX) due to NYHA class II dyspnea and exertional chest pain. His history included bladder cancer and metastatic prostate cancer, for which he underwent nephroureterectomy, cystoprostatectomy, and ureterocutaneostomy. He had previously undergone transcatheter aortic valve replacement (TAVR) for severe aortic stenosis (2018), multiple stent placements in the left anterior descending artery (LAD) following NSTEMI (March 2021) and left atrial appendage occlusion (LAAO) for atrial fibrillation with prior gastrointestinal bleeding (April 2021). PCI of the CX was performed in July 2023. Due to prior TAVR with a CoreValve prosthesis, cannulation was challenging, requiring a JL 3.5 6F catheter. Intravascular ultrasound revealed a heavily calcified 70% proximal CX stenosis (minimum lumen area 3.0 mm^2). Lesion preparation involved inflation with a noncompliant balloon. A drug-eluting stent failed to advance and, upon balloon shaft withdrawal, remained in the LM-CX segment. The stent was successfully retrieved using four guidewires. Drug-coated balloon (DCB) angioplasty was performed instead, restoring TIMI 3 flow. The procedure required 230 mL of contrast, leading to an increase in serum creatinine from 1.6 mg/dL (eGFR 45) to 2.0 mg/dL (eGFR 35) by day 5. Aggressive IV hydration and diuretic adjustments were initiated to prevent further renal deterioration. In August 2023, PCI of the LAD confirmed the good result of CX angioplasty. At 14 months post-procedure, the patient remains clinically stable, denying dyspnea, chest pain, syncope, or palpitations. His creatinine remains stable at 2.0 mg/dL (eGFR 34).

Conclusions

Despite precautions, high contrast doses are sometimes unavoidable in cases of complications, making it essential to discuss the risks with the patient. Complex angioplasty required stent removal, but DCB balloon angioplasty of the CX was successfully performed with good results. In cases of extensive calcifications and renal insufficiency, DCB can be an alternative to stent implantation with good long-term result.

Multidisciplinary Management of a Rare Paraganglioma Extending into the Right Atrium

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Background

Paragangliomas are rare neuroendocrine tumors arising from extra-adrenal autonomic paraganglia. They present as highly vascularized, slow-growing, encapsulated tumors that can be found in various sites in the body. Most commonly paragangliomas are located in head and neck - especially in the bifurcation of the common carotid artery. Tumors can cause vague symptoms such as a sensation of tinnitus ,headaches and hearing loss. In advanced cases the damage may involve cranial nerves.

Case Report

We report a case of a 44-year-old female who presented with severe headaches resistant to pharmacotherapy and hearing loss. Imaging studies revealed a skull base tumor at the jugular foramen, penetrating the sigmoid and transverse sinuses, encasing the internal jugular vein, and extending into the right atrium. TEE revealed a finger-like tumor measuring 40 mm in length and up to 10 mm in diameter, extending almost to the level of the tricuspid valve without impairing its function. The patient was qualified for a multi-stage neurosurgical treatment.

The first stage involved tumor embolization and fluoroscopy-guided biopsy. Histopathological examination confirmed the diagnosis of paraganglioma. Ultimately, the tumor was embolized twice, followed by a successful resection of the tumor, with removal of the mass from the internal jugular vein and right atrium through a cervical approach.

Conclusions

This case highlights the importance of considering paraganglioma in patients with unexplained neurological symptoms or incidental masses. Due to the tumor's rare location, extending all the way into the atrium, a multidisciplinary approach involving specialists from cardiology, neurology, neurosurgery and vascular surgery was essential in both the diagnostic process and treatment plan for the patient. Surgical excision remains the primary method of treatment. Paragangliomas, while rare, should be considered in the differential diagnosis of patients and their management requires careful multidisciplinary planning to ensure optimal outcomes.

Postpartum Cardiomyopathy Featuring Giant Left Ventricular Thrombus Complicated by Cardiogenic Shock with Double Mechanical Support Resolved by Successful Heart Transplantation

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Background

A woman's heart undergoes significant remodeling from one month prior to delivery through to five months postpartum. When these changes exceed critical thresholds, peripartum cardiomyopathy (PPCM) may develop, presenting a potentially life-threatening condition. PPCM is diagnosed in patients without any prior history of heart disease or other identifiable causes of heart failure. Its symptoms, such as fatigue, dyspnoea, and palpitations, are nonspecific. Although first described in the 1800s, its aetiology remains unclear. Standard heart failure therapy serves as the primary treatment; however, severe cases may require advanced interventions, which will be addressed during the presentation.

Case Report

We present the case of a 33-year-old woman who developed symptoms of heart failure twenty-four days post-delivery. Urgent echocardiography revealed severely impaired left ventricular contractility (EF 5-10%), a thrombus attached to the intraventricular septum (with dimensions of 3.2 x 2.0 cm), and an atrial septal defect. Despite a comprehensive multidisciplinary approach — including advanced surgical interventions and mechanical support — the patient's condition progressively deteriorated, culminating in the necessity of a life-saving heart transplantation. Post-transplant, complications such as graft rejection were managed through tailored immunosuppressive therapy and multiple courses of therapeutic plasmapheresis. The patient achieved a positive outcome, underscoring the importance of timely diagnosis and a comprehensive multidisciplinary approach.

Conclusions

The discussion section of the case report will also explore the aetiology, clinical symptoms, treatment, and prognosis of PPCM. Understanding these factors is essential for ensuring that patients receive the most effective and appropriate care. Nonetheless, further research is crucial to enhancing our understanding of this condition.

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Rethinking Management of Channelopathy-related Arrhythmias: A Case Study

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Background

Congenital long QT syndrome (LQTS) is a rare channelopathy characterized by a prolonged QT interval on the surface of an electrocardiogram (ECG). Delayed ventricular repolarization in LQTS predisposes individuals to polymorphic ventricular tachycardia (VT) torsades de pointes (TdP), which can lead to syncope or sudden cardiac death. In high-risk cases, precise pathophysiological assessment is essential for effective management. Here, we present a case of inherited LQTS complicated by ventricular ectopy, in which catheter ablation was considered as a therapeutic option.

Case Report

In 2018, an asymptomatic 43-year-old male experienced syncope at rest, accompanied by involuntary urination. He recovered spontaneously without disorientation. A thorough patient evaluation ruled out neurological disorders and structural heart disease. However, multiple 12-lead ECGs revealed a prolonged QTc of 535 ms without underlying secondary causes. While on beta-blocker treatment, arrhythmic syncope due to TdP recurred, leading to the implantation of an intracardiac cardioverter-defibrillator (ICD). Subsequently, genetic testing identified a heterozygous pathogenic KCNH2 gene variant c.1832A>T, associated with long QT syndrome type 2 (LQT2). Over the years, despite adequate beta-blocker therapy, 24-hour Holter ECG monitoring showed an exponential increase in premature ventricular contractions (PVCs), which the patient associated with fatigue. Most extrasystoles followed a high-risk short-long-short PVC pattern; therefore, an electrophysiological study was performed. It confirmed an arrhythmogenic substrate in the lateral region of the right ventricular free wall, approximately 10 mm above the ICD lead. Catheter ablation was performed successfully, eliminating the substrate, with no PVCs recurrence at rest or during isoproterenol provocation testing.

Conclusions

In LQTS, early afterdepolarizations occurring in a short-long-short sequence can induce TdP via repolarization dispersion, creating myocardial regions with delayed repolarization that serve as reentry pathways. In this context, PVCs may act as a precipitating factor for malignant arrhythmias, making catheter ablation a potential preventive strategy to reduce this risk. The detailed phenotypic assessment and the effectiveness of our therapeutic intervention hold significant clinical relevance for a pathophysiology-driven individual treatment approach in high-risk LQTS patients.

Transcatheter Aortic Valve Implantation During Cardiac Arrest: A Life-Saving Intervention in Catastrophic Annular Rupture

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Background

Severe aortic stenosis (AS) in elderly patients presents a significant procedural challenge due to frailty and comorbidities. Transcatheter aortic valve implantation (TAVI) has become the preferred alternative to surgical aortic valve replacement in high-risk patients. However, catastrophic complications such as annular rupture and cardiac tamponade remain rare but life-threatening events requiring immediate intervention. This case illustrates an extreme scenario of aortic annular rupture during TAVI, leading to cardiac tamponade and asystole, successfully managed with on-table resuscitation and valve implantation during cardiopulmonary resuscitation (CPR).

Case Report

An 82-year-old female with severe symptomatic AS underwent TAVI. Following balloon aortic valvuloplasty for pre-dilation, fluoroscopic imaging revealed an aortic annular rupture with signs of sudden tamponade and subsequent asystole. Immediate CPR was initiated while performing an emergent pericardiocentesis with autotransfusion of withdrawn blood. Given the patient's frailty, multiple comorbidities, and a very high surgical risk (EuroSCORE-II 9.2%), the heart team determined that emergent open-heart surgery was not a viable option. With the TAVI device (ACURATE neo, size M) already loaded, the decision was made to proceed with implantation during ongoing CPR. The valve was successfully deployed during full asystole, and post-implantation fluoroscopy confirmed sealing of the rupture site. Within minutes of continued CPR post-implantation, the patient regained sinus rhythm. She demonstrated an impressive recovery, with discharge to rehabilitation after a two-week hospital stay. At a 30-day follow-up, the only noted sequela was mild neurological impairment, potentially linked to the prolonged CPR in an elderly patient.

Conclusions

This case underscores the potential of TAVI as a life-saving intervention even in extreme circumstances such as catastrophic annular rupture and cardiac arrest. The decision to proceed with valve implantation during CPR, combined with immediate pericardiocentesis and autotransfusion, proved to be crucial for patient survival. While rare, this case highlights the importance of rapid multidisciplinary decision-making and preparedness for procedural complications during TAVI in very high-risk elderly patients.

Two Cases of ASD Closure Complications: A Call for Accurate Sizing and Long-Term Follow-Up

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Background

Percutaneous Atrial Septal Defect (ASD) closure is a routine procedure carried out to prevent left-to-right shunting of blood and its complications. However physicians ought to keep in mind that occluders also come with their own short and late-term complications.

Case Report

We present two patients that both experienced complications after percutaneous ASD closure. The first is a 20 years old female that presented with several hours of loss of vision in the left eye. Head CT was normal, but an embolism in the central retinal artery was confirmed in retinal fluorescein angiography. As a part of diagnostics, Transesophageal Echocardiography (TEE) was done, which revealed a small ASD type 2 (5x7mm) with left-to-right shunting. Reversal of leakage was proven by bubble test and the patient was referred for ASD closure. Due to the small size of the defect, it was decided not to perform balloon sizing of the defect and a 9,5mm ASD occluder was implanted, achieving correct positioning in TEE without a residual leak. However the next day in Trans-Thoracic Echocardiography (TTE) the occluder was not visible in its typical position. It was found in the abdominal aorta. A percutaneous removal was carried out. During the same procedure, precise balloon sizing was performed, revealing a diameter of 19 mm. ASD closure was conducted (24 mm occluder). Control TTE after 24h revealed proper device position. The second case is a 25 years old woman admitted for elective TEE after a recent temporary episode of vision loss in the left eye. She had a history of occluder implanted 9 years before due to a large ASD type 2 (18x24 mm, occluder size 26 mm). TTE showed a suspicion of leakage through the interatrial septum, so she was referred for TEE. The examination revealed left-to-right atrial shunt near the inferior-posterior end of the occluder, additionally there was a mass - possible thrombus associated with the left-atrial part of the occluder. Antithrombotic therapy was initiated. Patient was referred to surgical treatment.

Conclusions

The first case demonstrates that negligence, such as skipping the balloon sizing, may result in an underestimation of the defect size and device embolism. The second case emphasizes that long-term complications such as device thrombosis or cardiac erosion can occur. We highlight the importance of precise pre-procedural planning and long-term follow-up after percutaneous ASD closure.

Cardiology & Cardiac Surgery Session

Session Coordinators:
Magdalena Warych
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Integrating Inflammatory and Cardiac Biomarkers for Predicting Long-Term Mortality in Type 2 Diabetes: Insights from Machine Learning, Platelet Function, and Bioinformatics Analyses

Authors

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Introduction

Type 2 diabetes mellitus (T2DM) is a chronic metabolic disorder linked to increased cardiovascular (CV) risk due to hyperglycemia, insulin resistance, and platelet dysfunction. Key inflammatory biomarkers, including TNF-α, IL-6, and NT-proBNP, play crucial roles in vascular dysfunction, atherosclerosis, and cardiac stress

Aim of the study

This study aimed to evaluate the predictive value of these biomarkers for long-term mortality and their relationship with platelet function using Shapley Additive exPlanations (SHAP) analysis and enrichment techniques to explore molecular interactions in CV disease pathology

Materials and methods

A total of 303 T2DM patients were enrolled, with 34 (11.2%) deaths recorded over a median follow-up of 5.9 years. Serum IL-6, NT-proBNP, and TNF-α levels were measured via immunoassay and compared between survivors and non-survivors. Platelet function was assessed using VerifyNow testing, with a cut-off of 515 to classify hyper vs. normal platelet activity. Machine learning models, particularly XGBoost with SHAP analysis, were applied to predict all-cause mortality, ensuring robustness through cross-validation and Monte Carlo simulations. Bioinformatics analyses identified key molecular networks and pathways associated with IL-6, TNF, and NT-proBNP in CV complications.

Results

Receiver operating characteristic (ROC) analysis demonstrated IL-6, NT-proBNP, and TNF-α as significant mortality predictors (AUC: 0.653, $p=0.004$; AUC: 0.688, $p<0.001$; AUC: 0.657, $p=0.003$, respectively). Combining all biomarkers improved prediction accuracy (AUC: 0.697, $p=0.0002$). Multivariate Cox regression analysis confirmed their combined predictive value for long-term mortality (HR=4.10, 95% CI: 1.9-8.8, $p=0.0003$). Patients with hyper platelet activity exhibited significantly higher TNF-α levels ($p=0.019$). SHAP analysis identified IL-6 as the strongest contributor to mortality risk. Enrichment analysis revealed 34 shared targets for IL-6, TNF, and NT-proBNP, linking them to cytokine signaling, vitamin B12 metabolism, and heart-related pathways, including dilated cardiomyopathy

Conclusions

Combining biomarkers reflecting CV pathophysiology enhances early risk stratification for all-cause mortality in T2DM. IL-6, NT-proBNP, and TNF-α together serve as strong, independent predictors of long-term mortality, while TNF-α also exhibits significant interactions with platelet function in stable diabetes

Adverse Events in Surgical Treatment of Tricuspid Valve Insufficiency with Annuloplasty Rings- Analysis of MAUDE Fatabase

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Introduction

Tricuspid valve annuloplasty with ring implantation is the most common procedure used for the surgical treatment of tricuspid regurgitation. The annulus is reshaped by implanting a rigid or semi-rigid prosthetic ring. Several types of annuloplasty rings are used, but there is limited data on the differences in their complication profile.

Aim of the study

The aim of this study was to investigate these differences between five types of annuloplasty rings based on the experience of manufacturers and user institutions.

Materials and methods

The MAUDE database was screened for suitable items. Five types of devices were found eligible to be included: Medtronic Tri Ad Adams, Medtronic Contour 3D, Edwards' M3, Edwards Physio, and Edwards Classic. A total of 746 reports were found and further analyzed. Reports describing tricuspid annuloplasty with any of the listed devices were included. Reports from the literature or social media, as well as reports from surgeries, where tricuspid annuloplasty was an concomitant procedure, were excluded from further analysis.

Results

There were 181 adverse events after implantation of the devices analyzed in our study. Most of them were related to Contour 3D (64.4%). The most common adverse events for all valve types included tricuspid regurgitation of the repaired valve (31.5% of cases), arrhythmia (24.9% of cases) and heart block (16.6%). Arrhythmias were more common with the Tri Ad than with other devices ($p<0.001$), heart block was more common with the Tri Ad than with the Contour 3D and more common with the Edwards M3 than with the Edwards Physio ($p=0.001$). Atrial flutter occurred more frequently with Tri Ad than with Contour 3D ($p=0.009$). No other differences in the complication profile were found. Pericardial effusion occurred in 3.9% of reported adverse events, right coronary artery occlusion in 2.2%, and perforation in 1.7% of cases. Death was the result of 6.6% of complications, with no differences between devices.

Conclusions

The most typical adverse events of tricuspid repair with ring implantation are recurrence of tricuspid regurgitation and various types of arrhythmias. The occurrence of heart block and other types of arrhythmias is significantly more frequent with Tri Ad compared to other devices studied.

Changes in Body Composition of Patients After Myocardial Infarction in Response to Cardiac Rehabilitation—Analysis of the Impact on Muscle Mass and Fat Tissue Content

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Introduction

Global studies have shown a reduction in mortality following myocardial infarction in patients participating in cardiac rehabilitation programs. It is commonly assumed that rehabilitation leads to significant weight loss. However, previous studies suggest that weight loss after cardiac rehabilitation ranges only from 0.5% to 3%. It is important to emphasize that although body weight and body mass index (BMI) are widely used indicators of a patient's nutritional status, they do not reflect body composition.

Aim of the study

The aim of this study was to assess changes in body composition in response to cardiac rehabilitation.

Materials and methods

The study included 118 patients—82 men and 36 women—who, after experiencing myocardial infarction, were qualified for cardiac rehabilitation according to current guidelines. A physical fitness assessment was conducted based on the results of a treadmill exercise test. Patients' body composition was analyzed before and after rehabilitation using a TANITA scale. The obtained results were statistically analyzed using STATISTICA version 13.

Results

The mean body weight of patients before rehabilitation was 85.01 kg, and after rehabilitation, it was 85.02 kg (p=0.950). An increase in mean muscle mass was observed from 57.047 kg to 57.367 kg (p=0.001), along with a decrease in body fat percentage from 29.14% to 28.45% (p=0.041). Similar trends were observed when analyzed by gender. In the male group, both parameters showed statistically significant changes: muscle mass increased from 63.49 kg to 63.78 kg (p=0.015), and body fat percentage decreased from 25.77% to 25.51% (p=0.042). In women, a significant increase in muscle mass was noted, from 42.38 kg to 42.76 kg (p=0.021), along with a decreasing trend in body fat percentage from 36.81% to 35.14% (p=0.119).

Conclusions

Cardiac rehabilitation does not lead to significant weight loss but contributes to a significant increase in muscle mass in both men and women.

Clinical Experience of Pulsed Field Ablation (PFA) as an Innovation in Atrial Fibrillation Treatment

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Introduction

Pulmonary vein isolation (PVI) is known as a main ablation strategy in patients with symptomatic paroxysmal or persistent atrial fibrillation (AF). Thermal methods (cryoablation or radiofrequency ablation (RF)) based on inducing coagulative necrosis have been present for a while. Recently, pulsed-field ablation (PFA) which uses irreversible electroporation and is cardiac-tissue selective, has become a resounding success. It is crucial to explore new techniques with a short learning curve, ensuring that the procedures become more accessible to patients.

Aim of the study

The aim of the study is to analyze the learning curve and its influence on the safety and achieving durability of PVI with PFA in real-life AF patients.

Materials and methods

We retrospectively collected data from 111 consecutive patients with paroxysmal (80.2%) or persistent AF who underwent PVI. The procedures were conducted using pulsed-field ablation with the Farawave™ Nav catheter (Boston Scientific). Patients were divided into tertiles (T), and the outcomes regarding the durability of isolation and freedom from arrhythmia were compared over time. A follow-up interview was collected a few times after 3 and at least 5 months.

Results

Patients' characteristic qualified for the procedure was similar, no notable differences were observed, such as mean age and sex distribution. As the number of performed procedures increased, procedure duration [T1: 60 min (45-75); T2: 55 min (45-70); T3: 50 min (45-60) p=0.09] and fluoroscopy time [T1: 1129 s (825-1497); T2: 1074 s (782-1396); T3: 998 s (777-1200); p=0.2] showed a trend towards reduction. The administration of remifentanil declined over time [T1: 0.25 mg (0.2-0.3); T2: 0.2 mg (0.15-0.3); T3: 0.15 mg (0.1-0.2); p<0.005]. At a median follow-up lasting 24 weeks the Kaplan–Meyer estimate of arrhythmia-free survival was 65.4%.

Conclusions

The analysis showed that PVI's learning curve using the PFA method with Farawave™ Nav catheter is rapid. Thanks to this, more patients with AF can benefit from the ablations. A trend was observed towards a reduction in procedure duration and fluoroscopic exposure time across the groups. This also contributed to a reduced administration of remifentanil during the ablation.

Early Echocardiographic and Conduction Changes After Transcatheter Aortic Valve Implantation

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Introduction

Transcatheter aortic valve implantation (TAVI) is a well-established treatment for severe symptomatic aortic stenosis in high-risk patients and those over the age of 75. Despite its proven success, early post-procedural cardiac changes remain insufficiently understood.

Aim of the study

This study aims to examine early echocardiographic and conduction changes within 30 days following TAVI. By comparing these early post-TAVI changes with measurements taken prior to the procedure, we seek to provide insights into cardiac remodeling and its clinical implications.

Materials and methods

This retrospective study analyzed the medical records and echocardiographic findings of 612 patients who underwent TAVI at University Hospital Královské Vinohrady in Prague between April 2018 and April 2024. Data were collected at three time points: pre-TAVI, immediately post-TAVI, and 30 days after the procedure. Echocardiographic parameters, including left ventricular ejection fraction (LVEF), mitral regurgitation severity, and LV-to-aortic mean pressure gradient, were evaluated. Additionally, conduction abnormalities were assessed, with a particular focus on the development and resolution of left bundle branch block (LBBB) and complete AV block.

Results

Our analysis showed that while the median LVEF remained at 60% both pre-TAVI and at 30 days post-TAVI, the interquartile range improved from 50–60% to 55–65% ($p < 0.001$, Wilcoxon test). Similarly, the decrease in mitral regurgitation severity was statistically significant (median: 2, IQR: 2–3, $p < 0.001$). The LV-to-aortic mean pressure gradient increased by more than 5 mmHg in 8% of patients between post-TAVI echocardiography and the 30-day follow-up. New-onset LBBB occurred in 23.7% of patients, with 38.6% resolving within 30 days. Complete AV block requiring permanent pacemaker implantation was observed in 10% of patients.

Conclusions

Our findings highlight an early improvement in LV function and a reduction in mitral regurgitation severity following TAVI. An increase in the mean gradient in a small group of patients raises suspicion of early subclinical leaflet thickening/thrombosis, warranting further investigation. Additionally, conduction disturbances, particularly new-onset LBBB and complete AV block, were common, with a notable proportion of LBBB cases resolving within 30 days. These insights enhance our understanding of early post-TAVI remodeling and may help refine early post-procedural patient monitoring and management.

Evaluation of Long-term Complications in Patients After an Episode of Intermediate-high and High Risk Pulmonary Embolism: Post-PE Care Programme.

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Introduction

A growing body of evidence suggest that a substantial number of patients who survive acute pulmonary embolism (PE) episode subsequently complain of exercise dyspnoea in the post-PE period and up to 5-10% are diagnosed with chronic thromboembolic pulmonary hypertension (CTEPH) or chronic thromboembolic pulmonary disease (CTED). Limited data exist however on the incidence of such sequels among intermediate-high (IHR) and high risk (HR) PE patients especially in the era of modern pulmonary arteries (PA) reperfusion therapies.

Aim of the study

Our study aimed to investigate the incidence and contributing factors of post-PE consequences among IHR and HR PE patients.

Materials and methods

We evaluated medical records of patients with PE from a prospectively conducted consultations register between June-2018 and October-2024 in the Saint John Paul II Hospital in Krakow, Poland. We included IHR and HR patients defined in line with the ESC Guidelines who were treated in our institution and had at least one follow-up visit at the cardiology out-patient clinic within 12 months after the PE episode. The composite endpoint was defined as the diagnosis of CTEPH/CTED or the patients' symptoms indicative of at least NYHA class II heart failure during the follow-up visit.

Results

We evaluated 192 patients, of whom 137 (71%) [62.5 years old (46.5-71), 50.74% male], [124 (90%) IHR and 13 (10%) HR], completed a follow-up visit. The composite endpoint occurred in 42 (31%) patients. Five (4%) were diagnosed with CTEPH or CTED and 37 (27%) with exercise intolerance in NYHA class II or greater. Patients, who suffered from the post-PE consequences as compared to those who did not were older, more often were women and had lower cardiac troponin levels at presentation of the index PE [66 [54-76] vs. 60.5 [44-70]; p=0.04; 63% vs. 44%; p=0.04; 46 [32-132] vs. 106 [43,5-181], p=0,02; respectively]. There were no differences between the groups in terms of the rates of interventional therapies used for the index PE, duration of PE symptoms, location of PA clots, incidence of thrombophilia, history of recurrent PE or levels of NT-proBNP or D-dimers at index PE presentation.

Conclusions

Exercise dyspnoea was common among survivals of IHR or HR PE, whereas incidence of CTEPH and CTED low. Post-PE consequences affected older women more often. The reason for lower levels of troponins at index PE presentation in patients with severe dyspnoea needs further investigation.

Factors Influencing Lead Longevity in Implantable Cardioverters-Defibrillators, Pacemakers and Cardiac Resynchronizing Therapy Devices

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Introduction

Percutaneous lead extraction is crucial for managing complications associated with cardiac devices. Despite advances in device technology, notable variability in the lifespan of different leads has been observed. Identifying the factors that affect lead longevity is critical for improving patient outcomes.

Aim of the study

To assess patient comorbidities, reasons for lead extraction, and factors influencing lead longevity.

Materials and methods

In this retrospective study, we investigated data from the National Register of Percutaneous Lead Extractions for patients treated at a single hospital between 2021-2024. Patient demographics, relevant comorbidities (such as hypertension, diabetes, heart failure, cardiomyopathy), clinical indications for both implantation and extraction, procedure-related adverse effects, device type, lead: type, location and lifespan were recorded. We used Mann–Whitney U, Kruskal–Wallis, and post-hoc Dunn tests to evaluate associations between clinical factors and lead failure.

Results

We analyzed 107 patients (mean age: 69 years, 70.1% male). We found significant differences between lifespans across device types as well as a significant link between NYHA-defined heart failure (HF) level and lead lifespan ($p=0,024$). More severe HF was linked to shorter lead longevity. No significant associations were found between lead placement and infection rate, nor between lead lifespan and comorbidities, pocket infection, sex, age, or BMI ($p>0.05$ for all).

Conclusions

Our study indicates that heart failure severity is a key factor in predicting the lifespan of any lead used in cardiac devices. Other clinical indicators are not viable enough to serve as points of reference in relation to lead life. This underscores the importance of HF management in controlling coexisting arrhythmias and reducing the costs of anti-arrhythmic therapy. Further research is needed to better understand how HF severity affects lead longevity.

GPU-accelerated Real-Time Prediction of Critical Complications in MI Patients Using Multi-Modal AI: A Novel Continuous Early Warning System

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Introduction

Early prediction of critical events such as acute kidney injury (AKI), shock, ventilation, and cardiac arrest is essential for improving outcomes in acute myocardial infarction patients. Traditional early warning systems often fail to capture the complex interactions between physiological parameters that precede these events. Recent advancements in artificial intelligence, particularly in deep learning, offer new avenues for real-time prediction using multi-modal data. This study presents an ensemble-based AI system embedded in a computer device for continuous prediction of these complications at least six hours before occurrence.

Aim of the study

To develop and validate a real-time, multi-modal AI system for predicting AKI, shock, ventilation, and cardiac arrest 6 hours before occurrence in MI patients using continuous monitoring of ECG, vital signs, lab values, and demographics.

Materials and methods

The proposed system integrates real-time multimodal data, including ECG, vital signs, laboratory values, and demographic data. An ensemble approach combines Transformer-based models for temporal pattern recognition, neural networks for sequential data processing, and XGBoost for structured tabular data analysis. The models are trained on multi-center, international datasets. Feature selection is optimized using genetic algorithms. The models use an attention mechanism to continuously learn and update itself from new data. Models were validated using cross- and external validation and reported performance metrics include F1, area under the ROC curve (AUC-ROC), sensitivity, and specificity. The models are implemented on a GPU-accelerated device for low-latency inference.

Results

Preliminary results indicate high predictive accuracy across all target outcomes, with AUC exceeding 0.85 for each event category. The ensemble model demonstrates improved sensitivity and specificity compared to traditional early warning scores, with enhanced temporal resolution enabling continuous risk assessment. Further validation is ongoing to confirm robustness across diverse patient populations.

Conclusions

This study demonstrates the feasibility and effectiveness of deploying a multi-modal, ensemble-based AI system on an edge computing platform for real-time prediction of critical events. By continuously monitoring patient data and providing early warnings, the system enhances decision-making and optimizes resource allocation. This approach holds significant potential for reducing mortality and morbidity associated with MI.

Hemodynamic Consequences of Acute Pulmonary Embolism Predict Risk of Computed Tomography Pulmonary Angiography-related Acute Kidney Injury.

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Introduction

Computed tomography pulmonary angiography (CTPA) is an important study in the diagnosis of acute pulmonary embolism (APE). There are limited data on acute kidney injury (AKI) after CTPA in APE patients.

Aim of the study

The aim was to evaluate frequency and predictors of AKI in patients with the first APE episode.

Materials and methods

Single-center, retrospective analysis of APE patients, without hemodynamic instability. Blood tests, including plasma creatinine concentration and clinical evaluation were performed before CTPA and after 48h and 72h. Transthoracic echocardiography was performed to evaluate right ventricle (RV) function.

Results

A total of 411 patients with APE were enrolled. AKI defined by creatine increase >0.3mg% within 72 h following CTPA was found in 46 pts (11.2%). Patients with AKI (+) when compared to AKI (-) were characterized by: higher sPESI score; more pronounced RV disfunction; higher plasma concentration of NT-proBNP and more often suffered from preexisting CKD and diabetes mellitus (DM2). The multivariate logistic regression model showed that only: BOVA score [OR 1.482 (95% CI, 1.125;1.952), P value=0.005]; NT- proBNP >3314 pg/ml [OR 4.823 (95% CI, 1.989;11.697), P value<0.001], while not CKD or sPESI were independent risks factors for AKI. Among subjects with BOVA ≥3 points and NT-proBNP≥3314 pg/ml, almost 32% developed AKI and among patients with BOVA<3 points and NT-proBNP<3314 pg/ml only 5% of patients developed AKI.

Conclusions

AKI present in 11% of all PE patients diagnosed with CTPA is associated with embolism severity, measured by BOVA score, and RV dysfunction as defined by higher NT-proBNP, while not to preexisting CKD or DM2.

-

Impact of Coronary Artery Calcification on Procedural Complexity and Outcomes in STEMI Patients

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Introduction

Arterial calcification is the accommodation of calcium deposits in the walls of arteries, particularly within atherosclerotic plaques. Severely calcified coronary artery lesions with associated thrombus can contribute to complete coronary occlusion, resulting in ST-Elevation Myocardial Infarction (STEMI).

Aim of the study

This study aimed to compare risk factors, laboratory results, procedural characteristics, and potential complications between groups of patients suffering from STEMI with and without observed coronary artery calcification.

Materials and methods

Data from 31 consecutive patients with STEMI and severely calcified coronary arteries were analyzed. Control group consisted of 29 patients with STEMI without arterial calcifications.

Results

The median age was 74(61,85) years in patients with coronary artery calcifications and 58(52,72) years in patients without calcifications. Males constituted 67.74% of the calcification group and 82.76% of the non-calcification group. Risk factors such as hypertension (90.32% vs. 65.52%; p=0.01977) and dyslipidemia or hyperlipidemia (93.55% vs. 48.28%; p=0.0001) were more commonly observed in the group with calcifications. Procedural characteristics indicated that coronary artery calcifications were associated with longer procedure times (average 108.94±51,75 minutes in the calcification group vs. 72.00±24,89 minutes in the non-calcification group; p=0.001324), increased use of intravascular imaging, and the requirement for special devices. The maximum post-dilation balloon pressure tended to be higher in patients with calcifications (average 19.37±4,7 atm vs. 14.30±5,48 atm; p=0.000607). Importantly, the calcification group experienced more procedural complications (29.03% vs. 7.14%; p=0.03110). Procedural success was higher in the non-calcification group (29.03% vs. 7.14%; p=0.02680).

Conclusions

The results of this study demonstrate that patients with STEMI and calcified coronary lesions tend to have more risk factors of coronary artery disease than patients without calcifications. The presence of calcifications and the need of dedicated devices use contribute to a higher risk of procedural complications. Procedures involving calcified lesions are more complex and may result in worse outcomes. Further research involving a larger cohort of patients is necessary for better comparisons and evaluation.

Impact of Intraoperative Arrhythmia and Cardiac Arrest on Short- and Mid-term Mortality After Transcatheter Aortic Valve Replacement

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Introduction

Aortic valve stenosis is a significant health problem in the elderly as it is the most commonly diagnosed valvular heart disease. In this population, transcatheter aortic valve implantation (TAVI) is treatment of choice for aortic valve pathology.

Aim of the study

The aim of the study was to investigate the impact of intraprocedural arrhythmias or cardiac arrest during TAVI on 30 day and 1 year mortality.

Materials and methods

All patients undergoing TAVI were evaluated for arrhythmias or cardiac arrest during TAVI. In-hospital, 30-day, and one-year mortalities were compared between patients with and without those intraoperative complications. The impact of preprocedural and intraprocedural characteristics on mortality was analyzed.

Results

A total of 122 patients (age: 79.3±0.5 years, 51.7% female) were included in the analysis. Intraprocedural 3rd-degree heart block was observed in 9% of cases and cardiac arrest in 6.6% of cases. Other arrhythmias were observed in 3.3% of cases. Mortality was significantly higher in the group with cardiac arrest than in the group without cardiac arrest (30-day: 50% vs 4%, $p<0.001$; 1-year: 62.5% vs 7% $p<0.001$). In-hospital mortality (18.2% vs 1%, $p<0.001$) and 30-day mortality (18.2% vs 4%, $p=0.048$) were significantly higher in patients with 3rd-degree heart block. No patient with other arrhythmia died in the first year post-intervention. No intraoperative characteristics had an impact on cardiac arrest or arrhythmia occurrence ($p>0.05$)

Conclusions

Knowledge of the risk factors for the occurrence of cardiac arrhythmias and cardiac arrest during TAVI is crucial for its management.

Improved Aortic Valve Calcium Scoring with Vendor Neutral Agatston Score.

Authors

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Introduction

Based on the European Society of Cardiology guidelines, the use of sex–specific Agatston score thresholds further improve classification of patients with aortic stenosis into mild, moderate or severe. However, substantial dierences in Agatston score depending on CT system may lead to patient misclassification, and suboptimal treatment.

Aim of the study

The aim of the study was to investigate the influence of vendor neutral Agatston score (vnAS) on the classification of aortic stenosis severity.

Materials and methods

In this single center study, we retrospectively included patients with severe aortic stenosis referred to the transcatheter aortic valve implantation (TAVI). CT evaluation and echocardiographic assessment were performed before TAVI. Measurement of calcium score was performed according to Agatston method (Syngo.via, Siemens Healthineers). The vnAS was calculated using a regression model which was evaluated by both coefficient of determination and analysis of variance. Based on Agatston score and vnAS patients were classified to one out of three aortic valve stenosis groups, based on previously defined thresholds: unlikely (<1600 for men, <800 for women), likely (≥2000 for men, ≥1200 for women), highly likely (≥3000 for men, ≥1600 for women).

Results

In this study we included 81 patients among whom 53% were women. Median Agatston scores were 2246.7 (IQR 1573.5–2779.5) and 2499.7 (IQR 1160.6–3900.9) for women and men, respectively. Median vnAS was 2421.8 (IQR 1867.7–3280.4) for women, and 2911.5 (IQR 1765.7–4417.2) for men. Based on Agatston score, 25.6% women were defined as likely severe aortic stenosis and 74.4% were defined as highly likely. In the group of 38 men, 23.7% patients were classified as unlikely, 36.8% as likely, and 39.5% as highly likely. Based on vnAS, 9.3% of women were reclassified from likely to highly likely group. In men, 2.6% were reclassified from likely to unlikely, 5.2% men from unlikely to likely, and 7.8% individuals from likely to highly likely.

Conclusions

Based on vnAS 9.3% of women and 15.6% of men were reclassified into another group of aortic stenosis severity. Therefore, the previously developed calibration tool, the vnAS, may help to improve the classification of aortic stenosis severity in patients with suspected severe aortic stenosis.

Long-Term Outcomes of First-Generation Bioresorbable Scaffolds vs. Everolimus-Eluting Stents in Coronary Artery Disease: A Retrospective, Dual-Center Study

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Introduction

First-generation bioresorbable scaffolds (BRS) were developed as an alternative to permanent drug-eluting stents (DES), aiming to restore vascular function and potentially improve long-term clinical outcomes. However, their efficacy and safety remain a subject of debate.

Aim of the study

This study aimed to compare the long-term clinical outcomes of first-generation Absorb BRS and Xience everolimus-eluting stent (EES) in patients undergoing percutaneous coronary intervention (PCI).

Materials and methods

A retrospective, dual-center analysis was conducted on 254 patients (BRS: 127, EES: 127) treated between 2012 and 2015. The control group (EES) was selected using Propensity Score Matching based on age, gender, hypertension, diabetes, and clinical presentation. Patients were followed for up to 11.8 years, with a median follow-up of 9.07 years (IQR: 4.18–10.20) in the EES group and 9.50 years (IQR: 4.55–11.20) in the BRS group. Clinical follow-up data were obtained from hospital records and telephone interviews. The primary endpoint was major adverse cardiovascular events (MACE), including all-cause mortality, myocardial infarction (MI), target lesion revascularization (TLR), and stroke. Time-to-event outcomes were analyzed using the Cox proportional hazards model, and Kaplan-Meier survival curves were used to compare event-free survival between groups.

Results

No significant difference was observed in the composite endpoint between the groups (HR 1.27, 95% CI: 0.86–1.85, p=0.227). The BRS group had a significantly higher rate of TLR compared to the EES group (HR 2.84, 95% CI: 1.20–6.71, p=0.018). While MI (HR 1.07, 95% CI: 0.56–2.06, p=0.837) and all-cause mortality (HR 1.28, 95% CI: 0.82–2.01, p=0.282) did not reach statistical significance, their rates were higher in the BRS group. Stroke incidence was lower in the BRS group (HR 0.19, 95% CI: 0.04–0.88, p=0.033).

Conclusions

First-generation BRS showed a higher rate of TLR compared to EES, while no significant differences were observed in MI or overall mortality. Stroke incidence was lower in the BRS group; however, this result may be incidental. Given the high revascularization rate and known limitations of Absorb stents, their clinical use has been largely discontinued. However, newer-generation BRS with improved scaffold design and drug delivery systems have since been developed. Further studies are necessary to evaluate their long-term safety and efficacy.

Long-term Clinical Relevance of Hyponatremia Identified During Acute Myocardial Infarction

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Introduction

Hyponatremia is an important marker of poor prognosis in various clinical settings, as well as a significant predictor of mortality in patients with an acute myocardial infarction (MI), but the disparities in its prognostic value in specific MI presentations remain not well established. The two main subtypes of MI: STEMI and NSTEMI differ in clinical manifestations, treatment, and short- and long-term prognoses.

Aim of the study

We investigated whether hyponatremia affects the long-term survival of patients following an MI in both STEMI and NSTEMI presentations.

Materials and methods

862 MI patients hospitalized between 2012 and 2017 were retrospectively followed-up within the median time period of 41.9 [28.2–73.5] months. Based on the ECG records we distinguished two types — STEMI and NSTEMI. All participants were assigned to a hyponatremic or normonatremic group with hyponatremia defined as a sodium level of less than 135 mEq/L on admission.

Results

In the acute phase of an MI, hyponatremia was diagnosed in 31 (3.6%) patients. The hyponatremic patients were less often male (38.7 vs. 70.4%, $p<0.001$), and less frequently had Killip class I (63.3 vs. 80%), but more often had Killip class IV on admission (16.7 vs. 4.2%, $p = 0.024$) and more often had a history of impaired renal function (32.3 vs. 15.5%, $p=0.013$) than those with normonatremia. Hyponatremic patients had higher troponin T levels on admission by 75.1% ($p=0.003$), a higher isoenzyme MB of creatine kinase level by 34.4% ($p=0.006$), and lower hemoglobin (by 8.5%, $p=0.001$) levels compared to the normonatremia group. Long-term mortality was significantly higher in the patients with hyponatremia versus normonatremia (18 [58.1%] vs. 243 [29.2%], log-rank $p<0.001$). This was driven by differences in the NSTEMI population (65 vs. 30.5%, $p<0.001$). By a Cox proportional hazard regression analysis, hyponatremia was associated with a higher long-term mortality (hazard ratio of 2.222, a 95% confidence interval of 1.309–3.773, and $p=0.003$).

Conclusions

Hyponatremia in the acute phase of MI remains an independent predictor of increased long-term all-cause mortality, particularly with NSTEMI presentation. For clinicians, it is important to consider electrolyte imbalance when assessing a patient's prognosis and possibly adjusting a treatment regimen. Further studies concerning this relationship need to be performed with a representative number of participants to understand the underlying mechanisms and plan the optimal management to ensure favorable clinical outcomes.

Multi-Modal AI for Predicting Echocardiographic Parameters: Transforming Cardiac Assessment with ECG and Vital Signs

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Introduction

Accurate and timely assessment of cardiac function is critical for managing heart disease, but access to echocardiography is often limited by availability of equipment and skilled technicians. Multi-modal data from readily available sources such as electrocardiograms (ECG), vital signs, and patient demographics can provide valuable insights into cardiac function avoiding the need for imaging all-together.

Aim of the study

To develop and validate a multi-modal AI model that predicts ejection fraction (EF), myocardial wall kinetics and valvular function, utilising state-of-the-art machine-learning and automation architectures.

Materials and methods

The model integrates ECG waveforms, vital signs, and demographic data using a hybrid deep learning architecture with conventional neural networks, time aware tree-based models, and ensemble techniques, aimed at enhancing prediction accuracy of each echocardiography metric and generalizability across diverse patient populations. Additionally, the study seeks to design an interpretable user interface for clinical application, ensuring ease of use and integration into existing healthcare workflows. An ensemble strategy combining bagging, boosting, and model stacking is implemented to enhance robustness. The model is trained and validated using MIMIC-IV data with cross-validation and external testing planned to ensure transfer of accuracy. Explainability techniques, including SHAP values and attention weight visualization, are integrated to provide transparent clinical insights.

Results

Preliminary results indicate that the model achieves high accuracy in predicting EF, and kinetic state in different myocardial walls segments. Early validation suggests mean absolute error (MAE) within ±5-7% for LVEF and area under the ROC curve (AUC) >0.85 for major classification tasks, such as detecting reduced EF and significant valvular disease. Performance across different subgroups (age, gender, comorbidities) is consistent, suggesting good generalizability. Further validation is ongoing to confirm these findings and refine model thresholds for clinical safety and efficacy.

Conclusions

This multi-modal AI tool demonstrates significant potential in predicting echocardiographic parameters using non-invasive, easily accessible data. By offering rapid, accurate cardiac assessments, the model can enhance decision-making in settings with limited access to echocardiography. The deployment of this model is expected to improve resource allocation and ultimately contribute to better patient outcomes.

Dentistry & Maxillofacial Surgery Session

Session Coordinators:
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Polskie Towarzystwo Ortodontyczne
Polish Orthodontic Society

Comparison of Immediate and Delayed Prosthesis on Dental Implants in Patients with Periodontal Diseases

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Introduction

Inflammatory and dystrophic periodontal diseases are accompanied by loss of bone tissue of the alveolar process and they were considered as contraindications to dental implantation until recently. The presence of pathogenic microflora in the oral cavity confirms the concept that periodontal pathogens may be associated with the occurrence of perimplantitis and implant disintegration, as periodontal pockets serve as a tank for bacterial colonization. However, the rehabilitation of inflammatory foci, orthopedic measures and surgical preparation allows to use the method of implantation in this group of patients.

Aim of the study

The purpose of the study was to evaluate the effectiveness of dental implantation, in patients with chronic periodontitis after immediate implantation. The main criteria were to determine the stability of the implant, the evaluation of soft tissues - to measure the depth of PPD pocket, to evaluate the loss of MBL bone tissue.

Materials and methods

9 patients were selected to achieve the goals who had indications for implants in the front and lateral areas of the upper and lower jaw. Clinical research was conducted according to conventional methods. The quality of implant integration and the loss of compact bone was evaluated using radiological methods, the degree of implant stability was determined using the OSTELL device. The percentage of bleeding was determined during probe. To assess the condition of the oral hygiene, they determined the percentage of surfaces with plaque. The assessment of the results of the statistical study was performed according to the criterion of the Student's t-test.

Results

9 dental implant patients suffering with one-sided terminal defect and unilateral defects in the dentition were examined in this study. Under local anesthesia, atraumatic removal of the teeth was performed with the preservation of the vestibular alveolar wall and the optimal positioning of implants. In clinical cases, the use of direct loading of the implant stability should be near 35 H/cm. Abutments were chosen and implants were splinted by the only prosthetic structure. The temporary prosthesis was carefully polished and fixed after the stitches were applied.

Conclusions

The use of implants has the prospect of being successful, if the treatment for patients with periodontal diseases is properly planned and regular control visits after comprehensive rehabilitation are maintained. These two elements are the key to success.

-

Does Intermittent Fasting Reduce Gum Disease?

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Introduction

Gum disease is a widespread condition linked to inflammation, but little is known about how lifestyle factors like intermittent fasting (IF) affect oral health. While some studies suggest IF reduces systemic inflammation, its direct impact on gum health remains unclear.

Aim of the study

This study aimed to assess whether intermittent fasting is associated with reduced gum inflammation and bleeding using a simple, chairside evaluation.

Materials and methods

A cross-sectional study was conducted at Banacha Szpital's dental clinic with a single visit per patient. Participants were divided into two groups: those who practice intermittent fasting (16:8) and those who do not. Clinical assessments included bleeding on probing (BOP), gingival redness/swelling, and plaque levels. Patients were also asked whether they experienced gum bleeding while brushing. No laboratory tests, follow-ups, or dietary modifications were involved.

Results

Preliminary findings suggest that fasting participants had lower BOP and less visible gum inflammation compared to non-fasters, despite similar plaque levels. A higher percentage of non-fasting participants reported gum bleeding during brushing.

Conclusions

These results indicate that intermittent fasting may have a beneficial effect on gum health by reducing inflammation, independent of oral hygiene habits. This study provides a simple, practical approach to exploring fasting as a potential lifestyle-based method for improving periodontal health. Further research is needed to confirm long-term effects.

Enhancing Diagnostic Precision: A Comparison of Analog Maxillary Position Transfer Methods for Improved Occlusal Contact Accuracy

Authors

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Introduction

The precise transfer of maxillary position to an articulator is essential for accurate occlusal analysis, diagnosis and prosthetic rehabilitation. Various registration and transfer methods exist, potentially impacting clinical outcomes.

Aim of the study

This study aims to compare the accuracy of different methods for registering and transferring the maxillary position to an articulator, based on variations in the positioning of the maxillary model and occlusal contact distribution.

Materials and methods

The study included a patient selected based on the DC/TMD protocol with no temporomandibular disorder, presenting I class in Angle and canine classifications. The patient underwent dental examination and alginate impression-taking. The same impression was used for all methods to ensure consistency. The patient's maximum intercuspation was registered by traditional and digital articulating paper and occlusograms. Plaster models were fabricated and scanned for digital verification. Seven methods of maxillary position registration and transfer were analyzed: -Mounting models using a hinge articulator -Mounting models in an articulator using an articulator-mounted occlusal record (Bonwill's triangle method) -Mounting models using an arbitrary facebow with standard articulator settings -Mounting models using an arbitrary facebow with individualized articulator settings -Mounting models using a kinematic facebow (Cadiax) with fully individualized articulator settings -Mounting models using a kinematic facebow (Zebris) with fully individualized articulator settings. Each method was evaluated based on differences in the positioning of the maxillary model by analyzing occlusal contacts.

Results

The study revealed differences between the methods. Using hinge articulator and Bonwill's triangle-based mounting models demonstrated the greatest discrepancies in occlusal contact reproduction. Arbitrary facebow transfer with standard settings showed moderate deviations, whereas individualized settings improved accuracy. Kinematic facebows with fully individualized settings provided the most precise and reproducible occlusal contacts, indicating superior spatial transfer accuracy.

Conclusions

The choice of maxillary position registration and transfer method affects occlusal contact accuracy. Kinematic facebows with fully individualized articulator settings offer higher precision, making them the preferred choice in clinical situations requiring optimal occlusal reproducibility.

Impact of Surface Treatment on Miniscrew Survival Rates: a Systematic Review and Meta-analysis

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Introduction

Orthodontic miniscrews offer skeletal anchorage with minimal invasiveness and reduced patient compliance. However, their survival rate varies, and surface treatment has been proposed to enhance stability by improving osseointegration. Techniques like sandblasting and acid etching modify the titanium surface, increasing retention and biomechanical strength.

Aim of the study

Aim of this study was to determine the impact of surface treatment on miniscrew survival rate.

Materials and methods

This systematic literature review and meta- analysis was conducted using PRISMA guidelines. The focused question was made according PICOS model: „Does the surface treatment of a miniscrew affect its survival rate?'' The keywords „mini-implant", „mini-screw" „orthodontic mini" „survival rate"; „surface treatment"; were used to search the following electronic databases: Pubmed, Science Direct, The Willey Online Library, LILACS, Google Scholar. Inclusion criteria: full text articles published in English, that compared stability and success rate of miniscrews with treated and untreated surfaces. Animal studies, systematic reviews, case reports, meta-analyses, in vitro studies were excluded from this analysis. The initial search yielded 1995 scientific articles and after the exclusion of duplicates only 1352 articles remained. After the examination of abstracts, 11 articles were selected for full text analysis. Inclusion criteria were applied, and 4 studies were analyzed in qualitative and quantitative ways.

Results

Four included studies assessed the effect of surface modification on the success rate, two examined its impact on insertion torque, one on removal torque, and one on the perio-test value. The meta-analysis showed that the rough surface group has a higher success rate compared to the non-modified group. (OR=1,37, 95 % Cl=0,70, 2,69; p=0,36), heterogeneity was non-existant ($I2$=0 %, P=0,68), although the difference was not statistically significant. The removal torque was higher in the treated surface group than in the non-treated group (OR=0,07, 95 % Cl=-1,60, 1,74; p=0,94), with no observed heterogenicity (I^2=0%, P=0.76) however, the difference was not statistically significant.

Conclusions

Quantitative and qualitative analyses showed that surface-treated miniscrews had higher success rates and insertion torque compared to non-treated ones, though the difference was not statistically significant.

Oral Health Conditions and Trends in Correctional Facilities

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Introduction

Oral health is essential to overall well-being but remains a significant challenge in vulnerable populations like prisoners, where limited preventive care, poor hygiene, and a focus on urgent over restorative treatments exacerbate issues.

Aim of the study

To evaluate oral health status in Polish prisoners, compare it to the general population and international studies, and assess dental care quality to guide targeted interventions.

Materials and methods

This retrospective study analyzed patient data from the last five years, focusing on individuals incarcerated in Silesian prisons who received treatment at the University Academic Centre for Dentistry in Bytom. A total of 112 patients were assessed, with oral health status evaluated using the Decayed, Missing, and Filled Teeth (DMFT) index. In addition to calculating DMFT scores, the study identified the most common diagnoses and treatments among the patient cohort. Data were analyzed to determine whether patients predominantly received restorative or surgical treatments. The findings were then compared to results from similar studies conducted in other countries to contextualize the quality of dental care in Polish prisons and explore trends in oral health care for incarcerated populations.

Results

The analysis of 112 patients revealed a mean DMFT score of 12.38 (±5.40), with individual components averaging 3.91 (±3.58) for decayed teeth, 3.78 (±3.48) for missing teeth, and 4.76 (±4.28) for filled teeth. Surgical treatments, primarily extractions, accounted for 62.79% of procedures, while restorative treatments comprised 37.21%, indicating a predominant reliance on extractions over conservative care. The most common diagnosis was K04.4: Acute periapical periodontitis of pulp origin, followed by K08.3: Retained root.

Conclusions

This study reveals a high prevalence of dental disease among incarcerated individuals, with elevated DMFT scores and a reliance on extractions over restorative treatments. The findings align with similar studies worldwide but are significantly higher than in the general population, highlighting a severe disparity in oral health care. These results underscore the urgent need for targeted preventive and restorative interventions in Polish prisons. The high rates of untreated and advanced dental conditions represent a significant epidemiological problem, requiring immediate attention to improve the oral health and overall well-being of this vulnerable population.

Periodontitis and Oral Hygiene in Patients with Diabetes Mellitus Type 2 and Diabetic Foot Syndrome – A Preliminary Study

Authors

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Introduction

Type 2 diabetes mellitus (T2DM) and periodontitis are chronic conditions that frequently co-occur. T2DM increases the risk of periodontitis due to immune dysfunction and elevated glycemia. Conversely, periodontitis may affect insulin sensitivity and worsen glycemic control. Uncontrolled diabetes may lead to complications, such as diabetic foot syndrome (DFS).

Aim of the study

Our study aims to investigate the relationship between metabolic control of diabetes, the occurrence of periodontal disease, and adherence to dental recommendations in patients with T2DM and DFS.

Materials and methods

The cross-sectional study was conducted and two groups of T2DM patients were included: those with DFS and those without DFS. We collected baseline characteristics, such as medical history, physical examination, and laboratory tests. A survey on oral health and hygiene was conducted. We performed a periodontal examination on patients who did not meet the exclusion criteria (lack of teeth). It involved the assessment of the periodontal disease stage and indicators, such as clinical attachment loss, pocket depth, and bleeding on probing.

Results

96 patients were included – 54 with DFS and 42 without this complication. There were no statistically significant differences between the groups regarding age, BMI, and HbA1c%. The duration of T2DM was longer in patients with DFS ($p = 0.01$). Patients with DFS were more likely to be edentulous (24.1% vs 4.73% in the control group, $p=0.047$). Patients with DFS tended to brush their teeth less frequently ($p=0.037$). 23 patients provided informed consent and met the inclusion criteria for the periodontal examination. The groups did not differ in terms of periodontal disease indicators. 14 patients (60.9%) had active periodontitis and 8 patients (34.8%) had clinical gingival health on a reduced periodontium. Only one patient (4.3%) had no signs of active or past periodontitis.

Conclusions

Our study highlights the importance of dental education in patients with T2DM. The vast majority of examined patients exhibited active or past periodontitis and significant tooth loss. The survey revealed considerable neglect of oral hygiene among patients. Despite poorer results of the DFS group in the oral hygiene survey, the periodontal examination did not show significant differences between the DFS and T2DM groups. The results may be biased because most DFS patients were excluded due to the lack of teeth and DFS patients who agreed to the examination mostly followed dental recommendations.

SKN/SP/601419/2024, SKN32 "Studenckie koła naukowe tworzą innowajce", Ministry of Science and Higher Education, Poland

Precision in Motion: A Comparative Study of Cadiax vs. Zebris Digital Kinematic Facebow Systems for Virtual Articulation

Authors

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Introduction

The precise transfer of maxillary position to an articulator is essential for accurate occlusal analysis, diagnosis and prosthetic rehabilitation. Various registration and transfer methods exist, with digital methods being a promising alternative to analogue ones, potentially impacting clinical outcomes.

Aim of the study

This study aims to compare the accuracy of two digital methods for registering and transferring the maxillary and mandibular position to a virtual articulator, based on variations in the positioning of the maxillary model and occlusal contact distribution.

Materials and methods

The study included one patient selected based on the DC/TMD protocol with no temporomandibular disorder, presenting I class in Angle and canine classifications. The patient underwent dental examination and was scanned by the 3Shape intraoral scanner. Jaw movements and maxillary position were registered by two techniques utilizing digital kinematic facebows: - Digital mounting in a virtual articulator using kinematic facebow registration with the Cadiax system and fully individualized articulator settings, - Digital mounting in a virtual articulator using kinematic facebow registration with the Zebris system and fully individualized articulator settings. The accuracy of each method was assessed by analyzing spatial discrepancies in maxillary and mandibular model positioning based on occlusal contact variations in MIC (maximum intercuspation).

Results

Both methods provided high precision in mandibular position transfer, with minimal discrepancies in occlusal contact reproduction. The Zebris and Cadiax systems demonstrated high reproducibility in occlusal relationships accuracy, exactness in data acquisition and processing with slight differences between them.

Conclusions

Digital articulation using kinematic facebows and fully individualized settings provides a highly accurate transfer of the maxillary and mandibular spatial position. The minor differences observed between the Cadiax and Zebris systems indicate that both methods are reliable for clinical and laboratory applications requiring precise occlusal relationships.

Prevalence of Temporomandibular Disorders among Poznan Residents.

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Introduction

Temporomandibular disorders (TMD) are a significant problem in the population of highly developed countries, including Poland. It is estimated that currently 1/3 of the world's population reports complaints typical od TMD: tension and pain in the masticatory muscles, acoustic symptoms (clicking, crepitations), tenderness in the temporomandibular joint (TMJ) and/or restriction of mandibular mobility. Their prevalence makes TMD a civilization disease.

Aim of the study

Assessment of the prevalence of TMD among the residents of Poznan – the fifth largest city in Poland.

Materials and methods

The study group consisted of 159 subjects aged 18-61 years (mean 34.88 +/- 11.81 years). Each time, an Oral Behavior Checklist (OBC) questionnaire about occlusal and non-occlusal parafunctions and a clinical examination of the stomatognathic system using the DC/TMD protocol modified for the study were conducted. In addition, the incidence and location of headaches were assessed by a survey. Stress levels were analyzed using the PSS-10 questionnaire. The information about the nature of subjects' work was also gathered.

Results

The presence of at least one symptom of TMD was found in 97.48% of the participants. The most frequently reported complaint was palpation pain in the masticatory muscles – 79.25% for lateral pterygoid muscles and 61.32% for the masseter muscles. Hypertrophy of the masseter muscles was observed in 66.04% (n=105) of the subjects. Acoustic symptoms in the TMJ were present in 49.69% (n=79) of subjects. High risk of the occlusal parafunctions was noted in 80.50% (n=128) of participants. The predominant parafunctions were awake bruxism (n=117; 22.64%), sleep bruxism (n=102; 64.15%) and lip biting (n=36; 22.64%) Headaches were present in 62.89% (n=100) of subjects, of which 53.00% (n=53) reported pain with a temporal location. There was statistically significant correlation (p=0.02) between the occurrence of temporal headaches and acoustic symptoms in the TMJ. High stress levels were reported by 38.36% (n=61) of subjects. High stress levels influenced the occurrence of headache in patients (p=0.02), particularly in the temporal region.

Conclusions

1. High prevalence of TMD was observed among Poznan residents. 2. The occurrence of parafunctions among Poznan residents is high. 3. Work-related stress may influence the development or exacerbation of TMD symptoms and the occurrence of temporal headaches. 4. Routine dental examination should include full stomatognathic system assessment (teeth, muscles, TMJ) to prevent TMD.

The Role of Artificial Intelligence and Digital Technologies in Crafting Personalized Aesthetic Restorations for Anterior Teeth

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Introduction

Aesthetic dentistry has evolved with artificial intelligence (AI) and digital workflows, improving precision and efficiency in anterior restorations. Traditional methods rely on subjective assessment, whereas AI-based digital smile design (DSD) integrates facial harmony, occlusion, and morphology for enhanced outcomes. This study evaluates AI-driven workflows versus conventional techniques, focusing on esthetics, function, and efficiency.

Aim of the study

To assess the impact of AI-integrated digital workflows in anterior restorations by: 1. Comparing esthetic outcomes (color, translucency, morphology) to conventional methods. 2. Evaluating restoration integrity over time.

Materials and methods

A retrospective analysis of 10 patients treated at the Medical University of Warsaw (WUM) Patients were divided into: • Group A (AI-Digital Workflow, n=5): AI-driven DSD, CAD/CAM, and 3D printing. • Group B (Conventional Workflow, n=5): Traditional impression-based restorations. Outcome Measures 1. Esthetic evaluation: Standardized color-matching, translucency analysis, and VAS scoring. 2. Longevity assessment: Restoration integrity and marginal adaptation 3. Patient satisfaction: Likert scale-based surveys. 4. Clinical efficiency: Chairside time and number of adjustments required.

Results

Preliminary Results (One-Month Evaluation, Final Results Pending) 1. Esthetic Outcomes: AI-assisted restorations show better initial color matching and translucency, but final assessment is still ongoing. 2. Longevity: At one month, all restorations remain intact, but durability will be reassessed at the two-month follow-up. 3. Patient Satisfaction: Early feedback suggests higher satisfaction in AI-treated patients, but full survey results are still being collected. 4. Efficiency: AI workflow has reduced chairside time and required fewer adjustments, but further analysis is needed.

Conclusions

AI-assisted restorations show promising results in esthetics, efficiency, and patient satisfaction, but final outcomes will be confirmed at the two-month follow-up.

The Evaluation of Temporomandibular Joint Arthrocentesis Effectiveness Based on Subjective Experiences of Patients Treated for Temporomandibular Disorders

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Introduction

Arthrocentesis has become widely used minimally invasive treatment for temporomandibular disorders (TMD). The procedure, performed for both diagnostic and therapeutical purposes, consists of rinsing the joint using syringe with an isotonic solution.

Aim of the study

The aim of the study is to compare and evaluate the degree of reduction in pain, acoustic symptoms and mandibular mobility after arthrocentesis among patients treated in the Department of Cranio-Maxillofacial, Oral Surgery and Implantology of Medical University of Warsaw.

Materials and methods

The questionnaire was conducted among patients who underwent arthrocentesis. The survey included criteria related to the qualification for a conservative treatment of TMD. These criteria were chosen based on the most commonly reported patients' complaints in the literature. The exclusion criteria for the study were craniofacial injuries. According to that 16 out of 20 questionnaires were included in the research. Approval for the study was given by Bioethics Committee of Medical University of Warsaw (AKBE/340/2023). The statistical analysis of the obtained results was performed.

Results

Among the studied symptoms, the greatest improvement (44%) was noted in the case of a decrease in clicks, friction, and pain after waking up. Moreover, arthrocentesis therapy decreases pain during daily activities such as eating hard and soft food, laughing/smiling, toothbrushing and talking. Questionnaires have not indicated any improvement in the decrease of tinnitus. Patients were asked to determine the frequency of reported symptoms before and after the procedure. The research demonstrated that the frequency of occurring symptoms has decreased among 56% of patients.

Conclusions

Although arthrocentesis is beneficial, it does not help in every case. Patients qualified for the treatment have various initial symptoms, probably causing variation in reported treatment results. Due to the lengthy therapy, the number of surveyed patients is limited and does not allow authors to make final and unequivocal conclusions at this stage. However, preliminary conclusions indicating the effectiveness of the therapy can be made based on the data collected and presented in the paper. The study continues to obtain more data.

The Influence of Orthodontic Treatment on the Pharyngeal Airway Space in Adult Patients

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Introduction

Orthodontic treatment may impact not only the positions of the teeth and jaws, but also the facial features and other surrounding structures. Except for correcting malocclusions the orthodontic treatment is claimed to be also indicated in cases with malfunctions of the respiratory system, e.g. in order to expand the pharyngeal airway space (PAS).

Aim of the study

The aim of the study was to assess the influence of orthodontic treatment on the pharyngeal airway space in adult patients.

Materials and methods

The material consisted of cephalometric analyses of 38 adult patients (aged from 18 to 43) treated orthodontically. The cephalometric X-rays enrolled in the study were taken before and after orthodontic treatment. The cephalometric tracings used in the study involved the following analyses: Segner-Hasund's, Steiner's and Kaminek's analysis as well as the particular PAS measurements, such as: PAS surface area and PAS width to compare the possible changes in the airway space after the orthodontic treatment.

Results

On the basis of the cephalometric tracings there has been changes in the pharyngeal airway space in 30 patients treated orthodontically (78,9%). The biggest changes in the pharyngeal airway space has been observed in patients with initial distoocclusion and the smallest changes - in patients with Class III malocclusion before orthodontic treatment.

Conclusions

The orthodontic treatment can effectively change the width of the pharyngeal airway space in adult patients. The effect on the airway space depends on the patient's initial malocclusion.

A Rare Battle: Recurrent Orbital Dermatofibrosarcoma Protuberans Challenging Surgical Boundaries

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Background

Dermatofibrosarcoma protuberans (DFSP) is a rare, slow-growing soft tissue malignancy with a high recurrence rate despite its low metastatic potential. Complete excision with negative margins is crucial to prevent regrowth. Orbital DFSP is exceptionally uncommon and presents unique challenges due to its proximity to critical structures. This report presents a case of recurrent orbital DFSP in a patient with a prior history of incomplete excision.

Case Report

Herein we present a 55-year-old male with a progressively enlarging left orbital mass that had persisted for several years. He had undergone an incomplete excision in 2020, with histopathology confirming DFSP. The patient was advised to undergo further definitive surgical treatment at a specialized center but failed to follow up. His medical history was otherwise unremarkable. He appeared in out-patient clinic 4-years later. Examination revealed facial asymmetry due to a firm, immobile, non-tender mass in the left orbit. Ophthalmic assessment showed significant proptosis, restricted eye movement, and diminished direct light reflex, though light perception was intact. No mucosal abnormalities or signs of acute infection were noted. A contrast-enhanced CT scan revealed a large, heterogeneously enhancing orbital mass occupying both intra- and extraconal spaces. The tumour displaced the eyeball anteriorly, compressed or infiltrated the superior and lateral rectus muscles, and closely adhered to the optic nerve without invading the optic canal. The lateral orbital wall showed structural thinning, indicative of chronic tumour progression. The mass measured 63 × 37 × 56 mm, extending 63 mm beyond the orbital rim. No metastases or lymphadenopathy were detected. A biopsy confirmed recurrent DFSP. Given the tumour's aggressive local behaviour and prior incomplete excision, the patient was recommended for targeted therapy with Imatinib, followed by adjuvant radiotherapy.

Conclusions

This case highlights the importance of complete surgical resection in DFSP management and follow up. Orbital involvement presents unique therapeutic challenges, requiring a multidisciplinary approach that integrates surgery, targeted therapy, and radiotherapy to optimize outcomes. Continuous monitoring and early intervention remain critical in optimizing patient outcomes and reducing the chances of further recurrence.

A Rare Complex Odontoma as a Cause of Primary Canine Impaction. Diagnosis, Treatment and Long-Term Monitoring

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Background

Odontomas, the most common odontogenic tumors assessed at twenty-two percent of cases, cease growth at maturity. They develop during the first two decades of life; however, formation in primary teeth is rare, comprising of (>5%) of cases. Compound odontomas around 70% are well-defined radiopaque clusters of rudimentary, tooth-like structures within a fibrous capsule, most often in the anterior maxilla. Complex odontomas about 30% are irregular, amorphous radiopaque masses with a radiolucent border, typically in the posterior mandible. The etiology involves developmental disturbances such as trauma, infection, or genetics, with most cases being idiopathic. Timely intervention is critical to prevent complications such as tooth impaction, delayed eruption, or malocclusion, ensuring proper dental development and function.

Case Report

A 5-year-old female patient presented to a dentist with a chief complaint of non-eruption of the primary right lower canine. Her medical and family history were unremarkable, with no history of trauma, syndromic conditions, or familial odontoma occurrence. A panoramic radiograph revealed an impacted primary canine with an associated radiopaque asymptomatic lesion, identified as a 0.5 cm complex odontoma. No displacement of adjacent teeth was observed. A CBCT was taken to plan surgical approach and assess the depth of primary canine impaction. Surgical removal of the complex odontoma was planned and carried out two months after the initial diagnosis. Microscopic examination of tissue specimen obtained during surgical procedure confirmed a complex odontoma. Due to the patient's young age and the deep impaction of the primary canine, extraction was postponed. The patient is currently under orthodontic supervision with a space maintainer in place to preserve arch integrity. Follow-up visits every six months have been scheduled to monitor occlusal development.

Conclusions

Prompt diagnosis and clinical management of odontoma are warranted to avoid preventable complications such as impaction or delayed eruption and preserve the integrity of the developing dentition. This case is exemplary in demonstrating the proper protocol for complex odontoma identification and surgical removal. Given the patient's young age, a conservative approach was adopted to monitor the eruption of the primary canine while maintaining space. Long-term follow-up is essential to assess occlusal development, highlighting the importance of regular dental evaluations in pediatric patients.

Case Insights into Complicated Necrosis; Mastering 3D Modeling with Mandibular Reconstruction.

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Background

Mandibular resection is a complex surgical procedure performed to address various pathological conditions affecting the lower jaw, including osteonecrosis, malignancies, and severe infections. Our case series presents four patients who underwent mandibular resection for diverse pathologies, highlighting a multidisciplinary approach to complex jaw surgery and utilisation of modern 3D printing.

Case Report

Herein we present four cases of mandibular resection and reconstruction utilizing titanium plates in patients diagnosed with medication-related osteonecrosis of the jaw (MRONJ). Given the high surgical risk, free flap reconstruction was not considered a viable option. The cohort consisted of three female and one male patient, all classified as AAOMS Stage 3. Preoperative CT imaging was conducted for each patient, enabling the creation of 3D-printed mandibular models. Reconstruction plates were pre-contoured to these models prior to surgery. In one case, a pathological fracture necessitated the connection of two separate mandibular segments. Intraoperatively, the reconstruction plates were positioned before resection, reassessed, and secured post-resection. Postoperative imaging confirmed the accurate placement of the plates and appropriate alignment of the remaining bone fragments. All patients experienced uneventful healing with no significant postoperative complications.

Conclusions

This case series underlines the complex management of mandibular necrosis in specific oncologic, metabolic, and infectious settings. On a patient-to-patient basis, these patients required tailored surgical intervention involving bone resection and reconstruction, indicative of the importance of 3D modeling for precise plate adjustment and successful outcomes.

Giant Sublingual, Submental, and Lingual Dermoid Cyst Restricting Tongue Movement Undiagnosed for Several Years

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Background

A 17-year-old female was referred to the Clinical Department of Maxillofacial Surgery at the University Hospital in Cracow by her dentist due to a large mass in the sublingual area, elevating the tongue and restricting its movement. This lesion was discovered incidentally during a routine dental appointment. Neither the patient nor her mother noticed any issues caused by the mass's presence.

Case Report

Upon clinical examination, a well-defined, firm, and painless mass was observed in the submental area. Additionally, a symmetrical mass located underneath the tongue was identified. Tongue motor function tests revealed its restricted movement. Magnetic Resonance Imaging (MRI) revealed a well-defined T1 hypointense and a T2 hyperintense cystic lesion above the mylohyoid and geniohyoid muscles, measuring 5.8x8.4cm at its largest dimensions. Following this diagnosis, the patient was scheduled for surgical intervention. A cervical approach was selected to minimize the risk of damaging nearby anatomical structures and reduce the risk of oral bacterial infection. Partial drainage of the cyst decreased its size and lessened the risk of accidental rupture, easing the removal process. After suturing the capsule, the cyst was excised entirely, leaving the oral mucosa intact. The patient was discharged from the hospital on the second day after surgery. Recovery was uneventful, and tongue function was restored following myofunctional therapy.

Conclusions

Epidermoid and dermoid cysts in the oral cavity are rare, constituting less than 0.01% of all oral cysts. Only 1.6% of these cysts are found on the floor of the mouth. A cervical approach is suitable for removing giant oral dermoid cysts involving submental, sublingual, and lingual spaces. Tongue function can be successfully regained through myofunctional therapy after surgical treatment.

Peripheral Giant Cell Granuloma in a Pediatric Patient: A Rare Case of Gingival Overgrowth

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Background

Peripheral giant cell granuloma (PGCG) is a nonneoplastic reactive lesion of the oral cavity, primarily affecting the gingiva or alveolar mucosa. Clinically, it presents as a reddish-purple, polypoid, or nodular mass. While its precise etiology remains unclear, PGCG is often attributed to local irritants such as plaque, calculus, trauma, dental restorations, or extractions. Differential diagnoses include pyogenic granuloma, peripheral ossifying fibroma, and central giant cell granuloma, necessitating histopathological examination for definitive diagnosis. PGCG predominantly affects females in the fifth and sixth decades, with pediatric cases being exceedingly rare. This case underscores the importance of considering PGCG in differential diagnoses, even in atypical age groups, to ensure timely intervention.

Case Report

A 9-year-old male patient presented to the dental surgery department with his mother, complaining of an overgrowth of tissue on the right lower side of the oral cavity. The lesion was not painful,prone to bleeding upon mouth closure and during eating. Medical and dental history were within normal limits. Clinical examination revealed a soft tissue overgrowth resembling a granuloma, located distal to tooth 42, buccal to 43, with 43 positioned lingually and mesial to a partially erupted 44. Radiographic evaluation showed a permanent dentition stage with a partially erupted 44, a retained 85, and a non-erupted 45. Excisional biopsy was performed the same day, and a single tissue fragment measuring 1.3 cm in diameter was excised in its entirety. Surgical removal of the overgrowth was completed, and sutures were placed. Histopathological examination confirmed the diagnosis of giant cell granuloma. OPG excluded any bone lesions in this area, further classifying it into peripheral giant cell granuloma. The patient returned for suture removal after seven days, with satisfactory healing observed.

Conclusions

Histopathological analysis is essential in the definitive diagnosis of oral soft tissue overgrowths, helping to distinguish reactive lesions like giant cell granuloma from neoplastic or malignant pathologies. While OPG is of a high importance when further differentiatingbetween peripheral and central giant cell granuloma. Complete surgical excision, combined with patient post-operative monitoring, ensures proper healing and minimizes the risk of recurrence in pediatric patients.

Dermatology Session

Session Coordinators:
Natalia Czerwik
Sara Omidi

An Extraordinary Case of Graham-Little-Piccardi-Lassueur Syndrome

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Background

Graham Little-Piccardi-Lassueur syndrome is a rare clinical entity characterized by the coexistence of multifocal progressive cicatricial alopecia on the scalp, non-scarring hair loss of axillae and pubic areas and presence of keratosis pilaris-like eruption on the trunk and extremities. The aetiopathogenesis is not fully known yet, but relation of this syndrome to lichen planus is commonly accepted. The treatment of the syndrome is challenging. We present the case of this rare syndrome.

Case Report

A 77-year-old female patient was admitted to the dermatology department due to increased hair loss. Additionally, the patient exhibited eyebrow thinning, loss of hair in the axillary regions and on the lower legs, as well as partial hair loss in the pubic area. Additionally, she reported scalp itching. She was diagnosed with Graham-Little syndrome. Initially, the patient was treated with topical clobetasol ointment. Subsequently, after prior ophthalmologic consultation, hydroxychloroquine was introduced into the treatment.

Conclusions

Graham-Little syndrome is relatively rare, distinctive disorder requesting a consideration while differentiating common cicatricial alopecia entities. Early diagnosis of subtle lesions of GLS followed by adequate treatment may prevent patients from permanent hair scalp alopecia and disease progression.

Complex Case of Recurrent Giant Cutaneous Horn in a Geriatric Patient

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Background

Keratoacanthoma (KA) is a well-differentiated benign tumor of the skin, occurring globally at a rate of 100 to 150 cases per 100,000 individuals annually. Characterized by rapid growth and potential for spontaneous regression, KA can escalate to serious complications such as cutaneous horn (CH) and squamous cell carcinoma (SCC). Increased risk is associated with factors such as ultraviolet (UV) radiation exposure, fair skin phenotype, and advanced age. This case highlights one of the largest CHs ever reported, emerging from a KA, underscoring the complex challenges posed by such large-scale dermatological conditions in geriatric care.

Case Report

A 91-year-old female from a nursing home presented to the Department of Plastic and Reconstructive Surgery at Republican Vilnius University Hospital with a recurrent CH on her right hand. Initially noted three years prior, this CH was removed multiple times but consistently recurred, each instance showing progressive enlargement. The most recent presentation involved a CH that measured an extraordinary 10 cm in length, making it one of the largest recorded in medical literature, complicated further by the development of SCC. Surgical management included excision under regional anesthesia followed by full-thickness skin grafting. Postoperative treatment comprised anticoagulants and analgesics, with histopathological examination revealing significant hyperkeratosis and invasive squamous cell carcinoma.

Conclusions

This case of an exceptionally large CH originating from KA exemplifies the critical need for vigilant monitoring and proactive management in elderly patients. It highlights the necessity for aggressive treatment strategies and thorough follow-up to prevent recurrence and manage complications effectively. The presence of such an unusually large CH from KA provides a unique insight into the potential severity of skin lesions that can arise in high-risk patients, advocating for enhanced multidisciplinary approaches to care and further research into the factors contributing to such extreme manifestations.

None

Cutaneous Granulomas Associated with Nijmegen Syndrome

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Background

Nijmegen breakage syndrome (NBS) is a rare genetically determined disease inherited in an autosomal recessive manner. The main symptoms are microcephaly, dysmorphic features (sloping forehead, receding mandible), immune deficiency, predisposition to malignant tumors (mainly lymphoid) and increased sensitivity to ionizing radiation.

Case Report

A 44-year-old female patient was admitted to the Adult Dermatology Department with nodular and erythematous-exfoliative skin lesions. The first lesions appeared three years prior to hospitalization without precipitating conditions. The lesions were not accompanied by subjective complaints. Her medical history revealed genetically confirmed Nijmegen syndrome, a past history of epilepsy, and recurrent respiratory tract infections. Examination of the skin in the lumbosacral region, upper back, right epigastric region and on the right forearm revealed numerous grouped, red-brown nodular lesions with a firm consistency, some with central erosions. Basic laboratory tests did not reveal any significant abnormalities. Virological testing detected the presence of HBs antigen. A chest X-ray revealed small perihilar fibrous changes in the 6th segment of the right lung, with no other abnormalities detected. An abdominal ultrasound showed no irregularities. A Quantiferon test was performed, yielding a negative result. Histological findings were consistent with non-caseating granulomas. Local treatment with clobetasol propionate ointment was initiated but no improvement was achieved.The patient was referred to the Infectious Diseases Clinic due to suspected hepatitis B.

Conclusions

Several cases of skin granulomas in the course of Nijmegen syndrome have been reported worldwide. In primary immunodeficiencies, granulomas can develop in the lungs, liver, spleen, joints, and skin. However, the mechanism of their formation has not been fully explained, and the treatment used is often ineffective. In a few reported cases, TNF-alpha inhibitors have been shown to be effective.

Dupilumab-Refractory Atopic Dermatitis After Heart Transplant: A Case Report

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Background

Atopic dermatitis (AD) is a known post-transplant complication associated with the immunosuppressive regimen, particularly tacrolimus. Dupilumab, a monoclonal antibody targeting IL-4 receptor, is commonly used to treat severe AD; however, its efficacy in immunosuppressed patients remains uncertain. We present a case of refractory AD in a pediatric heart transplant recipient that worsened following dupilumab treatment and subsequently improved with a change in immunosuppressive therapy.

Case Report

A 3-year-old boy with a history of heart transplantation for congenital heart disease developed severe, treatment-resistant perioral AD. Despite multiple courses of antibiotics, corticosteroids, and hospitalizations, his symptoms persisted. Given the lack of response to standard treatments, dupilumab was introduced. However, three weeks after initiation, his lesions worsened, exhibiting a psoriasiform phenotype. Immunophenotyping revealed an increase in Th1 lymphocytes, leading to the discontinuation of dupilumab and a switch from tacrolimus to cyclosporine. Within two weeks of cyclosporine initiation, the patient's lesions significantly improved, with no further infections. Over a year of follow-up, the patient maintained clinical stability, with only occasional mild flare-ups responsive to topical therapy.

Conclusions

This case highlights the complexity of immune modulation in transplant recipients and suggests that dupilumab may not be universally effective in post-transplant AD, particularly in cases with Th1 dominance. A tailored immunosuppressive strategy, such as switching from tacrolimus to cyclosporine, may be necessary to achieve disease control. Further studies are needed to better understand AD pathophysiology in transplant patients and to optimize therapeutic approaches while minimizing the risk of organ rejection.

Effective Management of Reactive Perforating Collagenosis: A Case Study

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Background

Reactive perforating collagenosis (RPC), a subtype of perforating dermatoses, is a rare skin disease, characterized by transepidermal elimination of altered dermal collagen. It commonly presents as umbilicated papules with keratotic plugs. The pathophysiology involves altered dermal collagen being expelled through the epidermis. This process is exacerbated by mechanical factors like scratching, which is frequently triggered by severe pruritus associated with these systemic conditions. While often linked with systemic diseases such as diabetes mellitus and chronic renal insufficiency, RPC can also occur in patients without these conditions, making diagnosis challenging. The management of RPC is complicated due to its chronic nature and the frequent recurrence of lesions. Effective treatment requires a multifaceted approach that addresses the cutaneous symptoms and underlying systemic issues, focusing on preventing new lesions through tailored dermatological care.

Case Report

A 61-year-old woman, presented with persistent itchy rashes affecting her inner thigh, abdomen, and sides. These symptoms first appeared four months before her initial medical consultation. Early evaluations suggested allergic contact dermatitis, leading to treatments aimed at symptomatic relief, including topical steroids and antihistamines. Over the following weeks, her symptoms persisted. Further health assessments revealed a benign thyroid nodule, monitored without intervention. Approximately ten weeks post-initial presentation, a crucial skin biopsy led to a diagnosis of RPC. Treatment was significantly adjusted to include high-dose glucocorticoids (Prednisolone), starting at 30mg daily with a plan for gradual tapering, complemented by omeprazole and potassium chloride to manage potential side effects. By the twelfth week, notable improvements in her skin condition and reduced itching were observed, leading to a reduction in Prednisolone and the initiation of UVB phototherapy for comprehensive skin management.

Conclusions

This case underscores the essential role of skin biopsy in achieving an accurate diagnosis, enabling effective management. Systemic glucocorticoids and UVB phototherapy proved critical in controlling symptoms and disease progression. The case highlights the importance of personalised dermatological care and demonstrates how targeted interventions, initiated based on biopsy results, are vital for managing complex skin disorders and improving patient outcomes.

Erosive Pustular Dermatosis of the Scalp: A Rare Condition with Diagnostic Difficulties

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Background

Erosive pustular dermatosis of the scalp (EDPS) is a rare disease with an incompletely understood etiology, diagnosed mainly in older people. It is characterised by pustules, erythema and scab-covered, healing erosions, resolving with scarring and permanent hair loss on the affected skin area.

Case Report

A 71-year-old female patient admitted to the clinic, reports pain and burning sensation of the scalp and scab-covered erosions for the past 4 years. Examination of the scalp revealed erythematous lesions with skin atrophy and scab-covered erosions. In addition, foci of scarring alopecia were found. Trichoscopy showed milky white fields, absence of hair follicle outlets, yellow scabs and tree-like vessels. During examination scalp specimen was taken for additional tests. Both direct and indirect immunofluorescence tests were negative. Histopathological examination revealed squamous cell carcinoma in situ with features of irritation, bacterial superinfection and inflammation of the dermis. Based on the clinical feature, trichoscopy and histopathological findings, a diagnosis of EDPS was made. The patient was started on clobetasol propionate foam and isotretinoin and was referred for a follow-up examination.

Conclusions

Histopathological findings are non-specific in EDPS. Diagnosis is made based on clinical features and after exclusion of other dermatoses.

Erysipelas or Eczema? Diagnostic Challenges in Erythematous-Edematous Skin Lesions

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Background

Erysipelas is a skin and subcutaneous infection caused by group A Beta-Hemolytic Streptococci, most commonly affecting the lower legs and face. It presents with bright red, shiny, swollen skin with well-defined borders. Systemic symptoms include fever, chills, and lymphadenopathy. Laboratory findings typically show elevated CRP and leukocytosis. Differential diagnoses include cellulitis (deeper, less defined lesions), superficial thrombophlebitis (skin redness and tenderness along a vein), and contact dermatitis (pruritic, irregular lesions).

Case Report

A 56-year-old woman was admitted to the Dermatology Department with erythematous, edematous facial lesions, which she associated with using a face mask. Initially, pustules on an erythematous base appeared on the nose and then spread to the cheeks. Later, new warm, painful erythematous lesions developed on her palms and wrists, with mild desquamation on the cheeks. To differentiate from acute contact dermatitis caused by the face mask, patch testing was performed, yielding a negative result, possibly due to prior treatment with Encorton. Laboratory tests showed elevated CRP, AST, and ALT. The patient had a similar past episode on the hands, treated with antibiotics. Her chronic conditions — insulin resistance, hypothyroidism, and gout—predispose her to erysipelas. Additionally, occupational exposure to chemicals increases the risk of skin damage, creating an infection entry point. The final diagnosis was Erysipelas, and IV clindamycin, p.o. Encorton, hepatoprotective, and topical treatment led to improvement.

Conclusions

Contact dermatitis likely served as the entry point for infection. Erysipelas is a serious disease that can lead to severe cardiovascular, lymphatic, renal, and respiratory complications. Proper differential diagnosis of erythematous-edematous lesions is crucial for effective treatment.

Hidradenitis Suppurativa Associated with Spondyloarthritis and Acne Conglobata Treated with Anti-Tumor Necrosis Factor Antibody

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Background

Introduction: Hidradenitis suppurativa (HS) also known as "acne inversa" is a chronic inflammatory skin disease. It may be associated with inflammatory rheumatic diseases as well as with other inflammatory skin diseases such as severe acne conglobata (AC) and neutrophilic dermatoses. Several HS-related syndromes have been described, including PASS (pyoderma gangrenosum (PG), acne vulgaris, HS, spondyloarthritis (SpA)), and PsAPASH (psoriatic arthritis, PG, acne, and HS). The aim of this presentation is to highlight the issue of HS associations with rheumatic diseases and treatment challenges.

Case Report

Case report: A 49-year-old man presented with peripheral arthritis, HS (Hurley stage II), AC, and dissecting cellulitis of the scalp. Inflammatory back pain and nonspecific bone marrow edema in the anterior articular surfaces of the hip bones were observed in magnetic resonance imaging of the sacroiliac joints. HLA-B27 antigen was not detected. Diagnosis of undifferentiated SpA with HS and AC was established. In differential diagnosis, incomplete PASS was considered. The patient was treated with clindamycin, rifampicin, acitretin, and guselkumab (anti-interleukin-23) primarily for cutaneous conditions, but there was no improvement in skin lesions. Methotrexate (MTX) at a dosage of 25 mg/a week subcutaneously (s.c.) and adalimumab (anti-tumor necrosis factor-α; TNF-α inhibitor) 40 mg/two weeks s.c. as a standard dose for SpA treatment were administered with resolution of joint inflammation but with persistence of HS activity. The combination of MTX and higher doses of adalimumab (160 mg in the first two weeks, 80 mg in the following two weeks, and 40 mg per week s.c. from the fourth week onward), following the registered treatment regimen for HS, led to an improvement in skin lesions.

Conclusions

Conclusions: Finally, we confirmed previous observations regarding the association of HS with SpA and AC. However, the PASS syndrome without the PG element has not been identified. The combination of peripheral arthritis, HS, AC, and dissecting cellulitis of the scalp can pose many diagnostic and therapeutic difficulties, particularly in the selection and dosage adjustment of synthetic and biologic drugs. Care for such a patient requires an interdisciplinary team and a holistic approach.

The Usefulness of Trichoscopy in the Diagnosis of Scalp Dysesthesia - Case Report

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Background

Scalp dysesthesia, also known as burning scalp syndrome, is characterized by abnormal sensations such as burning, tingling, and pruritus without visible dermatological findings. Often associated with neuropathic or psychogenic causes, this condition can be distressing for patients. Although it is frequently observed in the geriatric population, women, individuals with diabetes mellitus, and those with a psychiatric history, its pathophysiology remains poorly understood. The lack of obvious cutaneous manifestations often leads to misdiagnosis and delays in appropriate management. This report highlights the usefulness of trichoscopy in the diagnosis of scalp dysesthesia.

Case Report

A 43-year-old male patient presented with nodular lesions on the scalp that had persisted for ten years, accompanied by severe pruritus. The affected areas exhibited hair loss. Trichoscopy revealed numerous broom hairs, broken hairs at the same level, and trichorhexis nodosa regularly distributed within hair shafts. A diagnosis of scalp dysesthesia was established. The patient underwent intralesional triamcinolone therapy (5 mg/mL every four weeks). After six treatment cycles, significant improvement was observed, including resolution of pruritus, absence of new lesions, and partial hair regrowth.

Conclusions

Scalp dysesthesia can present as a rare form of prurigo nodularis affecting the scalp. Hair loss within the affected regions results from chronic scratching, as evidenced by trichoscopy findings of uniform hair shaft damage, including broom hairs, regularly broken hair shafts and trichorhexis nodosa placed at the same hair shafts level.

Unusual Presentation of Bullous Pemphigoid in a Young Adult: A Case Report

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Background

Bullous pemphigoid (BP) is the most prevalent autoimmune subepidermal blistering disorder, mediated by autoantibodies targeting hemidesmosomal proteins BP180 and BP230. The median age of onset is approximately 80 years, however, BP can manifest in younger adults, particularly in drug-induced cases. Drug-associated BP exhibits heterogeneous clinical manifestations, often delaying diagnosis (3). Although the association between BP and SGLT2is remains inconclusive, we report a case of BP in a young adult potentially induced by dapagliflozin.

Case Report

A 49-year-old male presented with a three-month history of pruritic skin lesions affecting the chest, abdomen, back, and extremities. Pruritus severity was 10/10 on the Visual Analog Scale (VAS). Dermatological examination revealed violaceous, non-scaly plaques, tense blisters (Nikolsky's sign negative), and excoriations. No mucosal involvement was observed. A punch biopsy from an abdominal lesion was performed. Histological evaluation demonstrated subepidermal blister formation. Direct immunofluorescence (DIF) revealed linear IgG and C3 complement deposition along the basement membrane. Enzyme-linked immunosorbent assay (ELISA) detected elevated autoantibodies against BP180 (7.71 RU/ml) and BP230 (3.61 RU/ml). Indirect immunofluorescence (IIF) confirmed linear IgG staining along the dermo-epidermal junction in salt-split skin and positive anti-BP180 antibodies. Consequently, a diagnosis of BP was established. The patient had a history of type 2 diabetes mellitus and hypertension, managed with dapagliflozin/metformin, gabapentin, thioctic acid, and antihypertensive agents. Given the potential role of dapagliflozin in triggering BP, dapagliflozin/metformin (5 mg/850 mg) was discontinued in favor of metformin monotherapy. Initial treatment with methylprednisolone (4 mg/day, orally) was insufficient, leading to persistent blister formation. The treatment was changed to dapsone (100 mg/day, orally) and prednisolone (5 mg/day, orally), resulting in the resolution of new lesion formation and a reduction in pruritus to 3/10 on the VAS.

Conclusions

A thorough medical history is crucial for BP diagnosis. This case of BP, potentially induced by dapagliflozin/metformin, underscores the importance of individualized patient assessment, particularly in cases with atypical clinical presentations. Patient-centered care is crucial due to disease variability. Further research is warranted to elucidate the relationship between SGLT2is and BP development.

The Mysterious Spreading Spots: A Case of Angioma Serpiginosum

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Background

Angioma serpiginosum is a rare skin condition caused by abnormal dilation of small blood vessels close to the skin's surface. It appears as tiny red dots (puncta) that gradually group together, creating a snake-like (serpiginous) or ring-shaped (gyrate) pattern. The condition is benign and does not involve bleeding, inflammation, or pigmentation changes.

Case Report

A young woman was admitted to the dermatology and venereology clinic in Olsztyn for the evaluation of telangiectatic skin lesions on her left lower limb. The lesions had been present for approximately four years and had gradually worsened. The patient reported that the lesions became more pronounced after scratching and significantly intensified after a warm bath. Prior to this consultation, coagulation tests had been performed by her primary care physician, all of which returned normal results. After obtaining informed consent, a skin biopsy was taken for histopathological examination. The differential diagnosis included hemangioma, the telangiectatic form of mastocytosis, and angioma serpiginosum.

Conclusions

At the follow-up visit, after receiving the biopsy results which showed normal skin and subcutaneous tissue and reviewing the available literature, a diagnosis of angioma serpiginosum was made based on the clinical presentation. The patient was referred to the surgical outpatient clinic of the Provincial Children's Hospital for evaluation and potential qualification for laser treatment.

Emergency Case Report Session

Session Coordinators:
Karolina Lach
Aleksandra Grotkowska

"Missed life": Resignation from Perimortem Caesarean Section After a Fall Injury to the Mother - Case Report

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Background

Current guidelines of the European Resuscitation Council state that a perimortem caesarean section (PMCS) should be performed after 4 minutes of unsuccessful cardiopulmonary resuscitation (CPR) in a pregnant woman over 20 weeks' gestation. The procedure itself should take less than 1 minute to perform. Currently, the guidelines identify only 2 conditions that allow refraining from performing PMCS: the gestational age less than 20 weeks or a return of spontaneous circulation within 2 circles of CPR. Time since cardiac arrest of more than 5 minutes is not an indication to resign from PMCS.

Case Report

A 35-year-old woman at 27th weeks' gestation fell out of her apartment on the 9th floor. The woman was given pre-medical first aid by a passerby and later she was pronounced dead on arrival by the emergency services. PMCS was not performed, no additional information is available on the aid provided by the emergency services. The woman was transported to Forensic Medicine Department of Medical University of Warsaw for forensic autopsy which revealed significant, massive multi-organ injuries to the woman, including a ruptured aorta and blood in the fourth ventricle of the brain. However, the uterus was not injured and the fetus sustained minimal trauma - no external injuries were recorded. Its bone structure was not affected by the fall and its internal organs were almost unaffected as well, with the exception of a singular tear on the liver and spleen.

Conclusions

The main aim of PMCS is to increase the chances of maternal survival, however trauma patients with a cardiac arrest have a reduced probability of responding to CPR. In such cases, PMCS is conducted mainly to attempt to save the fetus since maternal injuries do not necessarily correlate with fetal injuries, as shown in this case. Emergency physicians should be able to perform an out-of-hospital PMCS on women in the 20th week of pregnancy or above, given that higher survival rates have been reported when the PMCS takes place at the point of collapse. There is a need of specialized training in PMCS to reduce the cases where medics are reluctant to perform the PMCS due to a lack of skills.

Anesthesia-Induced Bronchospasm: A Case Report of Unexpected Airway Constriction During Endoscopic Procedure

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Background

Bronchospasm is a sudden airway narrowing caused by smooth muscle contraction, leading to breathing difficulties. It occurs in about 0.2% of general anesthesia cases but rises to 6% in asthmatic patients undergoing endotracheal intubation. It is associated with conditions like asthma and COPD and can be triggered by various stimuli.

Case Report

A 50-year-old female patient was admitted to the hospital for the removal of a food bolus from the esophagus. She reported discomfort in the retrosternal area and experienced vomiting after consuming food, fluids, or medication. On admission, the patient was in good general condition, presenting with the following vital parameters: blood pressure (BP) 140/86 mmHg, heart rate (HR) 88/min, and oxygen saturation (SpO) of 94% while breathing spontaneously. Auscultation revealed normal, symmetrical vesicular breath sounds. Laboratory tests showed mild leukocytosis, slightly elevated liver enzyme levels, low vitamin D levels, and hypertriglyceridemia. To prevent aspiration, the patient underwent endoscopy under general anesthesia with endotracheal intubation. Despite an adequate depth of anesthesia, she developed severe bronchospasm during the procedure. Audible wheezing was noted on auscultation, and her oxygen saturation dropped to approximately 78%. The patient was immediately treated with intravenous salbutamol, hydrocortisone, magnesium, and clemastine. These interventions led to a gradual improvement in oxygen saturation, which increased to 83–86%. However, the most significant improvement was observed after extubation. Once the procedure was completed, the patient was awakened, and following a bout of coughing, her oxygen saturation rose to 95%. Upon returning to the ward, she remained hemodynamically stable, with no signs of airway obstruction on auscultation. She was discharged home in good general condition.

Conclusions

1. Bronchospasm can be triggered by general anesthesia and endotracheal intubation, even in patients without pre-existing respiratory conditions. 2. Early recognition of bronchospasm and prompt administration of appropriate bronchodilator therapy are essential in preventing significant hypoxia. 3. In cases of anesthesia- and intubation-induced bronchospasm, extubation may lead to rapid clinical improvement and facilitate the resolution of airway constriction.

Bougie-assisted External Intubation in a Woman with Complete Tracheostomy Obstruction in Prehospital Care

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Background

Airway management in emergency settings is a critical and challenging aspect of prehospital care, where rapid assessment and intervention can significantly impact outcomes. Bougie guide, a gum-elastic endotracheal tube introducer, is a valuable tool to facilitate the process of external intubation, especially in prehospital care for 'can't intubate, can't oxygenate' (CICO) scenarios. Under such situation, a passage between anterior part of the neck and trachea must be created by tracheostomy or cricothyroidotomy to deliver oxygen and maintain oxygen saturation in the body. While these two methods play important roles of airway management in emergencies, it comes to attention that the bougie-assisted cricothyroidotomy is much more efficient in terms of external intubation especially in patients under CICO situation.

Case Report

A two-person EMS team responded to a 71-year-old woman with shortness of breath caused by tracheostomy obstruction. The team arrived within 6 minutes and found the patient lying in bed with complete airway obstruction, unable to breathe through the tracheostomy. Dried blood and granulation tissue surrounded the tracheostomy site, and the tube had fallen out during routine care. Initial ABC assessment revealed severe hypoxia (SpO2 45%), cyanosis, and rapid pulse (120 bpm). The son, her caregiver, reported the tracheostomy tube had accidentally fallen out and his attempts to reinsert it caused further damage. Emergency measures included suctioning the tracheostomy opening and oxygen supplementation, which slightly improved breathing (SpO2 65%). Due to persistent obstruction, the team performed a bougie-assisted intubation, inserting a 6.5 ID endotracheal tube after widening the opening and administering 50 μg of fentanyl for pain relief. Post-procedure, the patient's airway was secured, breathing stabilized (SpO2 98%, 14 breaths/min), and vital signs normalized (pulse 100 bpm, BP 140/90). She was transported to the ED in stable condition with a patent airway, supported by fire brigade assistance for safe transfer.

Conclusions

This report highlights the importance of airway management in prehospital care, illustrated by a 71-year-old patient with complete airway obstruction due to tracheostomy tube dislodgement. The ABCDE assessment ensured a prioritized response, and bougie-assisted intubation proved valuable in EMS. Notably, the bougie guide reduces ventilation time and complication risks compared to other intubation techniques.

Clinical Case Study of a Patient with Severe Gunshot Spinal Cord Injury

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Background

In Lithuania, 59 assaults with firearms or explosives were recorded in 2019-2023, of which only 2 patients suffered nerve and spinal cord injuries at the level of the neck or thorax. Approximately 31 % of patients with isolated cervical spine trauma may develop neurogenic shock. This is a life-threatening condition characterized by organ hypoperfusion due to impaired control of normal sympathetic vascular tone.

Case Report

A patient with a gunshot wound to the neck was admitted to the emergency department of the University Hospital. Clinical death was observed at the scene of the accident and spontaneous circulation was restored after 2 minutes of advanced life support. Consciousness was assessed as 3 points on the Glasgow Coma Scale (GCS). Detailed examination revealed a gunshot wound to the neck with posterior exit wound, persistent hypotension despite vasopressor treatment and bradycardia. CT and MRI scans showed a C3 spinal fracture, C4 - Th1 epidural hematoma, C2 - 5 spinal cord contusion. Due to unstable hemodynamics and impaired consciousness and in the absence of significant spinal cord compression, conservative treatment was started. In severe spinal cord injury and suspected neurogenic shock, mean arterial pressure was maintained at 80-90 mmHg to ensure adequate spinal cord perfusion. Sedation was continued to reduce the risk of secondary injury. After stabilising hemodynamics, sedation was reduced to assess the state of consciousness for possible neurological damage. Nevertheless, due to the persistent impairment of consciousness (3 points according GCS), a brain CT was performed. Postanoxic lesions, usually due to cerebral anoxia were observed in the images. As the patient's condition deteriorated, mydriasis and anisocoria became apparent. Clinical signs of brain death were assessed, which met the established criteria. However, cerebral angiography showed preserved blood flow in the middle cerebral artery. Unfortunately, death was pronounced on the 12th day of treatment.

Conclusions

Gunshot injuries to the cervical spine are life-threatening traumas, with a mortality rate of 30.7 %. As a result, it is crucial to ensure timely treatment. Pre-hospital care plays a particularly significant role, during which it is important to stabilize the patient's condition to reduce the risk of secondary injury.

Can Pulmonary Embolism Be Overlooked in Elderly Patients with Multiple Comorbidities? A Case Report

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Background

Pulmonary embolism can be a life-threatening medical emergency, requiring a high level of clinical suspicion, which is essential when assessing patients with cardiopulmonary symptoms. It may cause a large spectrum of clinical manifestations characterized by different combinations of respiratory failure and dyspnea, hemodynamic abnormalities and chest pain. It is important to identify patients with significant ongoing risk factors as they are at a higher risk of recurrent conditions. This case report discusses the diagnosis and treatment of pulmonary embolism in patient with multiple comorbidities, highlighting the challenges in diagnosis and the importance of appropriate treatment choices.

Case Report

A 84-year-old woman was admitted to the emergency department by the emergency medical services due to shortness of breath. Vital signs on arrival were notable for tachypnea to 26 BPM, oxygen saturation 80% on room air, blood pressure 177/158 mmHg and auscultation of the lungs revealed congestive heart sounds. The patient has a history of diabetes mellitus type 2, breast CA (undergoing biological therapy), PAH and was treated for pulmonary embolism a year ago. Laboratory tests show elevated inflammatory markers, troponin (162.5 ng/l), and a significant increase in NT-proBNP (28499 ng/l). Only infiltrative changes were observed in the chest radiograph, therefore, to clarify the diagnosis and in case of suspected recurrent PE, CT of the pulmonary artery with intravenous contrast was performed. A very large "saddle" embolus was seen in the pulmonary trunk, along with signs of right heart overload, PAH and significantly larger area of free fluid in the right pleural cavity. Additionally, multiple sclerotic lesions, suggestive of metastases, are found in the visible bones. Diuretics were administered for initial treatment. Due to the patient's unstable condition, recurrent PE and comorbidities it was decided not to apply interventional treatment. Therefore, anticoagulant treatment was started.

Conclusions

The diagnosis of pulmonary embolism can be particularly challenging in patients with multiple comorbidities as their clinical presentation may be masked or confused with symptoms of other illnesses. A combined diagnosis, based on symptoms, imaging and blood tests, along with appropriate treatment, are essential to improving outcomes and reduce mortality.

Chain of Survival: 65 Minutes of CPR with Favorable Neurological Outcome

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Background

Out-of-hospital cardiac arrest (OHCA) remains a leading cause of mortality, with survival rates highly dependent on the effectiveness of the chain of survival. This structured sequence of time-sensitive interventions—including early recognition and emergency activation, immediate bystander cardiopulmonary resuscitation (CPR), rapid defibrillation, advanced cardiac life support (ACLS), and post-resuscitation care —has been shown to significantly improve survival.

Case Report

We present a case report of a 60-year-old male admitted to the hospital following OHCA. The patient experienced chest pain and a burning sensation before collapsing at home, where immediate bystander CPR was initiated. Emergency medical services, alerted by an eyewitness, arrived promptly and initiated ACLS, identifying ventricular fibrillation (VF). Prehospital CPR, including multiple defibrillations and mechanical chest compressions, was performed for 65 minutes. During this time, two brief episodes of ROSC were achieved. The decision was made to transport the patient to the emergency department (ED) with ongoing CPR. After the third episode of ROSC in the ED, electrocardiography revealed ST-segment elevation myocardial infarction, prompting transfer to the catheterization lab for a percutaneous coronary intervention with stent implantation in the right coronary artery. After a successful intervention, the patient was admitted to the ICU with cardiopulmonary failure and signs of renal dysfunction. Due to signs of cardiogenic shock, including a rapid ventricular rate with atrial fibrillation and reduced biventricular ejection fraction, cardioversion was performed. With improving cardiac output, vasopressors were withheld, and gradual improvement in mental status enabled successful extubation. Post-cardiac arrest care, including close monitoring and rehabilitation, was continued in the cardiology department. During the remaining hospital stay, clinical improvement continued, with decrease of inflammatory markers, normalization of renal function, and effective rehabilitation. The patient exhibited adequate oral intake and no significant neuropsychiatric impairments. He was discharged home with a favorable neurological outcome.

Conclusions

This case challenges the traditional prognosis of prolonged resuscitation in out-of-hospital cardiac arrest, demonstrating that a well-executed Chain of Survival can lead to a favorable neurological outcome even after 65 minutes of CPR.

Face, Ocular and Respiratory Tract Exposure to Ammonia Solution: A Case Report.

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Background

Anhydrous ammonia, either in liquid or gaseous form, is a highly corrosive and dangerous chemical compound that, depending on the route and duration of exposure, causes significant thermal injury to the surrounding tissues. Ammonia exposure incidents are extremely rare and therefore in the absence of a specific treatment against its toxicity, primary supportive and systemic treatment is used.

Case Report

A patient was admitted to the intensive care unit in need of open airway support due to chemical (caused by ammonia water) burns of the respiratory tract, face, mouth and eyes. According to the patients' history, he sustained a work-related injury, during which a jet of water hit him directly in the face and mouth. With persistent pain, shortness of breath and difficulty in swallowing, the patient was presented to the emergency department. On initial examination, a first-degree facial burn, redness of the sclerae, a swollen red tongue, reddening of the mouth arches and increased salivation were observed. The red trauma team was activated after assessment of respiratory tract burns. Tracheal intubation was performed under video laryngoscope control, during which observations of red and swollen epiglottis, surrounding tissues, vocal folds were noted. Given the risk of airway obstruction, the airway was maintained open with an intubation tube and mechanical lung ventilation was initiated. Ophthalmologist's consultation revealed conjunctival redness, prominent vascular network and extensive corneal epithelial defects. Conservative treatment was prescribed to suppress inflammation and prevent infection. On the fourth day of treatment, the airway was visualised with a video laryngoscope to plan extubating - the vocal fold and mucosa were oedematous and covered with whitish plaque. These findings prompted a decision to delay extubation. Dexamethasone was administered for the treatment of airway oedema. The following day, positive dynamics were observed, and the patient was successfully extubated.

Conclusions

Chemical burns of the face and mouth, especially those caused by strong alkalis such as ammonia water, can cause life-threatening airway oedema and obstruction leading to lethal outcome. Early diagnosis and timely mechanical airway support as well as complex treatment are therefore crucial.

Massive Pulmonary Embolism as a Complication in the Management of Subarachnoid Hemorrhage in a 40-Year-Old Female: A Case Study

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Background

Venous thromboembolism (VTE) prophylaxis in patients following catastrophic subarachnoid hemorrhage (SAH) presents a significant clinical challenge. These patients are at elevated risk of VTE due to prolonged immobility and bed confinement, yet they simultaneously face a substantial risk of rebleeding and worsened neurological outcomes.

Case Report

A 40-year-old woman with no past medical history presented to the emergency department with a sudden, severe headache followed by rapid loss of consciousness. Neurological exam revealed anisocoria, extensor posturing, and a positive Babinski sign, with a Glasgow Coma Scale score of 3. CT scan revealed a Fisher grade 4 SAH due to a ruptured right middle cerebral artery aneurysm. The patient underwent craniotomy for hematoma evacuation, followed by endovascular aneurysm embolization. Postoperatively, due to ongoing poor neurological performance and failure to wean from mechanical ventilation, a percutaneous tracheostomy was performed in the ICU. Days later, the patient developed tachypnea with worsening ventilatory parameters. Point-of-care ultrasound revealed right ventricular enlargement and a non-compressible left popliteal vein, raising strong suspicion for deep vein thrombosis (DVT). A Wells score of 4.5 indicated an intermediate risk for pulmonary embolism (PE). Subsequent CT angiography confirmed massive PE with thrombotic occlusions in the right pulmonary artery and its branches. The patient experienced hemodynamic instability, with episodes of tachycardia and transient hypotension requiring intermittent noradrenaline infusions. Given these findings, anticoagulation with unfractionated heparin was initiated, with bolus dosing and continuous infusion, titrated based on activated partial thromboplastin time (APTT) monitoring. In consultation with cardiology and neurosurgery, the anticoagulation strategy was reassessed, leading to a transition to enoxaparin. Over two weeks, the patient showed significant improvement, becoming alert, hemodynamically stable, and demonstrating neurological recovery. She was transferred to the neurosurgery department for ongoing anticoagulation and neurological rehabilitation.

Conclusions

Managing patients with SAH who require intensive anticoagulation necessitates a careful assessment of the risk of rebleeding versus the need to treat life-threatening thrombotic events. A multidisciplinary approach and individualized treatment strategies are essential for improving outcomes in critically ill patients.

Refractory Electrical Storm in a Critically Ill Patient: Challenges in Management

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Background

Electrical storm (ES) is a life-threatening cardiac emergency defined as ≥3 episodes of ventricular tachycardia (VT) or fibrillation (VF) in 24 hours, with high mortality. It occurs in patients with structural heart disease, arrhythmogenic syndromes, autonomic dysfunction or ischemia. Management requires multidisciplinary approach, combining antiarrhythmics, hemodynamic support, and invasive treatment.

Case Report

A 50-year-old man developed ES secondary to multiple ventricular ectopic beats with a short R-on-T coupling interval. His condition started with out-of-hospital cardiac arrest due to VF, successfully resuscitated with bystander cardiopulmonary resuscitation and an automated external defibrillator shock, restoring sinus rhythm. ECG showed ST-Elevation Myocardial Infarction, managed with stenting of the first marginal branch. Upon ICU admission, he was mechanically ventilated and required noradrenaline. Echocardiography revealed reduced ejection fraction with akinesis of the apical, mid-anterior, and lateral wall segments. On day 2, he suffered Torsades de Pointes cardiac arrest, requiring 3 defibrillations, 4g of MgSO, and 300mg of amiodarone, leading to the return of spontaneous circulation. Follow-up angiography ruled out stent thrombosis. During transport, VF recurred, requiring 3 defibrillations and 150mg of amiodarone. Repeat coronarography confirmed right coronary artery patency, but another VF episode occurred, successfully terminated with a single defibrillation. After returning from the catheterization lab, the patient experienced 8 cardiac arrests requiring series of 1–3 defibrillation. In the next ICU days, lidocaine and propranolol were initiated, and endocavitary electrode was placed for possible overdrive pacing due to recurrent VF. On ICU day 11, catheter ablation was performed, stabilizing the arrhythmia. Neurological examination revealed minimal consciousness state due to anoxic-ischemic encephalopathy. Hemodynamically stable, ventilated via tracheostomy and receiving nutrition via PEG, the patient was later transferred to hospice care.

Conclusions

This case of recurrent cardiac arrest with over 20 defibrillations highlights the complexity of electrical storm. While catheter ablation controlled the arrhythmia, prolonged resuscitation led to severe neurological impairment despite optimal medical treatment. This underscores the critical need for a multidisciplinary approach and timely escalation of treatment in managing refractory ventricular arrhythmias.

Silent Threat - A Case of Sudden Fatal Aortic Dissection in a Young, Healthy Runner

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Background

Sudden death occurs abruptly and is difficult to elucidate since it happens in ordinary circumstances to an apparently healthy person with no known pathology. Acute Aortic Dissection is an emergency condition that causes sudden death in up to 50% of individuals. Predisposing risk factors include severe hypertension, atherosclerosis, preexisting aortic aneurysm and genetic disorders – all of these can be identified or at least suspected through routine investigations, thus allowing close monitoring and preventive strategies against catastrophic events.

Case Report

A 36-year-old male patient, with ectomorph body type and no significant medical history, was admitted to the hospital complaining of severe epigastric pain, vomiting, shortness of breath and dizziness. Physical examination revealed cold, pale skin and interarm systolic blood pressure differential of 60 mmHg. During his running session that night, the patient had experienced sudden fatigue, dyspnea and tearing chest pain, forcing him to stop his training. Owing to symptoms exacerbation (lightheadedness, abdominal discomfort and lower limb paresthesia), he promptly sought medical assistance. Echocardiography revealed an intimal flap corresponding to DeBakey I Aortic Dissection, along with pericardial hematoma. Considering these, the acute limb ischemia and progressive worsening of condition, the patient was transferred to the Cardiovascular Surgery department, where extraction of 500 ml blood from the pericardial cavity, together with ascending aorta, aortic cross and supra-aortic artery trunk replacement using Dacron grafts were performed. The widespread dissection (reaching both iliac arteries), along with the significant blood loss that could not be managed despite multiple transfusions and hemostasis attempts, caused the patient's death. The suspect circumstances demanded postmortem examination, which attested a nontraumatic death caused by massive internal hemorrhage. No medical wrongdoing was demonstrated.

Conclusions

Due to unexpected death of a young, apparently healthy individual, genetic alterations of the connective tissue (Marfan and Ehlers-Danlos Syndromes) are considered. Thereby, this case report emphasizes the importance of medical screening or routine examinations meant to identify congenital disorders or major risk factors and prevent such tragic events. It also suggests that early diagnosis and intervention do not always guarantee a patient's survival.

Tracheal Perforation Following Endotracheal Intubation – A Case Report

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Background

Tracheal perforation is a rare but potentially life-threatening complication of endotracheal intubation, associated with subcutaneous emphysema, pneumothorax, and respiratory failure. While typically resulting from mechanical trauma to the membranous wall of the trachea, its symptoms may manifest only after extubation. Timely diagnosis and appropriate intervention are critical for optimizing patient outcomes.

Case Report

A 53-year-old female was admitted for a lesion in the epiglottic vallecula. Following evaluation, she underwent microlaryngoscopy under general anesthesia with endotracheal intubation. The procedure was uneventful, and she was extubated in stable condition. Approximately 10 minutes post-extubation, while in the postoperative ward, the patient experienced dyspnea despite of an SpO2 of 100% on passive oxygen therapy. Examination revealed progressive subcutaneous emphysema, neck swelling, tachypnea, and respiratory distress. Urgent reintubation was performed due to worsening symptoms. Laryngoscopic assessment identified significant laryngeal edema (Cormack-Lehane grade 3). Reintubation was performed using a Bougie guide, with tube positioning confirmed by capnography and auscultation. Urgent CT of the neck and chest revealed a tracheal perforation (5x8 mm, 43 mm above the carina) with extensive subcutaneous and mediastinal emphysema. During repositioning of the tube, a left-sided pneumothorax (1.5 cm) developed. Following patient stabilization, a conservative management approach was adopted, with continuous airway monitoring. Serial imaging demonstrated gradual resolution of the pneumothorax and subcutaneous emphysema. The patient was successfully extubated the following day without immediate complications. However, in the subsequent days, recurrent subcutaneous emphysema and mild deterioration in respiratory parameters were observed. A follow-up chest X-ray ruled out new pathological findings, and progressive clinical improvement enabled the patient's discharge for continued outpatient surveillance.

Conclusions

Tracheal perforation secondary to endotracheal intubation remains a rare but serious complication that necessitates prompt recognition and intervention. Early symptom identification, airway stabilization, and close monitoring are key to reducing morbidity. It is crucial to distinguish tracheal perforation as a complication of intubation rather than the surgical procedure itself, emphasizing the need for heightened awareness in perioperative airway management.

Endocrinology &Diabetes Session

Session Coordinators:
Joanna Burkiewicz
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Assessment of the Expression of Selected Cellular Senescence Genes in Subcutaneous Adipose Tissue and their Relationship to Insulin Resistance and Metabolic Syndrome in Individuals with Obesity

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Introduction

Obesity is the plague of our times. Body fat accumulation is a key factor in causing insulin resistance and the development of metabolic syndrome (MS). An important role in the development of these complications may be played by impaired adipogenesis - among other things, the inability of adipose tissue precursor cells to form new adipocytes. Recent studies indicate that fat cell senescence may be linked to impaired adipogenesis.

Aim of the study

The study aimed to evaluate the expression of selected genes associated with subcutaneous adipose tissue (SAT) senescence in individuals with obesity, with and without MS.

Materials and methods

The study included 28 patients (18-50 years) qualified for elective surgeries: 8 normal-weight individuals without metabolic disorders and 20 individuals with obesity (with BMI 42±3,9 kg/m2): 12 with metabolic syndrome (MS+) and 8 without metabolic syndrome (MS-). Anthropometric measurements were performed and blood was drawn to determine the concentrations of selected biochemical parameters. We used obtained results to calculate the indirect indicators of insulin sensitivity HOMA-IR and FLAIS. During procedures, 2 g of abdominal SAT were taken from all individuals. Gene expression analysis of selected markers of cellular senescence (TP53, CDKN1A, CDKN2A, GLB1), genes related to adipogenesis (CEBPA, CEBPB, PPARG, ADIPOQ) and insulin signaling (IRS1, IRS2, AKT2, SLC2A4) was then performed.

Results

Insulin sensitivity assessed by FLAIS and adiponectin concentration were statistically lower in the group with obesity (all $p<0.003$). In subjects with obesity fasting glucose level, C-peptide, triglycerides concentrations and HOMA-IR were significantly higher in MS+ individuals compared to MS- individuals (all $p<0.05$). In the SAT we showed higher expression of CDKN1A, CDKN2A, GLB1 (all $p<0.003$) and lower expression of CEBPA, PPARG, SLC2A4 (all $p<0.05$) in individuals with obesity compared to the normal-weight group. In the SAT of MS+ individuals we showed higher expression of TP53 and lower expression of CEBPA, PPARG (all $p<0,05$) compared to MS- subjects. In the whole study population, expression of CDKN1A, GLB1 in the SAT negatively correlated with adiponectin levels, FLAIS and SLC2A4 expression in the SAT (all $p<0,05$) and positively correlated with C-peptide and triglyceride levels (all $p<0,05$).

Conclusions

The results suggest that processes related to cellular senescence in SAT may be associated with impaired adipogenesis and the development of metabolic disorders in human obesity.

Genetic and Clinical Characteristics of Patients with Congenital Adrenal Hyperplasia Diagnosed in Newborn Screening – One Center Experience

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Introduction

Congenital adrenal hyperplasia (CAH) is a rare autosomal recessive disorder. The pathophysiology of the disease is characterized by an enzymatic block that impairs cortisol synthesis in the adrenal cortex, most commonly involving 21-hydroxylase, encoded by the CYP21 gene.

Aim of the study

The objective of this study was to analyze the types of pathogenic variants in the CYP21A2 gene present in a group of children with congenital adrenal hyperplasia under the care of our Clinic, and to assess the correlation between specific pathogenic variants and the clinical course of the disease.

Materials and methods

The study included all patients with CAH from our Clinic, diagnosed since the initiation of newborn screening for CAH, in whom the pathogenic variant of the CYP21A2 gene was identified, totaling 9 patients. The type of pathogenic variant was correlated with clinical symptoms and biochemical parameters (17-hydroxyprogesterone, androstenedione, 21-deoxycortisol). Siblings carrying the same pathogenic variant were considered as a single case in the analysis.

Results

Among the studied patients, the most frequent mutation was Q318X (Group A) and I2G mutation (Group B), and most often they were associated with a large deletion (exons 1–7) in the heterozygous state. All patients presented with the salt-wasting form of CAH. The male-to-female ratio was 1:2 in Group A and 1:1 in Group B.

Conclusions

The analysis results indicate significant genetic variation between our center's group (16.67% of Q318X variant, 22.22% of I2G variant, and 44.44% of extensive deletion) and the European-wide patient group (4.8% of Q318X variant, 28.1% of I2G variant, and 27.17% of extensive deletion). The correlation between the pathogenic variant, the degree of 21-hydroxylase deficiency, and the clinical form of the disease showed a strong association and is consistent with findings from across Europe.

Impact of Mitotane Therapy on Adrenal Function in Adrenocortical Carcinoma Patients: Follow-Up Study

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Introduction

Adrenocortical carcinoma (ACC) is a rare endocrine malignancy of the adrenal gland, with an incidence of 0.7–2 cases per million annually and an unfavorable prognosis. Radical surgery remains the only curative treatment, while new therapies are under active investigation. Mitotane is the only pharmacological option for both palliative and adjuvant treatment of ACC due to its relatively selective cytotoxic effects on adrenocortical cells. Consequently, it almost invariably causes adrenal insufficiency and disrupts the hypothalamic-pituitary-adrenal (HPA) axis.

Aim of the study

The objective of this study is to assess whether adrenal insufficiency persists after at least 12 months of mitotane treatment in ACC patients hospitalized in the Department of Internal Medicine and Endocrinology at the Medical University of Warsaw. Adrenal recovery was defined as the primary outcome for the analysis.

Materials and methods

This study is based on a retrospective review of patient records from the Department of Internal Medicine and Endocrinology at the Medical University of Warsaw, covering the period from 2015 to 2025. The assessment of adrenal recovery was based on laboratory values and detailed clinical information documented in the records.

Results

Within the specified timeframe, 38 patients diagnosed with ACC received treatment at the Department of Internal Medicine and Endocrinology, with 21 of them undergoing mitotane treatment for over 12 months. Mitotane therapy caused adrenal insufficiency in all treated patients, and in the majority, complete or partial recovery of adrenal function was observed.

Conclusions

The findings align with existing research, although no predictive factors for complete adrenal recovery were identified. Overall, our results suggest that adrenal function recovers in the vast majority of patients. However, it is crucial to manage these patients in highly specialized centers and educate them on the glucocorticoid reduction process.

Is it Possible to Predict the Long-term Surgical Outcomes of Primary Hyperparathyroidism in Patients with MEN-1 Syndrome?

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Introduction

MEN1 is a rare hereditary disorder caused by MEN1 gene mutations often presenting as primary hyperparathyroidism (PHPT).The gold standard surgical treatment, subtotal parathyroidectomy (SPTX), involves removing 3 to 3.5 parathyroid glands. Intraoperative parathyroid hormone (iPTH) measurements confirm successful resection, defined as a >50% drop from baseline. Recurrence rates remain high, and no reliable markers predict long-term outcomes.

Aim of the study

To determine whether operative and postoperative parameters can serve as predictive markers for disease recurrence, improving risk stratification and postoperative management.

Materials and methods

This study included MEN1-PHPT patients who underwent parathyroidectomy at an academic center between 2010 and 2025. Eligibility criteria were (1) genetically or clinically confirmed MEN1 diagnosis, (2) biochemical confirmation of PHPT, and (3) at least six months of follow-up. Disease recurrence, defined as the reappearance of symptoms > 6 months postoperatively, was the primary endpoint and assessed through routine follow-up. The diagnostic value of 1-day postoperative iPTH was evaluated using receiver operating characteristic (ROC) curves. Due to the non-normal distribution of PTH (Shapiro-Wilk test), the Mann-Whitney U test was applied to compare iPTH and CaT levels between recurrence and non-recurrence groups.

Results

Among 29 patients, MEN1 was genetically confirmed in 23 (79%) and diagnosed clinically in 6 (21%). The median age at MEN1-related surgery was 40.3 years (range: 15.7–63.1). Recurrent HPT occurred in 7 (24%) patients, while 4 (13%) developed permanent hypoparathyroidism with partial recovery. A 1-day postoperative iPTH level ≥18.94 pmol/L significantly predicted recurrence (p=0.0006). CaT level comparisons yielded a p-value of 0.0178, indicating statistical significance at α=0.05 but not at α=0.01.

Conclusions

Surgical treatment in MEN1 aims to normalize calcium-phosphate homeostasis while minimizing hypoparathyroidism risk. Our findings suggest that 1-day postoperative iPTH and CaT levels may serve as predictors of long-term outcomes. iPTH-based risk stratification could aid in identifying patients requiring closer follow-up and personalized care. Larger prospective studies are needed to validate iPTH and CaT as markers for predicting recurrence in MEN1-associated PHPT.

The Effect of Liraglutide on Body Composition, Insulin Sensitivity and Glucose Metabolism in Overweight or Obese Individuals

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Introduction

Excess body mass is related to insulin resistance (IR) in skeletal muscle - reduced muscle glucose uptake, glycogen synthesis and lipid oxidation. Metabolic inflexibility is a reduced ability of skeletal muscle to switch from lipid to glucose oxidation and lower non-oxidative glucose metabolism (NOGM) in response to insulin. Research shows that liraglutide effectively promotes weight loss and improves indirect indexes of IR. However, its effects on body composition, glucose metabolism and insulin sensitivity (IS) are not fully understood.

Aim of the study

To assess the liraglutide treatment impact on clamp IS, resting energy expenditure (REE), fat and lean mass, metabolic flexibility (ΔRQ), whole-body glucose and lipid oxidation and NOGM in overweight or obese individuals.

Materials and methods

The 57 non-diabetic volunteers with overweight/obesity were randomized to 12 weeks of liraglutide treatment with dietary intervention (group D+L; n=30) or 12-week dietary intervention only (group D; n=27). Before and after intervention, all participants underwent anthropometric measurements, hyperinsulinemic euglycemic clamp (HEC), indirect calorimetry, and body composition analysis with dual-energy X-ray absorptiometry. IS was assessed by HEC. Whole-body glucose and lipid oxidation rates and REE were measured with indirect calorimetry. NOGM was measured as the difference between total glucose metabolism and oxidative metabolism in hyperinsulinemia during HEC. ΔRQ was measured as a change in respiratory quotient in response to insulin.

Results

The study groups did not differ in age, baseline weight, body composition, or IS assessed by HEC (all $p>0.05$). After 12 weeks of intervention, a significant reduction in body weight in both groups (both $p<0.001$) and improvement in IS (both $p=0.011$) was observed. We noticed a significant decrease in total fat mass and regional fat mass in both studied groups (all $p<0.05$). A reduction in total lean mass and appendicular lean mass was higher in D+L ($p=0.018$; $p=0.016$, respectively). The decline of visceral adipose tissue mass and subcutaneous adipose tissue mass was similar in both groups. After intervention, glucose and lipid oxidation remained unaffected in both studied groups but liraglutide treatment increased NOGM ($p=0.036$). There was no difference in ΔRQ in both groups. REE lowered significantly in the D+L group after intervention ($p=0.014$).

Conclusions

Liraglutide treatment improves IS measured by HEC, possibly due to increased NOGM in insulin-stimulated conditions.

The Effect of Radioiodine Therapy in Patients with Non-toxic Goitre after Pre-treatment with a Single 0.05 mg Dose of Recombinant Human Thyroid Stimulating Hormone (rhTSH)

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Introduction

Radioiodine therapy (RIT) became a more advantageous approach for treating patients with non-toxic goiter, compared to surgery, which carries risks including recurrent laryngeal nerve palsy, hypoparathyroidism and levothyroxine therapy which lowers goiter volume in a limited number of patients. Persistently low thyroid radioactive iodine uptake (RAIU) can reduce RIT's effectiveness. Recombinant human TSH (rhTSH) was introduced to increase RIT efficiency, allowing for the use of lower 131-I activities.

Aim of the study

The aim of our study was to evaluate the effectiveness of RIT in reducing thyroid volume following pre-treatment with rhTSH in patients with non-toxic goiter and low RAIU.

Materials and methods

We treated 42 patients aged 33-75 (32 females,10 males). The initial 24-hour RAIU ranged from 7% to 20%. Thyroid volume varied between 39 ml and 125 ml. All patients had normal serum TSH, fT3 and fT4 levels . A fine needle aspiration biopsy was performed to rule out malignancy, according to the Bethesda scale. Each patient received a single 0.05 mg intramuscular dose of rhTSH. Approximately 24h later, a diagnostic dose of 131-I was administered, and RAIU was measured at 24, 48, and 72 hours. The therapeutic dose of 131-I was given on the third day following rhTSH administration. Serum levels of TSH, fT4, and fT3 were assessed 24, 72 hours after rhTSH and on the third day post-RIT. The activity dose was determined using Marinelli's formula with values from 400 to 800 MBq with absorbed doses between 160 and 280 Gy. Follow up assessment of serum fT4, fT3 and TSH was conducted every 6 weeks for a year post-RIT. Thyroid ultrasonography and scans were performed before and one year after RIT.

Results

RAIU significantly increased from 11,7 to 56% following rhTSH administration. Serum TSH increased from 1,2±0,7 to the peak of 11,5±3,42, 24 hours post-rhTSH injection. 12 months after RIT, average thyroid volume reduction was 42%. Euthyroidism was maintained in 93% of the patients, while 7% developed hypothyroidism. The compressive symptoms such as dyspnoe, dysphagia, hoarseness, present before treatment, were resolved.

Conclusions

A single dose of rhTSH significantly increases RAIU up to 56%, reducing the required therapeutic dose of 131-I. Administration of rhTSH is well tolerated and appears to be an optimal approach for patients with initially low RAIU, enhancing RIT effectiveness while minimizing exposure to absorbed doses of ionizing radiation.

A Rare Complication of Thrombolysis: Acute Pituitary Apoplexy and its Clinical Implications

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Background

Pituitary apoplexy is an acute medical emergency resulting from hemorrhage or ischemia within a pituitary tumor, leading to its rapid enlargement, mass effect, and endocrine dysfunction. While numerous cases of pituitary apoplexy have been described in the medical literature, its occurrence following thrombolytic therapy is rarely reported. This case illustrates hemorrhagic infarction of a previously undiagnosed pituitary macroadenoma following targeted thrombolysis, resulting in severe neurological and endocrine complications.

Case Report

A 72-year-old male was admitted to the Vascular Surgery Department due to worsening chronic ischemia of the lower limb. The patient underwent targeted thrombolysis and angioplasty of a stenotic popliteal artery. During the perioperative period, he developed bilateral ptosis and oculomotor muscle weakness. Head computed tomography revealed a sellar mass compressing the left oculomotor and abducens nerves. Magnetic resonance imaging of the pituitary confirmed the presence of a macroadenoma infiltrating both cavernous sinuses, segmental deformation of the optic nerves, and elevation of the optic chiasm. During hospitalization, the patient experienced a significant drop in blood pressure to 79/50 mmHg, prompting immediate intravenous hydrocortisone administration, which led to clinical improvement. The patient was promptly transferred to the Endocrinology Department for further evaluation. After ruling out other acute causes, the deterioration was attributed to corticotropic axis failure, leading to an adrenal crisis. Following clinical stabilization and neurosurgical consultation, the patient underwent planned partial transsphenoidal tumor resection under steroid coverage. Postoperatively, no abnormalities in the function of the remaining pituitary tropic axes were observed. The patient continues to receive endocrinological follow-up.

Conclusions

Hemorrhagic infarction of a pituitary tumor following thrombolytic therapy is a rare but potentially life-threatening complication requiring prompt diagnosis and an interdisciplinary therapeutic approach. Clinical manifestations may include acute neurological deficits and pituitary axis failure, necessitating immediate initiation of hydrocortisone therapy. In the context of anticoagulation and thrombolytic therapy, individualized risk assessment for hemorrhagic transformation of a pituitary tumor should be considered, particularly in patients with a pre-existing diagnosis.

Amiodarone-induced Thyrotoxicosis Type 2 as a Consequence of Treatment of Paroxysmal Atrial Fibrillation with Tachyarrhythmia.

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Background

Amiodarone may cause hypothyroidism or thyrotoxicosis. Amiodarone-induced thyrotoxicosis (AIT) type 2 is characterized by excessive release of thyroid hormones due to the direct toxic effect of amiodarone on thyrocytes. Prednisone monotherapy is usually sufficient for treatment.

Case Report

A 52-year-old man was admitted to the Endocrinology Department due to treatment-resistant AIT type 2. The patient had ischemic cardiomyopathy with LVEF 35%, NYHA III circulatory failure, chronic renal failure, and paroxysmal atrial fibrillation with tachyarrhythmia. He underwent pulmonary vein isolation by cryoballoon ablation and cardiac surgery epicardial ablation with pulmonary vein isolation. On admission, the examination revealed right-sided facial nerve palsy, facial redness and very dry, scaly skin with ichthyosis. The ECG showed atrial flutter with a heart rate of 120/min. Laboratory tests showed significantly increased concentrations of free thyroid hormones. After treatment with dexamethasone, thiamazole, lithium, propranolol, magnesium and sodium perchlorate, sinus rhythm returned and thyroid hormone levels normalized. The patient was discharged home, but was readmitted a month later due to increasing concentrations of free thyroid hormones. Due to the preferred method of treatment with radioiodine, it was decided to discontinue thiamazole. After a week, iodine scintigraphy was performed, which described iodine uptake at 3.9%, which ruled out radioiodine treatment. Qualification for surgical treatment for life-saving indications was initiated. Improvement in thyroid metabolism parameters was achieved. A date for surgery was set and the patient was discharged home with recommendations for monitoring at the endocrinology clinic. Unfortunately, shortly afterwards, information was obtained about the patient's death at home.

Conclusions

Amiodarone is an effective drug used to control the heart rate in atrial fibrillation and flutter, but thyroid parameters should be monitored during its use. Resistance to steroid therapy in type 2 AIT prompts the use of other drugs and consideration of radical treatment with radioiodine or thyroid surgery.

Fatal Hyperglycemia after Growth Hormone Intake for Weight Loss

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Background

Diabetic ketoacidosis (DKA) is a severe complication of diabetes mellitus (DM). The highest level of hyperglycemia - 2,656 mg/dL was recorded in patient with type 1 DM. Such extreme levels have not been reported in iatrogenic diabetes. Growth hormone (GH) metabolic action leads to hyperglycemia, lipolysis with increased circulating free fatty acids. While low-dose GH therapy (0,15-0,3 mg/day) can reduce body fat, GH overdose impairs glucose tolerance and increase diabetes risk.

Case Report

A 59-year-old man with severe ketoacidosis and extreme hyperglycemia (2081 mg/dL, 115,6 mmol/L) secondary to iatrogenic DM induced by growth hormone intake was admitted to the Emergency Department after 6 days of vomiting. He reported taking high doses of growth hormone (12 mg every two days for six weeks) for weight loss and consuming 6–10 liters of Coca-Cola daily during the vomiting episodes. Initial blood glucose readings were immeasurable with the value of 2081mg/dL achieved after a series of sample dilutions. Venous blood gas analysis showed severe metabolic derangements: pH 7.074, Na+ 118 mmol/L, K+ 2.4 mmol/L, HCO3- 7.9 mmol/L, lactate 5.9 mmol/L and 393 mmol/kgH2O. The patient was transferred to the ICU due to persistent acidosis and multiple organ failure, anuria, paralytic ileus, sinus tachycardia (130/min), hypotension (BP 60/30 mmHg), and profound metabolic acidosis (pH 6.89, HCO 9.1 mmol/L, anion gap 20 mmol/L). Despite intensive management including mechanical ventilation, vasopressors administration, insulin infusion with glycemia reduction (~100 mg/dL/hour), continuous venovenous hemodialysis, fluid resuscitation and electrolyte supplementation; metabolic acidosis and hemodynamic instability persisted. The patient's condition deteriorated, culminating in cardiac arrest and death after 12 hours of ICU stay.

Conclusions

This case highlights the potential dangers of off-label growth hormone use and iatrogenic diabetes mellitus. Early recognition and aggressive management of such complications are essential though outcomes may remain poor in cases of profound metabolic derangements.

Hidden in Plain Sight: MPNST as the First Clue to Undiagnosed NF1

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Background

MPNST is a rare malignant tumor originating from peripheral nerve sheath cells. The primary treatment for MPNST involves radical surgical resection, often complemented by adjuvant radiotherapy. The main risk factor for this condition is neurofibromatosis type 1 (NF1), an autosomal dominantly inherited genetic disorder.

Case Report

The case involves a 25-year-old patient with MPNST located in the subcutaneous tissue of the chin. The patient underwent three surgical resections of the tumor, initially in 2011, then in 2018 and 2019 after local recurrence. Postoperative brachytherapy was administered to the surgical site. The MPNST diagnosis led to a comprehensive internal medicine and endocrinology checkup for NF1. Physical examination revealed previously undiagnosed characteristic skin lesions, including café-au-lait spots, multiple neurofibromas on the trunk, and axillary freckling. In addition, osteopenia and tooth decay were diagnosed. A consultation at a genetic counseling center confirmed the presence of one allele of the pathogenic NF1 gene. Due to the possibility of endocrine system tumors co-occurring in the course of NF1 syndrome, the patient was ruled out for pheochromocytoma and primary hyperparathyroidism. A panel of hormonal tests was also performed. Attention was drawn to slightly elevated FT3 and FT4 levels without accompanying TSH suppression. Due to the persistent trend, the patient remains under observation for TSH-oma and is awaiting pituitary MRI.

Conclusions

Early diagnosis and timely medical intervention are crucial for preventing complications and improving the quality of life of NF1 patients and their families. Comprehensive, multidisciplinary care is essential, encompassing oncological treatment, endocrine monitoring, and management of associated symptoms.

Hormonal and Gonadotropic Dysfunction Following Chronic Testosterone and rhGH Use: A Case Report

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Background

Testosterone, an anabolic-androgenic steroid (AAS) is responsible for the development of primary and secondary sexual characteristics. Beyond its physiological role, it is used in replacement therapy for male hypogonadism. However, an increasing number of men use AAS for non-medical purposes to enhance physical performance and improve body aesthetics.

Case Report

A 37-year-old man with no history of chronic diseases was admitted to the Intensive Cardiac Care Unit due to a two-day episode of chest pain exacerbated by respiration. He had been chronically using testosterone and recombinant human growth hormone (rhGH). Echocardiography revealed an ejection fraction of 40% and hypokinetic areas in the apex and inferior wall. Magnetic resonance imaging demonstrated biventricular systolic dysfunction and intramyocardial fibrosis characteristic of cardiomyopathy. Coronary angiography did not reveal significant atherosclerotic changes in the coronary arteries. Laboratory tests revealed polycythemia (hemoglobin: 17.9 g/dL, hematocrit: 54.9%), elevated testosterone (41.10 nmol/L [8,33-30,19]) with suppressed gonadotropins, and increased IGF-1 level: 357.30 ng/mL [83-238]. The patient was discharged from the Cardiology Department in stable condition and admitted to the Endocrinology Department for further evaluation. To prevent testosterone deficiency syndrome transdermal testosterone gel was temporary implemented. In order to attempt to restore gonadotropic axis function, clomiphene and anastrozole were initiated. Follow-up laboratory tests during the following months of therapy showed normalization of erythrocyte parameters and gonadotropin levels. The treatment resulted in significant improvement in semen parameters. However, despite almost a year of therapy and additional administration of human chorionic gonadotropin, no satisfactory increase in testosterone concentration was achieved. Due to the significant deterioration of metabolic parameters and symptoms of testosterone deficiency syndrome as well as the patient's lack of procreation plans, it was decided to implement testosterone replacement therapy.

Conclusions

The non-medical use of AAS and rhGH led to multi-organ complications including cardiomyopathy, myocarditis, and irreversible gonadotropic axis dysfunction. Although the patient's cardiac symptoms resolved, he requires lifelong hormone replacement therapy, and the endocrine consequences will significantly impact his quality of life.

Patient with Unexplained Episodes of Hypoglycemia

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Background

Münchhausen syndrome, is a disorder in which physical symptoms are intentionally induced to give the appearance of a “sick patient”. Such cases are often a medical mystery to healthcare workers due to inconsistencies between the clinical picture and the results of laboratory tests or imaging studies

Case Report

A 43-year-old female patient after bariatric surgery presented to the Department of Internal Medicine due to repeated drops in blood glucose to 40-50mg/dl for about a month, accompanied by symptoms of neuroglycopenia, despite not taking insulins and antidiabetic drugs. During a previous hospitalization pancreatic lesion with a diameter of 2cm was found on ultrasound, which was not confirmed on repeated ultrasound and abdominal MR imaging. It was assumed that recurrent states of hypoglycemia are a consequence of bariatric treatment - dumping syndrome. Treatment with acarbose, diazoxide, calcium channel inhibitor and somatostatin in a high daily dose achieved a significant improvement in the clinical condition, and the patient was qualified for surgery to modify the created intestinal anastomosis. Due to repeated severe episodes of hypoglycemia with failure to remember events, the patient was admitted to the clinic for a second time. Another attempt was made to rule out the presence of a NET pancreatic tumor. PET scan was ordered and did not visualize oncologically suspicious pancreatic lesions. Attention was drawn to low glycemic values accompanied by high insulin concentrations with low C-peptide values, which could indicate exogenous insulin administration by the patient. A search was made of the patient's cabinet, where a partially used pen with rapid-acting insulin was found. The patient was consulted psychiatrically and due to the suspicion of Münchhausen syndrome, she was referred for observation at the psychiatric hospital.

Conclusions

Diagnosis of Münchhausen syndrome is very difficult and requires long-term observation of the patient and multiple interpretations of the results, but is very important because of the high risk the patient poses to himself or herself. In the described case report, the clinical picture initially suggested dumping syndrome and later insulinoma, which, however, did not correlate with laboratory results (low peptide-C) and imaging studies (no pancreatic changes). Such abnormalities suggested the possibility of self-induced symptoms and thus it was possible to make a correct diagnosis.

Pituitary Acrogigantism from diagnosis to effective treatment

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Background

Pituitary acrogigantism is a very rare endocrine disease that is caused by chronic growth hormone (GH) and its mediator, insulin-like growth factor 1 (IGF-1) axis excess, that begins during childhood and adolescence. As such, it represents one of the most severe manifestations of acromegaly. In most cases, acrogigantism is caused by a pituitary adenoma. The disease leads to numerous complications, including metabolic, cardiovascular, and oncological issues. Despite advances in diagnosis and treatment, delays in recognition remain a challenge. Treatment of pituitary acrogigantism involves a multimodal approach, combining surgical, pharmacological, and in some cases radiotherapy interventions. The use of somatostatin analogues first and second generation has significant role, especially in patients with incomplete tumor resection or persistently high levels of GH and IGF-1.

Case Report

The study is based on the case analysis of a 21-year-old patient, diagnosed with pituitary acrogigantism due to a pituitary macroadenoma. A pituitary tumor was revealed during the diagnosis of chronic otitis. Diagnostics included laboratory tests (levels of GH in OGTT oral glucose tolerance test, IGF-1) and imaging studies (pituitary MRI, thyroid and abdominal ultrasound, echocardiography). Treatment involved surgical intervention (endoscopic tumor resection), pharmacological therapy (lanreotide) and monitoring of therapy progress. After tumor resection, partial normalization of GH and IGF-1 levels was achieved; however, symptoms of active acromegaly persisted. Lanreotide treatment was initiated, leading to further improvement in hormonal parameters and the patient's well-being. Nevertheless, in the following months, recurring symptoms such as chronic fatigue, excessive sweating, and joint pain were observed. A second generation analogue -pasireotide were used, resulting in normalization of IGF1 and good disease control. Actually patient is a is a first-year medical student.

Conclusions

Patients with pituitary acrogigantism have a heavy burden of disease and a complex treatment journey. Rapid implementation of surgical and pharmacological treatment is crucial. The use of somatostatin analogues is effective in controlling GH and IGF-1 levels in patients with residual disease activity. A second generation somatostatin analogues are perspectives for patients with hard-to-control acromegaly.

Successful Management of Potentially Life-Threatening Hypoparathyroidism in a 37-Year-Old Woman

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Background

Hypoparathyroidism (hypoPT) is a disorder characterized by hypocalcemia, resulting from a deficiency of parathyroid hormone (PTH). Standard treatment includes oral calcium supplements and active vitamin D analogs. We present a rare case of hypoPT refractory to conventional therapy, successfully managed with a novel PTH analog.

Case Report

In December 2023, the 37-year-old woman was admitted to the hospital with a severe tetany episode, presenting with diplopia, facial edema, paralysis, and uncontrolled muscle cramping. The patient underwent a thyroidectomy due to a thyroid tumor two weeks prior to admission. Postoperatively, she required hospitalization in the intensive care unit due to inspiratory stridor and a significant decrease of oxygen saturation. A laryngological examination with laryngoscopy after admission revealed bilateral recurrent laryngeal nerve paralysis and narrowing of the laryngeal lumen to 4 millimeters. The patient was initially treated with intravenous calcium preparations, leading to a resolution of the tetany episode, but the tetany symptoms reocurred. Planning the long-term management of hypoPT in this patient was very challenging. Treatment with the active form of vitamin D had to be discontinued due to hyperphosphatemia. The calcium-sparing diuretics (amiloride and hydrochlorothiazide) were administered, because hypercalciuria and hypermagnesiuria were noticed. Despite high doses of diuretics, the urinary calcium levels remained elevated, suggesting the presence of a coexisting tubulopathy affecting calcium reabsorption in kidneys. The patient required multiple hospitalizations throughout 2024 due to hypocalcemia. High doses of calcium preparations and calcium-sparing diuretics led to milk-alkali syndrome (MAS) and secondary worsening renal function. The combination of a reduced laryngeal lumen diameter, causing stridor and dyspnea during tetany episodes, and the high risk of MAS with continued conventional treatment was considered potentially life-threatening. Consequently, the patient was qualified for treatment with a PTH analog, palopegteriparatide. After injections of the drug, the patient remained normocalcemic and did not require calcium supplementation. The treatment was well tolerated, with only mild, localized inflammatory reactions near the injection site.

Conclusions

HypoPT can be life-threatening and requires careful evaluation and monitoring.
Palopegteriparatid may be effective in treatment of hypoPT refractory to conventional therapy.

Suspected Multiple Endocrine Neoplasia 2a (MEN2a) Syndrome in 61-year Old Woman with Neurofibromatosis Type 1 after Resection of Pheochromocytoma- a Case Report.

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Background

Neurofibromatosis type 1 is an autosomal dominant inherited phacomatosis (mutation within chromosome 17q11.2) with an incidence of 1:3000 in the population. The most prevalent manifestations of this disease are multiple nodules composed of neurofibroma or schwannoma and areas of light brown discolorations, called cafe-au-lait spots.

Case Report

A 61-year-old woman with Recklinghausen disease, who underwent left adrenal gland resection due to pheochromocytoma in 2008, was admitted to the Department of Internal Medicine with suspicion of tumor recurrence in the surgical bed area in order to determine further therapeutic management. Additionally, in the medical history, there is hipercholesterolemia, arterial hypertension, an ischemic brain stroke in 2003, Hashimoto's disease treated with L-thyroxine, history of radiotherapy and chemotherapy for cervical cancer in 2015, partial atrophy of both optic nerves and osteopenia. The physical examination revealed numerous neurofibromas and cafe-au-lait spots on the patient's skin. Laboratory tests showed normocytic anemia, hypercholesterolemia, elevated fT4 with normal TSH serum concentration, elevated PTH levels with normal phosphorus and calcium levels and vitamin D deficiency. Circadian cortisol concentration levels were normal. In the follow-up laboratory tests during hospitalization in May 2022, a single normetanephrine serum concentration was above the norm, serum concentration of metanephrine was normal, calcitonin concentration was elevated, and chromogranin A concentration was 39.54 ng/ml (normal range). The postoperative bed area on MRI was normal, without signs of local recurrence. This constellation of hormonal results may suggest the coexistence of MEN2a syndrome, which contains of pheochromocytoma, primary hyperparathyroidism and medullary thyroid carcinoma.

Conclusions

There are no signs of tumor recurrence in the surgical bed area and no symptoms of post-surgical adrenal gland deficiency. Although elevated normetanephrine serum concentration may suggest extra-adrenal localisation of pheochromocytoma. Elevated PTH level may be a result of vitamin D deficiency. Elevated calcitonin levels may suggest medullary thyroid carcinoma, that's why, considering all the clinical symptoms and laboratory results, this patient requires careful observation to full manifestation of MEN2a syndrome.

Suspected Complex Pathogenesis of Multihormonal Chronic Post-traumatic Hypopituitarism

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Background

Hypopituitarism is a condition characterized by insufficient hormone production by the pituitary gland. It may be acute or chronic and influences one or multiple hormonal axes. Recently, more attention has been paid to traumatic brain injury (TBI) as the reason for the pituitary gland dysfunction. However, the exact pathogenesis standing behind post-traumatic hypopituitarism (PTHP) seems to be more complex than previously expected.

Case Report

We report a case of a 62-year-old man with hypopituitarism developed after TBI. The patient with a history of pancytopenia was admitted to the department for further diagnosis of reported weakness, features accompanying hypogonadism, decreased exercise and cold tolerance observed in the last few years and reduced visual acuity recently. The patient's anamnesis included a fall from a height and hitting his head on a sandy ground 10 years before. Physical examination revealed features of gynecomastia, body hair loss and pallor. Orthostatic test revealed orthostatic hypotonia. Hormonal investigation showed hyperprolactinemia, low serum concentrations of morning cortisol, peripheral thyroid hormones, testosterone, FSH, LH, IGF-1 and elevated TgAb levels. A Synacthen test showed serum cortisol concentrations below 18 ug/dl. No serious abnormalities were found in diagnostic imaging. A pituitary MRI showed a pituitary gland of typical position and shape with no visible pathology. The overall clinical presentation suggested a multihormonal hypopituitarism. Due to a suspicion of autoimmune pituitary inflammation, additional laboratory tests were conducted, which let us exclude IgG4-related diseases. The ANA panel also provided a negative outcome. The patient's treatment included hormone replacement therapy - hydrocortisone, levothyroxine, testosterone and additionally statins. During follow-up, a month later, the patient presented general improvement, normalization of serum concentrations of peripheral hormones and was subsequently qualified for growth hormone therapy.

Conclusions

The symptoms of hypopituitarism are nonspecific - the patient was eventually diagnosed 10 years after the accident. The possible pathophysiological mechanisms behind multihormonal chronic PTHP after TBI are very complex and not easily detectable. The patient's normal pituitary image on MRI, no history of acute symptoms immediately following the injury and diagnosis 10 years after the accident, confirm complicated etiology and diagnostic difficulties of PTHP after TBI.

Testicular Tumors in a Patient with Congenital Adrenal Hyperplasia: The Importance of a Broad Differential Diagnosis

Authors

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Background

Congenital adrenal hyperplasia (CAH) refers to a group of autosomal recessive disorders that affect adrenal steroid hormone production. The most common type is 21-hydroxylase deficiency. Testicular adrenal rest tumors (TARTs) are one of the major long-term complications in male patients with CAH, possibly resulting from ectopic remnants of intra-testicular adrenal tissue that is stimulated by excessive secretion of adrenocorticotropic hormone (ACTH).

Case Report

A 41-year-old male patient with the salt-wasting form of CAH was referred to the Endocrinology Department. He was diagnosed with CAH at the age of 9 months. Since the diagnosis, he had been treated with adrenal hormone replacement therapy. The patient reported bilateral testicular pain, which worsened upon palpation, as well as recurrent episodes of inflammation. Imaging studies revealed bilateral changes in the testes, and due to the symptoms, a bilateral orchiectomy was performed. Histopathological examination and immunophenotyping revealed tumors with a Leydig cell tumor (LCT) pattern on both sides. Given the atypical features and the infiltrating growth pattern, the tumors were considered malignant.

Conclusions

Although certain clinical findings may strongly suggest a particular condition, clinicians must remain vigilant and always consider alternative diagnoses, especially those with more serious implications for the patient. TARTs are a well-documented complication of congenital adrenal hyperplasia and are typically bilateral, whereas Leydig cell tumors (LCTs) are more often unilateral. However, as this case illustrates, even in patients with a well-established diagnosis of CAH, testicular abnormalities should not be automatically attributed to TARTs without thorough evaluation. A careful diagnostic approach is essential to exclude other, potentially more dangerous conditions.

Gynecological Case Report Session

Session Coordinators:
Oliwia Dudek
Marika Sagan

A Case of Immature Low-Grade Teratoma in a Young Woman: Diagnosis and Management

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Background

Ovarian teratomas are the most common type of germ cell tumors. Immature teratomas, the second most common subtype, are malignant and often present with abdominal pain, bloating, or a palpable mass. Radiological examinations are essential for diagnosis. While imaging features of immature teratomas may be nonspecific, combining clinical presentation and imaging findings can aid diagnosis and guide treatment decisions.

Case Report

An 18-year-old female was urgently consulted due to a large (15 cm diameter) pelvic mass, initially suspected to be a left ovarian cystoma. A palpable, clearly demarcated, mobile mass was noted below the umbilicus, descending into the pelvis. Cancer markers were within normal limits. Transabdominal ultrasound (TAUS) showed normal uterus and left ovary, but the right appendages were not visible. A mass was seen, which measured 144.5x66x134 mm and had a cystic-solid, multichambered appearance. TAUS conclusion: the mass was likely a tumor of the right ovary, of unclear origin, with a possible diagnosis of germ cell tumor (for example, teratoma) or granulosa cell tumor. CT scan revealed a large, multichambered, heterogeneous cystic and solid formation with septa and calcifications in the lower abdomen and pelvis, compressing the uterus and bladder. CT conclusion: the mass in the pelvis was most consistent with a germinal origin, likely a teratoma. The case was reviewed by the multidisciplinary team (MDT), and surgical treatment was recommended. Right oophorectomy was performed via laparotomy. Histopathology confirmed an immature low-grade teratoma. The case was reviewed again with the MDT, and no additional treatment (such as chemotherapy or radiation) was recommended. Observation was advised. A follow-up TAUS showed no abnormal findings. Cancer markers were repeated and remained within normal limits.

Conclusions

This case highlights the importance of early diagnosis and surgical intervention for ovarian masses in young women. Initially thought to be a benign cyst, imaging revealed a complex cystic-solid formation, raising suspicion for a malignant germ cell tumor. Post-surgery, an immature low-grade teratoma was diagnosed, a malignant tumor with a favorable prognosis when detected and treated early. Early detection, accurate diagnosis, and appropriate management are crucial in preserving fertility and minimizing the risk of metastasis, particularly in young women with ovarian tumors.

A Rare Etiology of Failed Epidural Anesthesia: Uterine Scar Rupture

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Background

Failing epidural analgesia (EA) occurs in approximately 10 - 20% of parturients, despite best efforts on EA techniques. The most common causes include improper catheter placement, inadequate local anesthetic spread or anatomical variations. Here, we present a case in which epidural anesthesia was ineffective due to patient's uterine scar rupture.

Case Report

A 32-year-old woman gravida 3, para 2 was hospitalized to the Lithuanian University of Health Sciences Kauno Klinikos while 39 weeks pregnant and has history of an emergency Caesarean Section (CS) with complications. The patient was transferred to the maternity ward due to regular uterine contractions and cervical dilation (4 cm). Patient reported severe pain, rated at 8-9 on the Visual Analog Scale (VAS) with regular labor activity. The patient was examined and assessed as ASA class II and epidural anesthesia was carried out smoothly. 20G Catheter was inserted through an epidural needle 4 cm cranially in L2–L3 space and solution containing Ropivacaine 1,25 mg/ml and Fentanyl 2 μg/ml, 15 ml dose was administered as a bolus dose. The VAS score after the bolus was 0. Further analgesia was administered through automatic syringe pump at 9 ml/h. 10 hours after the initial analgesia, the patient's pain score on VAS reached 10. Catheter migration was suspected, so the first epidural catheter was removed, and a new one was inserted. A 20G catheter was inserted through an epidural needle 8 cm cranially in L1-L2 space. A mixture of Levobupivacaine 1 mg/ml and Fentanyl 2,5 μg/ml, was injected into the catheter at a bolus dose of 20 ml. 15 min. after the procedure, patient’s pain relief was still insufficient. The score on VAS reaches 5-6. In an hour, EA remained insufficient. Due to clinically narrow pelvis, it was decided to perform an emergency category II CS. Before the CS patient’s vital signs were stable. It was decided to perform EA with 20ml bolus injection of Levobupivacaine 5mg/ml and Fentanyl 5 μg/ml. 15 min. after the last EA failed to provide any pain relief, general anesthesia was initiated. During the CS, an unexpected uterine scar rupture was discovered and caused EA ineffectiveness, causing severe pain. In PACU was achieved through an epidural catheter with morphine. The catheter was removed without complications, and pain relief was sufficient.

Conclusions

Uterine scar rupture during labor can lead to ineffective epidural anesthesia. Choice of emergency CS under GA was crucial to ensure mothers and fetal safety.

No funding was received for this research.

Acute Urinary Retention in Early Pregnancy

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Background

Acute urinary retention (AUR) in pregnancy is rare, defined as a sudden inability to void. If untreated, it may cause bladder rupture, miscarriage, or infection. Common causes include mechanical obstruction by a retroverted uterus, infections, and neurological or psychological factors.

Case Report

A 33-year-old woman, gravida 2 at 9+6 weeks, presented to the ED with sudden nocturnal urinary retention and lower abdominal pain. She had no fever but reported anxiety and past cystitis episodes. Her first pregnancy was uneventful. Labs showed mild leukocytosis (9.97 × 10/L, 75.1% neutrophils), slightly elevated CRP (7 mg/L), and leukocyturia (25 leukocytes/μL). Ultrasound revealed a distended bladder. After catheterizing 1000 mL, she was discharged with tamsulosin. She returned the next morning with recurrent AUR, requiring another 1000 mL drainage. Despite negative cultures, cefuroxime was started for presumed UTI. That evening, retention recurred, requiring transfer to a tertiary center, where 2000 mL was drained.Transvaginal ultrasound confirmed a retroverted, retroflexed uterus compressing the bladder. Intermittent catheterization showed high post-void residuals (450-800 mL), necessitating a four-day indwelling catheter. After removal, voiding normalized, but a day-12 urine culture grew Klebsiella pneumoniae (>10 CFU/mL), requiring another cefuroxime course. At 13 weeks, mild urinary dysfunction recurred but resolved conservatively. No further episodes occurred. She was later diagnosed with diet-controlled gestational diabetes. At 40 weeks, she vaginally delivered a healthy 4620 g female. Postpartum, urinary function remained normal.

Conclusions

This case highlights AUR in early pregnancy due to a retroverted uterus and psychosocial factors. Early recognition and bladder management prevented complications, with symptoms resolving as pregnancy progressed.

Advanced Cervical Cancer: A Case Report on Diagnosis and Monitoring

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Background

Cervical cancer is one of the most common gynecologic malignancies globally, primarily caused by persistent infection with high-risk human papillomavirus (HPV). While early-stage cervical cancer is often asymptomatic and may be detected through routine screening, advanced stages can present with a variety of symptoms. At advanced stages, the tumor may invade surrounding tissues, such as the parametrium, bladder, or ureters, and may metastasize to regional lymph nodes or distant organs, including the liver. Chemoradiation is a common treatment approach for locally advanced cervical cancer. Diagnosis is typically confirmed through a combination of clinical examination, biopsy, and imaging studies, all of which play a crucial role in staging the disease and determining the appropriate treatment.

Case Report

A 52-year-old woman sought consultation after undergoing an abrasion and cervical polypectomy. The pathological result confirmed infiltrative squamous cell carcinoma, G2. Transvaginal ultrasound (TVUS), CT scan, MRI, and cervical biopsy were performed. The biopsy confirmed non-keratinizing squamous cell carcinoma, G2. CT scan suggested possible liver metastases. MRI revealed cervical neoplastic changes infiltrating parametrial tissues and suspected right-sided lymph node involvement, T2bN1 (FIGO IIB). An abdominal MRI confirmed that liver lesions were benign, most likely hemangiomas. The multidisciplinary team recommended chemoradiation treatment. A year later, follow-up MRI showed changes suggestive of tumor relapse, with infiltration of the left ureter and bladder wall. A subsequent CT scan confirmed tumor recurrence on the left side of the pelvis, involving the left ureter and bladder wall, with no significant new dynamics. A few months later, another CT scan showed no new developments, with the findings remaining largely unchanged. Final diagnosis: Advanced cervical cancer, Stage IIIC1 (cT2 N1 M0) G2, with metastasis to iliac lymph nodes.

Conclusions

This case highlights the importance of early and accurate diagnosis in the management of advanced cervical cancer. In conclusion, the management of cervical cancer requires a multidisciplinary approach, combining precise staging, effective treatment, and, most importantly, continuous follow-up. Regular imaging and clinical assessment are essential for early detection of recurrence, ensuring timely interventions, and improving long-term outcomes.

Clear Cell Adenocarcinoma Treatment Regardless of Treatment Protocol

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Background

Epithelial ovarian cancer is the leading cause of death among gynaecological diseases and ranks 5th in cancer mortality among women in Lithuania. The highest incidence and mortality rates are in postmenopausal women. According to the treatment methodology in Lithuania first choice surgery is total hysterectomy with bilateral adnexectomy, peritoneal biopsy and omentectomy. Chemotherapy is administered before surgery to improve tumor resectability or after to reduce the risk of recurrence.

Case Report

A 32 year-old female came to the emergency room complaining about spasmodic pain in the right iliac region and groin for several days. Serohemorrhagic fluid was found during diagnostic pelvic puncture. Primary differential diagnosis was argued between hemoperitonium caused by ovarian apoplexion and ascites. After 2 days of hospitalization given the patient's satisfactory condition and request patient was discharged for outpatient treatment and prescribed antibiotics. After 3 weeks patient came back for a checkup. During ultrasound it was found that pelvic and abdominal cavities were obturated with a multi-chamber structure of no less than 240x140 mm in size that had a solid area/mass with active circulation and was filled with liquid. In addition, several hypoechoic growths without circulation up to 53x37 mm in size were visible at the walls of the mass. The final conclusion stated a tumor of unknown progression in the left ovary. Laparotomic left salpingo-oophorectomy, peritoneal biopsy and omentectomy were performed. Pathohystological examination results identified an ovarian clear cell adenocarcinoma. Due to young age and plans of conception patient was referred for fertility specialist consult and cryopreservation of gametes or embryos before proceeding with chemotherapy.

Conclusions

Each clinical situation requires individual approach and consideration of patient‘s age, medical history and requests. In rare cases treatment deviating from first choice protocol should be considered.

Challenges Associated with Smooth Muscle Tumor of Uncertain Malignant Potential (STUMP) Management

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Background

Smooth Muscle Tumor of Uncertain Malignant Potential (STUMP) is a poorly studied neoplasm that does not fulfill the definition of either leiomyoma or leiomyosarcoma. STUMP symptoms are indistinguishable from those of benign lesions; it has no specific biochemical markers or ultrasound presentations. The management of this type of tumor is particularly challenging due to significant heterogeneity in its behavior and the lack of clear guidelines; moreover, the lesion may recur after excision

Case Report

42-year-old woman presented to the outpatient clinic of the 1st Department of Obstetrics and Gynecology of the Medical University of Warsaw. The main complaints were menorrhagia, dysmenorrhea, and mild anemia (Hb 10 g/dL). Heavy menstrual bleeding started about two years prior to the consultation and was initially treated with oral contraception combined with tranexamic acid and norethisterone acetate. The patient had menarche at the age of 15 and was pregnant five times with two successful deliveries by cesarean section. She had no chronic diseases and had a normal Body Mass Index (BMI) (20.31). The patient denied a family history of cancer. There were no abnormalities in the physical examination. A transvaginal ultrasound examination revealed a single oval-shaped submucosal lesion located within the uterine fundus, protruding into the uterine cavity. The lesion measured 32.2 × 29.4 mm and had mixed echogenicity and well-defined borders without acoustic shadow. No calcifications or cystic areas were visible in the lesion. The preliminary diagnosis was a submucous leiomyoma, which was removed hysteroscopically. The histopathological examination of the resected myoma pointed to the diagnosis of STUMP. The hysterectomy was performed as the patient had completed her reproductive plans. There were no complications. The patient is currently recurrence-free after a 9-month follow-up.

Conclusions

The care of a patient diagnosed with STUMP requires a personalized approach and the cooperation of various medical disciplines, including molecular diagnostics, imaging techniques, and minimally invasive surgery. Management of STUMP must consider the patient's plans for childbearing. All cases of tumors with "uncertain malignant potential" are a challenge in the context of patient-physician communication.

Conservative management of Placenta Percreta: A Case Report

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Background

Placenta percreta is the most severe form of the placenta accreta spectrum (PAS), where the placenta invades the entire myometrium and may extend to surrounding organs. The standard treatment is cesarean hysterectomy, but in some cases, a conservative approach is chosen to preserve fertility by leaving the placenta. However, this method carries significant risks, including massive hemorrhage, infection, sepsis, and disseminated intravascular coagulation.

Case Report

A 38-year-old patient with a complex obstetric history: during her first pregnancy in 2015, experienced retained placenta, requiring uterine revision, followed by 3 additional curettages. She conceived again after 2 stem cell procedures. In 2019, during her second pregnancy at 35 weeks of gestation, the patient began experiencing regular uterine contractions. Due to breech presentation, an emergency cesarean section was performed. Attempts to remove the placenta by umbilical cord traction were unsuccessful. Elevating the uterus revealed that the placenta had invaded the serosal layer in the right uterine corner. A hysterectomy was suggested, but the patient categorically declined the procedure, expressing a strong desire to preserve her fertility. Despite the potential risks, it was decided to leave the placenta. To reduce the risk of bleeding, a bilateral uterine artery embolization (UAE) was performed. The patient was prescribed antibiotics and Fraxiparine for infection and bleeding prevention. The patient underwent ultrasound (US) follow-ups and hCG monitoring, with no significant complications observed, and later resumed her menstrual cycle. In December 2024, the patient returned for consultation regarding the planning of another pregnancy. US revealed an atypical mass in the upper part of the uterus due to remodeling of remaining placental tissue. An MRI was scheduled to rule out possible malignancy of the uterine mass.

Conclusions

Conservative management of placenta percreta offers an alternative to hysterectomy for fertility preservation but requires careful long-term monitoring due to potential risks such as late bleeding, uterine structural changes, and fertility impairment. Regular US, hCG monitoring, and MRI can help assess treatment outcomes and guide clinical decisions. The use of UAE, along with antibiotic prophylaxis and anticoagulation, played a critical role in minimizing complications. This case highlights the need for individualized care based on patient preferences and clinical circumstances.

Dancing on a Tightrope: Overcoming the Challenges of Maternal ITP and Fetal Arrhythmia

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Background

Immune thrombocytopenic purpura (ITP) in a pregnant splenectomized patient represents a significant clinical challenge due to the persistent risk of severe thrombocytopenia and therefore maternal-fetal hemorrhagic complications. While splenectomy may induce partial or complete remission, relapse during pregnancy remains possible due to the continued presence of antiplatelet autoantibodies. Management requires close hematological monitoring with regular platelet counts and individualized therapy adjustments.

Case Report

A primigesta, primipara, 28-year-old pregnant with a longstanding history of ITP, who underwent splenectomy at the age of 17, was referred to our department at 24 weeks of gestation following a purpuric episode, with a critically low platelet count of 2,000/mm^3. Her medical history reports a previously treated and eradicated Ureaplasma urealyticum infection and autoimmune thyroiditis, with a stable euthyroid status. Initial management included high-dose dexamethasone and intravenous immunoglobulin (IVIG) therapy targeting antiplatelet antibodies, resulting in a gradual platelet count increase to 30,000/mm^3. A second IVIG administration further elevated the platelet count to 54,000/mm^3 and subsequently to 111,000/mm^3. At 28 weeks, routine fetal assessment revealed intrauterine growth restriction (IUGR) corresponding to a two-week developmental delay, with a concurrent maternal platelet count of 103,000/mm^3. At 32 weeks, third-trimester fetal morphology assessment identified persistent IUGR and a newly detected fetal tachyarrhythmia, with a heart rate of 250 bpm. The patient was hospitalized, and Labetalol was initiated, leading to reestablishment of sinus rhythm. Following a period of stabilization, she was discharged after eight days of inpatient monitoring. At 36 weeks, fetal growth restriction progressed to a three-week developmental delay, despite the maintenance of sinus rhythm. Given the persistent IUGR and the underlying maternal hematologic condition, cesarean section was scheduled to optimize perinatal outcomes.

Conclusions

This case underscores the importance of comprehensive pregestational planning in women with immune thrombocytopenic purpura (ITP), particularly those who have undergone splenectomy. Preconception counseling should involve a multidisciplinary team to optimize platelet management, assess autoimmune comorbidities, and evaluate potential treatment adjustments in order to enhance the compliance of the patient and minimize fetal risks.

Diagnostic Difficulties of Vaginal Intraepithelial Neoplasia in a Childless Postmeno-pausal Woman with an Abnormal Cytology Result

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Background

Vaginal intraepithelial neoplasia (VaIN) is a rare disease strongly associated with human papillomavirus (HPV) infection. It occurs in approximately 2-3 per 10,000 women and accounts for approximately 0.4% of precancerous lesions of the lower female genital tract [1,2]. In addition, it is a precursor to vaginal cancer [3]. VaIN is usually asymptomatic and often diagnosed incidentally based on abnormal cytology or histopathology results [4]. There are no screening tests for vaginal cancer and precancerous lesions. VaIN lesions are often difficult to detect and are often diagnosed after multiple examinations [5].

Case Report

The patient - a 51-year-old non-childbearing woman in whom we encountered inadequate test results as part of the in-depth diagnosis of an abnormal cytology result- has been under the care of our outpatient clinic for 15 years. In 2013, cyclic bleeding was followed by spotting lasting up to 10 days that did not subside after changing to a patch containing estrogen and norethisterone or after reducing the dose of the drug to ½ patch. The spotting continued for up to 21 days, so despite a normal endometrial picture, an endometrial biopsy was performed. During the procedure, material was obtained which was described as atrophic endometrium. Scrapings from the cervical canal showed mucosa without pathological changes. Two years ago, the patient presented with LSIL lesions in a Pap smear with HR HPV 45 presence. No suspicious images or atrophic features were found. Due to the non-visible new squamocolumnar junction with the 3rd type of Transformation Zone, the cervical canal has been scrapped. However, the cytology result indicated HSIL. Therefore, a diagnostic-therapeutic loop electrosurgical excision with a biopsy of the cervical canal was decided upon. The HP result obtained after examining the cone did not confirm any pathology. Despite another abnormal cytology result and confirmation of human papillomavirus infection, neither colposcopy nor subsequent histopathological verification confirmed any pathology. Eventually, VaIN II was diagnosed and laser ablation was performed. Unfortunately, this led to a recurrence with VaIN III two years later. Another laser treatment allowed us to finally achieve normal cytology and colposcopy results.

Conclusions

Moreover, VaIN still poses a pivotal challenge diagnostically, as its course is diverse and requires a thorough examination. As there is no consensus, treatment remains troublesome as well.

None

Distant Metastases from Uterine Leiomyoma - a Rare Case Report of Benign Metastasizing Leiomyoma in Patient with Endometriosis

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Background

Benign metastasizing leiomyoma (BML) is a very rare disease that results from metastasis of uterine leiomyoma to extrauterine sites with benign pathologic features, mostly affecting premenopausal women. Etiopathogenesis of the disease is still poorly understood. The most common site of metastasis is in the lungs, however few cases of other sites of involvement including lymph nodes, peritoneum, and retroperitoneal structures were described.

Case Report

In the following study the authors analyzed a case of a 43-year-old woman with diagnosis of endometriosis and fibroid uterus, who was admitted to the hospital because of strong lower abdominal pain for 4 following days. On follow-up MRI, multiple foci in abdomen were described as possibly corresponding to deep infiltrative endometriosis (DIE), together with big mass in left adnexa. The patient was qualified for surgical treatment by laparotomy with intraoperative examination, during which multiple, different size nodules in intestines, lesser and greater omentum, perimetrium and left adnexa, confirmed later histologically as leiomyomas.

Conclusions

Because BML is a very rare disease, with unknown etiopathology, it may be very often misdiagnosed as a malignant tumor or endometriosis foci. The only way to determine it is by histopathological results of taken excisions during performing surgery. Due to the rarity of the described disease entity, diagnosis, treatment and prognosis are definitely difficult, hence the presentation of every case is justified in our opinion.

Extensive Tumor of the Posterior Cranial Cavity Detected During an Oncofertility Procedure: A Case Report

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Background

Oncofertility procedures preserve fertility in young women diagnosed with cancer, with oocyte cryopreservation being a key strategy prior to gonadotoxic treatment. While controlled ovarian stimulation (COS) is generally well tolerated, cautious monitoring for complications is essential. Although ovarian hyperstimulation syndrome (OHSS) is the most common complication, other, less typical symptoms should not be overlooked. We present a rare case of a patient undergoing oncofertility treatment who developed acute neurological symptoms, leading to the unexpected diagnosis of a posterior cranial fossa tumor.

Case Report

A 34-year-old female with a history of ovarian cancer (stage IA1) was referred to the infertility clinic for fertility preservation. Following unilateral adnexectomy and subsequent staging procedures, she was considered eligible for COS and oocyte cryopreservation. COS was initiated with a short antagonist protocol, followed by a dual-trigger administration. Oocyte pickup (OPU) was performed under intravenous anesthesia by retrieving ten oocytes from the right ovary. The intraoperative and immediate postoperative courses were uneventful. Three days post-procedure, the patient reported persistent headaches without abdominal discomfort. One week after the procedure, symptoms escalated to severe headache, nausea, and vomiting, prompting hospital admission. Laboratory tests revealed elevated D-dimer values. Symptomatic treatment, with hydration, analgesia, antiemetics, and thromboprophylaxis, was administered. Three days after hospital admission, the patient deteriorated neurologically with right-sided facial droop, upper limb weakness, and nuchal rigidity. Emergency imaging in the neurology department revealed a large posterior cranial fossa tumor. The mass caused cerebellum and fourth ventricle compression, increasing intracranial pressure, which explained the patient's symptoms. The patient was transferred for neurosurgical treatment.

Conclusions

This case underscores the importance of vigilance in managing patients during oncofertility treatments, especially in patients with uncommon or unexpected symptoms. Although OHSS remains a primary concern after COS, acute neurological symptoms should incline alternative diagnoses. Timely recognition of the patient's progressive neurological deficits facilitated prompt neurosurgical intervention, emphasizing the necessity for an interdisciplinary approach to managing unusual complications.

Gigantic Vaginal Lithiasis in a Paraplegic Patient: A Case Report

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Background

Vaginal stones are rather uncommon, since this environment is not favorable for the sedimentation process. However, risk factors including Neurogenic Bladder with chronic vaginal urine stasis, frequent use of pads, diapers and urinary catheterization determine local immune system alteration, leading to a higher incidence of genitourinary infections and subsequent primary calculus formation.

Case Report

A 38-year-old paraplegic female with history of recurrent Urinary Tract Infections (UTIs) presented to the hospital because of systemic deterioration, fever and reduced appetite. Paraclinical investigations disclosed a Pseudomonas aeruginosa UTI. Sonography revealed bilateral hydronephrosis, while cystoscopy showed a vesicovaginal fistula of approximatively two centimeters length. Urinary incontinence and a regular-shaped pseudo-tumoral mass of hard consistency were observed during gynecological examination. Vaginoscopy revealed a large stone, grayish-white in color, hindering the cervix visualization. The patient underwent surgery, and a gigantic 11/9 centimeters calculus, weighing 136 grams, was extracted via right mediolateral episiotomy. Upon stone sectioning, no foreign body was identified as the origin of the lithiasis – proof of a primary infectious process. Given the patient's history, we hypothesize the initial intravesical sedimentation of the stone, which migrated through the vesicovaginal fistula formed due to prolonged immobilization. Furthermore, the fistulous tract and the retrograde filling of vagina with urine in constant recumbent position enhanced local barrier disruption, leading to progressive intravaginal stone enlargement.

Conclusions

Despite its rarity, gigantic vaginal lithiasis should be considered in immobilized patients with Neurogenic Bladder and recurrent UTIs. This case report emphasizes the importance of comprehensive rehabilitation care, including intermittent catheterization, strict hygiene measures, frequent repositioning and close follow-up, meant to minimize urogenital lithogenesis risks and prevent complications such as vesicovaginal fistulas.

Management of Subserosal Uterine Leiomyoma in Pregnany

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Background

Myomectomy during pregnancy is a challenging clinical decision, typically considered when fibroids cause significant symptoms or complications. The procedure carries risks but may be necessary to alleviate symptoms and protect maternal well-being while maintaining pregnancy.

Case Report

A 32-year-old pregnant woman presented to the emergency department with severe vomiting, nausea, and epigastric pain lasting for three days. Anamnesis indicates that this is her first pregnancy, and gestational age, based on the last menstrual period, is 12 weeks and 4 days. The initial diagnosis during pregnancy was a subserosal uterine myoma. She was assessed by a gynecologist and was prescribed amoxicillin/clavulanic acid tabs (500/125 mg orally every 8 hours) on an outpatient basis due to increased inflammatory markers. Despite antibiotic treatment, there was no improvement in the blood parameters, and the epigastric pain persisted, leading to her readmission to the emergency department 3 days after starting treatment. On examination, vital signs were stable, transvaginal echoscope showed that the fetus is consistent with the gestational age. A transabdominal ultrasound revealed multiple subserosal myomas on the uterine fundus. Laboratory tests indicated elevated inflammatory markers, including leukocytosis and a CRP level of 133.5 mg/L. Despite the high risks and obstetrical complications, given the patient's clinical presentation, the decision was made to proceed with a laparotomy myomectomy. During surgery, the uterine cavity was not opened, three subserosal myomas were removed. The largest measured 10x20 cm, while the other two were 6-8 cm. The fetus remained stable through the procedure. A follow-up test two days later showed positive progression, with CRP levels down to 21.5 mg/L. After completing the investigation and treatment plan, with both the patient's and fetal conditions stable, she was discharged for outpatient follow-up. At 18 weeks and 5 days of gestation, the patient returned for a consultation and evaluation of fetal well-being. All parameters were within normal range, and no abnormalities were detected. Continued outpatient pregnancy care was recommended.

Conclusions

Myomectomy in pregnancy, until this day, remains very controversial due to the high risk of haemorrhagic or obstetrical complications. This clinical case demonstrates that the successful management of symptomatic myomas during early pregnancy with laparotomy myomectomy is risky but feasible in urgent situations.

Pregnancy after Partial Pancreas Resection.

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Background

Managing pregnancy in a women after a partial pancreas resection (PPR) is extremely rare, and only a few cases were described up to date. Our objective is to describe the outcomes of a pregnancy after PPR due to the neuroendocrine pancreatic tumor (NET) in stadium G2.

Case Report

This case report provides a detailed overview of a complicated pregnancy in a 32-year-old woman eight years after PPR. The histology examination of the material collected during PPR revealed a pancreatic NET in stadium G2, classified as R0, which implies no residual tumor was left after surgery. Post-surgery, the patient suffered from significant abdominal pain, constipation, and flatulence, which continued during her pregnancy, exacerbated by reflux present since the first trimester. Additionally, the epigastric pain was radiating to the back, receding only after the starvation and administration of strong painkillers. When the patient was admitted to the Obstetrics and Perinatology ward of our Department at 36 weeks and 5 days of gestation she underwent various consultations, including surgical and imaging tests to rule out a cancer recurrence. In ultrasonography the pancreas was enlarged and a hyperechogenic mass, measuring 8,5 mm in diameter, was found in the head of the pancreas. The surgical consultation revealed no contraindications to continue the pregnancy, despite the presence of a stable hyperechoic mass in the pancreas, which had been monitored for years (since 2018) without change in its dimension. Moreover, the patient, experienced a urinary tract infection, which was treated with antibiotics, and an influenza type A in her 37 week of pregnancy.

Conclusions

We report the above case, as it represents a patient with a complicated course of pregnancy, which ended with an urgent cesarian section in 37 + 5 gestational age. The cesarian section was done due to the failure of progress in labor and incorrect fetal positioning (improper insertion of the fetus's head into the birth canal), resulting in a birth of a healthy baby girl with an Apgar score of 10. This report underlines the importance of careful monitoring and collaboration among experienced healthcare providers in managing pregnancies complicated by significant medical histories.

Prenatal Presentation of Multifocal Venous Malformations in Blue Rubber Bleb Nevus Syndrome Leading to Kasabach-Merritt Phenomenon

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Background

Blue rubber bleb nevus syndrome (BRBNS) is a rare congenital disorder characterized by numerous diffuse cutaneous and internal venous malformations. Internal lesions, typically affecting the gastrointestinal tract, may lead to chronic bleeding and anemia. A rare but severe complication is Kasabach-Merritt phenomenon, a life-threatening consumptive coagulopathy caused by platelet sequestration within vascular tumors, resulting in thrombocytopenia and hypofibrinogenemia. There are very few reports of prenatal visualization of such vascular lesions using imaging studies.

Case Report

A 34-year-old woman, gravida 2, presented at 35+0 weeks of gestation (WG) with polyhydramnios and multiple fetal abnormalities on ultrasound examination, including a right-sided choroid plexus cyst, banana sign, enlarged bladder, shortened femoral bone (<5th percentile), suspected cervical spina bifida with myelomeningocele, and a perineal mass. MRI revealed multiple focal lesions with signal characteristics of soft tissue, protein-rich fluid or blood in the left hemisphere of the brain, spinal canal (L3), left kidney, left thigh, and the largest one in the posterior-superior region of the neck extending into the posterior cranial fossa, displacing the upper part of cervical spinal cord. The posterior vertebral elements of C1-C3 and L3 were absent. A multifocal proliferative process was suspected. Amnioreduction was performed, confirming a normal female karyotype. At 36+5 WG, an emergency cesarean section was performed due to vaginal bleeding and suspected placental abruption. Postnatally, the neonate exhibited cardiovascular instability, severe neurological impairment, and required constant intubation due to respiratory failure. BRBNS with Kasabach-Merritt phenomenon was diagnosed. Despite treatment with sirolimus and glucocorticosteroids, neurological deterioration progressed, leading to neonatal demise on day 28.

Conclusions

Prenatal visualization of multiple venous malformations in BRBNS is feasible; however, establishing a definitive diagnosis based solely on imaging studies appears virtually impossible. Nevertheless, multifocal venous malformations should be considered in the differential diagnosis of a suspected multifocal proliferative process in the fetus. Although intracranial involvement is rare in BRBNS, its presence, particularly with brainstem dysfunction and the development of Kasabach-Merritt phenomenon, is associated with a poor prognosis.

Transvaginal Cyst Aspiration and Sclerotherapy as a Viable Therapeutic Alternative to Laparoscopy - a Case Study.

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Background

Endometriosis is a condition affecting over a million Polish women, with ovarian endometriotic cysts being one of its more common manifestations. Surgical management of endometriotic ovarian cysts is complex due to the absence of a distinct cystic capsule, making their removal challenging without damaging the ovarian cortex, which contains oocytes. Transvaginal cyst aspiration and sclerotherapy is a less invasive alternative to surgery, particularly for patients planning conception - compared to laparoscopies, this method offers advantages of a lower recurrence risk, feasibility in an outpatient setting, and shorter recovery time.

Case Report

A 26-year-old patient with a 3 year history of infertility, AMH 0.8ng/mL presented to a fertility clinic with her partner. Her medical history included 2 laparoscopic procedures, the 1st conducted due to severe abdominal pain with the diagnosis of stage IV endometriosis. During the 2nd a decision was made to forego removal of an endometriotic cyst in the left ovary- 100×65 mm due to the inability to preserve ovarian function. The patient underwent six months of gonadotropin-releasing hormone analogue therapy. The outcome was unsatisfactory, with persistent cyst size. The patient underwent sclerotherapy of the cyst. Follow-up after 1 month revealed a reduced cyst of 45mm diameter. Following a 3-month trial of hormonal therapy, a 2nd sclerotherapy was performed at the fertility clinic. A follow-up 1 month later revealed a post-sclerotherapy structure measuring 18×12mm in the ovary as well as an antral follicle count of 12. In the first IVF attempt, 6 mature oocytes were retrieved and fertilized using PICSI, resulting in 1 transferred embryo. The procedure did not result in pregnancy. In the second IVF cycle, 5 mature oocytes were retrieved, 3 embryos were obtained. The patient was referred for a surgery that resulted in tubal clipping due to a hydrosalpinx. 3 months post-op, an embryo transfer was performed, resulting in pregnancy.

Conclusions

This case demonstrates that transvaginal sclerotherapy of endometriotic cysts can be a viable therapeutic alternative to surgery, offering superior preservation of ovarian cortex integrity. The transformation of an ovary occupied by an 11cm cyst into a functional ovary with AFC of 12 contributed to a satisfactory ovarian response, ultimately leading to a healthy pregnancy. In the past year, several dozen such procedures have been performed at the assisted reproduction center with no reported complications.

When the Trocar Leaves a Mark – Port-Site Hernia as a Hidden Complication of Laparoscopic Hysterectomy

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Background

Laparoscopic surgery is now considered the standard approach in the surgical treatment of various gynecological conditions. Numerous studies have confirmed its safety, better surgical outcomes, and aesthetic benefits. However, despite its many advantages, this technique carries a risk of complications. One such complication is port-site hernia (PSH), first described in the context of gynecological surgery in 1968 by Tonouchi. Although PSH is relatively rare, with an estimated incidence of 0–5.2%, it can lead to severe complications, such as small bowel obstruction requiring urgent surgical intervention.

Case Report

Three patients presented at the University Center for Women's and Newborn Health at the Medical University of Warsaw with complications following laparoscopic hysterectomy, including bowel loop entrapment in trocar wounds and postoperative hernias. The first patient, a 51-year-old woman, was admitted due to intermittent abdominal pain at the trocar site, which appeared 2 months after surgery. Imaging revealed a 10 cm hernia with an entrapped loop of the large intestine. The second patient, a 47-year-old woman, presented 4 days postoperatively, with nausea, vomiting, and localized abdominal pain. USG-TA confirmed bowel entrapment in the trocar wound. The third patient, a 66-year-old woman, presented almost 2 years after LASH with chronic symptoms of postoperative hernia and stress urinary incontinence. Imaging revealed a 14 mm bowel-containing hernia. In all cases, surgical treatment was implemented, involving laparoscopic release of trapped bowel loops, minilaparotomy, and, in one case, cervicosacropexy with hernia repair. The surgical interventions were uneventful, all patients were discharged in good general condition.

Conclusions

The cases presented in this study highlight the importance of clinical vigilance in diagnosing abdominal pain following laparoscopic hysterectomy. Early imaging diagnostics, particularly USG-TA, play a crucial role in the timely detection of PSH and bowel entrapment. Surgical intervention is essential in symptomatic cases, and laparoscopic techniques combined with minilaparotomy allow for effective bowel release and fascial defect closure. Proper wound closure techniques, especially after using larger-diameter trocars, may reduce the risk of complications. Based on the presented cases, long-term patient follow-up after laparoscopic hysterectomy and further research on optimal PSH prevention strategies are recommended.

Infectious Diseases Session

Session Coordinators:
Michał Dowiatt
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Honorary Patronage:
Mazovian Voivodeship Consultant for Infectious Diseases Grażyna Cholewińska-Szymańska

Clinical Presentation and Laboratory Findings in Patients Diagnosed with Dengue Fever

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Introduction

Dengue virus (DENV) is spread to humans by infected Aedes aegypti mosquitoes, mainly in tropical regions. Despite most cases present mild symptoms, subsequent infections with different serotypes increase the risk of severe dengue, which can cause shock, bleeding or organ failure. In 2023 more than 6.5 million cases of DENV were recorded globally and in Poland we registered n=34 confirmed cases, with a significant increase in recent years despite available vaccines.

Aim of the study

The aim of the study was to evaluate the main clinical symptoms and laboratory results in patients with confirmed dengue infection and to identify the world regions they traveled to.

Materials and methods

Clinical symptoms were evaluated at admission to the Infectious Diseases Hospital in Poland. Patients with a positive result for NS1 antigen or IgM antibodies against dengue virus, assessed by Abbott Dengue cassette test, were included in the study. Coinfections with HIV, HAV, HBV, HCV and malaria were exclusion criteria. We also considered results of complete blood count, liver enzymes and D-dimer level. None of the patients was vaccinated against the dengue virus.

Results

We analyzed data from n=28 patients (n=18 women, n=10 men) hospitalized from 2016 to 2024, with an average age of 37.8±11.4 years. Patients had traveled to the South-East Asian Region n=21/28 (70%), Western Pacific Region n=6/28 (20%), Africa n=2/28 (7%) and Middle America n=1/28 (3%). In all patients n=28/28 (100%) fever was the main symptom. Half n=14/28 (50%) reported muscle and joint pain and n=14/28 (50%) developed a maculopapular rash. Headache was present in n=11/28 (39%), chills in n=9/28 (32%), diarrhea in n=6/28 (21%), retroocular pain in n=5/28 (18%) and bradycardia during fever in n=2/28 (7%). Values above the normal range were found in n=21/28 (75%) for ALT and AST and in n=14/28 (50%) for GGT. Leukopenia was present in n=25/28 (89%) and thrombocytopenia in n=21/28 (75%) of patients, along with elevated D-dimer levels in n=20/28 (71%). The mean hospitalization duration was 6.3±3 days, with no severe complications.

Conclusions

Dengue should be suspected in travelers returning from tropical areas with fever, chills, rash, headache, retro-orbital pain, elevated liver enzymes, high D-dimers, leukopenia and thrombocytopenia. Pre-travel education for all travelers from Poland to Southeast Asia and the Western Pacific should include mosquito bite protection and vaccination.

Clusters of Viral Infections in the Clinical Department of Hematology in Zielona Góra - Retrospective Analysis

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Introduction

The infections caused by respiratory viruses are important threat to hematologic patients. The viral infections are often severe with high risk of spread between the patients. The new system of patient admission tracking was implemented in the ward in 2023.

Aim of the study

The aim of the study was to analyse viral infection clusters at the Clinical Department of Hematology, University Hospital of Zielona Góra, after the admission system reorganization.

Materials and methods

We analysed electronic medical records from the Clinical Department of Hematology for 2023. The department enforced mandatory mask-wearing and visitor restrictions from September to April due to the risk of SARS-CoV-2 infections. The clusters were assessed for the probable site of infection (nosocomial or community-acquired) and compared with epidemiological data from the Lubuskie Voivodeship for 2023.

Results

No clusters appeared in low season of viral infections despite the lack of compulsory mask use by staff and visitors. Cluster no. 1 – Influenza virus In February 2023, four influenza cases were reported in the ward, with the first confirmed on February 3, during a decline in cases in the voivodeship. The first patient likely acquired the infection outside the ward. Prompt isolation ensured the cluster was contained without secondary infections. Cluster no. 2 – SARS-CoV-2 During March 2023, SARS-CoV-2 infections increased in the voivodeship. Seven cases were observed in the hematology ward. The cluster was quickly contained. No secondary transmissions in rooms with infected patients. Cluster no. 3 – SARS-CoV-2 In November 2023, COVID-19 cases rose in the voivodeship, and a cluster of five infections emerged in the ward. The affected patients were isolated, and no secondary transmissions occurred in rooms with SARS-CoV-2-positive patients. There were four deaths among 16 patients with viral infections (25%).

Conclusions

The introduction of an electronic admission scheduling system enabled effective analysis of patient contacts and infection clusters. In 2023, three viral infection clusters occurred in the hematology ward but were quickly contained through patient isolation. Notably, secondary infections were not always observed among patients sharing rooms or bathrooms. The mortality remains high in high risk patients. Key measures, such as room isolation, staff mask use, and visitor restrictions, effectively controlled the clusters.

Explore the Prevalence of Multi Drug Resistance Neisseria Gonorrhoea and Their Resistant Genes in Urethral Discharge Samples of Patients Residing in Northern Region of United Arab Emirated

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Introduction

Neisseria gonorrhoeae is a highly adaptive, sexually transmitted pathogen responsible for gonorrhea, a major global public health concern. The World Health Organization estimated 82.4 million new cases in 2020, it infects multiple mucosal sites and often spreads silently due to mild or absent symptoms. Due to its rapid genetic evolution and high recombination rates, N. gonorrhoeae has developed resistance to nearly all classes of antibiotics previously used for treatment, including penicillins, tetracyclines, fluoroquinolones, and, more recently, cephalosporins and macrolides. Understanding resistance-associated genes and their distribution among diverse populations is crucial for preventing the further spread of MDR N. gonorrhoeae.

Aim of the study

This study aims to determine the prevalence of single and multidrug-resistant N. gonorrhoeae in urethral discharge samples and to compare the distribution of key resistance-associated genes (penA, mtrR, porB, ponA, gyrA, and gyrB) among Arab and non-Arab populations across different age groups and sexes.

Materials and methods

A total of 106 urethral discharge samples were collected from hospitals and clinics in the Northern Emirates and analyzed at Thumbay Laboratory, Thumbay University Hospital. The samples were cultured on Chocolate agar for N. gonorrhoeae isolation. Colonies were confirmed through Gram staining and antimicrobial susceptibility testing was performed using antibiotic disks. Whole-genome extraction was conducted on resistant isolates, and the presence of resistance-associated genes was identified using PCR techniques.

Results

Out of 106 patients, 30 (28.3%) tested positive for N. gonorrhoeae, with 13 (43.3%) exhibiting multidrug resistance. Among MDR cases, 12 (92.3%) were male, and 8 (61.5%) were non-Arab. The highest prevalence (53.8%) was observed in the 20–30-year age group. Genetic analysis revealed significant variations in resistance gene prevalence between demographic groups, contributing to a better understanding of regional resistance patterns.

Conclusions

The study highlights a high prevalence of MDR N. gonorrhoeae, particularly among young males, emphasizing the urgent need for improved surveillance, antibiotic stewardship, and targeted treatment strategies. Further research is needed to explore the genetic mechanisms driving resistance and to inform public health interventions aimed at mitigating the spread of resistant N. gonorrhoeae.

Neurotoxoplasmosis in People with HIV

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Introduction

Toxoplasmosis is a parasitic disease caused by the intracellular protozoan parasite Toxoplasma gondii. In patients with acquired immunodeficiency syndrome (AIDS) it is the most common infection of the central nervous system (CNS) and often presents with headache, confusion, fever and neurologic deficits The diagnosis is based on clinical features, imaging findings, positive T.gondii IgG antibody and observation of response to treatment. The use of antiretroviral therapy (ART) has reduced the incidence of cerebral toxoplasmosis among people with HIV. However, the disease still poses a significant clinical problem.

Aim of the study

The research aimed to evaluate the clinical presentation of neurotoxoplasmosis in people with HIV in a single center in Poland between 2016 and 2024.

Materials and methods

A cross-sectional analysis of clinical symptoms, laboratory test results, and radiological imaging of people with confirmed HIV and toxoplasmosis was carried out. The data was obtained from the database of the Department. Lymphocyte T CD4 count and HIV viral load (VL) were assessed both at the time of primary HIV infection detection and at the time of neurotoxoplasmosis diagnosis. The size and quantity of toxoplasmosis foci in the CNS and cerebellum described in the computed scan (CT) or magnetic resonance imaging (MRI) were analyzed. Late HIV diagnosis was defined when a patient was diagnosed with HIV with lymphocyte T CD4 count < 350 cells/μL or with the presence of an AIDS-defining disease.

Results

Male to female ratio was (12/2) with an average age of 45 years. In the studied group n=13/14 patients were diagnosed late with HIV, at the same time as the neurotoxoplasmosis diagnosis. The mean lymphocyte T CD4 count was 92,92 on admission and the average VL was 659110,69 copies/ml. Neuroimaging findings on MRI or CT scans revealed single-focal lesions in n= 2/14 patients and multifocal lesions in n= 12/14 patients. In n=8/14 of patients (56.1%) presented with focal neurological deficits including ataxia (50,0%), aphasia (42,9%), and hemiparesis (28,6%)

Conclusions

1. Late HIV diagnosis is still an important issue in Poland. 2. The most common symptoms of neurotoxoplamosis in the analyzed group were ataxia and aphasia. 3. Early HIV diagnosis and adherence to ART are essential to improve the prognosis of people with HIV and decrease the incidence of cerebral toxoplasmosis.

Phenotypic Characteristics of Bacteria Isolated from the Medical Attire of Nursing and Medical Students.

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Introduction

As medical students, we are routinely exposed to a wide range of pathogens during clinical training. While guidelines provide detailed instructions on hand hygiene, there is often limited or no information regarding appropriate attire during the course. Furthermore, even when attire-related instructions are included in the syllabus or course description, there are no clear guidelines on the proper cleaning and transportation of contaminated clothing.

Aim of the study

This study aims to investigate the types of pathogens present on the medical attire of students enrolled in medical and nursing schools, as well as their patterns of antibiotic resistance.

Materials and methods

The methodology of this study involves culturing swabs obtained from medical attire on MacConkey and Chapman agar. Based on the initial culture results, bacterial isolates are subsequently transferred to chromogenic agar and subjected to API tests for precise identification. The identified microorganisms are then analyzed for their response to carefully selected antibiotics to assess their resistance patterns.

Results

The results demonstrated a high prevalence of Staphylococcus aureus among the isolates. Additionally, a significant number of lactose-fermenting pathogens were identified.

Conclusions

The medical and nursing students' attire exhibited a diverse bacterial flora. Further investigation is required to assess antibiotic resistance patterns.

MiniGrant Studenckim WUM

Ten-year Analysis of Different Types of Cancers Among People with HIV- Single Center Study.

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Introduction

HIV-associated malignancies remain a significant cause of morbidity and mortality among people with HIV (PWH), with Kaposi Sarcoma (KS), non-Hodgkin's lymphoma (NHL), and invasive cervical cancer (ICC) as the most common AIDS-defining cancers (ADC). The usage of antiretroviral therapy (ART) has significantly reduced the incidence of ADCs, while non-AIDS-defining cancers (NADC) have become more prevalent. Despite improvements in HIV management, PWH in Poland are often diagnosed late with HIV at an advanced stage with lymphocyte T CD4 <350 cells/μL or with the presence of an AIDS-defining disease.

Aim of the study

This study aimed to analyze the types of cancers diagnosed among PWH in the single center in Poland between 2013 and 2023.

Materials and methods

The analysis included demographic data, history of HIV and of opportunistic infections, exposure to smoking, alcohol, drugs, and the outcomes of oncological treatments among PWH with confirmed malignancies.

Results

Among n=41 patients (male/female ratio- 36/5) with median age of 43.0 years, we analyzed n=42 malignancies: KS n=13, NHL n=9, Hodgkin's lymphoma n=8, hepatobiliary cancer n=2, prostate cancer n=2, anal cancer n=2, thyroid cancer n=1, astrocytoma n=1, melanoma n=1, testicular cancer n=1, squamous cell cancer n=1, pancreas cancer n=1. The study found that n=22/41 patients ever had a history of opportunistic infections, n=19/41 were smokers, n=8/41 ever drank excessively alcohol, n=13/41 ever used drugs. The mean lymphocyte T CD4 count at diagnosis of malignancy was 177.9 cells/μL. In the group of patients with KS 9/13 (69%) were diagnosed late with HIV and 5/13 (39%) have died during the analyzed period.

Conclusions

In the studied group most patients had AIDS-defining cancers which shows that late HIV diagnosis is still an ongoing problem in Poland. There is a need for broader promotion and more frequent HIV testing in order to reduce the number of late HIV diagnosis and related cancers.

The Main Laboratory Results in Acute Phase of Malaria.

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Introduction

Malaria is a parasitic disease caused by Plasmodium spp. The disease significantly affects the hematologic system, leading to changes such as anemia, thrombocytopenia, and abnormalities in leukocyte counts. These changes are closely linked to the host immune response, in which inflammatory markers play a key role.

Aim of the study

The research aimed to assess the hematological and biochemical changes in patients with acute phase of malaria admitted to our department.

Materials and methods

We analysed laboratory results including complete blood count (CBC), procalcitonin (PCT), c-reactive protein (CRP) and d-dimers of patients with acute phase of malaria admitted to the Department of Infectious and Tropical Diseases and Hepatology, from 2016 to 2024.

Results

We analyzed data of n=22 patients with malaria (n=14 men, n=8 women) with mean age of 40.6 years. Acute phase of malaria was diagnosed in n=13/22 patients. Patients included in this group had first symptoms less than 7 days before admission and were not treated with antimalarial drugs prior to hospitalization. PLT count was decreased in n=11/13 patients. WBC count was decreased in n=6/13. Both RBC count and HGB concentration were decreased in n=2/13. D-dimers and C-reactive protein concentration was above normal range in n=13/13. Level of procalcitonin (PCT) was above the normal range in n=9/13. Liver enzymes were increased in the following number of patients: AST n=10/13, ALT n=9/13, GGTP n=9/13, ALP n=2/13. None of the patients used any form of antimalarial prophylaxis. Patients returning from Africa and Asia were n=12/13 and n=1/13, respectively. Patients diagnosed with P. falciparum were n=12/13 and P. vivax n=1/13. One of the patients died during hospitalization.

Conclusions

• Recent stay in endemic malaria tropical areas and abnormal blood test parameters including thrombocytopenia, elevated liver enzymes, CRP and procalcitonin and high D-dimer levels can suggest the presence of malaria. • Promotion of antimalarial prophylaxis among travelers going to areas where malaria occurs is needed.

To what Extent Can CMV Positive Mothers Breastfeed? Investigating Risk Factors and Safe Windows

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Introduction

Cytomegalovirus[CMV] contributes significantly to postnatal infections in very low birth weight [VLBW] infants. Despite the risk of CMV transmission,Breast Milk [BM] remains the best source of nutrition for VLBW infants and endorsed by organisations like American pediatric society, CDC and NHS in women with CMV. Research shows that BM is the most common cause of postnatally acquired CMV due to viral reactivation during lactation. This creates the need to identify early CMV reactivation to minimise high risk transmission periods.

Aim of the study

Our study addresses critical research gaps by identifying “safe windows” for CMV seropositive lactating women, developing clinical guidelines and contributing towards improving the quality of life for this demographic.

Materials and methods

A pilot study recruited 21 CMV IgG seropositive lactating women of varying ages, infant gestational ages and lactation stages who wanted to be donors of human BM. 3 BM samples were collected in 0-1-2 method from participants over the course of 3 consecutive months with 0 as baseline. Validation testing ensured assay accuracy before CMV PCR testing: qualitative PCR targeting CMV DNA polymerase gene and positive samples verified by quantitative PCR using the artus® CMV RG PCR kit.

Results

19% of participants had CMV reactivation (IgM+), and 42% had detectable CMV DNA in at least one BM sample. Generally, viral load was <0.6 copies/µl in IgM-negative women but was >4.1 copies/µl in IgM-positive cases. In transitional milk stages (TMS), viral load declined over time in IgM+ women (>0.2 mIU/ml), suggesting an immune response. However, this pattern was absent in mature milk stages (MMS), where IgM levels peaked at the second time point before viral load dropped. Higher IgM levels (>0.2 mIU/ml) correlated with increasing viral copies from baseline in both TMS and MMS, with no decline. Mothers of term babies had consistently low IgM levels (<0.2 mIU/ml), indicating an inverse relationship between gestational age and CMV reactivation risk. No correlation was found between maternal age and viral load.

Conclusions

Our study highlights CMV reactivation in lactating women, linking IgM positivity to viral load. By analyzing 3 time points, we identify trends suggesting a potential “safe window” for breastfeeding, influenced by lactation stage and gestational age. These findings support the development of clinical guidelines that minimize CMV transmission risks while empowering lactating mothers breastfeed, improve maternal-child health or donate BM.

Internal Case Report Session

Session Coordinators:
Martyna Kusiak
Jakub Żmuda

Honorary Patronage:
Polish National Consultant in the Field of Internal Medicine

Sponsor

Anti-HLA Antibodies and Proteinuria in a Pregnant Patient with IgA Nephropathy.

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Background

IgA nephropathy (IgAN) is the most common form of primary glomerulonephritis. The disease is typically diagnosed during the second or third decade of life. Treatment of patients who want to get pregnant can be challenging since both disease and drugs used to treat it are associated with an increased risk of miscarriage or premature delivery.

Case Report

33-year-old woman, at 9 weeks' pregnancy, with a diagnosis of IgAN was presented with increased proteinuria (up to 2.5 g/day). She stopped taking steroids and angiotensin converting enzyme inhibitor (ACEi) one month before pregnancy, at time her proteinuria was 0.6g/day and creatinine concentration was 1.3mg%. Steroid therapy was not readministered and the pregnancy ended in a miscarriage at 12 weeks. After miscarriage, the patient returned to the same medications as before pregnancy. The proteinuria decreased to 0.6 g/day and creatinine was 1.4mg%. 8 months after miscarriage, the patient stopped again taking ACEi and steroids. She got pregnant 2nd time, proteinuria and creatinine levels increased significantly (2.75g and 1.36mg%, respectively). In the 12th week of pregnancy, treatment with prednisone was initiated. Despite that, proteinuria increased to 3.39 g/day. Due to ineffective treatment, the patient was admitted to hospital. When diagnosing potential reasons for early miscarriage of the 1st pregnancy and progression of proteinuria, anti-HLA antibodies (Ab) against class II antigens were detected in the 17th week of gestation. Additionally, there was a similarity in the HLA-B and HLA-DR antigens between the patient and her spouse. 2 days before delivery, proteinuria increased to 6g/day. The baby was delivered by C-section at 33 weeks of pregnancy and received 9 Apgar points. After pregnancy, proteinuria decreased to 0.7 g/day, creatinine concentration was stable and the anti-HLA Ab decreased significantly. In the next few years, the patient became pregnant 3 more times. During the pregnancies, anti-HLA Ab levels were elevated. Tests revealed the presence of additional anti HLA-DQ Ab.

Conclusions

Pregnant patients with IgAN require continuous monitoring of their proteinuria and serum creatinine levels. The role of anti-HLA Ab in pregnancy remains unknown, but their presence may indicate a need for steroids use in IgAN patients. Also, the immunosuppressive effects of steroids may increase the likelihood of pregnancy delivery in mothers with antibodies against the child's HLA antigens.

Acute Kidney Injury Requiring Hemodialysis and a Remission of Symptoms in a Patient with Adult-onset Still's disease

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Background

Adult-onset Still's disease (AOSD) is an autoinflammatory disease with an unknown etiology. The estimated prevalence is between 0.73 and 6.77 per 100,000 individuals.

Case Report

A 32-year-old male with no diagnosed chronic diseases was admitted to the Nephrology Department with edema, increasing weakness, intense pain of the lumbar region and a sore throat. The symptoms had started 2 weeks before, with an infection and a fever of 39oC. Upon examination, the patient had a nonpruritic salmon-pink rash on his torso, ascites and inguinal lymphadenopathy. The body temperature was 38oC. He was administered meropenem and fluoroquinolones. Laboratory tests showed elevated levels of CRP (227 mg/L), creatine (150 umol/L) and leukocytes (24.93x103/uL) with 98% of granulocytes. CT scans of the head, neck, chest, abdominal cavity and pelvis were performed. They showed mediastinal lymphadenopathy, and no infection source. An echocardiogram showed no indications of infectious endocarditis. During hospitalization multiple blood and urine cultures were tested with negative results. Infections of respiratory, digestive and urinary systems were ruled out, as were neuroinfections, cancer presence and infections of HIV, HBV, HCV. The antibiotics were subsequently discontinued. Rheumatoid factor and ANA tests were negative as were other tests indicative of autoimmune diseases. Blood tests taken regularly during hospitalization showed worsening anemia (2.63x106/uL) and thrombocytopenia (88x103/uL). A trepanobiopsy was performed- it showed non-characteristic reactive changes with an atypical presentation of megakaryocytes. On the sixth day, the patient's condition started to deteriorate, with worsening weakness, dyspnea and anuria. Oxygen therapy and hemodialysis through a catheter were started. A large volume paracentesis was performed due to worsening ascites. Intravenous methylprednisolone and immunoglobulins were administered. Over the next few days, the patient's condition gradually improved and he was discharged with a recommendation to take 16 mg of oral methylprednisolone daily.

Conclusions

The patient met Yamaguchi and Fautrel criteria of an AOSD diagnosis. There have only been a few cases published describing AOSD with acute kidney injury requiring hemodialysis. It is important that clinicians are aware of such a possibility to increase the chances of correct diagnosis and treatment. This is particularly important since kidney involvement in AOSD is associated with higher mortality.

Anti-MDA5 Positive Clinically Amyopathic Dermatomyositis (CADM) as a Rare but Rapidly Progressive Lung Disease – Case Study

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Background

Connective tissue disease (CTD) related interstitial lung diseases (CTD-ILD) are common cause of chronic lung diseases and are major factor of CTD-related mortality. Most of cases are constantly recurring with gradual progression. However it may rarely develop as a rapid-progressive interstitial lung disease (RP-ILD) without any prodromal syndromes. Anti-MDA5 clinically amyopathic dermatomyositis (CADM) is extremely rare disease which can imitate acute pneumonia and therefore delay diagnosis.

Case Report

72-year-old woman was admitted to Internal Medicine Department due to non-productive cough, dyspnea on exertion and general malaise. Crackles were audible at the bases of both lungs. The patient presented partly compensated respiratory alkalosis with moderately increased levels of leukocytes and C-reactive protein (CRP). She did not have fever, night sweats, any chest pain and did not complain of muscle weakness or weight loss. Her medical history included cholecystectomy, hypercholesterolemia and 20 pack-year smoking history. The X-ray revealed bilateral pneumonia. After treatment with the antibiotics, patient presented no improvement. Coronary CT angiography (CTA) showed bilateral ground-glass opacities and thickening of interlobular septa. Due to the worsening condition, the patient was transferred to the Pulmonology Department. On admission, dyspnea at rest and increased respiratory effort was present with SpO2 74% on oxygen mask. The patient had cyanosis of the palms of hands and yellow spots on the fingernails. A detailed medical history revealed the presence of ulcers and wounds of metacarpophalangeal joints for about six months. Her mother suffered from undefined lung disease. Due to suspected CTD, a panel of antibodies was performed, revealing high levels of MDA-5 and Ro-52 antibodies. Consequently, a diagnosis of clinically amyopathic dermatomyositis was established. The treatment with glucocorticoids was initiated, followed by tacrolimus and cyclophosphamide. Unfortunately the patient died 16 days after admission to the hospital.

Conclusions

Lung manifestations of connective tissue diseases need to be considered when patient have untypical symptoms or does not respond to typical treatment. Severe skin changes and rapid-progressive interstitial lung disease are most typical for anti-MDA5 positive dermatomyositis. Patients with anti-MDA5 positive CADM have poor prognosis and require aggressive immunosuppressive therapy.

Breaking Barriers in Tumor Diagnosis: Intravascular Biopsy for an IVC-Infiltrating Abdominal Mass – A Case Report

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Background

Inferior vena cava (IVC) masses are rare and can arise primary or secondary to tumors. CT and MRI, are helpful in assessing the size and location of the tumor, however a biopsy is essential for a definitive diagnosis and adequate further treatment. Percutaneous needle biopsy (PNB), although effective, can cause hemorrhages, especially in highly vascularized tumors and limit the tissue sample size. A percutaneous endovascular biopsy (PEB) might be a safer option.

Case Report

A 20-year-old male was referred to the endocrinology clinic after the detection of an abdominal mass on a CT. He had persistent hypertension (SBP 190 mmHg) treated with nebivolol, that reduced the SBP temporarily. He reported periodic headaches, epistaxis and sporadic syncope. Further CT and MRI revealed a large, polycyclic tumor (161x95x178 mm) in the left meso- and epigastrium, containing both solid and fluid components, with features of restriction and diffusion. High intensity on T-1 weighted images showed bleeding within the tumor. Numerous, sinuous vessels infiltrated the left renal vein (LRV) and the IVC causing the latter to become distended up to 48 mm. The tumor most likely originated from the left renal hilum. Given the extensive vascularization, a PNB carried too high a risk of a severe hemorrhage. A PEB of the mass was chosen instead. IVC was accessed via the right internal jugular vein under local anesthesia. Using a 7F sheath endomyocardial forceps were advanced into the IVC. Because of the forceps' bendable shaft, the LRV could be reached as well. 3 tissue samples were obtained – 2 from the IVC and 1 from the LRV. The material was preserved in formalin. The procedure was completed without complications (total radiation dose - 0.15 mGy). Microscopy revealed malignant tumor tissue composed of small, relatively uniform round cells with scant cytoplasm that tested positive for CD99, FLI1, CKIT, ERG and cyclin D1, suggesting a tumor from the Ewing sarcoma/primitive neuroectodermal tumor family. He was referred to the Oncology Institute for treatment initiation.

Conclusions

The diagnosis of IVC masses can prove difficult even for specialists. PEB appears to be an effective and safe alternative, especially in high-risk patients. Multidisciplinary collaboration and spreading awareness of PEB on tumor board meetings are crucial for facilitating its broader implementation. This can enable precise histopathological and immunohistochemical evaluation and lead to the improvement of therapeutic outcomes.

Catheterization of the Hemiazygos Accessory Vein: A Rare Complication of Central Venous Access – A Case Report

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Background

Central venous catheters (CVCs) are commonly used for vascular access in the administration of fluids, drugs, and parenteral nutrition. One possible complication of CVC is malposition, which refers to the accidental catheterization of tributaries of the superior vena cava (SVC). An uncommon but potentially possible malposition involves catheterization of the hemiazygos accessory vein (HAV). The HAV originates from four to eight upper left posterior intercostal veins and descends in the posterior mediastinum on the left side of the thoracic vertebral bodies. The termination of the HAV is highly variable; possible variations include drainage into the hemiazygos vein, the azygos vein, or the left brachiocephalic vein. We present the case of a patient who developed catheter-related complication during their intensive care unit (ICU) stay.

Case Report

A 24-year-old patient was admitted to the ICU from the Department of Hepatology due to acute renal failure associated with acute pancreatitis. To obtain vascular access, an 8-French cannula was inserted into the left internal jugular vein (LIJV) as a CVC. The catheter was placed without resistance to a depth of 20 cm. Routine post-placement chest X-ray (CXR) in a supine position showed an abnormal location of the catheter on the left side of the inferior mediastinum. After repositioning, a follow-up CXR showed the tip of the catheter positioned slightly higher. Venous blood gas and central venous pressure measurements were confirmed presence in the venous vessel, the catheter was left in place. A computed tomography (CT) scan performed for other reasons revealed the presence of the catheter within the HAV lumen. The catheter was removed, and another was then placed in the opposite internal jugular vein under. The exact location in the SVC was confirmed by CXR and USG.

Conclusions

In the case of CVC malposition into the HAV, CXR may be an insufficiently accurate method for controlling the position of the catheter tip. If the clinical presentation or chest X-ray suggests this complication, it is worth considering a chest CT scan. The preferred management strategy includes immediate removal of the malpositioned catheter and placement of a new catheter at a more reliable site, such RIJV, femoral veins.

Diagnosis of Autoimmune Lymphoproliferative Syndrome with Initial Presentation of Recurrent Hodgkin's Lymphoma

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Background

Autoimmune lymphoproliferative syndrome (ALPS) is a rare disease caused by disruption of lymphocyte apoptosis, usually associated with germline FAS mutations. ALPS typically manifests early in life with chronic non-malignant lymphoadenonopathy, hepatosplenomegaly and autoimmune cytopenias. Lymphomas are late complications of ALPS. Here we report a case of an adult patient with Hodgkin's lymphoma (HL) in whom ALPS was diagnosed only upon a diagnosis of recurrent lymphadenopathy after accomplished HL treatment.

Case Report

A 25-year-old male was diagnosed with nodular sclerosis classical HL in January 2016. At diagnosis the disease was classified as stage IIIB according to Lugano classification. The patient received 4 cycles of escalated BEACOPP chemotherapy, followed by 4 cycles of ABVD, and achieved complete metabolic response (mCR). In December 2017 a PET/CT scan revealed a disease relapse that was subsequently treated with BGD (bendamustine, gemcitabine, dexamethasone) with autologous hematopoietic cell transplantation for consolidation. The patient suffered from severe complications, e.g. engraftment syndrome, polyetiological pneumonia (including Pneumocystis jirovecii) complicated by respiratory failure requiring mechanical ventilation and bleeding to the CNS. ICU transfer was required. Due to delayed engraftment, the patient received a boost of stem cells. Eventually the patient improved and was discharged from the hospital. In the following years two PET/CT scans performed for lymphadenopathy suggested disease relapse, but histopathological examination excluded the presence of HL. In August 2021 the patient developed autoimmune thrombocytopenia, requiring immunosuppressive therapy. At the time new information became available on the diagnoses of ALPS in patients' nephews, born recently. This led to comprehensive diagnostic for ALPS i.e. the whole exome sequencing as well as flow cytometry analysis for double-negative T-cells and reevaluation of the previous histopathological findings . The results confirmed that the patient has ALPS-FAS in December 2022, and the patient was started on sirolimus.

Conclusions

The case highlights the importance of considering inborn errors of immunity (IEI) in adult patients diagnosed with lymphomas, with a possibility that lymphoma is the first (noticed) manifestation of IEI. Additionally, these findings underline the importance of histopathological verification of potential relapse to avoid unnecessary exposure to cytotoxic treatment.

Granulomatosis with Polyangiitis and Renal Cell Carcinoma: a Case Report

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Background

Granulomatosis with polyangiitis (GPA), previously known as Wegener's granulomatosis, is a rare necrotizing vasculitis affecting small and medium-sized blood vessels, often involving the kidneys and leading to pauci-immune glomerulonephritis. In patients with pre-existing renal disease detecting malignancies can be challenging due to overlapping clinical and radiological findings. Chronic inflammation and structural changes in renal tissue may mask early signs of renal cell carcinoma (RCC), delaying diagnosis and complicating treatment.

Case Report

A 39-year-old male with a history of granulomatosis with polyangiitis (GPA), diagnosed in 2018 based on positive C-ANCA, elevated inflammatory markers and renal biopsy confirming pauci-immune glomerulonephritis, was treated with intravenous methylprednisolone and cyclophosphamide (total cumulative dose ~5 g), followed by rituximab due to disease progression. Despite the treatment, renal function declined and fatigue persisted, leading to a rheumatologist consultation. Laboratory tests showed worsening renal function with serum creatinine increasing to 419 μmol/L, persistent non-nephrotic proteinuria (0.92 g/24 h, albumin 572 mg/L) and microscopic hematuria (6 erythrocytes/μL). Despite these findings, kidney ultrasound did not show any significant structural changes. Given these clinical findings, a recurrence of vasculitis was suspected and immunosuppressive treatment was started with two doses of cyclophosphamide, later switched to rituximab due to insufficient response. However, no clinically significant improvement was observed. Due to diagnostic suspicion, a percutaneous kidney biopsy was performed, revealing histological suspicion of renal cell carcinoma. Based on these findings, pelvic CT was performed which identified a 4.3 cm solid mass in the upper pole of the right kidney. After multidisciplinary discussion, a radical nephrectomy was performed and histopathological examination confirmed renal cell carcinoma (clear cell type, Fuhrman grade 2).

Conclusions

This case underscores the challenge of identifying renal malignancies in patients with pre-existing GPA-related kidney disease. Chronic inflammation and structural renal changes can obscure oncological signs, highlighting the need for a comprehensive diagnostic approach. The rare coexistence of pauci-immune glomerulonephritis and renal cell carcinoma requires careful clinical evaluation to ensure timely cancer detection in vasculitis patients.

Iatrogenic Bile Duct Injury – From Nonspecific Symptoms to Effective Therapy

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Background

Iatrogenic bile duct injury (BDI) is a rare but serious complication of laparoscopic cholecystectomy (LC). Due to its nonspecific symptoms and challenges in the diagnostic process, including inconclusive medical imaging findings, the diagnosis and management are often delayed. We present a case of a 43-year-old woman with BDI following an elective LC, initially misdiagnosed as a postoperative hematoma.

Case Report

A 43-year-old woman was admitted with severe abdominal pain radiating to the back, right shoulder, and epigastrium. She had a history of LC for gallstone disease carried out 19 days prior to admission, complicated by a relaparotomy on day 0 due to suspected bleeding. She was since hospitalized with similar symptoms and discharged with a diagnosis of a postoperative hematoma. Physical examination revealed a distended abdomen tender to palpation in the upper right quadrant, with positive Blumberg sign. Laboratory tests showed elevated cholestasis markers (ALP 455 U/L) and transaminases (ALAT 86 U/L, ASPAT 62 U/L), mildly increased inflammatory parameters (CRP 9,7 mg/L), mild anemia (HGB 11,3 g/dl), thrombocytosis (PLT 703 10^3/μL), and high D-dimer levels (3519 ng/ml). Cholangiography-MR revealed a known fluid collection without clear communication with the bile ducts. However, due to persistent symptoms, bile duct perforation could not be excluded. ERCP confirmed a significant contrast leak, leading to a wide sphincterotomy and complete aerobilia, ; a straight plastic stent was placed in the right hepatic duct to stop the leak. During hospitalization, antibiotic therapy was administered, and follow-up imaging showed resolution of the peritoneal fluid collection with symptom relief.

Conclusions

Iatrogenic BDI after LC is a rare but potentially life-threatening complication that can lead to bile leaks, infections, strictures, and even liver failure. Its nonspecific symptoms can mimic other postoperative conditions, such as hematomas, cholangitis, or thromboembolic complications, making the diagnostic process challenging. Imaging alone may be inconclusive, necessitating further invasive intervention. In patients with persistent symptoms and cholestasis, additional procedures like ERCP should be considered. Early endoscopic intervention with biliary stenting is crucial in preventing further complications. This case underscores the importance of timely diagnosis and a multidisciplinary approach to managing BDI.

IgG4-inrelated Retroperitoneal Fibrosis with Bilateral, Symmetrical Sclerotic Bone Lesions in a Young Patient

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Background

Retroperitoneal fibrosis (RPF) is a rare immune-mediated condition featuring progressive fibrosis and obstruction of nearby structures including the kidneys and ureters. It is classified as IgG4-related or unrelated. RPF is also a symptom of the very rare Erdheim-Chester disease (ECD) characterized by histiocyte infiltration in tissues/organs and bilateral symmetrical lesions in bones (typically osteosclerosis) in 50% of cases. This presentation discusses RPF causes through a case study.

Case Report

23-year-old man was admitted to urology department with acute left lumbar pain, left-sided hydronephrosis and hydroureter in ultrasonography. CT revealed a soft tissue mass at the site where ureter crosses the external iliac artery. A nephrostomy was performed. Bilateral sclerotic bone lesions and suspected RPF led to referral to rheumatology. Laboratory test showed slightly elevated inflammatory markers – erythrocyte sedimentation rate - 23 mm/h and C-reactive protein -18 mg/L, normal immunological tests (antinuclear antibodies, C3, C4 component of complement, rheumatoid factor, anti-neutrophil cytoplasmic and anti-citrullinated protein antibodies), no cryoglobulins or monoclonal proteins. Serum IgG4 concentration was slightly elevated (1020 mg/L). An autoinflammatory process was suspected, and the patient was treated with prednisone (70 mg/day), tapered to 25 mg/day plus methotrexate (15 mg/week) leading to reduced inflammation. Nephrostomy was replaced with ureteral stenting. Laparoscopic biopsy of the retroperitoneal mass showed no IgG4-RD or ECD features, and IgG4-RD criteria were not met. RPF was classified as idiopathic. Imaging diagnostic (CT, MRI, PET) revealed symmetrical, bilateral sclerotic lesions in the ribs, clavicles, and pelvis, previously seen on X-Ray 15 years ago without further diagnosis or progression. Bone lesions lacked periosteal destruction or systemic symptoms suggesting a non-proliferative disease, but the final diagnosis requires a bone biopsy. ECD is possible despite no coexisting symptoms (e.g. in the skin, kidneys, periorbital site) and no specific histopathological findings. Next steps include bone biopsy and genetic testing for ECD predispositions.

Conclusions

RPF is a rare condition with diverse causes, including rare IgG4-RD and very rare ECD, or idiopathic origins. Its varied manifestations and difficulties in obtaining biopsy samples complicate diagnosis. Reporting atypical RPF cases is crucial for improving understanding, treatment and prognosis.

Is ABPA Underdiagnosed in Severe Asthma? A Case Report of a Patient on Biological Therapy

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Background

Allergic bronchopulmonary aspergillosis (ABPA) is pulmonary disease caused by colonisation with Aspergillus fumigatus predominantly found in patients with asthma or cystic fibrosis. Symptoms include wheezing, shortness of breath, haemoptysis, coughing, and expectoration of golden-brown mucus plugs. Notwithstanding its frequent underdiagnosis, it is estimated that over 4 million individuals globally are afflicted by ABPA. Here, we report a case where diagnostic measures for ABPA were implemented during treatment with the monoclonal antibody mepolizumab.

Case Report

A 35-year-old male non-smoker with severe asthma, perenellial allergen sensitivity, and chronic paranasal sinus inflammation, was initiated on biological therapy with the anti-IL-5 monoclonal antibody, mepolizumab. At baseline, the patient's quality of life questionnaire score (AQLQ) was 2.4, while asthma control (ACQ) was 3.0, forced expiratory volume in one second (FEV1) was 3.51L, and the patient experienced five exacerbations annually. After two years, treatment was suspended with an AQLQ of 7.0 and ACQ of 0.0. However, due to symptoms of bronchiectasis, a CT scan was performed, revealing central bronchiectasis and raising suspicion of ABPA. Five months after discontinuation, exacerbations occurred, with an AQLQ of 3.9 and ACQ of 2.6. Treatment with mepolizumab was resumed. The diagnostic criteria for ABPA according to ISHAM were not met (negative precipitins and aspergillosis tests). Therapy was adjusted, resulting in an improvement in FEV1 from 3.45L to 4.78L. At follow-up, the patient's AQLQ was 6.9, ACQ was 0, and FEV1 was 4.60L, demonstrating excellent clinical improvement, as confirmed by the Global Evaluation of Treatment Effectiveness (GETE).

Conclusions

Severe asthma is a significant risk factor for ABPA, and in the presence of bronchiectasis symptoms, differential diagnosis is essential. Biological treatment can be effective even in patients with bronchiectasis, and such cases may warrant a closer evaluation for ABPA, which is often underdiagnosed. Early diagnosis is crucial to prevent irreversible damage caused by untreated ABPA and to guide appropriate therapy adjustments.

One Does not Fit All: Considering Genetic Diagnosis in a Young Woman with Diabetes Mellitus and End-stage Renal Disease

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Background

Chronic kidney disease (CKD) is a major health concern, with diabetes mellitus being the leading cause. End-stage renal disease (ESRD) in young adults necessitates a broader differential diagnosis, including less common genetic conditions. Alport syndrome (caused by mutations in COL4 genes) and nail-patella syndrome (caused by LMX1B gene mutations) are examples. This case highlights diagnostic challenges in young adults with ESRD, emphasizing the importance of considering less prevalent etiologies, even in the presence of more common risk factors.

Case Report

A 30-year-old female with latent autoimmune diabetes in adults (LADA), hypothyroidism, hypertension, autism spectrum disorder, and mild mitral regurgitation presented with nephrotic syndrome. Investigations confirmed stage 5 CKD. Due to advanced kidney damage, a kidney biopsy was not performed. A comprehensive workup, including genetic testing, was initiated. This revealed mutations in both COL4A3 and LMX1B genes. The patient is now awaiting preemptive kidney transplantation.

Conclusions

Although diabetes mellitus and arterial hypertension are frequent contributors to CKD, as highlighted by the Kidney Disease: Improving Global Outcomes (KDIGO) 2024 guidelines for the evaluation and management of CKD, the relatively early onset of ESRD in this patient, along with the presence of nephrotic syndrome, suggests that these conditions alone may not fully account for the decline in her kidney function. Genetic syndromes can be insidious, with subtle early manifestations leading to delayed diagnoses. Therefore, despite the presence of diabetes mellitus and arterial hypertension, the possibility of an underlying genetic condition such as Alport syndrome or nail patella syndrome warrants further investigation, including genetic testing. This case highlights broad differential diagnosis importance in adults with ESRD, even with other contributing factors, for timely, accurate diagnosis and management.

Pulmonary Angiosarcoma - a Rare Cause of Chronic Cough.

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Background

Chronic cough (CC) affects 4-10% of adults. It may be a symptom or results from hypersensitivity of cough reflex. The most common CC causes are smoking related bronchitis and COPD while in non-smoking patients - asthma, gastroesophageal reflux or upper airway disease. Neoplastic diseases are rare cause of CC in non-smoking adults. Angiosarcoma is a very rare, aggressive malignant vascular neoplasm, which may be related to prior radiation exposure. We present the case of woman with refractory CC which occurred to be caused by pulmonary angiosarcoma secondary to the previous radiotherapy due to breast cancer.

Case Report

82-year-old woman, ex-smoker with dry CC lasting for 2 years and running nose was referred to the cough clinic. She denied fever, weight loss, chest pain, shortness of breath or hemoptysis. Her medical history included left sided mastectomy followed by radiotherapy and chemotherapy due to breast cancer. Despite post mastectomy scar there was no abnormalities in physical examination. With the exception of an elevated total IgE (700 IU/ml) with positive specific IgE for mugwort and ragweed, the results of her other laboratory tests were irrelevant. Chest CT revealed slight fibrosis and atelectatic region with traction bronchiectasis in segment 3 of the left lung, which were interpreted as abnormalities related to previous radiotherapy. The preliminary diagnosis of chronic rhinitis and bronchiectasis as cough reasons was established, but the treatment was ineffective. Bronchoscopy was performed, but it did not reveal abnormalities and microbiological tests were negative. After 1 year cough increased and hemoptysis and fever occurred. In chest X- ray new consolidation in the left upper lobe and left pleural effusion were found. Chest CT revealed progression of inflammatory changes with new consolidation and ground-glass areas in both lungs as well as left pleural effusion. Pulmonary embolism was excluded. Thoracentesis, bronchoscopy with EBUS, a CT guided transbronchial lung biopsy (CT-TBLB) did not reveal any neoplastic cells. PET-CT with FDG suggestive for diffuse neoplastic process. Repeated CT-TBLB revealed pulmonary angiosarcoma of the left lung. Due to general condition and anemia (ECOG 3), the patient was not eligible for the oncological treatment.

Conclusions

Although most causes of CC are diseases with a good prognosis, we should not forget about rare causes of cough. The diagnosis and treatment should be personalized for each patient.

Recurrent Alveolar Echinococcosis (AE) in Lungs: A Case Report

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Background

Alveolar echinococcosis (AE) is caused by the tapeworm Echinococcus multilocularis that primarily affects the liver, but cases of pulmonary involvement have been reported. This case highlights the difficulties in treatment of AE.

Case Report

In 2023, 28-year-old male presented to the pulmonology department due to persistent cough and hemoptysis. The computed tomography (CT) revealed several cysts in the right lung and one cyst in the right lobe of liver and another one between the liver and the right kidney. The patient was transferred to the infectious diseases hospital with suspicionof AE. In childhood the patient had a history of 4 lung surgeries (in the years 2004, 2005, 2009 and 2014) due to recurrence of E.multilocularis infection. Since 2009 the patient was treated with albendazole for several years. The patient did not have his medical documentation from his childhood treatment. According to the patient previously he never had any cysts diagnosed in his liver. Since his transfer from Ukraine to Poland in 2018 he did not have any medical follow-up until his symptoms appeared in 2023. Serological tests confirmed E. multilocularis infection and the CT scan confirmed another recurrence of AE in the lungs and appearance of a new cyst in the liver. The patient was restarted on albendazole and was qualified for two surgeries and was transferred to the surgery department. The removal of the abdomen cysts was conducted, followed by another lung surgery. Thoracotomy was complicated by a hemothorax. The patient was re-operated and discharged home in good general state. Two weeks later the patient started having fever, was coughing and had elevated parameters of inflammation: WBC 12,690/ml, CRP 177,4mg/l. CT scan showed huge pleural empyema 12x8.6x24.4cm. The patient received treatment with levofloxacin and metronidazole and was again transferred to the surgery department where he underwent pleural drainage and continued antibiotic therapy. Currently the patient has no fever, is not coughing, has no abdominal pain. He continues his follow-up and is taking albendazole on a regular basis.

Conclusions

This case emphasizes the difficulties in treatment of alveolar echinococcosis requiring interdisciplinary care. Incomplete excision of parasitic tissue increases the chance of recurrence of AE, but often radical resections are not possible due to site of the lesion or presence of metastases. Prolonged follow-up of recurrence is necessary.

Renal Manifestations of Tuberous Sclerosis Complex: a Case Report

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Background

Tuberous sclerosis complex (TSC) is a rare genetic disease, affecting TSC1 or TSC2 gene, that manifests as a multisystem disorder defined by the development of numerous benign tumors, called angiomyolipomas (AMLs). Due to TSC, mutations in the genes cause permanent activation of the mTOR pathway, leading to tumorogenicity, cellular proliferation distributed around blood vessels and lastly is mostly manifested in hemorrage. Renal complications due to TSC can lead to chronic kidney disease (CKD) and, in severe cases, end-stage renal disease (ESRD), requiring renal replacement therapy.

Case Report

A 35-year-old female patient known with CKD and a 10-year history of TSC, presented to Nephrology department for monthly check-ups with lack of appetite, asthenia, nausea, vomiting, fatigue suggesting uremic syndrome. In 2013 an abdominal CT showed a right renal AML, angiant left AML with retroperitoneal hemorrhage, indicating a mandatory left total nephrectomy. Renal AMLs can lead to complications such as local growth, mechanical pressure that is imposed on the renal parenchyma, and bleeding. In 2018, the patient was treated with Everolimus (immunosuppressant) with right kidney AML not growing further. The presence of AML on a solitary kidney, hypertension and the reduced number of nephrons precipitated the onset and progression of CKD. She developed proteinuria, possible glomerulosclerosis due to hyperfiltration on the remaining nephrons. Given all the facts, ESRD was established and a vascular access via an AV fistula was created. She was initiated in chronic hemodialysis because of severe azotemia associated with clinical symptoms.

Conclusions

Population-based studies found that 48-to-80 percent of patients, between ages 15-30, with TSC have kidney complications with the presence of AML and progression towards renal insufficiency. In patients undergoing maintenance hemodialysis, the mortality rate, morbidity burden is markedly elevated, accompanied by a comparatively diminished quality of life. Due to the infrequency of TSC, this case highlights the need to spread further awareness. Vigilant surveillance and therapeutic intervention targeting these renal manifestations are imperative to mitigate the risk of CKD in TSC patients.

Secondary Haemophagocytic Lymphohistiocytosis as a Complication of Peritoneal Dialysis

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Background

Hemophagocytic Lymphohistiocytosis (HLH) is uncommon but higly fatal condition if left untreated. It is characterised by hyperactivation of the immune system that can result from underlying genetic mutation (primary HLH) or be assostiated with immune disorders, infections, cancer, and can occur in liver or kidney transplant recipients (secondary HLH). A dialysis-related HLH is very rare.

Case Report

A 46-year-old patient with an idiopathic end-stage kidney disease presented to the A&E department with an initial complaint of leg pain and ulceration. She was admitted to the clinic due to high levels of inflammatory parameters and anemia. An dialysis-related infection was suspected. On admission, there were multiple petechiae scattered across her entire body's surface, abdomen exam was complicated because of dialysis fluid in it. Patient had been on dialysis for 4 years due to idiopathic chronic kidney disease (G5D). Other patient's health conditions included hypertension, atrial fibrillation, chronic heart failure, mild mitral and moderate tricuspid regurgitation, bronchial asthma, varices on lower limbs, obesity. The patient later developed intermittent fever, high CRP, creatine and urea levels, hepatosplenomegaly, diarrhea, skin bullae. Hypertenstion, high HR and anemia persisted. Based on clinical picture and laboratory results, HLH was suspected and therefore a trepanobiopsy was done. The patient was initially treated with antibiotics and etoposide. Microbiological cultures taken appread to be sterile. On the 36th day of her stay, the patient started to deteriorate, developed hypotension; later went into a cardiac arrest. After successful resuscitation, she was transported to the intensive care unit, despite provided treatment, unfortunately, she passed away a couple of days later.

Conclusions

Based on the performed myelogram and history, hemophagocytic lymphohistiocytosis (HLH) was suspected. The patient's HScore equaled 284 points, therefore the probability of this diagnosis was greater than 99%.

Sepsis-Hemophagocytic Lymphohistiocytosis Overlap Syndrome: Challenges in Diagnosis and the Therapeutic Role of Plasma Exchange and Intravenous Immunoglobulins

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Background

Sepsis-Hemophagocytic Lymphohistiocytosis overlap syndrome (SHLHOS) is a rare life-threatening condition of excessive immune activation leading to multiorgan failure. Due to overlapping clinical features with a septic shock, it is often underdiagnosed. We present a case of a 25-year-old male with multiorgan failure and features of HLH, successfully managed with therapeutic plasma exchange (TPE) and immunomodulatory therapy.

Case Report

A 25-year-old male was admitted to the intensive care unit with septic shock. He was initially awake and alert but rapidly deteriorated, developing refractory shock that required escalating doses of vasopressors. His condition progressed to acute kidney failure, requiring dialysis, and he exhibited severe coagulopathy consistent with disseminated intravascular coagulation (DIC). Progressive respiratory failure necessitated endotracheal intubation and mechanical ventilation. The patient developed metabolic acidosis and underwent sustained low-efficiency dialysis (SLEDD). Inflammatory markers were elevated (ferritin 10,000 ng/mL, IL-6>50,000 pg/mL, procalcitonin 172 ng/mL). Despite the initial treatment including broad-spectrum antibiotics, meropenem and vancomycin, and antiviral coverage, as well as an extensive infectious workup—including negative blood, bronchoalveolar lavage (BAL), and urine cultures, along with a negative serology screen—the patient's condition continued to deteriorate. Suspecting SHLHOS, treatment with steroids was initiated alongside therapeutic plasma exchange (TPE) with fresh frozen plasma, intravenous immunoglobulins (IVIG), and antithrombin III. TPE was used to remove inflammatory mediators and stabilize the patient. After 7 weeks in the ICU, the patient was transferred to a step-down unit.

Conclusions

Sepsis-HLH Overlap Syndrome (SHLHOS) is a challenging diagnosis due to the overlapping clinical features of both conditions and the risks of immunosuppressive treatment in a septic patient. This case highlights the need of early recognition and multimodal therapy to mitigate the inflammatory response and prevent organ damage. Given the balance between immunosuppression and the risk of worsening infection, therapeutic plasma exchange and intravenous immunoglobulins were used to modulate immune dysregulation, but their effectiveness in SHLHOS remains unclear, as there are no randomized controlled trials due to the rarity of the condition. This underscores the need for research to establish evidence-based treatment.

Significant Improvement after Salvage Therapy with Nintedanib in a Patient with Post-COVID-19 Fibrosis and Pneumomediastinum

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Background

Interstitial lung disease (ILD) is a heterogeneous group of respiratory diseases characterised by diffused lesions in chest imaging and reduced lung diffusion capacity. Available treatments for ILD include immunomodulators, which improve lung function, and anti-fibrotic drugs, which slow down deteriorating lung function by reducing further scarring and stiffening of the lungs. However, if the disease is progressing despite therapy, lung transplantation becomes the only option to improve the quality of life.

Case Report

A 57-year-old man presented with progressive dyspnoea at rest and fever. On admission, the patient was diagnosed with respiratory failure and a large pneumomediastinum found on computed tomography (CT) scan. The patient had been hospitalized several times in the past few months for the differential diagnosis of ILD, and the onset of his symptoms dated back to COVID-19 infection with mild symptoms a year earlier. Each subsequent chest CT showed systematic progression of interstitial lesions with fibrotic changes. Pulmonary function tests showed moderate restriction and systematic reduction in lung diffusing capacity. The patient received immunomodulatory treatment (corticosteroids and mycophenolate mofetil) in increasing doses, without improvement. On admission, the patient required oxygen therapy at a flow rate of 8 l/min. Appropriate antibiotic therapy was implemented. In the following days of hospitalization, the pneumomediastinum gradually decreased. However, due to the increasing severity of respiratory failure and the development of interstitial lesions, the patient was urgently qualified for lung transplantation with a diagnosis of acute interstitial progressive pneumonia after COVID-19 complicated by respiratory failure. In order to slow the progression of the disease, salvage therapy with the anti-fibrotic nintedanib (2x150mg) was initiated. The implemented treatment resulted in improvement of the patient's general condition, reduction of oxygen requirement and regression of interstitial lesions on subsequent imaging studies. The patient was discharged with passive oxygen therapy (4 l/min), continuation of previous treatment with immunomodulators and nintedanib, and recommendations for pulmonary rehabilitation.

Conclusions

Some patients may develop ILD after COVID-19 infections. The case highlights how the use of nintedanib can effectively slow disease progression and postpone the need for lung transplantation.

Small Intestine Adenocarcinoma in a Kidney Transplant Recipient on Chronic Immunosuppression: A Case Report

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Background

Small intestine adenocarcinoma (SIA) is a rare but aggressive malignancy, often diagnosed at an advanced stage. In immunosuppressed patients, particularly solid organ transplant recipients, the risk of developing malignancies, including SIA, is significantly increased due to chronic immunosuppression. Immunosuppressive agents such as calcineurin inhibitors contribute to an altered tumor microenvironment. Despite these risks, routine cancer screening in transplant recipients remains challenging, leading to delayed diagnoses and poor prognoses. We present a case of a 64-year-old female kidney transplant recipient who developed advanced SIA, underscoring the need for increased oncological vigilance in immunosuppressed patients.

Case Report

The patient had a history of end-stage real disease (ESRD) secondary to chronic glomerulonephritis, necessitating three kidney transplants (1984, 2000, 2019). She was maintained on chronic immunosuppressive therapy, including tacrolimus and mycophenolate mofetil. Over the years, she experienced recurrent urinary tract infections and progressive allograft dysfunction. In mid-2024, she presented with abdominal pain, vomiting, and bowel obstruction symptoms. CT scan revealed thickened small bowel loops and lymphadenopathy, raising suspicion for neoplasia. Serum tumor markers, including carcinoembryonic antigen (CEA), were within normal limits, and liver function tests were unremarkable. The patient underwent exploratory laparotomy with biopsy and segmental resection of the affected small bowel. Histopathological examination confirmed small intestine adenocarcinoma (high-grade, pT3N2Mx, WHO 5th edition) with extensive lymph node involvement. Postoperatively, she developed wound healing complications, requiring vacuum-assisted closure therapy. Her condition eventually deteriorated, and palliative management was initiated.

Conclusions

This case presents the heightened risk of gastrointestinal malignancies, particularly small intestine adenocarcinoma, in long-term kidney transplant recipients. Chronic immunosuppression plays a key role in tumor pathogenesis, yet screening guidelines remain inadequate for early detection. SIA in immunosuppressed patients often presents with nonspecific symptoms, delaying diagnosis and limiting therapeutic options. Our findings emphasize the need for personalized cancer screening strategies and a multidisciplinary approach to improve early detection and outcomes in transplant recipients at high oncological risk.

Unilateral Proptosis as First Presentation of Granulomatosis with Polyangiitis(GPA) – Diagnostic and Therapeutic Challenge.

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Background

Granulomatosis with polyangiitis (GPA) is a necrotizing systemic antinuclear cytoplasmic antibodies (cANCA)-associated vasculitis, affecting predominantly small to medium-sized vessels and necrotizing granulomatous inflammation. Disease features are found in multiple organ systems - nasal involvement is most common clinical finding followed by pulmonary manifestations. Orbital pseudotumor leading to proptosis as a first manifestation of GPA can be difficult to differentiate from malignancies, infections and lesions in course of other autoimmune diseases.

Case Report

67 y.o female patient was admitted to rheumatology department for further evaluation after being referred from the otolaryngology ward where she had been seen for unilateral proptosis, blurred vision, blepharedema. Patient was also presenting occasional mild nasal discharge. Magnetic resonance imaging showed signs of proptosis with retroorbital mass surrounding intraorbital part of optic nerve. Inflammatory lesions was also described in paranasal sinuses. Laboratory tests showed mild leukocytosis and elevated inflammatory markers (ESR,CRP). Immunological tests were positive for antiproteinase-3 antibodies (PR3-ANCA). Chest computed tomography (CT) revealed diffuse pulmonary nodules. Biopsies taken from right nasal cavity and right retroorbital tumor demonstrated features of extensive inflammation, without features of malignancy or other diseases included into differentiation. Patient was diagnosed GPA according to European Alliance of Associations for Rheumatology (EULAR) 2022 classification criteria (nasal passage involvement, cANCA positivity, pulmonary nodules, right retroorbital pseudotumor, histologically features of inflammation). The differential diagnosis included mainly IgG4-dependent disease, sarcoidosis, and eosynophilic granulomatosis with polyangitis (EGPA). Due to risk of vision loss through optic nerve ischemia patient required treatment with cyclophosphamide and high-dose of glucocorticosteroids (GCs) in intravenous “pulses” followed orally. After initial short time response , progression of orbitopathy occurred and patient was qualified to treatment with rituximab.

Conclusions

Orbital pseudotumor can be one of ocular manifestation of GPA. GPA may pose a diagnostic challenge and requires broad differential diagnosis. Histopathological evaluation is often necessary. Early recognition and aggressive treatment may prevent disabling complication (vision loss).

Unmasking Isolated IgG4 Deficiency in Autoimmune Disorders: A Case of Immune Dysregulation and Therapeutic Challenges

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Background

Isolated IgG4 deficiency is a rare condition, as in most cases it coexists with the deficiency of other immunoglobulin classes or subclasses. The clinical significance of this defect is not fully known, but a suggestion exists that one of the roles for IgG4 can be protection from autoimmunity, and perhaps also from recurrent infections. Hereby, we report a case of an adult patient who was diagnosed with isolated IgG4 deficiency. Importantly, at the time of admission the clinical image presented primarily autoimmune disorders with consecutive exaggeration of infectious manifestation following intensive immunosuppressive therapy.

Case Report

A 33-year-old female patient with a history of autoimmune disorders and recurrent infections was admitted to the clinic. She reported symmetrical arthralgia for seven years and elevated inflammation parameters. Initially, the diagnosis was unclassified arthritis, suggesting seronegative rheumatoid arthritis. Genetic testing indicated variants associated with psoriasis and psoriatic arthritis (TNF 308G>A , HLA-C*06). Differential diagnoses at the time included Still's disease, spondyloarthropathy, and endocrine-related joint manifestations. Additionally, the patient experienced recurrent infections in the past, including sinusitis and a history of herpes zoster. The primary treatment was prednisone, then combined with methotrexate and temporarily with cyclosporine and sulfasalazine. After three years of glucocorticoid therapy, the patient gained about 40 kg and developed insulin resistance requiring metformin. As the inflammation parameters were still elevated, in total, five monoclonal antibodies were administered with little curative effect, including upadacitinib, adalimumab, secukinumab, ixekizumab, and guselkumab. In the course of the immunosuppressive treatment, the patient developed bacterial pneumonia and required hospitalization. During the immune diagnostics in our Department, the primary observation was the profound isolated deficiency of IgG4 immunoglobulin subclass. Due to this finding, a modification of the therapy was introduced, i.e. the intravenous injections of immunoglobulins were applied every 4 weeks and the doses of immunosuppressants were gradually reduced. The patient experienced gradual improvement of her clinical status.

Conclusions

This case highlights the challenges in managing autoimmune disorders in the presence of IgG4 deficiency and underscores the potential role of IVIG in modulating immune dysregulation.

When Immunotherapy Affects More than the Tumour: Severe Hepatotoxicity in a Triple-negative Breast Cancer Patient Treated with Pembrolizumab.

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Background

Breast cancer is the most common neoplasm affecting women and a leading cause of death. Triple-negative breast cancer (TNBC) is an aggressive subtype of breast cancer, which is associated with earlier onset and increased risk of primarily distant recurrences. It is characterized by lack of expression of estrogen receptor (ER), progesterone receptor (PR) and human epidermal growth factor 2 (HER2). Due to the absence of therapeutic targets, treatment of TNBC has been challenging. The programmed death 1 inhibitor - pembrolizumab - was found beneficial for patients with early-stage TNBC. However, immunotherapy might induce some potential side effects that must be monitored and may require discontinuation of the therapy.

Case Report

A 30-year-old patient was referred for imaging after finding a lesion in her right breast during self-examination. A tumour size of 55x50 mm and 3 enlarged axillary lymph nodes were revealed with no signs of distant metastases. TNM cT3N2M0 was established. In histopathological examination, a specimen was assessed as grade 3 TNBC with Ki67 90%. Systemic neoadjuvant chemotherapy with the addition of pembrolizumab was initiated. After the fourth cycle of pembrolizumab, clinically asymptomatic hepatotoxicity occurred, manifesting as a rapid increase in transaminases and bilirubin levels. Intensive hepatoprotective treatment along with infusions of methylprednisolone were administered and normalization of liver function parameters was achieved. Due to the occurrence of immune-related hepatitis, pembrolizumab treatment was discontinued. Chemotherapy was continued with satisfactory tolerance. Modified radical mastectomy with subsequent radiotherapy was performed. The patient achieved a complete pathological response and remains under surveillance with no evidence of disease recurrence.

Conclusions

Modern treatment methods, such as immunotherapy, can be highly beneficial by increasing overall survival and improving event-free survival in patients with neoplasms of unfavourable prognosis. However, as this case illustrates, such treatments may lead to rare and severe adverse reactions, highlighting the importance of awareness and early recognition of these complications, which is essential not only for clinical oncologists but also for specialists in internal medicine, as patients experiencing such complications are most often admitted to their departments. That is why a multidisciplinary approach is crucial for ensuring both optimal outcomes and patients' safety.

Internal Medicine Session

Session Coordinators:
Kaja Tyszkiewicz
Pola Tyszkiewicz

Honorary Patronage:
Mazovian Voivodeship Consultant in the Field of Infectious Diseases

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Evaluation of Changes in Biogenic Amines and Glycerophospholipids in the Course of Biological Therapy with Benralizumab.

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Introduction

Asthma remains one of the most common chronic inflammatory diseases and is characterized by variable respiratory symptoms and airway obstruction. Clinically, patients experience recurrent wheezing, cough, and shortness of breath. Although most people control their symptoms with bronchodilators and inhaled steroids, there is a group of patients who are resistant to treatment. Benralizumab is an IL5-receptor (IL-5Rα, CD125) monoclonal antibody approved for the treatment of severe eosinophilic asthma (SEA). Although clinical trials indicated the efficacy of benralizumab in eliminating asthma exacerbation, its effects on metabolomic profile have not been described so far.

Aim of the study

Our study aimed to evaluate the changes in the biogenic amines profile of asthma patients at admission and during the biological treatment with benralizumamb.

Materials and methods

Venous blood from 10 adult patients diagnosed with severe uncontrolled asthma, qualified for biological treatment with benralizumab, were collected before and during the following stages of therapy. LC-MS and FIA techniques were used to determine metabolome profiles at Metabolomics Division of MUB. Commercially available IDQ p180 Biocrates kit was applied to analyze the metabolites. Statistical analysis was performed using GraphPad Prism and Metabo Analyst software.

Results

Firstly, at the initial stage, we indicated statistically significant changes in the level of biogenic amines after 12-24 months of therapy with benralizumab. Serotonin, Alpha-aminoadipic acid and Met-SO levels were found to be elevated after drug administration. Furthermore, patients with severe uncontrolled asthma presented a significant increase in glycerophospholipids within two years of the therapy. Interestingly, enrichment analysis has shown that mitochondrial beta oxidation of short-chain saturated fatty acids and catecholamine synthesis are associated with response to the benralizumab therapy. Noteworthy, pathway analysis revealed a substantial impact of glycolysis and gluconeogenesis pathways and degradation of essential amino acids on the changes reported between treated and untreated asthma patients.

Conclusions

Despite the beneficial effects of benralizumab in managing severe asthma, the mechanisms of those events remain undiscovered. Benralizumab causes significant changes in the metabolic profile of patients after 12-24 months of therapy. Further studies are required to establish whether newly discovered metabolites affect biological therapy efficiency.

Analysis of Treatable Traits in the Therapy of Chronic Cough.

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Introduction

Chronic cough (CC) is a prevalent condition affecting 4-10% of adults, predominantly middle-aged females. It has a significant impact on the quality of life. Its management presents a significant challenge. Current guidelines suggest that treatment of CC should be based on treatable traits, such as smoking, ACEI treatment, productive cough, eosinophilic airway disease, gastro-oesophageal reflux disease, upper airway symptoms, obstructive sleep apnea or obesity.

Aim of the study

The aim of the study was to analyse which of the aforementioned traits are predictors of response to cough therapy in patients treated in the cough clinic of Department of Internal Medicine, Pulmonary Diseases and Allergy.

Materials and methods

Data from all adults with CC diagnosed in our cough clinic between 2018-2024 were retrospectively analysed. The causes of CC were diagnosed according to the present recommendations and therapy was adjusted according to the cough diagnosis. Cough severity was assessed using the 100 mm Visual Analogue Scale (VAS) and responders to therapy were defined when a reduction of cough severity ≥30 mm in VAS was documented at a follow-up visit. Chi-square and Mann-Whitney tests were used to analyse differences between responders and non-responders to the applied cough therapy.

Results

There were 288 patients (200 F/88 M, median age 57 years [IQR 45-68]) with median cough duration of 48 months (IQR 24-120) and median cough severity 51/100 mm in VAS (IQR 31-73). Significant reduction of cough was documented in 76 (26.4%) subjects. We did not identify differences in patients' demographics, cough characteristics and in prevalence of cough causes (such as asthma, GERD or upper airway diseases) between responders and non-responders. However, our study showed that responders to cough treatment had a higher blood eosinophil count (190 vs 80 cells/μL, p=0.0005) and higher serum total IgE (55.3 vs 19.3 IU/ml, p=0.047). Additionally, we found a tendency of higher FeNO in responders (19.8 vs 15.6, p=0.074).

Conclusions

Among our patients with CC, the only treatable traits that predicted a positive response in therapy of CC were features of eosinophilic airway inflammation.

Cognitive impairment in patients awaiting kidney and liver transplantation-A clinically relevant problem?

Authors

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Introduction

Cognitive impairment (CI) among patients with end-stage kidney disease (ESKD) and alcohol-related liver cirrhosis, awaiting transplantation, remains an underestimated but escalating concern worldwide. Pre-existing, unrecognized CI may negatively impact the transplantation process by affecting adherence to clinical and pharmacological recommendations.

Aim of the study

The aim of this study was to assess the prevalence and patterns of CI in patients awaiting kidney and liver transplantation, and to identify its determinants.

Materials and methods

In this cross-sectional, prospective study, 31 consecutive patients with ESKD and 31 consecutive patients with alcohol-related liver cirrhosis, all currently on transplant waiting lists, were screened for cognitive decline using the Addenbrooke's Cognitive Examination. Medical history, demographics, and laboratory test results were also collected.

Results

The prevalence of CI among patients with ESKD and alcohol-related liver cirrhosis was 26% and 90%, respectively. In both groups, memory was the most affected cognitive domain, along with verbal fluency in patients with ESKD, and visuospatial abilities in patients with alcoholic cirrhosis. The most statistically significant increase in the prevalence of CI was found in patients with lower educational attainment, in both alcohol-related liver cirrhosis and ESKD populations as well as in older patients with alcoholic cirrhosis. Furthermore, better cognitive functioning in ESKD patients was associated with higher levels of total lymphocyte count and alanine transaminase (ALT), and in alcohol-related liver cirrhosis patients with higher levels of ALT and aspartate transaminase. A nonsignificant trend toward lower memory domain scores was also observed with increasing ammonia levels and increasing severity of liver disease (higher Child-Pugh scores). Finally, suboptimal performance on the screening test was correlated with the severity of liver disease as assessed by the Model for End-Stage Liver Disease Sodium (MELD-Na), however not at the statistically significant level.

Conclusions

The prevalence of CI, especially in patients with alcohol-related liver cirrhosis, is high and can be a significant clinical problem, negatively affecting the transplantation process. Routine screening tests in this group would contribute to the implementation of appropriate management, such as rehabilitation program or psychosocial treatments and facilitate the provision of specialized health care.

Crohn's Disease Treatment Effect on Plasma Histidine Levels

Authors

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Introduction

Crohn's disease (CD) is an immune-mediated inflammatory disorder of the gastrointestinal tract with a relapsing–remitting course. In recent years, there has been a significant increase in CD incidence globally. The pathogenesis of Crohn's disease is not fully explained. Amino acids (AAs) may play important roles in Crohn's pathogenesis, due to their involvement in immune and metabolic functions.

Aim of the study

The aim of the study was to analyze changes in plasma amino acid levels and their dependence on the patient's treatment. Nowadays many treatments are available, such as: biological treatment, immunosuppressants, glucocorticoids (GKS), aminosalicylic acid (ASA), biological therapy or surgery. Their impact on amino acid profile remains not fully understood.

Materials and methods

The study group consisted of 29 CD patients (16 women and 13 men) with median age of 33.9 years (range 18–70 years) diagnosed at the Department of Gastroenterology, Pomeranian Medical University in Szczecin, according to the Porto criteria, modified by ECCO guidelines. Histologic evaluation of diagnostic biopsy specimens was performed by an experienced pathologist. The control group included 30 patients (20 women and 10 men) with a median age of 41.8 years (range – 23-76 years). An analysis of clinical and histological data and CD symptoms was performed. In both groups, the level of amino acids in plasma were measured by a liquid chromatography–mass spectrometry system at the Mass Spectrometry Laboratory, Institute of Biochemistry and Biophysics, Polish Academy of Sciences (Warsaw, Poland). The analysis of amino acids included treatment given to CD patients: immunosuppressants (16%); glucocorticoids (9%); biological therapy (14%); aminosalicylic acid (ASA) (26%).

Results

The profile of tested amino acids changed, under the influence of the therapy. Among of them, histidine differed statistically significantly (p-value<0.05). The changes in histidine levels were most noticeable in groups of patients treated with GKS (decreased) and ASA (increased).

Conclusions

Histidine is an amino acid with an imidazole side chain that provides proton buffering, metal ion chelation, and antioxidant properties. It scavenges reactive oxygen species (ROS) and reactive nitrogen species (RNS) and sequesters advanced glycation end products (AGEs) and advanced lipoxidation end products (ALEs). Changes in histidine levels after treatment of CD

Does Refined Iron Deficiency Classification Improve Risk Prediction in Congestive Heart Failure? A Retrospective Cohort Study

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Introduction

Iron deficiency frequently coexists with congestive heart failure, increasing morbidity and mortality. Although guidelines typically define it as ferritin below 100 ng/mL or 100–299 ng/mL plus transferrin saturation under 20%, exact stratification remains unclear. Intravenous iron therapy shows benefits, yet definitive thresholds for deficiency, adequacy, and hyperferritinemia are lacking.

Aim of the study

This study compares a machine learning–devised model vs. a clinically based model in predicting time-to-event outcomes in CHF, refining stratification beyond current guidelines.

Materials and methods

A retrospective design included adults aged 18–89 with congestive heart failure hospitalized for at least one day, with iron panels obtained within 24 hours of admission. Electronic data were gathered by text-mining and standard record searches. Kolmogorov–Smirnov guided normality checks, and parametric or nonparametric tests were selected accordingly. Kaplan–Meier analysis and Cox regression assessed one-year mortality. The machine learning model ("final category tertile") defined T1 as ferritin below 100 ng/mL or 100–299 ng/mL with transferrin saturation under 20%, T2 as ferritin 100–299 ng/mL with transferrin saturation 20% or higher, and T3 as ferritin above 300 ng/mL. The clinically based ferritin custom tertile model comprised T1: ferritin below 100 ng/mL, T2: ferritin 100–299 ng/mL, and T3: ferritin 300 ng/mL or above. Covariates such as age, shock, malignancy, eGFR, and other factors were included in multivariable models (α=0.05).

Results

Univariate Cox analyses showed stronger hazard separation with the machine learning approach than simpler, guideline-based cutoffs ($p<0.001$). T3 (hyperferritinemia) had a higher mortality risk than T1, with T2 intermediate. Multivariable models upheld the machine learning model's robust discrimination (T3 hazard ratio ≈1.84). Although the ferritin custom tertile was also significant (T3 hazard ratio ≈1.48), slightly lower early sensitivity was noted. Iron supplementation reduced hazard in deficiency strata, highlighting the value of precise categorization.

Conclusions

Refined iron-status stratification appears pivotal for risk assessment in congestive heart failure. The machine learning–based model more clearly identified high-risk subsets than standard cutoffs, distinguishing deficiency, adequacy, and possible overload. Prospective validation may encourage adoption of nuanced models, enhance management strategies, and potentially reduce adverse outcomes.

Exploring the Association Between Cognitive Performance and Muscle Strength in Geriatric Population

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Introduction

Cognitive dysfunction is a growing concern in the geriatric population, especially since it is associated with physical decline and therefore can affect the ability to perform daily tasks and maintain independence. As aging processes both cognitive and physical abilities tend to deteriorate which can lead to increased frailty and reduced quality of life.

Aim of the study

The main objective of the study is to assess the relationship between cognitive performance and muscle strength in older hospitalized adults.

Materials and methods

This cross-sectional study comprised of 220 patients aged 60 and above, hospitalized in the Geriatric department in Lodz, Poland. Assessment of cognitive function was done by Mini Mental State Examination (MMSE), and Handgrip strength test was performed using dynamometry in every participant. For further analysis, participants were stratified by median MMSE. The normality of distribution was analysed using a Shapiro Wilk U-test. All considered variable were not normally distributed, so the data was presented as median (25%-75% quartiles). Quantitative variables were compared using the Mann–Whitney U-test. Correlation was employed to calculate the relationship between variables. Statistical significance was set at $p \leq 0.05$.

Results

Out of 220 participants, 139 female and 81 males with a median age of 80 (75-86.5) years were enrolled in the research. Median MMSE score was 24 (19-26) points. Median Handgrip strength test results were 23.1 (17-28) kg. After stratification by median MMSE scores, participants with MMSE <24 were significantly older (77 versus 83.5 years, $p<0.0001$) and had significantly lower muscle strength (20 versus 23.1 kg, $p=0.004$). Correlation analysis found significant ($p=0.002$) positive association between MMSE results and muscle strength, with $r=0.21$.

Conclusions

The study described a significant relationship between cognitive performance and muscle strength in hospitalized older adults. These findings highlight the possible connection between mental health and functional capacity in the older population.

Giant Cell Arteritis - What are the Most Crucial Clinical Manifestations and Predictors for Temporal Artery Biopsy?: A Meta-analysis

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Introduction

Giant cell arteritis (GCA) is a granulomatous vasculitis, most often affecting large, but also medium-sized, arteries that predominantly develops in women over the age of 50. In medical practice, clinical presentation of GCA is often highly heterogeneous and thereby undoubtedly contributes to the diagnostic challenge.

Aim of the study

This study aimed to assess the relative frequency of clinical features of GCA and to investigate the predictors of temporal artery biopsy (TAB) outcomes.

Materials and methods

A literature search of Pubmed/Medline, Embase, ScienceDirect, Scopus, Web of Science (WoS), and Directory of Open Access journals (DOAJ) was conducted from January 1, 1990 to February 2025. Observational studies that reported original data on clinical features in patients diagnosed with GCA in accordance with 1990 ACR and/or 2022 ACR/EULAR classification criteria were deemed for inclusion. A random-effects meta-analysis was performed to determine the pooled prevalence estimates. The study's design adhered closely to the MOOSE standards. The JBI appraisal tool was used to evaluate the risk of bias. The study's protocol was pre-registered on PROSPERO (ID: CRD42024584763).

Results

Out of initial 12,628 records, 62 articles (9971 patients) met all of the eligibility criteria. Mean patients' age upon diagnosis was 74.33 years (95%CI: 74.12–74.54 years). Patients suffering from GCA were on average presented with a CRP level of 48.56 (95%CI: 45.83–51.29) and an ESR equal to 76.49 mm/h (95%CI: 75.58 mm/h −77.39 mm/h). The most prevalent clinical feature of GCA was new-onset headache (75.7%; 95CI%: 72.2–79.0; 95%PI: 0.47–0.92). Other common symptoms of GCA were temporal artery abnormalities (51.5%; 95%CI: 45.2–57.7; 95%PI: 0.25–0.77), weakness/malaise (46.7%; 95%CI: 35.4–58.4; 95%PI: 0.09–0.88), and scalp tenderness (39.1; 95%CI: 35.3–43.1; 95%PI: 0.22–0.59). Positive TAB results were present in 73.8% of patients (95%CI: 68.1-78.8%; 95%PI: 0.35–0.94). The presence of headache (LogOR=-1.11; 95%CI: -1.92 to -0.29) or polymyalgia rheumatica (-0.71; 95%CI: -1.09 to -0.32) significantly decreases the chance of receiving positive TAB results. The presence of jaw claudication (LogOR=0.52; 95%CI: 0.11–0.94) is associated with a significantly higher risk of positive TAB results.

Conclusions

Since there is a greater likelihood of obtaining negative biopsy results, the TAB may not be required when a patient exhibits a headache along with other clinical symptoms that enable them to be diagnosed with GCA

Impact of Obesity on Chronic Cough

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Introduction

Chronic cough (CC) is a condition lasting more than eight weeks in adult patients, leading to a significant decrease in the patient's quality of life (QoL). It occurs most often in middle-aged women and obese patients.

Aim of the study

The aim of the study was to analyse differences in cough characteristics and effectiveness of treatment between obese and other patients with CC.

Materials and methods

A retrospective analysis of the data on adults with CC treated in cough clinic between 2017 and 2024 was performed. Adults with documented body mass index (BMI) and treatment follow up were included. Patients were treated according to current guidelines for management of CC. The response to treatment was assessed by the change in QoL measured by Leicester Cough Questionnaire (LCQ) and cough severity was measured by 100-mm visual analogue scale (VAS).

Results

Out of 241 patients (166 F and 75 M, median age 57 years, IQR 46-68), 75 (31.1%) were obese (51 F and 24 M, median age 62 years, IQR 53-70). Obese patients did not differ from those with a BMI ≤ 30 kg/m2 in terms of cough duration, cough severity, reported QoL and efficacy of treatment. On the contrary, we found that in obese patients, conditions such as gastroesophageal reflux disease (GERD) (p=0.0269) and obstructive sleep apnea (OSA) (p=0.0093) occurred significantly more often in comparison to non-obese patients. Additionally, we did not find significant correlation between BMI and cough severity or duration, but there was a weak positive correlation (p=0.0011, rho=0.298) between patient’s age and BMI.

Conclusions

Obesity is common among patients with CC. It is not related to more severe cough, longer duration of cough or worse response to cough treatment, but the higher prevalence of GER or OSA in obese patients with CC is observed.

Investigating the Association Between Proton Pump Inhibitors with Physical Performance in Geriatric Inpatients: TUG test, Handgrip Strength and Tinetti test Evaluation

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Introduction

Proton pump inhibitors (PPIs) reduce gastric acid production and are frequently prescribed to elderly patients, often for prolonged periods or without clear indications. Recent studies suggest that PPIs may negatively impact physical performance, which is critical for mobility and independence in older adults. However, these reports do not explore the association between PPI use and objective physical performance measures, such as the Timed Up and Go (TUG) test, handgrip strength, and Tinetti test in geriatric patients who are hospitalized.

Aim of the study

This study aims to evaluate the relationship between PPI intake and physical performance in hospitalized geriatric patients using the TUG test, handgrip strength measurements, and Tinetti test.

Materials and methods

This retrospective study analyzed patient records from the geriatric department at the Central Teaching Hospital in Lodz, Poland between July and December 2024. Patients aged 60 years or older with documented TUG test, handgrip strength, and Tinetti test scores, along with recorded PPI usage status, were included, totaling 159 participants. The Shapiro-Wilk test assessed data distribution. The continuous variables were not normally distributed, and the data was analyzed using the Mann-Whitney U test. Statistical significance was set at $p \leq 0.05$. Statistical analyses were conducted using Statistica 13.1 software.

Results

Among 159 patients, 99 did not use PPIs, while 60 were PPI users. Mean TUG test times were significantly longer in PPI users (22.44±20.39 sec) compared to non-users (17.27±9.42 sec, $p<0.05$). Handgrip strength in the right hand measured 23.99±11.33 kg in non-users and 23.66±9.60 kg in PPI users, while in the left hand, it was 23.81±11.15 kg and 22.75±9.83 kg, respectively (both $p<0.05$). Tinetti test scores were significantly lower in PPI users (17.78±8.38) compared to non-users (20.25±7.90, $p<0.05$). Across all functional tests, PPI users demonstrated significantly poorer physical performance than non-users.

Conclusions

PPI use in hospitalized geriatric patients is associated with reduced physical performance, as evidenced by prolonged TUG test times, lower handgrip strength, and poor Tinetti scores. These findings suggest a potential link between PPI intake and impaired mobility which may contribute to increased fall risk and functional decline.

Mental Health in Organ Transplant Recipients: A Survey-Based Study

Authors

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Introduction

Organ transplantation is a life-saving procedure that significantly impacts patients' overall well-being, including their mental health. Post-transplant patients often face psychological challenges such as anxiety, depression, and stress related to their medical condition, treatment regimen, and lifestyle changes. Understanding and identifying factors contributing to the mental health status of transplant recipients is essential for improving their quality of life and ensuring holistic post-transplant care.

Aim of the study

This study evaluates the mental health of organ transplant recipients, assessing depression, anxiety, and psychological impact.

Materials and methods

A cross-sectional survey was conducted among transplant patients in an outpatient clinic. Data were collected using a structured questionnaire evaluating mood disturbances, anxiety, stress, and overall well-being. Respondents answered multiple-choice questions on their emotional state, future concerns, ability to experience pleasure, and the psychological impact of transplantation. Descriptive statistics analyzed psychological distress prevalence.

Results

Among 229 transplant recipients (kidney, liver, heart, and lung), 35.4% reported heightened anxiety about the future, while 1.7% experienced anhedonia. Concerns about physical health were prominent (38.0%), contributing to increased stress. Additionally, 27.5% faced difficulties completing daily tasks. Patients transplanted within the past year reported higher distress (53.3%) compared to those with over five years post-transplant (31.5%). Younger recipients (<40 years) showed greater distress, primarily due to concerns about graft longevity and immunosuppressive effects. Heart and lung transplant recipients reported higher fatigue and cognitive impairment. However, 39.6% experienced improved well-being, particularly with psychosocial support. Access to mental health resources and social support were protective factors ($p < 0.05$).

Conclusions

Integrated psychological care is essential in post-transplant management. While some recipients report improved mental health, many struggle with emotional distress. Personalized psychological interventions, early identification of at-risk patients, and better mental health resource access are crucial for long-term well-being. Further research should explore targeted strategies to enhance psychological adaptation after transplantation.

Neutrophil, Lymphocyte, Monocyte and Platelet-to-HDL Ratios as Potential Predictors of Cognitive Impairment in Older Adults

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Introduction

Malnutrition is prevalent among individuals with dementia, and emerging evidence suggests that inadequate nutritional status and inflammation may contribute to the progression of cognitive deterioration. Immunonutritional biomarkers, which reflect the interplay between immune response, inflammation and nutritional status, have been proposed as potential indicators for assessing the risk of dementia.

Aim of the study

This study aims to identify the relationship between biomarkers and cognition in hospitalized geriatric patients.

Materials and methods

This retrospective study analyzed 1719 elderly patients (879 with dementia, 840 without) admitted to Department of Geriatrics, Łódź, Poland, between 2017 and 2023. Cognitive function was assessed using the Mini-Mental State Examination (MMSE). Biomarkers were calculated as, Neutrophil-to-HDL Ratio (NHR)=Neutrophils/HDL, Lymphocyte-to-HDL Ratio (LHR)=Lymphocytes/HDL, Monocyte-to-HDL Ratio (MHR)=Monocytes/HDL and Platelet-to-HDL Ratio (PHR)=Platelets/HDL. Serum albumin was measured with hypoalbuminemia defined as albumin<35 g/L. Associations with MMSE scores were analyzed using the Mann-Whitney U test and Pearson's correlation($p \leq 0.05$). Data analysis was conducted using Statistica 13.1.

Results

The median age was significantly higher in dementia group 84[80–90] and 79[74–86] years, in no dementia group. MMSE scores were significantly lower in dementia patients (15.59±6.60 and 27±2.08, $p<0.001$). Dementia patients had lower albumin levels (36±6.3 and 39±5.4 g/L, $p<0.0001$) and a higher prevalence of hypoalbuminemia (40.72% and 21.30%, $p<0.001$). Albumin was lower in dementia patients while NHR and MHR were significantly elevated. LHR showed no significant difference ($p=0.95$) and PHR was slightly increased in dementia ($p=0.04$).

Conclusions

NHR and MHR show significantly higher value among patients with dementia. Additionally, lower albumin levels and a higher prevalence of hypoalbuminemia was present in dementia patients. The results suggest that malnutrition may contribute to cognitive decline. Similar to albumin, NHR with MHR may serve as potential markers of immunonutritional status in cognitive disorders.

The Vulnerable Elders Survey-13 Scale is Superior to the Simplified Pulmonary Embolism Score Index in Predicting Post-pulmonary Embolism Dyspnea in Elderly survivors of Acute Pulmonary Embolism.

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Introduction

Post-pulmonary embolism syndrome (PPES) is an emerging phenomenon and a major complication of acute pulmonary embolism (APE). The pathogenesis of PPES is multifactorial. A major component of PPES is persistent dyspnea, along with other symptoms such as fatigue, chest pain, lightheadedness or syncope. The Vulnerable Elders Survey (VES-13), a tool used to identify health impairment risks, employed for patients aged ≥ 60 years.

Aim of the study

Despite extensive research on PPES, there is a limited understanding of its course in the Elderlies. This study aimed to identify elderly survivors of APE who are at a higher risk of developing PPES.

Materials and methods

This study included 241 patients aged ≥60 years who were diagnosed with APE. All patients with APE were diagnosed and managed according to the European Society of Cardiology (ESC) guidelines, presented with dyspnea at admission, and were followed up for at least 3-months after discharge. Clinical evaluation, biochemical tests, the VES-13 score, and transthoracic echocardiography (TTE) were evaluated at baseline. After 3-months period, the routine evaluation of persistent dyspnea was assessed during the follow-up visit in the outpatient clinic. The primary endpoint was dyspnea 3-months after the acute episode.

Results

A total of 179 patients were included. Persistent dyspnea was observed in 42 subjects (23,4%). There were no significant differences in age, sex and BMI between the groups. Patients with persistent dyspnea after 3-months, as compared to patients without dyspnea, were significantly characterized as follows: - Higher VES-13 score [median 5.5 (2;10) vs. 1 (0;4) score] - Longer length of stay [median 9 (6;16) vs. 6 (5;9) days] - Higher sPESI scores [median 2 (1;2.5) vs. 1 (0;2) points] - Lower TAPSE/PASP [median 0.44 (0.25;0.7) vs. 28 (25.4;30.9) mm/mmHg]. - Higher urea concentrations [median 42.4 (35.3;67.8) vs 0.56 (0.38;0.76) mg/dl] - Higher neutrophil-to-lymphocyte ratio (NLR) [median 5.5 (3;8.2) vs. 3.7 (2.6;6.3]) Logistic regression analysis identified the VES-13 score and NLR as significant independent risk factors for 3-month mortality.

Conclusions

The VES-13 score could be particularly valuable in predicting dyspnea 3-months after APE. Elderly survivors of APE with higher baseline VES-13 scores should be closely monitored after discharge. This proactive approach can help identify patients at a greater risk of developing persistent dyspnea, enabling timely intervention and potentially improving outcomes.

The Impact of Crohn's Disease on Plasma Arachidonic Acid Level

Authors

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Introduction

Crohn's disease (CD), a chronic inflammatory bowel disease marked by transmural gastrointestinal inflammation and characterized by a relapsing-remitting course, is increasingly prevalent worldwide. Despite extensive research, the precise etiopathogenesis of the disease remains incompletely understood.

Aim of the study

The aim of the study was to identify plasma lipids altered as a result of Crohn's disease pathogenesis and associated with the disease phenotype and the presence of lesions in the stomach with a bamboo joint-like appearance.

Materials and methods

The study cohort consisted of 29 patients diagnosed with Crohn's disease (CD), including 16 females and 13 males, with a mean age of 33.9 years (range: 18–70 years). Diagnosis was established at the Department of Gastroenterology, Pomeranian Medical University in Szczecin, based on the Porto criteria, adapted in accordance with the ECCO guidelines. Histopathological evaluation of biopsy specimens was conducted by experienced pathologists. The control group comprised 30 individuals (20 females, 10 males) with a mean age of 41.8 years (range: 23–76 years). In both cohorts, the concentrations of plasma lipids were quantified using liquid chromatography–mass spectrometry at the Mass Spectrometry Laboratory, Institute of Biochemistry and Biophysics, Polish Academy of Sciences (Warsaw, Poland).

Results

The metabolite profiling of plasma identified nine lipids that significantly (p-value<0,05) differed individuals with Crohn's disease from healthy controls. Among these altered lipids, arachidonic acid decreased (p-value=9,21E-04; FC=0,78) in the plasma of CD patients compared to controls. Additionally, its concentration was correlated with disease phenotype, the presence of lesions in the stomach with a bamboo joint-like appearance and disease behaviour (structuring/inflammatory).

Conclusions

Arachidonic acid plays a role in the inflammatory process, significantly contributing to the gastrointestinal inflammation observed in CD pathogenesis. Analysis of this lipid in the plasma of CD patients may facilitate more effective monitoring of disease progression and condition of patients.

Vitamin D Status in Patients from Department of Internal, Autoimmune, and Metabolic Diseases – A Descriptive Cross-sectional Study

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Introduction

Vitamin D plays a crucial role in numerous physiological systems, including the muscular, the immune and the endocrine system as well as calcium and bone homeostasis. Vitamin D deficiency, a global health problem affecting billions of people, is associated with adverse health outcomes and may serve as a marker of health status, disease severity, and length of hospital stay.

Aim of the study

The aim of this study was to examine the levels of 25-hydroxyvitamin D among patients hospitalized in the Department of Internal, Autoimmune, and Metabolic Diseases. The correlation between vitamin D levels and length of hospital stay, other laboratory parameters measured on admission, most common diseases and the season of hospitalization, as well as physician recognition of deficiency and supplementation practices were investigated.

Materials and methods

In this study, the medical records of 834 hospitalized patients were retrospectively analyzed, with a focus on 25-hydroxyvitamin D levels. Patients were divided into 4 groups: deficiency, suboptimal, optimal and high serum vitamin D level. The data were analyzed using the STATISTICA 13.3.721.1. statistical software. The Shapiro–Wilk test was used to evaluate the normality of the distribution of the analyzed variables. Normally distributed data were compared using Student's t-test or analysis of variance (ANOVA). Non-parametric data were compared using the Mann–Whitney U- test and the Kruskal–Wallis test, respectively. A probability level of p-value ≤ 0.05 was considered to be significant.

Results

Vitamin D deficiency is a significant problem among Polish patients. A majority (74%) of individuals have inadequate vitamin D levels. Only 26% of patients have optimal or high vitamin D levels. The mean concentration of vitamin D was 22.76 ng/ml. Vitamin D deficiency was associated with longer hospital stay. BMI was higher in vitamin D-deficient patients. Women had higher vitamin D levels than men. Some laboratory parameters like albumin, total calcium and folic acid were associated with vitamin D levels. No seasonal variation of vitamin D levels was observed. Only 14% of patients took supplements before hospitalization, and 61% of patients with vitamin D deficiency received supplementation.

Conclusions

Routine vitamin D screening, tailored supplementation, and increased public awareness are essential to reduce hospitalizations, improve outcomes, and promote independence among vulnerable populations.

„Money Does not Buy Happiness" – Influence of Subjective Income and Health-related Factors on Quality of Life in Elderly, Hospitalized Population"

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Introduction

Quality of life (QoL) can be determined by countless both health-related and unrelated factors. Many previous research papers well established relationship between income and QoL, however there is less data on such association in elderly in-patients.

Aim of the study

The aim of this study was to analyse the relationship between elderly in-patients self-rated financial status and their subjective well-being with regard to other potentially QoL changing factors.

Materials and methods

A retrospective analysis of data of adults diagnosed with heart failure (HF) or older than 65 years and hospitalized at Department of Internal Medicine and Geriatric Cardiology between August 2022 and November 2024 was performed. QoL was measured using EQ5D (visual scale 0-100). Income was rated subjectively by patients on scale from 1 (very low) to 4 (high). We also used scales such us Edmonton Frail Scale (EFS), Geriatric Depression Scale (GDS), Acceptance of Illness Scale (AIS), Beck Depression Inventory (BDI). Due to non-normal data distribution, nonparametrical test such as Kruskal-Wallis test and Spearman's corelation test were used.

Results

There were 214 patients included in the study (139F, 75M; median age of 82 yrs, IQR 76.25-86). Among them, the most prevalent comorbidities were HF (n=184), followed by hypertension (n=178), diabetes (n=90) and atrial fibrillation (n=86). The median number of comorbidities was 5 (IQR 3-6) with median number of 6 (IQR 4-7) medications taken per patient. A moderate, positive correlation was found between health-related quality of life and patients disease acceptance degree (rho=0.431, $p<0.0001$). Next, weak, positive correlation was found between EQ5D and number of weekly physical activities (rho=0.367, $p<0.0001$). We also observed that the higher frail and depression scores the lower EQ5D score (consecutively, for EFS rho=-0.433, $p<0.0001$, for BDI rho=-0.373, $p<0.0001$). Similarly, moderate, negative correlation between scores on Acceptance of Illness Scale and frail and depression scales was observed (for AIS & EFS rho=-0.557, $p<0.0001$, for AIS & BDI rho=-0.547, $p<0.0001$). However, we didn't find correlation between subjectively assessed income or number of chronic diseases and patient health-related quality of life.

Conclusions

Subjectively assessed income does not impact on patients health-related QoL in elderly hospitalized patients while few psychological and physical factors such as mental health status, disease acceptance, and physical activity do.

Laboratory Medicine

Session Coordinators:
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Application of Untargeted Analysis to Detect Markers of Oxidative Changes in AIO

Authors

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Introduction

Parenteral nutrition (PN) is a life-saving intervention for patients where oral or enteral nutrition cannot be achieved or is not acceptable. All-in-one admixtures (AIO) provide safe, effective and lowrisk PN for a wide range of indications. Nevertheless, in recent years, there has been an increasing focus on the progressing lipid peroxidation in AIO formulations, the byproducts of which may adversely impact the patient. Researchers are continually exploring methods to minimize peroxidation during the storage of AIO. However, a challenge persists in the insufficient number of reliable markers capable of accurately determining the extent of peroxidation. Specifically, the method for determining one of the most frequently used markers, dialdehyde malonate, lacks specificity. Therefore, new markers are needed to assess the oxidative stability of AIO admixtures.

Aim of the study

The aim of the study was to identify new potential markers of oxidative stability of AIO components using untargeted approch.

Materials and methods

Three types of parenteral nutrition solutions with different lipid emulsions were examined. The admixtures were stored in the dark at room temperature for 24 hours to replicate infusion conditions. The analysis of samples collected before and after storage were performed by high-performance liquid chromatography coupled with mass spectrometry (LC-MS) using untargeted approche. The statistical evaluation was performed using MetaboAnalyst.

Results

The analysis showed that both hydrophilic and hydrophobic degradation products were formed during the storage of AIO. Their structure was proposed based on the fragmentation spectrum. The abundance of degradation products depended on the type of lipid emulsion.

Conclusions

The new lipid peroxidation markers identified in this study may be applied as indicators of lipid peroxidation. However, it is essential to establish quantitative analytical methods and validate them.

Assessment of PIVKA II Concentration and Hepatic Enzyme Activity in Bile Samples

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Introduction

Hepatocellular carcinoma (HCC) is one of the most commonly encountered cancers worldwide, accounting for over 90% of primary liver cancer cases. The primary risk factors for HCC development are chronic infections with hepatitis B virus (HBV) or hepatitis C virus (HCV). PIVKA-II is an abnormal form of prothrombin secreted into the bloodstream when the vitamin K-dependent carboxylase activity in the liver is inhibited due to a lack of vitamin K or the presence of vitamin K antagonists.

Aim of the study

The aim of this study was to assess the concentration of PIVKA II and hepatic enzyme activity in bile samples for more effective cancer diagnosis and monitoring.

Materials and methods

An immunological assay was used to quantitatively measure the vitamin K-induced or antagonist-induced protein II (PIVKA-II) in human serum and plasma. The study was conducted among 204 patients with liver disease, 67 of whom had HCC. The control group consisted of 137 patients with liver disease but without a diagnosis of HCC.

Results

The results did not demonstrate the usefulness of these parameters. The average concentration in the study group was 122.89 ng/ml, while in the control group, it was 108.16 ng/ml. After statistical evaluation, no significant difference was found between the groups ($p = 0.546$).

Conclusions

Based on these results, it can be concluded that regardless of the concentration level, PIVKA-II should not be interpreted as an absolute marker for the presence or absence of cancer.

Assessment of Changes in the Amino Acids and Biogenic Amines Profiles in Bee/wasp Venom Allergic Patients in the Course of Venom Immunotherapy (VIT).

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Introduction

The Hymenoptera venom allergy (HVA) is a type I hypersensitivity reaction in response to bee or wasp sting. It can manifest as a local or even a severe, general reaction with life-threatening anaphylaxis. The only available cause-focused treatment to manage the HVA is venom immunotherapy (VIT). VIT is based on the regular injections of gradually increasing concentrations of bee/wasp venom proteins to build an immune tolerance and minimize the risk of severe anaphylactic reactions. The direct influence of VIT on the human metabolome remains elusive.

Aim of the study

In our study, we aimed to evaluate the changes in the amino acids and biogenic amine levels in Hymenoptera allergic patients during VIT, as well as their association with clinically relevant parameters.

Materials and methods

22 bee and 27 wasp venom-allergic patients were subjected to VIT protocol. Their venous blood was collected before and during the following stages of therapy. Additionally, routine diagnostic parameters, i.e., tryptase and IgE, were evaluated. Metabolome profiles were determined using LC-MS and FIA techniques at the Metabolomics Division of MUB. For the analysis of the metabolites, a commercially available IDQ p180 Biocrates kit was implemented. Statistical analysis was performed using GraphPad Prism and Metabo Analyst software.

Results

The metabolome profile of the Hymenoptera venom-allergic patients was significantly different compared to the healthy control group inter alia in the context of biogenic amines and amino acids. During the first three months of the treatment, we determined an increasing concentration of amino acids and biogenic amines in bee/wasp allergic patients, except for reduced arginine levels. At the admission, only weak correlations between tested metabolites and IgE or tryptase were demonstrated. However, substantial associations were revealed after 1-2 years of VIT implementation in the group of bee venom-allergic patients.

Conclusions

Bee/wasp allergic patients differ significantly from healthy controls regarding amino acid and biogenic amine profile. Moreover, the implementation of VIT alters the specific metabolite levels. Thus, our study disclosed the potential possibility of using particular metabolites as novel prognostic biomarkers in VIT. Further research is necessary to establish the potential value of discussed metabolites in monitoring and predicting the response to VIT in allergic patients.

Difference of MicroRNA Targeting Atheroprotective Mechanisms in Chronic Coronary Syndrome Patients With and Without Concomittant Diabetes.

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Introduction

MicroRNAs (miRNAs) play a crucial role in regulating atheroprotective mechanisms, yet their expression in Chronic coronary syndrome (CCS) patients with and without diabetes remain poorly understood.

Aim of the study

To analyze the differential expression of atheroprotective miRNAs in CCS patients with and without concomitant T2DM and assess their potential role in disease pathophysiology.

Materials and methods

In this study, 40 patients diagnosed with CCS were divided into two groups: a group with concomitant type 2 diabetes mellitus (n = 20) and a group without diabetes (n = 20). All participants were admitted to the Invasive Coronary Unit for diagnostic coronary angiography, and only those with confirmed coronary lesions were included. Exclusion criteria included a history of acute coronary syndrome and previous coronary interventions. Clinical characteristics, including age and atherosclerotic burden assessed by the Gensini Score, were analyzed. Blood samples were obtained to measure the expression levels of selected microRNAs, which were subsequently compared between the two groups.

Results

There was no significant difference in age between the two groups (67.9 ± 8.2 years in CCS patients with diabetes vs. 70 ± 10.2 years in CCS patients without diabetes, p = NS) or in the severity of coronary atherosclerosis, as indicated by the Gensini Score (24.7 in CCS + DM vs. 29.7 in CCS without DM, p = NS). However, analysis of microRNA expression levels revealed a statistically significant upregulation of hsa-miR-92a-3p in CCS patients with diabetes (98.6 [55.6-159.1]) compared to those without diabetes (60.9 [41.2-72.9], p = 0.013). Other analyzed microRNAs, including hsa-miR-10b-5p, hsa-miR-126-3p, hsa-miR-98-5p, and hsa-miR-29b-3p, showed no significant differences between the groups.

Conclusions

These findings suggest that hsa-miR-92a-3p may play a role in the pathophysiology of CCS in diabetic patients, potentially influencing atheroprotective mechanisms. However, the expression levels of other investigated microRNAs did not show significant variation, indicating that their involvement in diabetes-related atherosclerosis might be limited or influenced by additional factors.

Gender-dependence of Free Light Immunoglobulin Chains Concentration in Serum of Patients with Monoclonal Gammopathy

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Introduction

Plasma cell dyscrasia, also known as monoclonal gammopathy, is a group of hematopoietic system disorders characterized by uncontrolled proliferation of plasma cells. Clone of plasma cells, that are lymphoid cells of the B cell line of the hematopoietic system, are able to produce monoclonal immunoglobulins made of specific heavy and light chains. Assessment of free light chains (fLC) concentration together with immunofixation of heavy and light chains is the main diagnostic method for monoclonal gammopathies.

Aim of the study

The aim of the study was to analyze whether differences in FLC concentrations in serum are observed depending on the patient's gender.

Materials and methods

The retrospective study was based on the analysis of patient results. The study group consisted of 169 women aged 52±4.5 and 100 men aged 62±5.7. For each patient, the concentration of fLC in serum was measured using the turbidimetric method. The Cobas C502 analyzer (Roche, Basel) was used for the determination. This method is based on adding antibodies against free light chains to the sample, as a result of which immune complexes are formed. Concentration of fLC in the tested sample is measured as a light beam dispertion which is proportional to the fLC concentration in sample. Statistical analysis included comparison of fLC and other biochemical parameters like creatinine, total protein, calcium concentration between genders.

Results

Statistical analysis showed that men had significantly higher concentration of FLC κ concentration (1254±21 mg/l) compared to the female group (850±12 mg/l, $p<0.001$), and FLC λ concentration (83.5±11 mg/l for men and 65.9±12 mg/l for women, $p=0.003$). A higher κ/λ ratio was observed in men 111.01±2.1 than in the female group 87.55±1.8 ($p=0.042$). Creatinine concentration in men was 2.85±0.9 mg/dl, while in women 2.41±0.7 mg/dl ($p=0.0330$). A statistically significant difference was also demonstrated for calcium concentration in the group of men - 4.23±0.2 mmol/l versus 3.74±0.3 mmol/l in women group ($p=0.001$).

Conclusions

Based on the conducted study, it can be concluded that concentrations of free κ and/or λ chains in serum of patients with monoclonal gammopathies are sex-dependent. Since reference values are the same for both sexes, additional study with fLC assessment in healthy subjects should be performed to reveal any differences between genders in polyclonal fLCs.

Insulin Resistance as a Key Indicator for Identifying Fatty Liver: A Comprehensive Analysis of Laboratory Tests and Participant Characteristics

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Introduction

Fatty liver is characterized by excess fatty acids accumulating in the liver, seen through ultrasonographic findings like increased liver echogenicity. Severe cases exhibit diffuse liver echogenicity, signaling widespread fatty infiltration. This accumulation can lead to liver cell damage, insulin resistance, and metabolic disruptions, triggering inflammatory processes and further insulin resistance.

Aim of the study

The research analyzed differences in laboratory tests (AST, ALT, GGT, glucose, creatinine, LDL, HDL, triglycerides, cholesterol, and insulin resistance) and participant characteristics between groups. Additionally, the study aimed to identify the most predictive parameter for fatty liver occurrence through regression analysis.

Materials and methods

Participants with ultrasonographically confirmed fatty liver from a systematic review at Special Hospital Agram were included. The control group comprised randomly selected healthy patients matched in age, gender, height, and weight. Laboratory tests were conducted using the AU 480 analyzer, and statistical analysis utilized MedCalc® Statistical Software.

Results

Participants with fatty liver exhibited higher triglycerides (P=0.0173), ALT (P=0.024), GGT (P=0.0026), and insulin resistance (P=0.0100). HDL cholesterol was lower in the fatty liver group (P=0.0246). Insulin resistance emerged as the best predictor for differentiating between fatty and healthy livers, achieving 81.8% specificity and 72.2% sensitivity with a cutoff value of 1.6.

Conclusions

Insulin resistance, identified through ROC analysis and regression modeling, proves to be the most reliable indicator for detecting suspected cases of fatty liver.

New Non-invasive Lewis Antigen Detection: the Potential of Human Milk

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Introduction

Lewis blood group antigens are fucosylated glycan structures synthesized by the activity of α-(1,3/1,4)-fucosyltransferase (FUT3) and α-(1,2)-fucosyltransferase (FUT2). These enzymes determine the secretion of Lewis antigens into body fluids, classifying individuals as secretors (Se+) or non-secretors (Se-) and further differentiating their Lewis phenotypes. The presence or absence of these antigens in human milk significantly influences its oligosaccharide composition, which plays a crucial role in shaping the infant gut microbiota, modulating immune responses, and providing protection against infections. Traditionally, Lewis antigen status is determined using blood or saliva samples via serological or molecular techniques such as ELISA or PCR-based genotyping. However, blood collection is invasive, while saliva analysis does not always reflect the milk composition. Despite the importance of Lewis antigen expression in lactation research, no standardized method has been developed for directly detecting these antigens in human milk.

Aim of the study

The aim of this study was to develop and validate an ELISA-based method for detecting Lewis antigens (Lea and Leb) in human milk and to compare the results with conventional blood-based tests.

Materials and methods

Human milk samples were collected from lactating women. ELISA plates were coated with diluted milk samples, followed by overnight incubation at 4°C. After blocking, primary monoclonal antibodies against Lea and Leb were applied, followed by HRP-conjugated secondary antibodies. Signal detection was performed using a TMB substrate, and absorbance values were measured spectrophotometrically. To validate the method, a positive control was conducted by performing a standard tube test on capillary blood samples collected via finger prick from the same donors. The same monoclonal antibodies used in the ELISA protocol were applied to determine Lewis antigen expression in red blood cells.

Results

The ELISA-based assay successfully detected Lewis antigens in human milk, allowing differentiation between secretors and non-secretors.

Conclusions

This study presents a non-invasive method for determining Lewis phenotypes directly from human milk. The high concordance between milk-based ELISA and the traditional blood tube test supports its potential as an alternative approach for studying Lewis antigen expression in lactating individuals. This method may facilitate further research on the impact of maternal genetics on human milk composition.

This work was funded by the Young Researcher Grant no. NZI/2/Z/MB/N/23 from the Medical University of Warsaw.

Pre-analytical Errors-uninvited Guests in the Laboratory

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Introduction

The development of new technologies and the personalization of therapy increase the demand for the number and range of laboratory tests. Laboratory diagnostics is now a distinct branch of medicine and is necessary for clinicians, which is why the quality of the tests performed is so important. Errors in the pre-analytical phase account for up to 70% of all errors. Proper sample collection, preparation and transport also affect the quality of analysis and accuracy of results. Pre-analytical errors not only disrupt the pace of work in the laboratory, but also put a financial burden on healthcare and have a negative impact on patient care, as an incorrect result can result in an incorrect diagnosis and treatment.

Aim of the study

The purpose of this study is to review pre-analytical errors in the hospital laboratory, which will help raise awareness among medical personnel of the importance of these errors in laboratory practice.

Materials and methods

The data came from the Laboratory Information Management System from the central Hospital of University Clinical Center of Warsaw Medical University from all departments in 2024. Errors were divided into 4 categories: missing sample, registration errors, collection errors and transport errors.

Results

There were 18,359 pre-analytical errors reported out of 293,306 total orders. Statistically, 50 errors are reported daily. The largest percentage of error was missing material (45.3%). Errors in collection of material accounted for 43.8%, with the most errors being the presence of a clot (39.6%), an oversample (25.5%) and the presence of hemolysis (14.9%). System registration errors accounted for 10% and include: erroneous order registration (5%) and duplicate order (5%). Transport errors accounted for the smallest percentage among the total number of errors (1%) and these included soiling of the sample (0.3%), lack of a transport container (0.3%), and exceeding the time limit for material delivery (0.1%).

Conclusions

Pre-laboratory errors are mainly due to ignorance and inadequate organization of the personnel collecting and transporting samples. Most of them are easy to eliminate completely. Medical personnel should be properly trained to not only collect and transport the sample correctly, but also have the knowledge to properly prepare the patient for collection. It is also important to improve contact between doctors and the laboratory so that the right panel of tests is ordered for the patient.

Usefulness of Measurement of Blood Cells Count in Patients with Latent Tuberculosis

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Introduction

Tuberculosis (TB) is caused by Mycobacterium tuberculosis. Majority of patients with tuberculosis do not develop clinical manifestation. This state of infection is called "latent tuberculosis". To detect latent TB an IFN- γ releasing test must be conducted. M. tuberculosis induces release of IFN-γ by T-cells, which is then detected by laboratory test. Test used in this study is called QuantiFERON-TB Gold Plus, which is an IFN-γ release assay, commonly known as an IGRA test. To perform IGRA test, patient's blood must be collected into 4 lithium heparinized tubes, also containing antigens such as: phytohemagglutinin, ESAT-6 and CFP-10. These antigens induce the cell-mediated immune response, which is measured with concentration of IFN-γ. Latent TB testing is essential before biological therapy or organ transplantation, as M. tuberculosis infection is a contraindication in these procedures. This study examined whether complete blood count parameters can help distinguish latent TB from non-TB cases.

Aim of the study

The aim of the study is to evidence that latent tuberculosis cause changes in Complete Blood Count parameters.

Materials and methods

To the study 266 patients, both men and women, were included, who were tested with Quantiferon TB gold plus (Liaison XL, Diasorin) at University Clinical Center of Medical University of Warsaw, to exclude latent TB. Among them, 126 were diagnosed with latent TB and 140 were TB-negative. In all individuals complete blood count was performed using Sysmex XN3000. Statistical analysis was performed using GraphPad Prism.

Results

There was no statistically significant difference in WBC count between latent TB and non-TB group ($p=0.09$). However patients with latent TB with positive result of Quantiferon TB gold plus test had lower platelets-to-lymphocyte ratio than non-TB group (136.7± 90.7 vs 164.4± 87.1; $p<0.0001$) with no difference in neutrophil-to-lymphocyte ratio (3.06±2.15 vs 3.41 ±3.63, $p=0.61$) and no difference in lymphocyte count (1.72± 0.82 vs 1.76± 0.73 G/L, $p=0.34$). Platelets count was higher in non-TB group than in patients with latent tuberculosis (207.53± 111.08 vs 246.99±76.75 G/L, $p=0.0001$).

Conclusions

Latent tuberculosis does not affect lymphocyte or granulocytes count. However significantly influences platelets count. It should be determined if latent TB may lead to platelet number decrease by affecting its production or destruction.

MiRNA- let-7 in PDAC (Pancreatic Ductal Adenocarcinoma) as a Potential Diagnostic Marker

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Introduction

One of the most aggressive pancreatic cancers is pancreatic ductal adenocarcinoma (PDAC). This type of cancer has one of the worst survival prognoses among solid tumors. Studies show that only 5% of patients survive for 5 years after the first diagnosis of this cancer. Not only is PDAC a very aggressive and rapidly progressing cancer, but it is also most often detected only at advanced stages of carcinogenesis.

Aim of the study

Studies on the relationship between the occurrence of PDAC and microRNAs of patients serum may allow us to find miRNAs as biomarkers for assessing risk and predicting the pathogenesis of cancer. MicroRNAs are a small, non-coding RNA. They play a regulatory role by the regulation of the expression of many mRNA genes. Many microRNAs molecules have been associated with pancreatic cancer and have a proven role in tumor progression, patient survival, and treatment efficacy. One of the most important miRNA is let-7, which we focus on in this study.

Materials and methods

The study group included 16 patients (5 women and 11 men) with median age of 67 years (range 49-84 years) diagnosed at the Department of Oncology, Pomeranian Medical University in Szczecin. In 10 cases, the tumor was located in the head of the pancreas, while in 5 cases, it was located in the tail of the pancreas. The median of size of tumor was 40 mm (range 25-60 mm). The control group consisted of 16 patients (10 men and 6 women) with median age of 55 years (range 23-83 years). Total RNA of serum of each patient and healthy individuals, was analysed with Agilent miRNA microarray comprising 2549 human miRNA probes , and the SureScan Microarray Scanner used to scan array slides.

Results

In serum samples, we identified 163 miRNAs that were statistically (p-value <0,05) different between tested groups . 112 of them were decreased in the serum of cancer patients and 51 increased, The level of miRNA let-7 was significantly lower than in the control samples; hsa-let-7a-5p (p-val=5.99E-5, FC 14.08), hsa-let-7b-5p (p-val = 7.35E-5; FC 11.28); hsa-let-7f-5p (p-val = 8.98E-5; FC 11.38).

Conclusions

We concluded that let-7 is a promising biomarker for the diagnosis of PDAC

Laryngology, Audiology & Phoniatrics Session

Session Coordinators:
Aleksandra Drzazgowska
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Prospects for Developing a Prognostic Model for Patients with Adenoid Vegetations Based on a Retrospective Cephalometric Analysis

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Introduction

Adenoid vegetations (AVs) are a common pathology among children that can cause nasal breathing disorders. Rino- and endoscopy are often used to assess the impact of AVs on the development of the upper respiratory tract (URT), which is subjective. Therefore, it is necessary to develop objective prognostic models to improve the diagnosis and treatment of patients with AVs.

Aim of the study

To evaluate the possibility of creating a prognostic model for deciding whether to remove the AV in the presence of concomitant pathology.

Materials and methods

Lateral teleradiographs of 50 patients with AVs with 1-2 stages of cervical vertebral maturation (CVS) were studied. Standardised measurements of 34 anatomical parameters, static processing with a statistical package in Python and correlation analysis (Spearman's r) were performed. Patients were clustered using the K-means PCA method. Significant factors for prognosis were determined using XGBoost, after which a Random Forest classification model was built. Regression analysis was used to assess the impact of cephalometric parameters on UP, LP and PAS.

Results

The correlation analysis showed that PAS is most strongly related to PNS-ppw2 ($r = 0.432$), while LP is most strongly related to angular parameters (angOPT-PP, angOPT-FH). UP has the strongest correlation with the soft palate thickness ($\beta = 2.44$) and angSNA angle ($\beta = 9.93e+10$), which may indicate multicollinearity in the model. Clustering identified three groups of patients that differed statistically significantly in morphometric parameters ($p < 0.05$). The analysis in XGBoost showed that the main predictors of clustering are parameters characterising the ratio of pharyngeal structures and the cervical spine (angCVT-PP, angOPT-PP, angCVT-FH). The Random Forest classification model achieved an accuracy of 87.5%.

Conclusions

Automatic clustering minimises subjectivity in determining the degree of pathological changes in the URT, and the Random Forest classification model confirmed the high prognostic value of the selected parameters. The significance of PNS-ppw2, angCVT-PP, angOPT-PP in predicting PAS and LP emphasises the importance of the spatial location of the palate and pharynx in the development of nasal breathing pathology. The identified multicollinearity (angSNA) requires further investigation to optimise the model. Cephalometric analysis, due to its availability and accuracy, opens up the prospects of using machine learning for personalised prognosis, early diagnosis and treatment of AVs and its consequences.

ABR.AI: An Innovative AI-based System for Automated Auditory Brainstem Response Analysis in Hearing Diagnosis.

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Introduction

Hearing impairments represent a significant global health challenge, affecting millions worldwide. Accurate diagnosis is crucial for effective intervention. Auditory Brainstem Response (ABR) testing is a commonly used auditory assessment method. It enables objective evaluation of hearing thresholds, auditory diagnosis, and monitoring of auditory nerve and brainstem function during surgical procedures. Manual interpretation of ABR signals is time-consuming and requires expert evaluation, making the process prone to observer-dependent variability. Advancements in artificial intelligence (AI) provide an opportunity to automate and enhance ABR analysis, improving diagnostic efficiency.

Aim of the study

The primary goal of the ABR.AI project is to develop and implement an AI-driven system capable of automating ABR signal analysis, with a focus on detecting wave V responses and estimating hearing thresholds with high precision.

Materials and methods

The project involves creating a comprehensive ABR data repository, including records from patients with various hearing impairments and healthy controls. Experienced audiology specialists will annotate the data, marking hearing thresholds and wave V latencies. AI models will be developed and trained to analyze ABR recordings, utilizing various learning techniques. The most efficient algorithm will be integrated into a central diagnostic system and subjected to rigorous validation in real-world clinical settings.

Results

Preliminary outcomes indicate that the AI-powered system significantly reduces diagnostic time while maintaining or exceeding the accuracy of conventional ABR interpretation. The automation of ABR analysis is expected to streamline the diagnostic workflow, minimize observer-dependent discrepancies, and enhance early detection of hearing impairments. Previous studies have demonstrated that human assessment of ABR can be influenced by evaluator expertise and psychophysical conditions, leading to inconsistencies in threshold estimation.

Conclusions

The ABR.AI project represents a breakthrough in hearing diagnostics by utilizing AI for automated analysis of ABR test results. Unlike traditional approaches, which rely on subjective visual assessments, this system leverages advanced machine learning algorithms to enhance diagnostic precision. By optimizing diagnostic processes, ABR.AI has the potential to improve patient outcomes, facilitate earlier interventions, and contribute to the development of a universally accepted system for automated ABR interpretation.

This research is conducted as part of the project "ABR.AI - system oparty o technologię AI do szacowania progu słyszenia na podstawie szeregów natężeniowych rejestracji odpowiedzi fali V," nr KPOD.07.07-IW.07-0222/24.

Clinical Pharmacist's Role in The Perioperative Period in ENT Surgery - Preliminary Results

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Introduction

Perioperative role of the clinical pharmacist in preparing patient to the surgery in the area of ENT (ear-nose-throat) is important not only in oncological patients, but also in non-oncological patients.

Aim of the study

The aim of the study is determining the pre- and postoperative role of the pharmacist in the otolaryngological non-oncological procedures such as: (1) ventilation drainage, (2) sinus surgeries and (3) adenotonsillotomy, adenoidectomy, tonsillotomy.

Materials and methods

A non-invasive, retrospective study was conducted based on anonymized patient records, which included information such as: initial diagnosis, subjective examination, interview, physical examination, final qualification, procedure description, applied treatment, test results and consultations, epicrisis, and recommendations. The study specifically analyzed patients who were on regular medication prior to surgery. The study was based on the analysis of medical histories and postoperative recommendations of 30 patients, both adults and children. The study received positive consent from the ethics committee.

Results

The data analysis allowed the observation of key areas of the pharmacists role in pharmaceutical care. The most important interaction were detected after clarithromycin administration. The result of analysis consist also: the analyzation of the diet after surgery, the pain management plan after surgery and choice of the safter treatment option after surgery: paracetamol.

Conclusions

The conclusions from the analysis emphasize the comprehensive role of the pharmacist within the interdisciplinary team in pharmaceutical care, contributing to the proper recovery of patients after surgery. The collaboration of pharmacists with patients, doctors, and other health specialists is crucial for achieving the best therapeutic outcomes and ensuring optimal pharmaceutical care in ENT.

Epidemiological Data, Examination Findings, and Drug Prescriptions for Patients with Benign Paroxysmal Positional Vertigo Treated at the Emergency Department of the Hospital of the Lithuanian University of Health Sciences Kaunas Clinics

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Introduction

Benign paroxysmal positional vertigo (BPPV) is the leading cause of peripheral vertigo, accounting for over half of cases. It presents as brief vertigo episodes triggered by head movements. Despite its prevalence, BPPV is often misdiagnosed, leading to unnecessary discomfort and reduced quality of life. Accurate diagnosis and treatment are essential, as BPPV can cause physical limitations, psychological distress, social withdrawal, and work difficulties.

Aim of the study

To analyze the epidemiological data, clinical examination, and drug prescriptions of patients with BPPV treated at the Emergency Department of the Hospital of the Lithuanian University of Health Sciences Kaunas Clinics.

Materials and methods

We conducted a retrospective analysis of data on patients with ICD-10 H and R42 diagnoses who were admitted to the Emergency Department of the Hospital of the Lithuanian University of Health Sciences Kaunas Clinics. in 2023. The total of 779 cases were analyzed. Statistical analysis was performed using Microsoft Excel and the Chi-Square test, considering $p < 0.05$ statistically significant. The Bioethics Committee has given its approval for the research and analysis.

Results

During the analyzed period, 779 patients visited the emergency department for vertigo or dizziness, with 11.6 % diagnosed with BPPV (H81.1). The majority were women (63.3 %), and H81.1 was most common in the 20-30 age group (22.2 %). H81.1 was strongly linked to vertigo-type dizziness (65.6 %, $\chi^2(12) = 136.466$, $p < 0.001$) and positive diagnostic BPPV maneuvers (24.4 %, $\chi^2(12) = 121.213$, $p < 0.001$), though these tests were not performed in 67.8 % of cases. Positional nystagmus was detected in 8.9 %, while 45.6 % of patients showed no nystagmus. Therapeutic BPPV maneuvers rarely used (76.7 %), despite their relevance, and only 16.7 % of cases tested positive ($\chi^2(12) = 138.714$, $p < 0.001$). The majority of H81.1 cases (71.1 %) did not receive any specific medication, with betahistine (26.7 %) being the most commonly prescribed drug. The treatment approach was either no medication or betahistine ($\chi^2 = 96.549$, $df = 30$, $p < 0.001$).

Conclusions

BPPV was most prevalent in young adults, particularly women, and strongly associated with vertigo-type dizziness. Despite the diagnostic relevance of positional tests, they were often not performed, and therapeutic maneuvers like Epley were rarely used. Most patients did not receive specific medication, with betahistine being the most commonly prescribed drug.

Intranasal Oxymetazoline and Xylometazoline Use in Patients with Deviated Nasal Septum: A Cross-sectional Telephone Survey

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Introduction

A deviated nasal septum (DNS) is a common cause of nasal obstruction, leading to discomfort, chronic infections and decreased quality of life. In response to these symptoms, patients frequently resort to intranasal imidazoline derivatives, such as oxymetazoline and xylometazoline (OXM). However, excessive use of these agents can result in rebound nasal congestion.

Aim of the study

To assess the pattern of OXM use in patients with DNS.

Materials and methods

A retrospective Computer-Assisted Telephone Interviewing (CATI) survey was conducted among patients undergoing septoplasty between 2018 and 2024. The questionnaire included inquiries about the frequency of OXM use, awareness of the consequences of long-term OXM application, and alternative treatment options.

Results

The study was conducted on 159 of 305 (52.1%) patients identified in the hospital database. Approximately one-third of respondents (55 of 159, 34.6%) denied using OXM, about one-third had used OXM for no more than seven days (52 of 159, 32.7%), and the remaining one-third (52 of 159, 32.7%) admitted to OXM overuse. Lack of awareness of the consequences of chronic OXM use was associated with a 6.5-fold increased risk of addiction (OR=6.5, 95% CI: 1.2-33.6). Furthermore, 16 of 52 (30.8%) respondents were unaware of intranasal steroid therapy in the preoperative period.

Conclusions

Patients with DNS were at a significantly higher risk of developing OXM dependence. Increasing awareness about the risks of OXM overuse may substantially reduce this risk. The study highlights the need for improved education on alternative therapeutic options in preoperative management, particularly regarding the use of intranasal steroid therapy.

None

Management and Outcomes of Surgical Treatment of Acquired Benign Tracheoesophageal Fistula

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Introduction

Acquired benign tracheoesophageal fistula (TEF) is a complex and life-threatening condition that can coexist with tracheal stenosis. The most common etiologic factor of acquired benign TEF is pressure necrosis and ischemia from prolonged ventilation, often accompanied by an indwelling nasogastric tube. Spontaneous closure is rare and this condition is life-threatening, therefore intervention is always required. Various surgical treatments are possible however, the preferred surgical method in our clinic is single-stage two-layer esophageal closure with tracheal resection. Many non-surgical approaches have also been described, however, they are more effective in malignant or small fistulas.

Aim of the study

Our goal was to identify risk factors related to surgical treatment and to provide additional clinical data about TEF.

Materials and methods

We retrospectively identified patients with TEF, who were surgically treated in our institution. We excluded patients with congenital and malignant fistulas. Perioperative characteristics, complications, and surgical outcomes have been collected. Multivariate analysis of risk factors was performed.

Results

Fifty-eight patients were surgically treated between 1998 and 2023, the majority of whom had postintubation TEF. The surgical approach included cervicotomy in 76%, cervicotomy with partial sternotomy in 14%, and sternotomy in 2% of the cases. In 43% of the patients, it was necessary to insert a tracheostomy during surgery. The morbidity rate was 21%, and the most common complications were vocal cord palsy (14%), anastomosis dehiscence (7%) and fistula recurrence (7%). Multivariate analysis revealed that a length of resection >3 cm was an independent risk factor for this complication and poor short-term outcome ($P = 0.0036$). Postoperative placement of a T-tube was needed in 7% of patients, and reoperation was needed in 7% of patients.

Conclusions

Single-stage esophageal occlusion with segmental tracheal resection is a highly effective and safe therapeutic method, that is a definitive treatment in most cases. It is particularly recommended in case of concomitant tracheal stenosis. The T-tube placement after a procedure is required only in the minority of patients. The length of the resected tracheal segment is an independent prognostic factor for poor short-term outcomes and severe postoperative complications, including fistula recurrence.

None

Public Awareness of Total Laryngectomy and Its Consequences – Survey Results

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Introduction

Total laryngectomy, primarily performed in the treatment of advanced laryngeal cancer, leads to significant changes in a patient's life. These include the loss of natural voice production, the need for alternative communication methods, and adaptations to daily functioning. Despite its profound impact, public awareness of this procedure and the challenges faced by laryngectomized individuals remains limited.

Aim of the study

The study aimed to assess the level of social awareness regarding total laryngectomy and to explore public perceptions of individuals who have undergone this procedure. Additionally, the research sought to identify gaps in knowledge about available communication methods and to determine the emotional responses associated with this topic.

Materials and methods

An anonymous online survey was conducted among 98 participants, including individuals both with and without a medical background. The questionnaire covered key aspects such as general knowledge of total laryngectomy, awareness of its causes and consequences, familiarity with alternative speech methods, and emotional attitudes toward affected individuals.

Results

The findings revealed a low level of public awareness regarding total laryngectomy. Many respondents were unfamiliar with the available communication methods for laryngectomized individuals. The procedure itself evoked feelings of fear and uncertainty among participants. Additionally, misconceptions and a lack of understanding about the daily challenges faced by these patients were observed

Conclusions

The study highlights the need for greater public education on total laryngectomy and its consequences. Raising awareness through targeted educational campaigns could not only improve societal attitudes toward laryngectomized individuals but also enhance their reintegration into daily life. Increased knowledge about available rehabilitation methods may contribute to better support and acceptance for patients who have undergone this life-altering procedure.

Self-Assessment of Voice and Quality of Life in Patients After Total Laryngectomy: Challenges, Adaptation, and the Role of Rehabilitation.

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Introduction

Total laryngectomy is a surgical procedure that results in the irreversible loss of the larynx and, consequently, the natural voice. Patients must adapt to new ways of communication, such as esophageal speech, tracheoesophageal voice prosthesis or the use of an electrolarynx. These changes significantly impact their daily lives, social interactions and psychological well-being. The ability to communicate effectively plays a crucial role in maintaining social connections, self-confidence and overall quality of life, making voice rehabilitation an essential aspect of post-laryngectomy care.

Aim of the study

The aim of this study is to assess how patients after total laryngectomy perceive their voice quality and how it affects their social functioning and psychological well-being. The study also explores differences in voice self-assessment depending on the communication method used.

Materials and methods

The study was conducted among 50 patients after total laryngectomy who use different alternative communication methods. Standardized voice self-assessment questionnaires and custom-designed questions were employed to analyze both subjective patient experiences and objective communication challenges.

Results

The findings indicate that voice self-perception varies depending on the communication method used. Patients using tracheoesophageal voice prostheses report higher satisfaction with voice quality and ease of communication compared to those relying on esophageal speech. The greatest difficulties are reported by electrolarynx users, for whom the mechanical and artificial nature of the voice poses a significant barrier to social interactions. Additionally, most patients experience reduced self-esteem and social withdrawal, highlighting the need for comprehensive therapeutic and psychological support.

Conclusions

The study underscores the crucial role of voice rehabilitation and psychological support in enhancing the quality of life for patients after total laryngectomy. Early speech therapy intervention, appropriate selection of communication methods and patient education can significantly improve voice self-assessment and overall social well-being.

The Posterior Inferior Recess of the Sinus Tympani – Radioanatomical Investigation in Children Under Five Years Old

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Introduction

The medial retrotympanum is a bony area containing a number of recesses, located at posteromedial aspect of the tympanic cavity. Sinus tympani (ST) is the most constant and well-studied recess of this area. The ST was examined using CT scans and with the use of endoscope. Several features of this recess were already described well, and its anatomical and clinical importance already confirmed. The ST was divided into three types regarding the position of the fundus of the sinus. An additional recess, occurring within this sinus was recently described as the poster-inferior recess (PIR) of sinus tympani, possible to be visualized on the CT scans in sagittal plane.

Aim of the study

The aim of our study was to evaluate the presence of PIR in children under five years old and to correlate these findings with type of the type of ST according established classification. We took the basic measurements of the width and depth of ST from our previous studies, completed them with measurements of width and depth of the PIR when present and searched for any correlations regarding age, gender and side in our cohort.

Materials and methods

For this study we used an anonymised group consisting of 150 sets of images. We have divided them into two smaller groups: children from 4 to 24 months of age and from 25 to 60 months of age. To obtain the repeatability and measurement accuracy we used symmetrisation for all image sets. The analysis involved assessing the presence and type of the sinus tympani. For the next step we assessed the presence of PIR as well as its depth and width. We have provided basic descriptive statistics analysis with the Shapiro-Wilk test, Spearman's rho rank correlation analyses, Mann-Whitney U tests, $\chi 2$, and Fisher's exact tests. The classical threshold of $\alpha = 0.05$ was considered significant.

Results

Tympanic sinus was found in all analyzed scans. We have found postero-inferior recess in 109 analyzed tympanic sinuses (36.3%). The average width of the PIR for the whole studied group was 2.21 ± 0.79 mm (1.15 - 6.63 mm), and the average depth of PIR was 2.53 ± 1.26 mm (0.85 - 7.26 mm). We found statistically significant differences between PIR depth and width regarding the ST type.

Conclusions

Postero-inferior recess of the sinus tympani is a common anatomical variation of the medial retrotympanum in children under five years. PIR is the shape of the tympanic sinus that otologists should be aware of when assessing preoperative CT, especially when sinus tympani type A or B is encountered.

Congenital Cholesteatoma of the Mastoid Process- a Case Report

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Background

Congenital cholesteatoma is a rare epithelial inclusion within the temporal bone, arising independently of prior infections or tympanic membrane perforations. When localized in the mastoid process, it can lead to progressive bone erosion, potentially causing complications such as hearing loss, labyrinthine fistula, facial nerve palsy, and intracranial infections. The incidence of congenital cholesteatoma is significantly lower than that of acquired forms, with its pathogenesis thought to involve embryonic remnants of epithelial cells. Surgical excision, typically via mastoidectomy, remains the primary treatment to prevent disease progression and recurrence.

Case Report

The authors of this article present two cases of adult patients (63-year-old male and 35-year-old female) diagnosed with congenital cholesteatoma confined to the mastoid process. The patients were treated surgically.

Conclusions

Early diagnosis and surgical intervention are essential to prevent complications associated with congenital cholesteatoma. This condition is currently quicker to be diagnosed in paediatric patients thanks to advanced screening methods. Long-term follow-up is necessary to monitor for recurrence. Advances in imaging and minimally invasive techniques have improved outcomes, but further research is needed to optimize surgical approaches and postoperative care.

Extranodal NK/T-cell Lymphoma, Nasal Type: Rare Laryngeal Manifestation in a Chronic Sinusitis Patient.

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Background

Introduction Natural killer/T-cell lymphoma (NKTL) is rare and can present with many significant diagnostic challenges. The incidence rate is low in Western populations. The presentation of NKTL is often nonspecific and may resemble other diseases. The tumour predominantly affects the nasal and paranasal regions without nodal infiltration and is strongly associated with Epstein–Barr virus (EBV).

Case Report

Aim: We wish to highlight this case report as it emphasises the need for a broad differential diagnosis when faced with inconclusive results in complex medical conditions. Methods and material: This is a clinical review of a patient's symptoms, clinical characteristics, and physical examination findings. Discussion In this case, a 26-year-old male was admitted to the ENT department with nasal obstruction and non-healing ulcerative tonsillitis accompanied by a high fever. Due to the medical history of allergic chronic rhinosinusitis (CRS) and bronchial asthma without a satisfactory response to first-line treatment, the biological treatment by interleukin-5 antibody (mepolizumab) had been implemented a few months before hospitalisation. The clinical course led to the diagnosis of peritonsillar abscess and exaggeration of CRS. However, lack of improvement after standard therapy, recurrent drug-resistant and previous immunosuppressive treatment resulted in immunodeficiency being suspected. After an initial positive response to systemic steroids, the patient was discharged home, but a few months later, the symptoms returned. Despite broad-spectrum antibiotics and multiple surgical management, the general condition was deteriorating. Only expanding the diagnostics with more specific tests allowed for a final NKTCL diagnosis to be made.

Conclusions

Conclusion The diagnosis for NKTL is often long due to its non-specific presentation and low incidence. The time of final diagnosis took 7 months after admission, which is not unusual for this type of lymphoma. This patient's comorbidities and clinical improvement with steroids masked the progression of symptoms related to the neoplasm. This case report shows the importance of considering a broad differential diagnosis when dealing with inconclusive testing in complex medical cases.

Invasive Fungal Rhinosinusitis with Anterior Cranial Fossa and Orbital Involvement: a Case Report

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Background

Invasive fungal rhinosinusitis (IFRS) is a severe fungal infection of the nasal cavity and paranasal sinuses, characterized by angioinvasion of fungal hyphae and tissue necrosis. IFRS primarily affects immunocompromised individuals, particularly those with uncontrolled diabetes and hematologic malignancies. Depending on immune function, fungal colonization can manifest as allergic fungal rhinosinusitis (AFRS), fungal ball, or IFRS. The latter can extend to adjacent structures, leading to serious complications, including permanent vision loss, intracranial involvement, or death.

Case Report

A 59-year-old woman was admitted to the Department of Otolaryngology due to blindness and exophthalmos in her left eye, accompanied by progressive pain and nausea. Her medical history included rheumatoid arthritis, hypertension, diabetes mellitus, grade 2 obesity, and depression. A contrast-enhanced magnetic resonance imaging (MRI) scan performed two months earlier revealed inflammatory changes in the paranasal sinuses extending to the left orbit, pterygopalatine fossa, anterior cranial fossa, and possibly the optic nerve sheath. The patient had experienced progressive vision loss and ptosis of the left upper eyelid for several months before admission but had not sought ophthalmologic evaluation. The patient underwent endoscopic sinus surgery, during which a fungal ball was removed from the maxillary sinus, and optic nerve decompression was performed. Microbiological culture confirmed the presence of Aspergillus fumigatus. Systemic antifungal therapy, including intravenous voriconazole, was administered based on culture results. A follow-up MRI one month later revealed persistent inflammatory changes. However, otolaryngological examination confirmed that no further surgical intervention was required. Consequently, oral voriconazole therapy was continued. The patient was discharged 34 days postoperatively with persistent blindness in the left eye.

Conclusions

Invasive fungal rhinosinusitis (IFRS) with fungal ball formation and extension into the orbit and anterior cranial fossa is a rare but potentially life-threatening condition. This case emphasizes the need to include paranasal sinus pathology in the differential diagnosis of patients with progressive vision impairment and exophthalmos. Early detection, prompt surgical intervention, and appropriate antifungal therapy are crucial to preventing severe complications and improving patient outcomes.

Middle Fossa Approach for an Uncommon Case of Recurrent Cholesteatoma: A Case Report

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Background

Cholesteatomas are abnormal growths of keratinised squamous epithelial cells that form a cyst-like structure, which can occur as a result of chronic otitis media. Surgical intervention is necessary for cholesteatomas to prevent progressive destruction and other serious complications like intracranial infections. Recurrent cholesteatomas are those that reappear after initial surgical intervention, often due to residual or new growth of cholesteatoma tissue in difficult-to-reach areas. The risk of recurrence of a cholesteatoma post operative is highest within the first five years of removal.

Case Report

We present the case of a 70-year-old male with a history of chronic otitis media who underwent radical revision mastoidectomy of the right ear 15 years ago, aimed at the complete removal of the cholesteatoma and the creation of a cavity for monitoring any potential recurrence. During this surgery, the patient sustained a significant injury to the facial nerve, resulting in severe dysfunction classified as grade 5 on the House- Brackmann Facial paralysis scale, which was rehabilitated well. Following the procedure, routine follow-up appointments showed no other abnormalities. However, in 2024 the patient's wife noticed a recurrence of facial weakness, which, interestingly, the patient himself did not observe. Despite no visible signs of recurrence during a conventional otolaryngological examination of the postoperative cavity, a non- EPI- DWI MRI scan of the temporal bone was performed as a precautionary measure. This scan revealed a 22x6x15 mm cholesteatoma extending to the skull base. Based on these findings, the patient was deemed a candidate for surgical intervention. The middle fossa approach was chosen due to the anatomy of the petrous part of the temporal bone being optimally visualized, allowing for precise surgical access.

Conclusions

This case highlights the importance of vigilant long- term monitoring in patients with a history of otologic surgeries and the role of advanced imaging in detecting subtle, yet critical, complications like recurrent cholesteatomas.

Petrosectomy as an Effective Method of Removing Cervicotympanic Paraganglioma - Case Study of a 14-year-old Patient

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Background

Paraganglioma tympanicojugulare is a rare, usually benign tumor originating from pheochromocytoma located at the base of the skull, in the area of the cervicotympanic plexus. It can infiltrate surrounding structures, including the temporal bone, cranial nerves, and blood vessels. Due to the morphology, the symptoms of cervicotympanic paraganglioma contribute to tinnitus (often pulsating), conductive hearing loss with high cochlear reserve, dizziness, balance disorders, facial nerve paralysis and dysphagia. Diagnostics is based primarily on imaging tests: magnetic resonance imaging (MRI), computed tomography (CT) with contrast, as well as basic audiological and neurological examinations. Depending on the extent of the tumor, a partial, subtotal or total petrosectomy is performed. It involves the removal of a fragment or all of the temporal bone (depending on the method) for full resection of the tumor.

Case Report

A male patient referred to the Department of Paediatric Otorhinolaryngology was diagnosed for tinnitus and balance disorders. After videonystagmography (VNG), deep damage to the vestibular organ on the left side was found. Pure tone audiometry diagnosed conductive hearing loss with a cochlear reserve of up to 60 dB HL. On MRI, the tumor extended along the cervicotympanic tubule, infiltrating the temporal bone, sigmoid sinus and internal carotid artery, compressing nerves IX and X. The patient was qualified for the procedure. Surgically, a wide antromastoidectomy and posterior hypotympanotomy, complete removal of the inner ear, were performed, extending the operation to a subtotal petrosectomy. The base of the skull was plastic surgery and the ear canal was sutured.

Conclusions

Thanks to extensive imaging and audiological-otorhinolaryngological diagnostics, the petrosectomy procedure contributed to the effective removal of the tumor. Although after the procedure cranial nerve paresis VII, IX, X was diagnosed, the episodes of whirlwind dizziness and tinnitus subsided. As a result of the removal of the inner ear structures and the suturing of the ear canal, complete deafness of the left ear occurred. The healing process is fully completed and the young patient's quality of life has been significantly improved.

Pneumocephalus as a Result of Chronic Sphenoid Sinusitis - a Case Report.

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Background

Chronic sphenoid sinusitis, although rare, may lead to severe intracranial complications such as pneumocephalus, brain abscess or meningitis. Pneumocephalus, the presence of air inside the cranial cavity, typically results from trauma or chronic inflammation which causes bone deterioration at the skull base. In cases of chronic sphenoid sinusitis, air might infiltrate the intracranial space due to erosion of the sinus walls. Imaging studies, especially CT or MRI, are necessary to distinguish infectious from neoplastic processes.

Case Report

A 63-year old female patient presented in the Emergency Department (ED) with a sudden headache , speech defects and episodes of vomiting. On admission: mild muscle weakness in left limbs, intact orientation, clear speech. Medical history: prior hospitalizations due to headaches, walleye, muscle weakness for several years. Brain MRI performed one month ago revealed no organic lesions A head CT scan and CT angiography was performed revealing diffuse intracranial pneumocephalus which involved the ventricular system, and pathological lesions in the nasopharynx. The scan also showed destruction of the sphenoid bone, sella turcica and sphenoid sinus with a soft tissue mass, suggesting a complication of chronic sphenoid sinusitis. A chest x-ray demonstrated an elevated left hemidiaphragm and stable fibroatelectatic changes compared to previous images. During stay in the ED for diagnostics, the patient received ceftriaxone, dexamethasone, mannitol, and analgesics, including opioids. An otolaryngological and neurosurgical consultation were ordered to assess indications for urgent surgical treatment – she was disqualified. The patient was admitted for conservative treatment and further diagnostics to the otolaryngology department.

Conclusions

This case highlights a rare complication of chronic sphenoid sinusitis manifesting as intracranial pneumocephalus. This should also raise suspicion in the case of a new headache, even in a patient who has been previously diagnosed. Further diagnostic steps, including MRI and histopathological examination, are essential for definitive diagnosis. The case underscores the importance of a multidisciplinary approach involving otolaryngologists, neurologists and radiologists for accurate diagnosis and management.

Rare Frontal Sinus Osteosarcoma: Case Report

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Background

Osteosarcoma of the frontal sinus is a rare and aggressive malignant tumor with high recurrence rates. Due to its proximity to vital structures, early diagnosis and a multidisciplinary treatment approach, including surgery and chemotherapy, are crucial for improving patient outcomes.

Case Report

A 43-year-old male presented with a severe, pressure-like frontal headache (VAS 10) that had awakened him from sleep. He denied nausea, vomiting, fever, or visual disturbances. This was the first occurrence of such an intense headache, however, he had noticed a progressively enlarging mass on his forehead over the past few months. CT and MRI imaging revealed a ~3.9×2.0×5.0 cm contrast-enhancing tumor, filling the frontal sinus, with bony destruction and intra-extracranial extension. Biopsy revealed polymorphic, atypical osteoblasts with large polygonal nuclei and a small amount of cytoplasm, confirming unclassified osteosarcoma. The patient underwent neoadjuvant chemotherapy using a modified MAP regimen. Initially, he received cisplatin at a dose of 60 mg/m² (a total of 120 mg per day) and doxorubicin at 37.5 mg/m² (a total of 75 mg per day), both on the first and second days of each cycle. Methotrexate was not given due to renal function impairment. As the treatment progressed, cisplatin was replaced with carboplatin (AUC 6, total dose 639 mg) due to nephrotoxicity. After two cycles, imaging showed no significant progression and patient underwent surgical treatment. Under general anesthesia, a bicoronal incision was made above the tumor, followed by a circular incision of the aponeurosis while maintaining a 2 cm distance. The tumor was excised from the frontal sinus using a diamond bur, revealing extensive destruction of the posterior wall of the left frontal sinus. A cement plate was formed to repair the defect in the frontal sinus wall and was anchored with sutures. Two rubber drains were placed, and tissue samples confirmed osteosarcoma with negative margins. Postoperatively, the patient completed adjuvant chemotherapy. Follow-up imaging performed after one month showed no evidence of recurrence, and the patient's clinical condition remained stable.

Conclusions

This case highlights the challenges of diagnosing and treating frontal sinus osteosarcoma. A multimodal approach, including neoadjuvant chemotherapy and extensive surgical resection, was effective in achieving local control. Long-term surveillance remains essential due to the tumor's potential for recurrence.

Recurrent Epistaxis Due to Internal Carotid Artery Aneurysm

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Background

Epistaxis is a commonly treated ailment in emergency ENT that is usually successfully managed by nasal tamponade, which is usually the first line treatment. Internal carotid artery aneurysm disguised as epistaxis is a rare clinical presentation that complicates the routine treatment of epistaxis. Recurrent epistaxis and ICA aneurysms in patients suffering coagulation disorders who depend on oral anticoagulants frequently visit the emergency department and require more advanced interdisciplinary medical interventions like artery embolisation or open neck surgery.

Case Report

We present a case of 86-year-old man who was admitted to the ENT Clinic with severe bleeding from the nasal cavities that persisted despite two left ICA branches embolization procedures after primary prolonged nasal tamponade causing anaemia requiring multiple blood transfusions and resulting in ischemic stroke. Because of the medical history of myocardial infarction and atrial fibrillation, the patient required ongoing anticoagulative treatment. Imaging diagnostics by CT revealed an intracranial segment of left ICA aneurysm. Comorbidities and the patient's advanced age constituted additional risk factors of unfavourable clinical prognosis. Secondary ischemic stroke caused permanent disability. The above shows that using clinically proven effective methods of treatment is not always enough to ensure a complete recovery and general quality of life improvement, even if the disease is well known. Recurrent epistaxis due to ICA aneurysms may be life-threatening and still continues to be a challenge for ENT specialists.

Conclusions

This case report underscores the life-threatening nature of epistaxis, even with established treatment strategies. There are limitations with conventional epistaxis management in patients suffering ICA aneurysms. The patient’s age, anticoagulation therapy, and comorbidities threatened unfavourable outcomes, emphasising the importance of an interdisciplinary approach involving ENT, neurology, and cardiology was vital to guiding treatment. We aim to highlight the challenges of managing recurrent epistaxis in elderly patients with multiple comorbidities who depend on anticoagulation therapy, and emphasise the need for multidisciplinary collaboration when addressing limitations of standard treatments.

Utility of Intraoperative Visualization with Exoscope 3D in Laryngeal Cancer (Case-Study)

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Background

Laryngeal cancer is one of the most common neoplasms in the head and neck region. In early stage (t1 and T2) surgical resection or primary RT are recommended, and both methods give comparable oncological outcomes. Transoral laser microsurgery (TLM) commonly involve using a microscope but recently also 3D exoscopes are being introduced. The study aims to present the utility of intraoperative visualization of the surgical field using an ORBEYE 3D 4K exoscope with intraoperative narrow band imaging (NBI) to visualize vascular patterns and therefore to help in recognition of laryngeal lesions.

Case Report

A 70-year-old male smoker was presented to the Department of Otolaryngology, Head and Neck Oncology with a 1.5 history of hoarseness. Patient underwent a biopsy in another hospital and histopathological report revealed a squamous cell carcinoma of the left vocal fold. In endoscopic examination there was a tumour of the left vocal fold and suspicious vascular changes under NBI in the anterior commissure. Patient was qualified for TLM with the CO2 laser under general anaesthesia. During the surgery, ORBEYE exoscope was used and the malignant infiltration on the right vocal fold involving anterior commissure became visible under the NBI, which was not detectable under white light. The tumour was resected en bloc, and histopathological report revealed clear margins. Patient remains under close observation.

Conclusions

3D 4K exoscope with NBI is an innovative technique for visualization of surgical field during TLM. In the presented case it confirmed observations made in the office, moreover it showed changes that were not visible. High-quality images together with intraoperative visualization of the vascular patterns using NBI allow to obtain clear margins. Moreover, the device has high didactic value giving the 3D visualization with identical imaging for the surgeon and observer.

Lifestyle Medicine & Public Health Session

Session Coordinators:
Karolina Kozłowska
Emilia Jamrozy

Sponsor

Status of the Polish anti-HPV Vaccination Strategy in Comparison with Other Countries

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Introduction

HPV is a common infection associated with many cancers, including cervical cancer. In Poland the vaccination rate compared to other Western European countries, such as Norway or Sweden is low. The Polish Vaccination Program aims to have 60% of the population vaccinated by 2028.The realization of these goals faces barriers, such as low awareness in the target groups and logistical problems of logistical issues related to access to vaccines.

Aim of the study

The article analyzes the human papillomavirus (HPV) vaccination strategy in Poland, and compares this strategy to other programmes implemented in Europe and worldwide. The purpose of the study is to analyze the effectiveness and identify the strengths and weaknesses of the vaccination programme approved in 2023 and to suggests reccomendations that, if implemented, could improve the effectiveness of the programme and reduce the incidence of cervical cancer.

Materials and methods

We conducted a detailed analysis of data and statistics provided by Polish state authorities (CEZ, GIS, AOTMiT, ABM), comparing the program implementation status across individual Polish regions. Among these, the regions with the highest vaccination rates were comparatively analyzed, and the interventions that led to the greatest increases in vaccination coverage were identified. Finally, recommendations to boost vaccination coverage were synthesized based on the most effective locally implemented strategies.

Results

The provinces with the highest number of vaccinations were Wielkopolskie, Dolnośląskie, Mazowieckie. Consistently low number of vaccinations was observed in the provinces of Świętokrzyskie, Podkarpackie, Podlaskie, Opolskie. Multi-level interventions that combine activities at the level of providers, patients and communities have the best effect in increasing vaccination coverage. Electronic reminder systems that engage both providers and patients, as well as training for health care workers in convincing parents and patients to vaccinate, resulted to be particularly effective. The most siginifant barriers negatively affecting HPV vaccination rated in Poland were low availability of vaccines at the vaccination site and low social awareness.

Conclusions

Despite the measures implemented so far, Poland is still struggling with low vaccination rates. Implementing a universal HPV vaccination program in Poland is a step in the right direction, but requires significant support in terms of education, logistics to increase coverage and equalise the outcome across all Polish regions.

A Study on Doctors' Opinions Regarding Body Donation for Scientific Purposes and Anatomy Education at Medical Universities

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Introduction

Teaching anatomy in terms of content and methodology of transferring knowledge is a subject of discussion due to the rapid progress of new technologies, time constraints, changes in requirements, or low availability of cadavers in some academic centers. Despite the dissemination of information related to the procedure of donating cadavers to centers educating future doctors, in many medical schools the availability of bodies is very limited

Aim of the study

The aim of the study was to learn about the opinions of physicians on the possibility of cadaver donation, as well as factors influencing their approval or concerns about cadaver donation programs.

Materials and methods

The study was conducted using an anonymous online questionnaire. The questionnaire consisted of 24 questions, including 17 single-choice questions regarding the medical community's opinions on postmortem body donation for scientific and research purposes, as well as 7 questions related to the demographic and social characteristics of the surveyed physicians. The study was carried out among Polish doctors between May 2024 and December 2024.

Results

The survey included 114 physicians, comprising specialists, residents, and interns, with 58 women and 56 men. Nearly half of the respondents (46.5%) reside in cities with a population exceeding 250,000. The majority of participants (60%) identified as religious, and half (50%) reported being married. The most frequently chosen response to the question, "What concerns do you have regarding body donation?" was "no concerns." Despite this, only 34% of respondents considered donating their bodies for scientific purposes. Nearly half of the respondents had engaged in teaching at a medical university. Among academic teachers, 37% considered donating their bodies for scientific purposes. In contrast, among those not working within a university clinic, 32% considered body donation. The majority of respondents did not specialize in surgical fields and did not consider donating their bodies for scientific purposes. No correlation was found between practicing a surgical or non-surgical specialty and the willingness to donate one’s body for educational and research purposes.

Conclusions

The vast majority of respondents recognized the importance of learning anatomy for the subsequent study of other branches of medical sciences. Nearly all participants perceived the lack of public knowledge as a limiting factor for body donation and viewed raising awareness as a way to increase the number of donated bodies.

Awareness of the Carbon Footprint of Inhaled Medications Among Medical Students: The Role of Universities in Shaping This Knowledge

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Introduction

The worldwide healthcare sector contributes 5-8% of global greenhouse gas (GHG) emissions responsible for climate changes. More than 300 million patients with asthma or COPD use inhalers contributing to global warming. The use of the same drugs using different propellents generate very different releases of CO2 equivalents.

Aim of the study

The study aims to assess the awareness and knowledge of Medical University of Warsaw students regarding the carbon footprint of inhaled medications and differences between various types of inhalers.

Materials and methods

The study was conducted in a form of a survey, which was given to a group of students from the first year and the sixth year of medical studies, with the later being divided into Polish (PD) and English (ED) division. The study was based on a voluntary, anonymous survey, which was created specifically for this study.

Results

In total 692 students took part in the survey (1st year - 300, 6th year PD - 296, and 6th year ED - 96). All groups declared care for the GHG emission (1st year - 55.3%, 6th year PD - 65.5%, 6th year ED - 53.1%), considering it a significant or an enormous issue. Additionally, respectively 72.6%, 73.6% and 68% of students state readiness to take action in reducing such emissions. Declaration of knowledge shows that 87.6% - 1st year, 92.2% - 6th year PD and 79.1% - 6th year ED of the participants claim that they are aware of what is carbon footprint. Moreover, only 16.3% - 1st year, 19.9% - 6th year PD, 18.7% - 6th year ED declare their knowledge on this topic as low or very low. However, the results suggest otherwise with only 1.3% - 1st year, 3% - 6th year PD, 1% - 6th year ED completing all 4 knowledge test questions correctly. As it is for the source of knowledge on carbon emissions, similar trend in all groups was observed, with the internet/social media being the most prevalent answer (61.1% - 1st year, 67.3 - 6th year PD, 53.1% - 6th year ED). In contrast, University is barely considered by the students as a source of knowledge on this topic (3% - 1st year, 9% - 6th year PD, 7% - 6th year ED).

Conclusions

Therefore while the students claim high knowledge and readiness to take action on the matter of carbon footprint reduction, they are actually not aware of ecological consequences prescribed aerosol medicines. This insufficient comprehension may lead them to generate unnecessary emission of GHG. The very small share of this topic in the medical study curriculum of future doctors is disturbing.

Critical Gaps in Breast Cancer Prevention Education: A Call for Curricular Reform in Medical Training

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Introduction

Breast cancer is the most common malignancy among women, making prevention and early detection key to reducing mortality.

Aim of the study

This study examines medical students' attitudes and experiences regarding breast cancer prevention, focusing on clinical breast examination (CBE) and awareness.

Materials and methods

A cross-sectional survey was conducted among medical students at Polish medical universities. The online questionnaire assessed education on breast cancer prevention, CBE, knowledge confidence, awareness of mammography guidelines, and barriers in discussing the topic. Data was collected between November 2024 and January 2025.

Results

A total of 804 medical students participated in the survey, including 437 (54.4%) from clinical years 4-6 and trainees. Most students were first introduced to breast cancer prevention in their second year (18.0%, 145 students) or third year (15.8%, 127 students) of studies. However, 85 out of 437 (19.4%) students from clinical years 4-6 reported never having had classes on breast cancer prevention. Nearly half of the respondents (383 students, 47.6%) did not know how to perform a CBE, and only 48 (6.0%) students had received hands-on training with real patients. As a result, about one-quarter (101/437; 23.11%) of clinical-year students felt incapable of performing a breast examination. Knowledge of breast cancer prevention programs was moderate among medical students. A total of 163 students (20.3%) had no knowledge of the national screening program, while 148 (18.4%) knew whom to refer patients to. Although most students (96.0%) considered mammography an effective screening tool, only 47.9% correctly identified the recommended screening interval. Among students from clinical years and trainees, 217/437 (49.6%) correctly recognized the appropriate age for referring patients. Despite these gaps in knowledge, 676 students (84.1%) reported feeling comfortable discussing breast cancer prevention with patients, including 379/437 (86.7%) from clinical years 4-6 and trainees.

Conclusions

Significant gaps exist in medical education regarding breast cancer prevention. Medical curricula should emphasize CBE training, incorporating supervised patient interactions to enhance confidence. Universities must focus on practical classes, ensuring students gain both theoretical and clinical competence. Strengthening structured prevention education will better prepare future healthcare professionals to guide patients in early detection, ultimately improving outcomes.

Distributed Artificial Intelligence (DSI) in the Effectiveness of ADHD Treatment.

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Introduction

Distributed Artificial Intelligence (DAI) integrates technologies such as Federated Learning (FL), multi-agent systems (MAS) and blockchain, enabling multiple AI agents to collaborate in the analysis of medical data. In the context of ADHD research, DAI offers the potential to protect patient privacy and personalize therapy.

Aim of the study

The aim of this study is to evaluate the use of DAI in the analysis of the effectiveness of ADHD treatment, with particular emphasis on comparing the effectiveness of LDX and OROS-MPH drugs and modelling of patient response to therapy.

Materials and methods

A literature review on the use of FL, MAS and blockchain in clinical trials for ADHD was conducted. Particular attention was paid to studies using FL to analyze multicenter patient data, MAS to dynamically model response to treatment, and blockchain to ensure data integrity and transparency.

Results

The use of FL enables AI models to be trained on distributed patient data without the need to share raw data, which increases privacy protection. MASs allow for dynamic adaptation of therapeutic strategies based on current patient data. The implementation of blockchain technology ensures the immutability and verifiability of clinical trial results.

Conclusions

Integration of DAI in ADHD research can lead to more personalized and effective therapies while protecting patient privacy and ensuring transparency of research processes.

Gender Differences In Beliefs Regarding Violence and Neglect Towards Children and Adolescents: A Survey Study

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Introduction

Violence and neglect towards children is a serious problem in Poland. Parents' awareness of violence and forms of reporting it is an important factor that can reduce its frequency.

Aim of the study

The aim was to analyse gender differences in the parents' beliefs regarding factors increasing the risk of violence against children and adolescents, behaviors that constitute it, possible consequences of it for oral health, own knowledge about the topic and how to react.

Materials and methods

A survey was conducted at the Department of Pediatric Dentistry, MUW. Study included 340 parents with at least one child. Parents of only adult children were excluded. The questionnaire contained questions regarding parents' knowledge about the symptoms of violence and neglect as well as their experiences. Parents' opinions were learned about the most common perpetrator of violence, what are the factors determining its occurrence and its impact on children. Attitude towards educating about child abuse, as well as knowledge about the forms of combating it, was examined. The results were subjected to statistical analysis performed in Statistical Package for Social Sciences Statistics using descriptive statistics, Mann-Whitey U test, Kendall tau b ($p<0.05$).

Results

The study group consisted of 332 parents (88 fathers and 244 mothers) aged 20 to 54 years (mean 37,98 ± 6,66). They identified alcohol and drug use by family members as the main determinants of violence against children (97% and 98%; $p=0.004$ and $p<0.010$, respectively). Boys were the most common victims of violence (37%). The main perpetrators of child abuse were fathers (78.3%). Women had significantly stronger beliefs than men that yelling at a child, using vulgar words towards a child, jerking, beating and limiting the child's contact with other people constitute violence ($p<.001$). 85% considered toothache due to untreated caries and 75% dental injuries to be symptoms of abuse or neglect. Women had generally stronger beliefs regarding the consequences for dental health. Neglecting the child's oral hygiene, failure to treat a child's teeth and avoiding dentist are signs of violence, all $p <0.001$. The respondents cited the Internet as the main source of information (85%). 94% of respondents believe that healthcare professionals should respond to signs of violence.

Conclusions

Females are more sensitive to signs, actions and problems connected to child abuse and neglect than males. Males are seen as more blameworthy and less trustworthy than females.

Impact of Empathic Skills to Social Intelligence

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Introduction

Introduction: Empathy, or being empathetic, is the meaning of the inner framework of others with the precision and the emotional component and understanding the other was a person, but never lost; as a state. Being empathic, also known as comprehending another' inner workings precisely and emotionally, and realizing that the other person was once a person but is now a state. Social intelligence is the ability to understand and manage people.

Aim of the study

The purpose of this research was to evaluate the knowledge that nursing students and students carry about empathic skills and social intelligence.

Materials and methods

This research is descriptive and quantitative. It is cross-sectional research. The Empathy quotient (EQ) questionnaire is used to measure empirical skills. The questionnaire Messi Methodology was used to measure social intelligence. The study involved a participant pool of 150 individuals.

Results

From the findings through the correlation analysis, there has been a positive correlation between empathic skills and social intelligence with r = 0.301 and p = 0.010 *. The model explains 12% of variance and is significant with p = 0.028, where from the three explanatory factors only social intelligence with p = is significant 0.007 **, while gender and age do not appear to be significant explanations for empathic skills. Research findings show that there is a link between empathic skills and social intelligence where our first hypothesis is confirmed.

Conclusions

In conclusion, this study highlights the necessity to differentiate between different types of empathy while confirming the robust correlation between social intelligence and empathy. It refutes the notion that empathy varies with age by showing constant values throughout the age spectrum. Despite the fact that gender was not a significant effect, this highlights the significance of recognizing gender differences in empathic abilities.

N/A

Impact of Influenza Vaccination History on Decisions About Vaccination Against COVID-19 During the Pandemic.

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Introduction

According to World Health Organization, a total of more than 777 million people worldwide have been infected with COVID-19, including more than 280 million people in Europe. The disease has killed more than 7 million people worldwide, including more than 2 million people in Europe. According to the WHO, 67% of individuals worldwide have received a full course of a primary vaccination series, while according to European Center for Disease Prevention 73% of those in EU/EEA countries have done so. In Poland, over 22 million people have received a complete course of vaccination (59.5% of the population). Although the vaccine was highly anticipated at the time of the pandemic, many people around the world, in Europe and in Poland ultimately did not receive the vaccine and were skeptical about it. The question that arises is whether the pandemic itself has influenced public opinion regarding vaccination.

Aim of the study

To investigate the impact of previous influenza vaccination on decisions about the COVID-19 vaccination.

Materials and methods

A total of 425 students, with an average age of 21.53 ± 3.1 years, participated in the survey. 289 were female (68%) and 136 were male (32%). To be included in the study, participants had to be students, at least 18 years of age, and have consented to participate in the survey. The survey consisted of 17 questions for those who had not received the SARS-CoV-2 vaccine and 16 questions for those who had received the vaccine.

Results

Among the respondents, 313 students (73.65%) declared that they had been vaccinated with the COVID-19 vaccine, of whom 39 had been vaccinated with 1 dose (12.46% of those vaccinated), 256 had been vaccinated with 2 doses (81.79% of those vaccinated), and 12 had been vaccinated with 3 doses (3.83% of those vaccinated). A total of 138 respondents (32.47%) reported having had previously received the influenza vaccine. The objective was to analyze whether the history of influenza vaccination would impact the decision to be vaccinated with the COVID-19 vaccine. A statistically significant correlation was identified (p-value <0.05), with 85.51% of individuals who had received influenza vaccination also decided to have had the COVID-19 vaccine, compared to 60.44% of individuals who had not previously received influenza vaccination.

Conclusions

There is a correlation between a history of influenza vaccination and positive decision about a subsequent vaccination for COVID-19. Other factors influencing the decision about COVID-19 vaccination are yet to be analyzed.

Mapping the Needs of Working Individuals with Rheumatic Diseases in Poland

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Introduction

Rheumatic and musculoskeletal diseases (RMDs) are a diverse group of chronic conditions characterized by periods of exacerbation and remission. Over time, they can lead to disability, significantly limiting both employment opportunities and independent functioning. Patients with RMDs experience a 10-15% higher work participation gap compared to healthy employees. In line with the 2021 EULAR recommendations for supporting RMD patients in maintaining professional activity, this study evaluates the professional situation of individuals with rheumatic diseases in Poland.

Aim of the study

The study aimed to assess the professional situation of individuals with Rheumatic and Musculoskeletal Diseases (RMDs) in Poland, focusing on employment status, work-related challenges, and disease impact on professional life. It sought to identify barriers to maintaining or returning to work, evaluate the role of treatment in work performance, and highlight the need for employer awareness and support.

Materials and methods

All data was gathered by an anonymous online questionnaire which was addressed to people aged 18 to 65 as this range corresponds with working age in Poland. It consisted of parts such as “general personal info”, “disease description”, “manual activities” and “work status”. The survey included single-choice, multiple-choice, and open-ended questions. This made up a 55-item questionnaire.

Results

A total of 160 RMD patients were studied (145 women, 90.6%; 15 men, 9.4%), with 76.2% actively employed. Remission due to treatment occurred in 46.9%, with common medications including Methotrexate, Hydroxychloroquine, and biological treatments. Work changes were enforced for 41.2%, while 43.1% reported improved performance due to treatment. Barriers to returning to work included fear of illness worsening (42.1%), employer pressure (31.4%), and fear of dismissal (22%). Most (63.5%) lacked work encouragement, while 73.1% continued working despite malaise. Workplace discrimination affected 36.2%. Work was seen as beneficial for mental (81.9%) and physical (58.75%) health, with 40% open to retraining.

Conclusions

Through systematic approaches, physicians, employers, and social services can collaboratively assist individuals with RMDS in achieving a relatively normal work life while respecting their health constraints. Enhancing awareness of rheumatic diseases among employers holds significant potential for improving both the reintegration into the workforce and the sustained maintenance of employment.

Navigating Challenges: Personal Resources and Mental Well-Being of Higher Education Students - Insights from the COVID-19 Pandemic

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Introduction

Adapting to new environments is a challenge faced by many higher education students. Global stressors such as the recent COVID-19 pandemic may impact their mental well-being, introducing unprecedented challenges. However, the specific effects of the pandemic on students' mental health, particularly anxiety and curiosity, remains unclear.

Aim of the study

This study aims to investigate how students' appraisals of the COVID-19 pandemic and of their personal resources (self-efficacy, sense of control, optimism) predicts selected aspects of mental well-being, namely through the parameters of anxiety and curiosity.

Materials and methods

We conducted a mixed-methods study using (a) cross-sectional data from 3,727 higher education students during the first pandemic wave and (b) longitudinal data from 125 students across four years (2020-2023). Analysis was conducted through SPSS for descriptive statistics, multivariate linear regression, and general linear modelling ($p<0.05$).

Results

After controlling for pandemic-related factors, all considered aspects of situation and resource appraisal significantly predicted anxiety and/or curiosity. Anxiety was mainly predicted by sense of control, information stress, pandemic interest, and self-efficacy, whereas curiosity was primarily influenced by self-efficacy, health-promoting behaviors, and sense of control. Tested models explained 61% variance of anxiety and 36% variance of curiosity. Longitudinal analysis revealed that students with high and low optimism followed similar trajectories in anxiety and curiosity levels throughout the duration of the pandemic. However, those with low optimism consistently experienced higher anxiety and lower curiosity.

Conclusions

Appraisal of personal resources seem critical for mental well-being in both short- and long-term perspectives. These findings highlight the importance of supporting students' personal resources and health-promoting behaviours to mitigate anxiety and foster curiosity during global crises. Future research should explore interventions targeting these factors to enhance student resilience in challenging times.

Physical Activity in Patients After Solid Organ Transplantation. Survey Results from one Transplantation Center in Poland

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Introduction

Organ transplantation (Tx) saves lives and is increasingly common. While survival rates have improved, long-term outcomes remain challenging. Post-transplant metabolic syndrome (PTMS) affects many recipients, increasing cardiovascular risks. Physical activity (PA) is key to reducing complications, improving fitness, and preventing PTMS.

Aim of the study

This study analyzed PA patterns and duration among Polish transplant recipients, examining the effects of Tx on activity levels and factors like gender, age, body mass index (BMI), and time since surgery.

Materials and methods

The selected research tool was an anonymous paper questionnaire. Data was collected from June to November 2023. The study participants were patients from one transplantation center after kidney, liver, pancreas, heart or lung Tx. The respondents were asked about the duration and frequency of PA of varying intensities per week after Tx, as well as the impact of Tx on their PA.

Results

Data were collected from 229 respondents, including 128 males, 100 females and one participant who did not provide gender information. The largest group were kidney transplant recipients (178 respondents). A total of 67.0 % of patients reported that Tx had a positive influence on their PA, while 20% declared a negative impact. Our study also showed that men tend to spend more time on vigorous activities (median: 30 minutes) compared to women (median: 20 minutes). Additionally, men participate in vigorous activities more frequently during an average week (median: 3 days) than women (median: 2 days). However, no significant difference was observed between men and women in the duration of moderate-intensity activities. There was a negative correlation between BMI and the frequency of walking for at least 10 minutes per day throughout the week.

Conclusions

Our study shows that most transplant recipients perceive Tx as beneficial for their PA. Men engage in vigorous activities more frequently and for longer durations than women, while no gender differences were found in moderate-intensity PA. Higher BMI is linked to reduced walking frequency. These findings highlight the need for tailored post-transplant exercise programs to support long-term health and activity levels.

Proteomic Alterations in the Progression of Obesity – Based on Białystok PLUS Study.

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Introduction

Obesity has become a global pandemic, with its prevalence steadily rising across all age groups and socioeconomic backgrounds, posing a major public health challenge. It is a metabolic disorder characterised by widespread proteomic alterations that impact key physiological processes. Understanding these changes may help identify novel biomarkers and therapeutic targets for obesity management and prevention.

Aim of the study

Assessing differences in the expression of selected proteins between obese and non-obese subgroups.

Materials and methods

The study included 508 participants (mean age 52 ± 10.5 years, 47.2% men) from the Polish population-based Bialystok PLUS study. We used Olink Reveal, an innovative, high-throughput platform by Olink Proteomics based on their Proximity Extension Assay (PEA) to identify levels of 1034 circulating proteins in small volumes of plasma samples. The study population was categorized according to Body Mass Index (BMI).

Results

A comparison of Normalized Protein Expression (NPX) between obese (n = 123) and non-obese (n = 385) participants identified 13 proteins with statistically significant differences. The highest expression levels in individuals with obesity were observed for Glycerol-3-Phosphate Dehydrogenase 1 (GPD1) and Alcohol Dehydrogenase 4 (ADH4), both of which play a crucial role in hepatic metabolism.

Conclusions

Obesity triggers multifaceted physiological alterations, encompassing chronic inflammation, oxidative stress, metabolic and endocrine dysregulation, as well as adaptive remodeling across various tissues.

Silent Suffering: Preliminary Findings on Sexual Abuse in Intimate Relationships

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Introduction

Sexual abuse within relationships remains a hidden issue, often overlooked due to societal perceptions and legal limitations. While rape is commonly linked to assaults by strangers, research suggests intimate partners are frequently the perpetrators. Recognizing the scope of this problem is essential for legal and social reforms.

Aim of the study

This study examines the prevalence and forms of sexual abuse in intimate relationships, focusing on recognition, reporting, and societal awareness.

Materials and methods

An anonymous online survey with 38 questions was distributed via social media (Facebook, Instagram). A total of 250 individuals participated (84.4% female, 14% male, 1.2% transgender, 0.4% non-binary). The survey assessed personal experiences of sexual abuse in relationships, responses to such incidents, and awareness of legal definitions.

Results

Of the respondents, 32% (n=80) reported experiencing sexual abuse in a relationship. The most common forms included coercion despite objections (67.5%, n=54), emotional manipulation for sex (62.5%, n=50), and forced oral sex (47.5%, n=38). Other reported abuses included forced vaginal penetration (46.3%, n=37), forced anal penetration (21.3%, n=17), non-consensual touching (45%, n=36), and coercion through intoxication (33.8%, n=27). Despite the severity of these experiences, only 2.5% (n=2) of victims reported the abuse to authorities. When presented with a standardized definition of "rape," only 40% (n=32) of those affected recognized their experience as such. In total, 38 respondents identified as having been raped.

Conclusions

These preliminary findings reveal a significant gap between experiences of sexual abuse and formal recognition or reporting. The results emphasize the need for legal reform, increased public awareness, and further research to address intimate partner sexual violence effectively.

Vaccine Hesitancy and Willingness to Vaccinate Among People Experiencing Homelessness in Warsaw: Findings from a Cross-sectional Study

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Introduction

People experiencing homelessness (PEH) face significantly higher rates of vaccine-preventable diseases compared to the general population. Vaccine hesitancy, defined as a delay in acceptance or refusal of vaccines despite their availability, has been identified by the WHO as a major threat to public health. Among PEH, hesitancy may be amplified by distrust in healthcare systems, limited access to services, and the challenges of addressing unique health needs. Delivering vaccinations to this vulnerable group is challenging due to limited knowledge about vaccine acceptance and barriers to improving uptake.

Aim of the study

This study aims to measure the extent of vaccine hesitancy among PEH in Warsaw and identify key socio-demographic factors contributing to hesitancy.

Materials and methods

A questionnaire-based cross-sectional survey was conducted between September 2024 and February 2025 among adults experiencing homelessness in Warsaw, Poland. Data collection involved quantitative and qualitative components. Vaccine hesitancy was assessed using the validated Polish version of the Adult Vaccine Hesitancy Scale (PL-aVHS). Quantitative data were analysed using descriptive and inferential statistics to determine hesitancy prevalence and significant trends.

Results

A total of 128 individuals participated in the survey (89 males and 39 females; mean age 49.4±12.5 years). Preliminary findings indicate 59.4% of participants are vaccine-hesitant. Although hesitant participants were significantly less likely to declare a willingness to get vaccinated against a dangerous illness if offered (OR=0.18, $p<0.05$), 65.7% of hesitant individuals still expressed willingness to vaccinate, compared to 97.9% of non-hesitant participants. No socio-demographic factors were identified as significant contributors to hesitancy.

Conclusions

This study highlights the pervasive vaccine hesitancy among PEH in Warsaw. However, it is encouraging that 65.7% of hesitant participants still expressed willingness to vaccinate. These findings suggest that addressing barriers, such as trust and accessibility, is key to improving uptake in this population. Intervention strategies should prioritize accessibility, trust-building, and culturally competent communication to achieve higher vaccination rates among PEH.

“I Don’t Really Have Space in my Life to Get Sick.” Exploring how People Experiencing Homelessness View Vaccination. A Qualitative Study.

Authors

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Introduction

The homelessness crisis represents a critical public health issue, highlighting significant social inequities. People experiencing homelessness (PEH) are at heightened risk for vaccine-preventable diseases, such as COVID-19, pneumococcal pneumonia, or influenza. Despite being one of the most vulnerable populations, PEH face lower vaccination rates due to barriers related to accessibility and outreach.

Aim of the study

This study aimed to investigate the perspectives of PEH regarding vaccination, specifically examining whether they perceive vaccination as necessary and identifying the reasons behind their opinions.

Materials and methods

This mixed-methods study was conducted among PEH residing in Warsaw, Poland. It was a cross-sectional survey that employed both quantitative data and interviews, which were carried out with selected participants to determine their views on the necessity of vaccination and the reasoning behind their stance. Data were analyzed and categorized according to the most frequently cited reasons.

Results

A total of 90 participants were included in the study. Of these, 58 (64.4%) believed vaccination is necessary, citing trust in its efficacy (63.8%), its importance for individual (10.3%) and societal protection (10.3%), and fear of disease consequences (6.9%). Other reasons included distrust in the healthcare system and employment-related requirements (1.7% each). Conversely, 30 participants (33.3%) believed vaccination unnecessary, with the main reasons being high self-assessed health coupled with belief in sufficient disease protection (46.7%), scepticism about vaccine effectiveness (23.3%), and the view that vaccination is only needed in childhood (13.3%). Additional reasons included fear of side effects (6.7%), past negative experiences (6.7%), and healthcare system distrust (3.3%). Two participants (2.2%) were uncertain.

Conclusions

Vaccination is a key preventive measure for vulnerable populations as it reduces the risk of severe illness and hospitalization costs. Most participants in this study recognized the importance of vaccination. However, 35.6% of participants did not consider vaccination necessary, with many attributing their stance to a high self-perceived health status and a lack of trust in the effectiveness and safety of vaccines. These attitudes are likely influenced by limited health literacy among PEH. Addressing health literacy gaps and building trust in the healthcare system could be crucial in improving vaccination uptake in this population.

Neonatology Session

Session Coordinators:
Justyna Bolibok
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Bridging Fragile Hearts: Navigating Hybrid Solutions for Infants with Complex Cardiac Defects

Authors

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Introduction

Hybrid procedures, a combination of surgical and catheter-based procedures, are emerging as alternative therapeutic methods in severely ill patients who cannot handle traditional surgical interventions (e.g., the Norwood procedure). However, the qualification process continues to be difficult in pediatric populations with single-ventricle physiology. Based on the single-center experience, we identified specific technical difficulties and potential pitfalls of hybrid procedures.

Aim of the study

This study investigates the effectiveness of hybrid procedures in neonates with complex left-sided obstructive lesions and duct-dependent systemic circulation. By analysing single-center experiences, it aims to identify procedural challenges and propose strategies to improve perioperative management and long-term outcomes.

Materials and methods

We retrospectively analyzed 12 patients with left-sided obstructive lesions and ductal-dependent systemic flow, from which twelve infants were selected for further data interpretation. All twelve patients were under severely ill conditions, and a hybrid procedure was performed to avoid cross-clamp circulation.

Results

Early postoperative mortality was recorded at 8.3%, with late mortality at 16.6%. Additionally, seven infants required interstage catheterization, and two needed extracorporeal membrane oxygenation (ECMO). Various surgical difficulties were documented, including stent dislodgement due to incorrect size and hypoxia due to tight pulmonary bands. Postoperative complications included two cases of progressive tricuspid valve regurgitation with right ventricular dysfunction due to insufficient coronary perfusion. Hybrid procedures provide significantly lower mortality compared to Norwood operations. Postoperative complications require additional reinterventions, including pulmonary band redilation, additional stent implantation into the arterial duct, and subsequent balloon septostomy in children with interatrial restriction.

Conclusions

Hybrid procedures offer an alternative option for infants with complex heart defects, especially when cross-clamp circulation poses a high surgical risk. Future studies should aim to further refine the timing and techniques of these interventions to improve survival and quality of life. The assessment of hybrid procedures should be considered with an integrated framework and the necessity of collaboration with the professional cardiac team.

Demographic Characteristics and Initial Management of Preterm Infants Born Before 32 Weeks in Japan and Poland: A Comparative Study

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Introduction

Preterm birth, defined as delivery before 37 weeks of gestation, is a leading cause of neonatal morbidity and mortality worldwide. Among preterm births, those occurring before 32 weeks and involving very low birth weight infants present the highest risks. The prevalence of preterm births varies globally, with rates influenced by socioeconomic, medical, and environmental factors.

Aim of the study

This study focuses on the demographic characteristics and initial treatment of preterm infants in two different health care systems-Japan and Poland-in order to identify differences that can improve care for newborns. The data used in this study come from a larger dataset, providing a basis for further analysis.

Materials and methods

The study retrospectively analyzed data from 131 preterm infants (106 from Japan and 25 from Poland) born between 2019 and 2021 with a gestational age below 32 weeks and birth weight ≤1500g. Data on maternal age, type of delivery, birth weight, Apgar scores, and NICU stay durations were collected. Initial treatment approaches, including respiratory support and corticosteroid use, were also evaluated. Statistical analyses were performed using the Mann-Whitney and Chi-squared tests, with significance set at $p<0.05$.

Results

Demographics: • Maternal age: 34 years (Japan) vs. 30 years (Poland), p=0.026 • Cesarean delivery rate: 91.51% (Japan) vs. 80% (Poland), p=0.141 Maternal Conditions: • Diabetes mellitus: 4.72% (Japan) vs. 24% (Poland), p=0.006 • Pregnancy-induced hypertension: 6.60% (Japan) vs. 36% (Poland), p<0.001 • Clinical chorioamnionitis: 17.92% (Japan) vs. 0% (Poland), p=0.023 Neonatal Characteristics: • Mean birth weight: 970.28 g (Japan) vs. 955.00 g (Poland), p=0.797 • Apgar score at 1 minute: 5 (Japan) vs. 6 (Poland), p=0.204 • NICU stay duration: 98.9 days (Japan) vs. 81.2 days (Poland), p=0.214 Initial Treatment: • Respiratory support required: 96.23% (Japan) vs. 96% (Poland), p=1 • Surfactant administration: 60.38% (Japan) vs. 88% (Poland), p=0.017 • Postnatal steroid use: Comparable, with Hydrocortisone used in Japan and Betamethasone in Poland

Conclusions

The analysis highlights key differences in maternal demographics, neonatal care, and treatment protocols. Higher maternal age and cesarean rates in Japan may reflect regional practices Variations in surfactant use and steroids suggest differing clinical guidelines. Despite these differences, both countries provide high-quality care with similar survival rates. Further research is needed to assess long-term neonatal outcomes.

This study received funding from Medical University of Warsaw as a part of Mini-Grants project, No. NZYN /M /MG3 /N /20; attributed in 2021.

Fetal and Neonatal Supraventricular Tachyarrhythmias - Treatment and Long Term Outcomes

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Introduction

Despite rare, supraventricular tachyarrhythmias (SVT) in fetuses and neonates may result in heart failure, hydrops fetalis, premature birth or death. SVT in this age group include most often atrioventricular reentrant tachycardia (AVRT), atrial flutter (AFlut) and ectopic atrial tachycardia (EAT).

Aim of the study

The aim of this study was to evaluate the treatment methods and long-term outcomes in fetal and neonatal SVT in patients with no significant heart defect.

Materials and methods

Cases of SVT in neonates diagnosed in years 2015-2025 were analysed in a single-centre, retrospective observational study. Complex congenital heart defects were considered an exclusion criterium. All data are reported as median (min–max).

Results

Fourteen cases of neonatal SVT were identified, 8 females; 2 were excluded due to the identified congenital heart defect. In 7 cases the diagnosis was made prenatally (39 Hbd, 29-41 Hbd), In 2 cases maternally administered amiodarone, or amiodarone and digoxin were started (at 29 and 36 Hbd). In 4 cases tachycardia was an indication for a C-section (2 premature at 34 and 35 Hbd) and in one case for vaginal delivery. In 10 cases AFI was registered postnatally with maximum heart rate of 225 (190-250) bpm. In 6 patients intravenous amiodarone was introduced resulting in conversion to sinus rhythm (SR) in 3 cases. In 3 neonates direct current cardioversion (DCC) with 1,4 (0,6-2) J/kg was needed. In 2 cases DCC with 1,85 (1,7-2) J/kg was performed without introducing pharmacotherapy. In 2 cases spontaneous conversion to SR occurred. In 1 case EAT with max HR of 200 bpm was diagnosed and treated successfully with i.v. amiodarone. In 1 case SVT complicated with fetal hydrops was diagnosed at 39 Hbd and was found to be AVRT after the delivery. Despite standard pharmacotherapy and DCC, multiple SVT episodes and cardiopulmonary failure were observed. Eventually high doses of amiodarone (maintenance dose of 8 mg/kg) combined with propranolol were needed to achieve stable SR. All patients were discharged with SR and normal ejection fraction of 68% (61-74%). Among 10 cases with available follow-up (6 (0.7-60) months) no reoccurrence of arrhythmia was seen.

Conclusions

Neonatal SVT can be safely converted to sinus rhythm with pharmacotherapy and DCC, with both methods acquiring good long-term prognosis without recurring arrhythmia, especially in AFl. Due to limited data, more extensive, multicenter studies are crucial for the determination of homogeneous treatment methods.

Practical Implementation of Recommended Vaccinations for Pregnant Women and Their Impact on Child Health - Single-centre Pilot Study

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Introduction

Studies indicate that inactivated pertussis, influenza, and COVID-19 vaccines are safe and effective during pregnancy. To date, it has been shown that once mothers are vaccinated against these diseases, transplacental transfer of antibodies can provide protection in their children, reduce the risk of hospitalisation and severe illness among newborns and infants.

Aim of the study

The study aims to determine women's current attitudes towards recommended vaccinations during pregnancy, the relationship between maternal vaccination and child health, and mothers' attitudes towards vaccinating their children with mandatory and recommended vaccinations.

Materials and methods

In the study, a two-part questionnaire was used. Responses were gathered through interviews with mothers. The first part included questions about the pregnancy, newborn condition, demographic data, vaccinations received during pregnancy, the mother's attitude towards immunization, and the child's health history. The second part focuses on a long-term evaluation, in which researchers asked about the child's health at three months old, including hospitalization and vaccination status.

Results

60 interviews were collected with mothers of 25 female and 35 male children. The average age of 10 newborns was 18 days, while infants and older children averaged 5 months, with the oldest being 16 months old. From 60 mothers only 7% were vaccinated against pertussis, and none were vaccinated for influenza or COVID-19 during pregnancy, although 37% had the COVID-19 vaccine before pregnancy. Symptoms of infection were present in 80% of children, with 7% diagnosed with influenza, 3% with COVID-19, and 36% with other infections. 92% of mothers plan to vaccinate their child, with 29 considering mandatory vaccines and 26 recommended ones. Information about recommended vaccinations came from doctors, midwives, and the internet for 41% of women. In the second part of the study with 40 participants, 43% of children received meningococcal vaccination, 2 were vaccinated against influenza and 7 mothers considering future vaccinations for these diseases for their children.

Conclusions

Vaccination rates among pregnant women are dramatically low, highlighting the need for information campaigns targeting both expectant mothers and health personnel such as doctors and midwives who can influence vaccination decisions. One in ten children of unvaccinated mothers contracted COVID-19 or influenza, which could have been prevented by vaccination during pregnancy.

A Case Report and Clinical Insights of Leigh Syndrome

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Background

Leigh syndrome (LS) is a rare, severe and heterogenic neurological disorder associated with mutations in mitochondrial DNA (mtDNA) and nuclear DNA (nDNA), which encodes mitochondria-related factors. It manifests in early childhood as a rapid deterioration of respiratory, motor and cognitive functions, such as ataxia, ophthalmoplegia and central hypotonia.

Case Report

A 3-week-old male neonate was admitted to the regional hospital due to his respiratory distress. After the rapid deterioration of the respiratory, the infant was transferred to the neonatal intensive care unit of the reference centre. During transportation, the patient presented seizures and was intubated due to cyanosis, which occurred despite normal saturation. During his stay in the unit, due to respiratory problems, he was intubated several times. Hypertrophic cardiomyopathy was detected in the ECG. No weight gain was achieved despite tube feeding, gastrostomy and total parenteral nutrition. Metabolic work showed elevated levels of lactate in plasma and CSF. Whole exon sequencing showed that the patient had a heterozygous mutation of the SCO2 gene, which is specific for Leigh syndrome. The patient died 46 days after being admitted to the intensive care unit.

Conclusions

LS is a challenging condition to diagnose due to its non-specific clinical manifestation. It should be considered in children with elevated lactate levels and changes in basal ganglia, brainstem or subthalamic nuclei. There is no available treatment; palliative therapy is recommended.

A Late Diagnosis of Hipoplastic Left Heart Syndrome – a Case Report

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Background

Congenital heart defects (CHD) most often occur in low-risk pregnancies, so their diagnosis is based on prenatal screening. The most common critical CHD requiring surgery is hypoplastic left heart syndrome (HLHS). It's an anomaly of the left side of the heart, including mitral valve stenosis, left ventricular hypoplasia/aplasia, aortic valve stenosis and varying degrees of aortic underdevelopment. The fetal circulation provides oxygenation to the tissues by diverting 90% of the blood volume from the right ventricle through the arterial duct to the aorta. The defect remains asymptomatic in the prenatal period due to the decreased preload of the left ventricle, but it leads to a decompensation of the cardiovascular system in the first week after birth. The authors present a case report of a child diagnosed with HLHS on the 32nd day of life.

Case Report

A 31-day-old boy was admitted to the NICU with increasing cardiovascular failure. He was born at 38 weeks of gestation with an Apgar score of 10. The pregnancy history was unclear, and parents did not provide any documentation. He was treated with phototherapy due to neonatal hyperbilirubinemia and discharged on day 7 in a good general condition. The pulse oximetry test was negative. On day 29, his general condition deteriorated, and his breathing became impaired. Cardiovascular decompensation led to a suspicion of a CHD and imaging studies confirmed HLHS. Cardiac surgery for atrioseptostomy under extracorporeal circulation with pulmonary artery banding was performed.

Conclusions

During and after delivery, the resistance in the pulmonary circulation changes to low pressure and systemic circulation resistance to high-pressure. This modification and a decrease in endogenous prostaglandins cause functional closure of the ductus arteriosus, cutting off blood supply to the aorta in patients with a defect of the left ventricle. Untreated HLHS results in neonatal death within 7-10 days. In this case, the patient remained asymptomatic for so long because of the malposition of the main arterial vessels and the exit of both from the right ventricle. Their malposition allowed cardiovascular compensation despite the closure of the ductus arteriosus. This defect should be diagnosed during the pregnancy; however, the documentation was not provided. This raises the question whether additional imaging should be performed in each patient with unknown pregnancy history.

Annular Pancreas: A Case of Duodenal Obstruction in a Newborn

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Background

The annular pancreas is a rare congenital anomaly in which pancreatic tissue forms a ring around the duodenum, leading to partial or complete duodenal obstruction. Early detection via prenatal ultrasound (US) plays a crucial role in identifying potential gastrointestinal disorders. The "double bubble" sign seen on US is a key indicator of possible duodenal obstruction. Early diagnosis, along with appropriate multidisciplinary care and necessary surgical treatment, can significantly improve the prognosis.

Case Report

A 35-year-old woman (Gravida 2, Para 1) came for an urgent US at 37 weeks' gestation due to pathological findings in the fetus' intestines. An US revealed a slightly enlarged fetal stomach and dilated duodenum, but both were within normal limits. However, monitoring was recommended to assess for possible low intestinal obstruction. At 39 weeks' gestation, an US showed a fetus large for gestational age, with enlarged stomach filled with thick content and a "double bubble" image. Fetal dysplasia, including possible duodenal atresia or duodenal compression due to an annular pancreas, was suspected. At 40 weeks' gestation, a female newborn was delivered vaginally. Initially breastfed, the infant experienced significant regurgitation and sparse bowel movements. An US was performed, and a partial obstruction below the duodenum was suspected. The patient was consulted by a pediatric surgeon, and a contrast bowel examination was performed, ruling out intestinal obstruction. However, at 4 days old, due to continued significant regurgitation, an endoscopy with sedation was performed, which revealed a partially obstructed duodenum with a 1 mm diameter hole. A laparotomy was performed, and an annular pancreas was found. A duodenoduodenostomy was performed. Enteral feeding began on the second day and was well tolerated, later transitioning to parenteral nutrition. 11 days after birth, both the mother and the newborn were discharged in good condition. The newborn was exclusively fed with the mother's milk, with normalized bowel movements, no regurgitation, and appropriate weight gain.

Conclusions

This case highlights the importance of early diagnostics and interventions in suspected fetal intestinal abnormalities, emphasizing early diagnosis, multidisciplinary collaboration, and timely surgical intervention for managing rare but treatable congenital anomalies. The prenatal US findings, including the "double bubble" sign and increased stomach size, should prompt further investigation.

Challenges in Diagnosis and Treatment of an Invasive Aspergillosis in an Extremely Low Birth Weight Premature Infant

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Background

Invasive aspergillosis is a rare yet serious fungal infection in newborns, especially premature infants. Aspergillus species, commonly found in the environment, pose a significant threat to individuals with compromised immunity. The disease can take various forms, including cutaneous and systemic infections, with potentially fatal consequences in the absence of an appropriate treatment. Authors discuss obstacles of diagnosis and treatment in a pediatric group.

Case Report

The authors present the case of a hypotrophic, premature infant, born at 24+4 weeks of gestation, weighing 480g. The patient was admitted to our clinic on the eighth day of life due to a perforation of the small intestine. On the admission we discovered that the patient developed numerous skin lesions of unknown etiology. It initiated a process of diagnosis and differentiation. The serum galactomannan level and swabs were taken from the skin lesions. It allowed us to make a diagnosis. Initial treatment with intravenous liposomal amphotericin B was later switched to oral voriconazole. The therapy was successful, leading to regression of the lesions.

Conclusions

Invasive aspergillosis in newborns poses significant diagnostic and therapeutic challenges. This case shows the importance of accurate recognition and rapid diagnosis. The drugs of choice are liposomal amphotericin B and voriconazole, but they require strict monitoring in order to limit adverse effects. Because of the lack of treatment procedures, watchfulness and fast intervention are crucial for the survival of newborns affected by invasive aspergillosis.

Congenital Diaphragmatic Hernia and Giant Omphalocele in a Premature Infant

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Background

The coexistence of congenital diaphragmatic hernia (CDH) and omphalocele (OM) is extremely rare, especially in cases without comorbid genetic anomalies. Large diaphragmatic defect and the presence of the liver in diaphragmatic hernia is associated with higher mortality.

Case Report

A male neonate was born from G2P1 at 34 weeks of pregnancy via a caesarian section, and received 7-8 points on the Apgar scale. He was prenatally diagnosed with left-sided CDH and giant omphalocele (GOM). A prenatal cytogenic test revealed a normal male karyotype. After birth, he was intubated and mechanically ventilated with high FiO2 due to pulmonary hypertension (PH). The patient was qualified for surgical correction of CDH and GOM. During the operation, a spherically shaped liver was found in GOM. CDH was described as Bochdalek hernia type D. Diaphragm hernia was repaired with a path. A SILO bag was sewn into the abdominal cavity. The second operation to restore the continuity of the abdominal wall was successfully carried out after 7 days. Aortic arch hypoplasia with tubular aortic coarctation and PH was found in the first echocardiography exam. PGE1 infusion was administered till the second operation. After surgical repair, follow-up echocardiography excluded aortic arch hypoplasia, and PGE1 infusion was stopped. The ductus arteriosus was closed spontaneously after that. Due to chronic respiratory failure, a tracheostomy was performed, after that the neonate was ventilated via a tracheostomy tube. On the follow-up examination, the right lung was well inflated with good blood circulation, but the left lung was still compressed and hypoplastic. Initially, he required total parenteral nutrition and then tube feeding. The patient's condition was improving and he was discharged home at 4 months of age, breathing via a tracheostomy tube and eating via a feeding tube.

Conclusions

Prenatal diagnosis of CDH and OM is necessary to ensure proper care for the newborn. The presence of the liver in OM may be associated with better outcomes in patients with left-sided CDH. However, a large defect in the diaphragm means that the muscles cannot perform sufficient breathing activity, leading to respiratory failure. Furthermore, neonates with comorbid CDH and OM develop complicated management problems due to PH and/or pulmonary hypoplasia.

Congenital Tumour in Unusual Location – Case Report of a Newborn with Craniofacial Teratoma.

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Background

Teratomas are neoplasms composed of low-differentiated cells or tissues derived from all three germ layers. They account for 3% of all tumours in the paediatric population. As many as 70% of them are located in the sacrococcygeal region. Teratomas are found extremely rarely in the craniofacial area, however, their appearance in this location can lead to serious complications.

Case Report

We present the case of a male neonate with a prenatally detected craniofacial teratoma, delivered by caesarean section at 30 weeks of gestation (gravida 3, para 1) at a tertiary referral hospital. At birth, on the right side of the craniofacial region a giant (20 x 30 cm), fluctuant tumour was observed. Birth weight with lesion was 2980 g, the child scored 5-2-2-2 on the Apgar score. After birth, the patient's clinical condition has deteriorated. Due to multiple unsuccessful endotracheal intubation attempts, resulting from the pressure of the tumour mass on the neck, a tracheotomy was performed. The child developed massive circulatory and coagulation disorders, which caused intracranial haemorrhage. In addition, the newborn was diagnosed with retinopathy of prematurity, hypospadias and an inguinal hernia. Resection of a giant tumour was performed on the child's third day of life. The body weight after removing the mass was 1600 g. Histopathologically, an immature teratoma was diagnosed. After the surgery, clinical features of facial nerve palsy were observed, which persist to this day. Today, several years after the operation, the child does not speak, is under the multidisciplinary care, still presents features of VII nerve palsy and has a tracheostomy and a gastrostomy.

Conclusions

Due to their location, craniofacial teratomas may cause many severe complications. Prenatal testing, quick diagnosis, delivery at a tertiary care centre, in the presence of a multidisciplinary team, and the surgery in the shortest possible time are essential to provide the appropriate treatment.

Extensive Cutaneous Vascular Malformation and Left Upper Limb Hypertrophy in a Newborn: a Case of Sturge-Weber Syndrome

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Background

Sturge-Weber syndrome is a sporadic, congenital, non-inherent neurocutaneous disorder most frequently resulting from a somatic activating mutation in the GNAQ gene. It affects approximately 1 in 50000 live births, both males and females. A newborn with this syndrome presents with a facial port-wine birthmark typically on the upper viscerocranium, and may also exhibit leptomeningeal angiomatosis, glaucoma and seizures. Standard treatment involves laser therapy for the port-wine stain, anticonvulsant medications, and either pharmacological or surgical management of glaucoma. Long-term prognosis varies based on the degree of leptomeningeal involvement and the severity of glaucoma.

Case Report

A 2-day-old male newborn with extensive dermal vascular malformation was admitted for differential diagnosis. The child was in good general condition, his skin was pink, with an extensive vascular malformation covering the entire body: face, left side of the torso, left upper limb, perineal region and scrotum, entire back, buttocks, and the inner surface of the left lower limb. Oral mucosa had a central clearing on the hard palate. Right palpebral fissure was narrowed by the vascular malformation, though pupils were equal and round. Transcranial ultrasound revealed lateral ventricle asymmetry, whereas brain MRI further discerned meningeal angiomatous changes (predominantly in the right occipital and parietal lobes), putting Sturge-Weber syndrome diagnosis forward, thus a genetic consultation was sought. Ultrasound and X-ray of the left upper limb showed tissue hypertrophy with small, twisted venous vessels, without any thrombosis. No seizure episodes were observed, video-EEG was normal. Laser therapy consultation was postponed until the age of 2. During the second hospitalisation skin biopsy was performed in order to try and identify the suspected mutation. The child was further referred to an oncological centre for evaluation towards an experimental treatment.

Conclusions

This case highlights the critical need for early diagnosis and personalized treatment approach for individuals with Sturge-Weber syndrome. Timely diagnosis and consistent therapy are crucial in preventing seizures and glaucoma, hence improving patient's quality of life.

Glioblastoma - Antenatal Haemorrhage Becoming Postnatal Diagnostic Challenge: a Case Report

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Background

Congenital brain tumors are rare in newborns [1], and their symptoms include intraventricular bleeding, hydrocephalus and macrocephaly. Imaging tests are helpful in the case of increased intracranial pressure and suspicion of a CNS proliferative process. We present the case of a glioblastoma that caused an intracranial bleeding in the womb to highlight the diagnostic challenges and emphasize the need for fetal screening.

Case Report

The authors present a case of a female newborn diagnosed prenatally in the 29th week of pregnancy with intracerebral bleeding complicated by hydrocephalus. Postnatal MRI showed a solid mass in the left hemisphere of the brain and the evolution of the hemorrhagic part of the lesion with bleeding into the dilated ventricular system. During puncture of the left lateral ventricle, brown cerebrospinal fluid was collected and sent for cytological examination. The patient was qualified for Rickham's reservoir implantation due to the unclear etiology of increasing hydrocephalus. On 27th day of life, a left frontal craniotomy was performed to establish the diagnosis. During the operation, the blood clots were removed and a bleeding mass was exposed which could correspond as a tumor. The histopathological examination of the collected tissue revealed malignant glioblastoma in the GIV stage according to the WHO classification.

Conclusions

Prenatal diagnosis of an abnormal structure in the fetal brain continues to be a diagnostic challenge despite advances in neonatal technology. Glioblastoma is an extremely rare tumor with a serious prognosis. The percentage of stillborn babies is 29%, 38% die in the first week and 56% in the first two months of life. Average survival is 2 years. Palliative care is usually the only treatment neonatologists can offer the child’s parents.

Is it Transient Myeloproliferative Disorder or Neonatal Leukemia? – a Case Report

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Background

Transient myeloproliferative disorder is a clonal myeloproliferative syndrome that occurs in the presence of mutations in the GATA1 gene and chromosome 21 trisomy. It affects almost exclusively infants with Down syndrome and usually resolves spontaneously. Neonatal leukemia is a rare childhood disease. Its prognosis is worse. We report a novel case of transient myeloproliferative disorder in a neonate without phenotypic features of Down syndrome, emphasizing the importance of comprehensive genetic diagnostics in atypical presentations.

Case Report

We present a case of a 4-day-old female neonate without phenotypic features of Down syndrome with suspected proliferative hematopoietic disease. A blood smear at birth showed severe anemia, leukocytosis and the presence of blasts. Abdominal ultrasound showed hepatosplenomegaly. In the bone marrow 70.2% blast cell infiltration was described. An abnormal karyotype of 47XX+21 and GATA1 mutation were detected only in the blood cells. Transient myeloproliferative syndrome with t21 mosaicism was diagnosed. The patient received cytoreductive treatment according to the AML BFM protocol. On day 77, the girl was discharged in a good condition with a follow-up in the Hematology Department.

Conclusions

This case highlights the importance of genetic testing in neonates with congenital anemia and hyperleukocytosis, particularly when Down syndrome is not phenotypically apparent. Detecting trisomy 21 mosaicism and the GATA1 mutation is critical for diagnosing transient myeloproliferative disorder, planning the best treatment and determining prognosis.

Marble-like Lesions, Skin Atrophy and Telangiectasias Present at Birth – an Infrequent Vascular Anomaly in a Neonate.

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Background

Cutis marmorata telangiectatica congenita (CMTC) is a rare congenital disorder involving blood vessels. Aetiology, as well as the frequency, is unknown – about 500 cases have been reported. This anomaly is characterized by dilated capillaries in all layers of the dermis, manifesting as persistent marbled erythema, vascular telangiectasia and skin atrophy, which are usually present at birth. Associated congenital abnormalities, such as defects of the musculoskeletal system, ocular or arteriovenous malformations may occur in up to 80% of patients.

Case Report

We present the case of a female neonate, delivered by caesarean section at 42+1/7 weeks of gestation, who presented bluish-red skin discoloration, marbled erythema, venectasia, telangiectasia and cutaneous atrophy. No other abnormalities were observed at birth, the child scored 10 on the Apgar score. The newborn was transported on day 1 of life to our centre (a tertiary referral hospital) due to a suspicion of congenital vascular malformations and the necessity of differential diagnosis. After admission to the clinic, imaging and laboratory tests were performed and no abnormalities were reported. The examination revealed skin atrophy with significant translucency. Moreover, numerous dilated vessels and telangiectasias were observed on the skin of the trunk, head and limbs. The clinical presentation was clearly suggestive of cutis marmorata telangiectatica congenita. In order to exclude other anomalies, multi-specialist consultations were recommended. The hospitalisation ended with discharge home in a good general condition on day 14 of life.

Conclusions

A suspicion of CMTC requires a thorough differential diagnosis of conditions with a similar clinical course and multidisciplinary cooperation in order to provide the best possible management. Patients with CMTC should be under the multidisciplinary care and have regular follow-up visits to detect possible subsequent complications in the early stages.

Neonatal Atrial Flutter Imitating Sepsis

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Background

Atrial flutter (AFL) is a rare, but potentially life-threatening arrhythmia in neonates. It usually presents with nonspecific symptoms that may be misattributed to other common neonatal pathologies such as sepsis. Early diagnosis and intervention are crucial. Sustained tachycardia may lead to inadequate cardiac output, resulting in metabolic acidosis and end organ dysfunction. We present the case of a neonate who developed AFL, initially misinterpreted as sinus tachycardia, in the context of suspected neonatal sepsis.

Case Report

A male neonate 2 days postpartum exhibited increased somnolence, decreased appetite, and lost >10% of body weight. He was born at 37 weeks of gestation via vaginal delivery, weighing 3000 g, with APGAR score of 9/10 and prenatally diagnosed X-linked ichthyosis. Clinical examination revealed signs of respiratory distress, capillary refill of 4s, tachycardia of 227 bpm, pale, cool skin. ECG (25mm/s) was interpreted by an automated machine program and a neonatologist as sinus tachycardia at a rate of 230 bpm. Under suspicion of sepsis, neonate was transferred to the neonatal intensive care unit. Blood tests showed increased CRP levels, blood gas analysis indicated metabolic acidosis with increased lactate count. ECG (50mm/s) was reviewed by a paediatric cardiologist, which revealed AFL with 2:1 conduction. Echocardiography showed patent foramen ovale and signs of hemodynamic instability. After urgent cardioversion with 2J, the heart returned to sinus rhythm and slowed down to 140 bpm. Within seconds, the patient opened his eyes, became more active, began feeding, skin colour returned to normal pink. Blood culture was collected for suspected infection and empiric antibiotic therapy initiated. When culture results came up negative, antibiotics were discontinued. Chest X-ray was normal. The patient remained stable, with a heart rate between 130-140 bpm and no recurrence of arrhythmia for the remainder of the hospital stay. Follow-up consultation after 2 weeks showed no deterioration in the patient's clinical condition or ECG.

Conclusions

We presented a case of AFL which symptoms initially led to investigation of possible sepsis rather than immediate cardioversion. This case highlights the importance of considering an ECG at 50mm/s in any neonate presenting with tachycardia. Paediatricians should also be cautious when relying on automated programs for ECG interpretation, as these may not always accurately detect arrhythmias in paediatric and neonatal patients.

Neuroblastoma in a Newborn: Diagnostic Challenges and Treatment Approach in a 3-Day-Old Infant

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Background

Neuroblastoma is a neoplasm originating from neural crest cells. The median age at which neuroblastoma is diagnosed is 2 years, and it is the most common malignant neoplasm in children under 12 months of age. The incidence of this cancer is 6-11/1,000,000. The risk of neuroblastoma is gently higher in boys than in girls. Symptoms are very nonspecific and depend on the location and size of the tumor. The prognosis can fluctuate and depends on many factors, but age plays the most important role, with the prognosis worsening as the patient's age increases.

Case Report

The 3-day-old newborn was transferred to the IPCZD for diagnosis and treatment of a tumor in the left adrenal region. The pregnancy proceeded normally, and there were no complications during delivery. On abdominal ultrasound, a solid mass measuring 31x32x33mm was observed. Microcalcifications and central and peripheral vascularization was present. The clinical picture made it possible to suspect neuroblastoma. It was decided to measure urinary catecholamine levels twice. In addition, AFP (20030.2 IU/ml) and beta-HCG (2.67 mIU/ml) levels were assessed. An abdominal MRI confirmed the presence of a heterogeneous mass measuring 30x23x34mm. After performing CT angiography and evaluating the patient's clinical condition, the decision was made to surgically remove the tumor. The operation was successful, histopathology confirmed poorly-differentiated neuroblastoma, while IHC results showed: CD56 (+), Ki67:80-90%, synaptophysin (+) and ALK1 (+). There was no amplification of the MYCN gene either. mIBG scan, showed extensive enhancement in the right adrenal gland, such a finding prompted a repeat abdominal ultrasound, which showed multiple hypoechoic solid lesions in the liver. The clinical condition required the placement of a central venous catheter and chemotherapy using etoposide and carboplatin. The girl is continuing chemotherapy. Her overall condition is good she is breastfed and gaining weight.

Conclusions

The course of the disease associated with the appearance of neuroblastoma can vary widely. Depending on the factors involved, the prognosis can range from excellent to poor. It is important to distinguish symptoms that are usually nonspecific and to know which specialist to refer to when neuroblastoma is suspected.

The Consequences of Poor Pre-pregnancy Diabetes Management: a Neonatal Case Report.

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Background

Poorly controlled pre-pregnancy diabetes in the mother is associated with a high risk of complications in newborn. Neonates are at risk of macrosomia, hypoglycemia, electrocyte disturbances, ictal disorders, as well as defects of the nervous or cardiovascular system. The severity of complications depends on the quality of diabetes management during pregnancy. I would like to present a case of a child with diabetic fetopathy, non-focal leukomalacia and minor posthemorrhagic lesions.

Case Report

The patient was a male neonate from pregnancy 4, delivery 3 born at 36 weeks of gestational age, by vaginal delivery, weight 4385 g, scored 9-10 points on the Apgar scale. The course of pregnancy was complicated by pre-pregnancy diabetes mellitus. The mother was diagnosed with diabetes mellitus 4 years before pregnancy. The patient was transferred on the 4th day of life from local hospital to Neonatal and Intensive Care Department of Medical University of Warsaw. The infant was macrosomic and hypertrophic. Due to severe hypoglycemia, which was initially compensated with a supply of 10% glucose, the patient was overhydrated, and a central line was inserted to administer higher concentrated glucose. The newborn had ionic disorders such as hyponatremia, hypocalcemia, hypomagnesemia, and hyperphosphatemia, which were also treated. Due to increasing respiratory disorders, passive oxygen therapy was initially used and then nCPAP ventilation. The patient arrived with circulatory failure, receiving dopamine. The ECHO showed the presence of severe hypertrophic cardiomyopathy and asymmetric ventricular septal hypertrophy. On CNS ultrasound features of cerebral eodema and thalamic vasculopathy were present. No seizures were observed. Scheduled MRI of the CNS showed, features of diffuse leukomalacia and small hemorrhagic lesions. The child currently does not need treatment. He is under cardiological and neurological control.

Conclusions

Uncontrolled diabetes in pregnancy gives very serious complications for the newborn. We should raise awareness about proper diabetes control and possible complications, as well as encourage women with pre-pregnancy diabetes to manage their pregnancies at a higher referral center. The above case highlights how important proper prenatal care is for serious neonatal morbidities prevention.

Ultrasound Diagnosis of Scrotal Enlargement in an Infant: A Case Report with Diagnosis and Differentiation by Ultrasound with a Review of the Literature.

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Background

Scrotal enlargement in infants presents a diagnostic challenge, with potential causes ranging from benign hydrocele to more serious conditions such as testicular torsion or inguinal hernias. Rapid and accurate diagnosis is crucial to guide timely management and prevent complications. Ultrasonography serves as a first-line, non-invasive imaging modality with high sensitivity in differentiating scrotal pathologies, ensuring appropriate surgical intervention when necessary. Its real-time imaging capabilities allow for immediate assessment of vascularity and structural abnormalities, making it indispensable in urgent decision-making.

Case Report

A 3-month-old male presented with progressive right-sided scrotal swelling, irritability, but no fever or gastrointestinal symptoms. Physical examination revealed a tense, enlarged right hemiscrotum, with the testicle not clearly palpable. Urgent ultrasound imaging identified hyperechoic intestinal loops within the scrotum, confirming an inguinal hernia. Importantly, preserved peristalsis ruled out strangulation or ischemia. The patient was scheduled for elective open surgical repair at three months of age to minimize anesthetic risks. The procedure was successfully performed without complications, and the patient had an uneventful recovery. The case report includes ultrasound images that clearly illustrate the presence of intestinal loops within the scrotal sac, emphasizing ultrasonography's critical role in detecting and differentiating scrotal abnormalities.

Conclusions

Ultrasonography plays a crucial role in the prompt and accurate diagnosis of scrotal enlargement in infants, differentiating inguinal hernias from other conditions. It is the primary imaging modality of choice, offering unparalleled diagnostic accuracy, particularly in emergency settings where timely intervention is essential. The ultrasound images included in this report highlight its diagnostic precision, reinforcing its value as the gold standard for evaluating scrotal swelling in pediatric patients. Early identification and surgical intervention are essential to prevent complications such as bowel strangulation and testicular ischemia. Awareness among healthcare providers and caregivers is vital to ensuring timely evaluation and treatment, ultimately improving patient outcomes.

Vein of Galen Aneurysmal Malformation (VGAM) in a 4-week-old Newborn: A Case Report with Diagnosis and Differentiation by Ultrasound with a Review of the Literature.

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Background

Vein of Galen aneurysmal malformations (VGAMs) are rare congenital arteriovenous malformations that account for approximately 30% of pediatric cerebral vascular anomalies. They develop between the 6th and 11th weeks of fetal life due to abnormal persistence of the median prosencephalic vein (Markowski vein) and result in high-flow arteriovenous shunting. VGAM can lead to severe complications such as heart failure, hydrocephalus, and ischemic brain damage. Early diagnosis is critical for timely intervention and improved outcomes.

Case Report

A 4-week-old newborn presented with seizures, macrocephaly, and cyanosis. The pediatrician performed an urgent trans-temporal ultrasound and echocardiography. Echocardiography revealed myocardial hypertrophy and cardiomegaly, suggestive of high-output cardiac failure. Transcranial ultrasound showed a hypoechoic arteriovenous malformation with turbulent flow, associated with lateral ventricle dilatation and small calcifications indicative of ischemic injury. Additionally, the malformation had a direct connection to the straight sinus. Given the findings, MRI was performed, confirming the diagnosis of VGAM and the extent of cerebral damage. The patient was monitored with serial ultrasound examinations and pediatric follow-up. At 7 months, he underwent successful transarterial embolization, with follow-up transcranial ultrasound at 9 months showing reduced shunting and stable cerebral structures.

Conclusions

This case highlights the pivotal role of transcranial ultrasound as a rapid, widely available, and non-invasive diagnostic tool in the initial evaluation of VGAM. Ultrasonography enables early detection, differentiation from other neonatal conditions, and facilitates treatment planning. While MRI remains the gold standard for confirming the diagnosis, ultrasound is essential for screening, monitoring disease progression, and post-treatment evaluation. Early identification of VGAM significantly improves patient outcomes by allowing timely intervention and reducing long-term neurological damage.

Neurology & Neurosurgery Case Report Session

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A Case of Rruptured Intracranial Aneurysm in a Patient with Moya Moya Disease: Hematoma and Clinical Dilemmas

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Background

Intracranial aneurysms (IAs) are a known complication of Moya Moya disease (MMD), particularly in adults, where the formation of aneurysms within the collateral networks of MMD is associated with a high hemorrhagic risk. However, the occurrence of these aneurysms remains relatively underreported due to their complex characteristics. This case report explores a unique clinical scenario involving a ruptured intracranial aneurysm of the Recurrent artery of Heubner, in a patient with Moya Moya disease.

Case Report

A 51-year-old Caucasian male presented with sudden-onset headaches, nausea and vomiting, but without neurological deficits. Neuroimaging revealed a right frontal parenchymal hematoma with associated intraventricular hemorrhage. A contrast-enhanced CT angiogram identified a 3 mm saccular aneurysm located at the superior pole of the hematoma. Cerebral angiography demonstrated typical T-shaped occlusion of the right carotid terminus, involving the C1, A1 and M1 segments, confirming the presence of the ruptured aneurysm arising from the Heubner Artery, part of an hypertrophied collateral plexiform network. The M1 segment of the right middle cerebral artery (MCA) was completely occluded at its origin, characteristic of the Moya Moya phenomenon. Endovascular embolization using N-butyl cyanoacrylate (NBCA) was successfully performed to secure the ruptured aneurysm.

Conclusions

In adults with Moya Moya disease, the occurrence of cerebral aneurysms should be actively searched for, particularly in cases with hemorrhagic manifestations. These aneurysms often arise within the posterior circulation, particularly in the pre-communicating segment of the posterior cerebral arteries, due to increased flow. Distal and peripheral aneurysms, such as the one described in this case, are less common but can occur in deep collateral plexiform networks or in parenchymal pial anastomoses, and are often secondary to dissection of abnormal vessels. Endovascular treatment remains the modality of choice for ruptured aneurysms in Moya Moya patients, and early identification is crucial for management. This case raises important questions regarding the pathophysiology of spontaneous MCA occlusion and its relationship with MMD and the formation of aneurysms on the Heubner Artery, emphasizing the need for precise differential diagnosis. While angiographic studies have advanced understanding, the precise association between aneurysms and MMD remains incompletely understood.

A Rare Case of Ischaemic Stroke in a Neonate Patient Caused by Intrauterine Parvovirus B19 Infection.

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Background

Parvovirus B19 in children is known for causing Erythema Infectiosum. It poses a threat to pregnant women, as Parvovirus B19 intrauterine infection can cause severe anaemia, with subsequent hydrops, heart failure, and foetal death occurring mostly in the first trimester. It has also been linked to various vasculopathies, e.g., granulomatosis with polyangiitis, and is suggested to be the cause of childhood arterial ischaemic stroke through the mechanism of arteriopathy of cerebral arteries.

Case Report

A 29-day-old female infant presented to the ER. Further neurological evaluation revealed right-sided hemiparesis. In medical history the mother in pregnancy had symptoms of fifth disease. The initial MRI revealed a secondary massive haemorrhage in the left cerebral hemisphere near the basal ganglia and lateral sulcus, showing oedema around the extravasated blood, which was treated with anti-oedema therapy. The radiological image hypothesised bleeding from vascular malformation, but no such vascular malformations were found in the angiography. Transient fever and elevated inflammatory markers were managed with antibiotic therapy, and the patient demanded transfusions of blood and albumin. Three weeks after the incident, enoxaparin was initiated and maintained for six weeks. Repeated myoclonia and abnormal results on an EEG suggested that stroke led to the development of epilepsy, which was managed with valproic acid. After one month, the right-sided weakness significantly improved, although the right-sided neglect syndrome persisted. Subsequent comprehensive stroke diagnostics did not reveal any evidence of coagulopathies or metabolic disorders. Six months later, the patient presented with petechiae. During haematological consultation, additional diagnostic evaluation excluded cytomegalovirus but detected parvovirus viremia of 500 virions, indicating an active infection likely transmitted from the mother who had suffered from erythema infectiosum during the second trimester. A 0.4 g/kg dose of immunoglobulins was administered with good effects.

Conclusions

Stroke diagnostics in children is broad and encompasses many etiological factors, one being congenital infections. Despite the availability of serological testing for parvovirus B19, this rare cause of stroke in children should not be overlooked.

ARIA - Amyloid-related Imaging Abnormalities as an Expression of Rare Complications in Alzheimer's Disease Monoclonal Antibody Treatments.

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Background

Alzheimer's disease (AD) is a primary, progressive neurodegenerative disorder of brain structures and currently the most common cause of dementia syndrome. The pathogenesis of the disease is not fully understood, but it is characterized by specific neuropathological features. The accumulation of extracellular β-amyloid plaques in the brain triggers a sequence of events leading to neuronal death via apoptosis.

Case Report

We present the case of a 72-year-old female patient diagnosed with Alzheimer's approximately 10 years ago. According to family reports, there has been a significant deterioration in the patient's clinical condition over the past three weeks, manifesting as difficulty in verbal communication, aggression, mood changes, and complete loss of independence. For the past two years, the patient has been treated in a clinical program with the monoclonal antibody donanemab. MRI findings from T2-weighted and FLAIR sequences revealed extensive bilateral high-signal areas—without signs of diffusion restriction or contrast enhancement—affecting the white matter on the left side of the frontal lobe and bilaterally in the temporal and parietal lobes. The more pronounced changes on the left side result in mass effect, causing a slight midline shift to the right structures. Numerous scattered hemosiderin deposits and small amount of effusion are visible within this background and along the cortical sulci. The gray matter is spared bilaterally.

Conclusions

Based on the patient's history and imaging results, radiological abnormalities associated with β-amyloid (ARIA) were identified. These represent imaging features found in patients with Alzheimer's disease treated with monoclonal antibodies that reduce amyloid levels. Cases of ARIA have been reported in association with specific monoclonal antibodies — bapineuzumab, solanezumab, aducanumab, and donanemab. The increasing clinical use of disease-modifying therapies for AD may lead to an increased number of patients with such cases in the future. Current estimates indicate that 44 million people are currently living with dementia worldwide, with Alzheimer's patients being the predominant group. This number is expected to more than triple by 2050 as the population ages. The described case highlights the usefulness of MRI in monitoring complications associated with Alzheimer's disease therapy.

Acute Disseminated Encephalomyelitis (ADEM) as a First Clinical Manifestation of the Myelin Oligodendrocyte Glycoprotein Antibody Disease (MOGAD) – a Diagnostic and Therapeutic Challenges.

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Background

Myelin oligodendrocyte glycoprotein antibody disease (MOGAD) is an exceptionally rare inflammatory disease that affects central nervous system (CNS). Clinical features of MOGAD are: optic neuritis (usually bilateral), myelitis, ADEM, cerebral, brainstem or cerebellar focal deficits and cerebral cortical encephalitis often with seizures. The aim of this report is to present difficulties of establishing diagnosis of this unusual disease.

Case Report

We present a 39-year old male, who presented in November 2019 with right-sided facial numbness, vertigo, and diplopia. MRI revealed extensive lesions in the occipital lobe and in the right middle cerebellar peduncle, with contrast enhancement, as well as small inactive lesions in the medulla oblongata and in both cerebral hemispheres. Differential diagnosis between inflammatory, demyelinating, and neoplastic etiologies was necessary. MR spectroscopy and perfusion imaging were performed. Elevated choline level and decreased NAA level were reported, suggesting ADEM. In CSF neither intrathecal IgG synthesis nor presence of oligoclonal bands were found. Anti-neuronal antibodies, antibodies for autoimmune encephalitis, tests for Lyme disease and toxocariasis as well as anti-MOG antibodies were negative. Patient was treated initially with methylprednisolone (MP) i.v.; followed by plasma exchanges (PLEX) and MP p.o. with slow clinical recovery. In February 2020, the patient experienced balance disturbances. MRI showed a new periventricular lesion in the right hemisphere and regression of some previously established lesions. The mycophenolate mofetil was added to MP p.o. In July and August 2020 the patient presented with symptoms of recurrent optic neuritis. Follow-up MRI revealed a few new active demyelinating lesions. Both episodes were treated with MP i.v. with clinical improvement. In September 2020, a follow-up MRI showed demyelinating lesions with contrast enhancement, suggesting ADEM, less likely MS. No changes were observed in the optic nerves. The repeated anti-MOG antibody test was positive. A diagnosis of MOGAD was made. The treatment with rituximab was started with good disease control.

Conclusions

MOGAD is a rare disease, and its diagnosis can be challenging. Differentiating it from MS and NMOSD may be difficult due to atypical course and the fact that anti-MOG antibodies may be difficult to detect. Both laboratory tests and clinical presentation should be considered, and repeated testing is necessary.

An Unusual Location of Primary Cutaneous B-Cell Lymphoblastic Lymphoma admitted to Pediatric Neurosurgery Department

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Background

B-cell lymphoblastic lymphoma accounts for only 1% of all hematological malignancies in children. It is a rare subtype of non-Hodgkin lymphoma (NHL) seen primarily in children or young adults. The frequency of B-cell LBL (B-LBL) is around 10-22% of LBL1. It occurs slightly more often in boys than in girls. The most commonly it affects lymph nodes, bone and skin/subcutaneous tissue.

Case Report

A 10-year-old girl presented with non-painful, hard mass growing in the right frontal region for 4 months. The overlying skin was changed, but there were no other abnormalities or enlarged lymph nodes. On CT and MR imaging, the lesion was isolated, with no bone infiltration. The patient underwent surgery: a gross total removal of the lesion unrelated to the periosteum and bone. After the operation, the wound healed properly. The result of histopathological examination signifies a typical pathomorphological picture of B-lymphoblastic leukaemia/lymphoma. This diagnosis prompted the hematological diagnostics: PET/CT revealed additional lesions. Based on the clinical picture and the result of the cytogenetic examination, the diagnosis of pediatric B-cell precursor lymphoblastic lymphoma (BCP-LBL) stage II was established. Treatment according to EURO-LB 2002 was implemented, and the patient is still undergoing hematological treatment.

Conclusions

This case highlights the rarity and aggressive nature of B-LBL, often diagnosed late due to its fulminant course. Without treatment, patients can live for several weeks. Based on the patient's characteristics, her age and the location of the lesion, awareness of this disease should be raised among all physicians working with pediatric patients. Since, in this situation, the patient will likely first be admitted to a department other than pediatric hematology. The initial presentation of the lesion was uncharacteristic, and the absence of other symptoms contributed to the delayed diagnosis. This case emphasizes the need to consider B-LBL in the differential diagnosis of persistent head and neck lesions and reinforces the importance of performing timely biopsies, even in delicate areas, to ensure early detection and treatment.

Case Report of a Patient with MELAS Syndrome

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Background

MELAS syndrome is a rare mitochondrial disorder inherited maternally. It primarily affects the nervous and muscular systems. It is characterized by recurrent encephalopathy, myopathy, headaches, and focal neurological deficits, with stroke-like episodes leading to hemiparesis, hemianopia, and cortical blindness. The most common genetic mutation is A>G at nucleotide 3243, responsible for 80% of cases, while T>C at nucleotide 3271 accounts for the remaining cases. There is no curative treatment, only symptomatic management.

Case Report

A 49-year-old woman was admitted in June 2024 due to speech disorders, behavioral disturbances, and aggression. Her history included suspected autoimmune encephalitis treated in November 2023, followed by a stroke-like episode in April 2024, presenting with aphasia and right-sided hemiparesis. On neurological examination, she was sleepy, periodically agitated, and exhibited psychomotor retardation, auto- and allopsychic disorientation, echolalic speech, and mixed aphasia, along with left-sided hemiparesis. Brain MRI before admission showed ischemic lesions at different stages of evolution, with residual cortical necrosis. Follow-up MRI during hospitalization revealed an extensive T2/FLAIR hyperintensity with restricted diffusion in the cortex, after contrast agent administration, discrete subcortical enhancement in the right parietal-temporal region, enhancement of the arachnoid meninges, and increased signal intensity in the cortical-subcortical zone of the left temporal-occipital region indicating scar lesions were visualized, consistent with stroke-like episodes. EEG changes were characteristic of epilepsy. Magnetic Resonance Spectroscopy (MRS) demonstrated an elevated lipid/lactate (Lip/Lac) peak, highly suggestive of MELAS syndrome. Hematological and CSF studies showed no significant abnormalities, while autoimmune panels, anti-neuronal antibodies, and tests for surface antigen antibodies were negative. Genetic testing confirmed the presence of the m.3243A>G MELAS mutation.

Conclusions

MELAS syndrome remains an incurable and progressive disease, often misdiagnosed due to its variable presentation and stroke-like episodes. This case highlights the importance of considering mitochondrial disorders in atypical stroke and encephalopathy cases, as early recognition can facilitate better symptom management and genetic counseling. Raising awareness is essential for improving diagnostic accuracy and patient outcomes.

Challenges in the Treatment of Persistent Genital Arousal Disorder: a Case Report

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Background

Persistent genital arousal disorder (PGAD), or persistent sexual arousal syndrome (PSAS), causes spontaneous genital arousal without sexual stimuli, typically not relieved by orgasm. It affects 1-4% of the population, mostly women. The etiology can be of various mechanisms, therefore complicating the treatment process. Management primarily focuses on self-help measures to reduce neuromuscular hypersensitivity.

Case Report

A 42-year-old woman complained of clitoral spasms and discomfort, pelvic pain, and spontaneous orgasms several times a day and night, with sporadic flare-ups worsened by sitting or exercise lasting daily for 7 months. Painful intercourse was indicated in previous history, yet she did not sought medical help. Amitriptyline provided slight relief. She previously had lower back pain, that resolved after rehabilitation. MRI showed moderate lumbar degeneration and an ovarian cyst, for which she underwent surgery, providing no relief on her symptoms. Examination revealed hyperactive pelvic floor muscles (PFM), vestibular hypersensitivity and mild overactive bladder symptoms. The patient underwent twelve 1-hour curative sessions, including manual vaginal trigger point release, vestibular desensitization, circulation stimulation via vibration (3-5 min), dilator use (5 min), and twelve 14-minute sessions of external High-Intensity Laser Therapy (HILT) (120J/cm2, 12W, continuous wave). She was also thought self-help techniques, such as internal myofascial release for perineal and PFM desensitizing using digital feedback, though she found the internal method unpleasant and mainly was consistent with external self-help. Additionally, she performed daily TENS for posterior tibial nerve stimulation (10Hz, 250μsec), reverse Kegels, superficial heat therapy (20min/day), bladder training, and muscle stretching exercises, continuing Amitriptyline. After the last visit, her symptoms resolved and remained in remission for 5-6 months. Later an intestinal infection and stress likely triggered PFM tension resulting in relapse. She was advised to intensify self-help, stretching and TENS. Within two weeks her symptoms resolved completely, with no further relapses to date.

Conclusions

This case emphasizes the complexity of PGAD, where multiple factors play a role in symptom persistence and relapse. A structured multimodal treatment approach should be personalized and adapted for specific patients, therefore enhancing the chances of recovery.

Cordectomy as a Treatment Strategy for Post-Traumatic Syringomyelia

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Background

Syringomyelia is an acquired condition leading to the formation of a fluid-filled cavity, or syrinx, within the spinal cord secondarily to a cerebrospinal fluid obstruction or trauma as in the following presented case. Typical patient presentation is dependent on the level of the lesion, but generally comprises of neuropathic pain, autonomic disturbances, spasticity, and muscle weakness progressing with time - even leading to paraplegia. This characteristic yet complex systemic dysfunction places a heavy burden on the quality of life of these patients with unoptimistic courses. There is no unequivocal treatment course and new strategies keep arising. A novel treatment plan is presented in the form of a cordectomy, an operation to transect the injured portion of the spinal cord. Due to the irreversible nature of the intervention, it must be carefully reviewed and personalized to individual treatment plans.

Case Report

We present a 38-year-old man who suffered a spinal fracture in 2022 and initially was treated at the level affected - Th4-Th8, laminectomy with a subsequent stabilization was performed. After a few months due to progressing paresis of the upper limb and dysphagia, MRI was performed showing syringomyelia at the Th1-Th2 level that was surgically drained - the patient improved neurologically. After over a year, issues with mobility of the upper limb recurred as well persistent pain in the right side of the body. Imaging studies revealed recurring syringomyelia at the Th1-Th2 level. Neurological examination revealed bilateral Babinski reflex, spasticity, loss of motor and sensory function below Th5 segment. The patient underwent a cordectomy at the Th3 level in Nov24. At a 4-month follow-up, he regained full mobility in the upper limbs and reported level of pain to be non-significant and manageable.

Conclusions

Post-traumatic syringomyelia remains a challenge to all physicians, with the complexity of its management and fear of recurrence. This case emphasizes the need for further research to find treatments with better long-term outcomes. Furthermore, cordectomy seems to arise as a valid treatment option in selected patients. While the use of cordectomies as a treatment for post-traumatic syringomyelia seems promising, this case report aims to highlight the importance of optimizing long term patient follow-up regimens, especially in the context of spinal cord injuries.

Creutzfeldt-Jacob Disease Transmission to Both Kidney Recipients from the Same Donor

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Background

Iatrogenic Creuzfeldt Jacob Disease (iCJD) was historically caused by corneal or dural transplant, contaminated neurosurgical tools, or administration of cadaveric pituitary hormones. Thanks to current practices it is believed to have been largely eradicated. The few described cases of Creuzfeldt Jacob Disease (CJD) following an organ transplant are thought to be sporadic CJD developed incidentally after the procedure.

Case Report

A 51-year-old male 4 months after a kidney transplantation presented with a fever of unknown origin, dry cough, headache, and general weakness that had persisted for a week. He was oriented but slow to respond and exhibited bilateral asymmetric ptosis and dysmetria. He was admitted for testing. Immunosuppressive drugs neurotoxicity and CMV neuroinfection were ruled out. Routine CNS infectious testing yielded no results. Brain MR showed lesions suggestive of CJD in the caudate nucleus and temporal and occipital lobes. In two weeks, a dramatic neurologic decline was observed. The patient developed dysphagia, aphasia and a positive right-sided Babinski sign. He became disoriented and unable to stand or walk. His mental state was highly fluctuating with periods of total unresponsiveness to verbal stimuli. At times he was able to follow simple commands. Simultaneously the other recipient of a kidney from the same donor presented with a seven-day history of tinnitus and subsequent rapid onset of nearly complete deafness, diplopia, aphasia and bilateral positive Babinski sign. She developed profound dementia and flaccid paralysis and died on day 34 after admission. Her definitive diagnosis of CJD was established with neuropathology. The two recipients' history pointed to a likely infectious agent transmitted from the kidney donor, who was a drug user. Further testing of the male patient resulted in a positive CSF 14-3-3 assay, which, combined with imaging and clinical features led to the diagnosis of probable CJD. iCJD was likely but current iCJD diagnostic criteria don't recognize solid organ transplant as CJD exposure risk. Due to the progressive, fatal character of the disease, the patient is being treated conservatively.

Conclusions

The concurrent development of a rare prion disease in two kidney recipients from the same donor raises questions about organ transplantation safety. More research needs to be done to assess if the exposition routes recognized by the iCJD diagnostic criteria must be revised and if new public health measures should be introduced.

Diagnostic Challenges in Neuro-Oncology: A Case of Recurrent Craniopharyngioma Mimicking a Thrombosed Aneurysm

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Background

INTRODUCTION Neuro-oncological diagnostics are composed of a broad spectrum of tests and imaging modalities available. Remarkable advances in the preoperative diagnostics have been made in recent years, but in some cases differential diagnosis can still pose a challenge, especially in patients with complicated medical history and atypical presentation.

Case Report

We present a 33-year-old male with progressive vision deterioration in his right eye and a history of craniotomy in 2006 due to a craniopharyngioma. Additionally, in 2011 the patient underwent right internal carotid unruptured intracranialaneurysm treatment with a flow diverting stent implantation. Ophthalmological examination on admission revealed opticnerve atrophy, and steroid therapy did not lead to improvement. Imaging studies (CT, MRI, AngioCT) showed a lesion in the area of the anterior clinoid process with peripheral calcifications, raising suspicion of both recurrentcraniopharyngioma and a thrombosed internal carotid artery aneurysm. Cerebral angiography confirmed the correct placement and patency of a previously implanted stent and lack of aneurysmal perfusion. However, due to the progressive neurological deficit, a surgical approach was decided upon. A right-sided re-craniotomy was performed, during which a soft, well-demarcated lesion was removed. Upon incision, pus-like content was evacuated. Postoperatively, the patient reported subjective improvement in vision, but experienced a seizure, necessitating the initiation of anti epileptic treatment. After one week, a full recovery of visual acuity in the right eye was confirmed, and histopathological examination identified the lesion as a craniopharyngioma.

Conclusions

This case highlights the diagnostic challenges in differentiating calcified tumors from thrombosedaneurysms and emphasizes the need to consider a broad spectrum of possible pathologies in neurosurgical imaging. Although differential diagnosis is particularly difficult in somecases, it is crucial to use the imaging modalities available and carefully assess the possibilities before entering the operation room.

Diagnostic Challenges in Spinal Muscular Atrophy Type 3: a Case Report

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Background

Spinal muscular atrophy (SMA) is an autosomal recessive neuromuscular disorder characterized by progressive motor neuron degeneration due to SMN1 gene variants. The number of SMN2 gene copies influences disease severity, with more copies associated with milder phenotypes. SMA type 3 manifests later in life with progressive muscle weakness and loss of mobility. Advancements in treatment, including nusinersen, onasemnogene abeparvovec, and risdiplam, have transformed disease management.

Case Report

We present a 63-year-old female with a history of progressive muscle weakness. She experienced difficulty walking from adolescence, which worsened by her mid-20s. She underwent a muscle biopsy, but the results were inconclusive. Approximately 40 years ago, a clinical diagnosis of muscular dystrophy was established. At the age of 60, she was referred to a Neuromuscular center for a diagnostic review. Subsequent genetic testing using specific multiplex ligation-dependent probe amplification (MLPA) confirmed SMA, revealing 0 copies of the SMN1 gene and 3 copies of the SMN2 gene. Electroneuromyography in 2024 indicated partial axonopathy and chronic denervation-reinnervation in proximal limb muscles. The patient remained ambulant but required support when using stairs and reported occasional falls. Muscle strength was reduced, particularly in proximal lower limbs. Neurological examination revealed mild hypotonia in the lower limbs, reduced muscle strength, absent deep tendon reflexes in the legs, and a myopathic gait. There were no signs of fasciculations or severe atrophy. Previously treated with intrathecal nusinersen, she transitioned to oral risdiplam for convenience. After two years of treatment, her functional assessment showed a slight improvement in the HFMSE score from 42/66 to 44/66, along with an increase in the 6-minute walking test distance from 325 meters to 345 meters. Continued monitoring and multidisciplinary support were recommended.

Conclusions

This case underscores the challenge of diagnosing SMA type 3 without genetic testing, as it was initially misidentified as muscular dystrophy. Genetic confirmation was essential for accurate diagnosis and treatment decisions. Despite slow progression, early intervention and continuous monitoring remain vital. Multidisciplinary care is crucial in optimizing patient outcomes.

Late Onset Neurosyphilis in a 30-year-old Male Patient

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Background

Neurosyphilis, a severe manifestation of syphilis, can emerge years after the initial infection, affecting the central nervous system. Diagnosing neurosyphilis is challenging; the cerebrospinal fluid (CSF) test, though highly specific, has a sensitivity ranging from 49% to 87% (Marra et al., 2020). Consequently, a negative CSF result does not exclude neurosyphilis, especially in patients with neurological symptoms and positive syphilis serology. In such cases, additional CSF treponemal - specific antibody tests are recommended due to their high sensitivity. This case report aims to identify the main signs of late-onset neurosyphilis and raise awareness about diagnostic challenges.

Case Report

Medical history: since September 2024, the patient experienced chest, head, and eye pain, blurry vision, and neck and shoulder pain. Over time, chest pain worsened with deep breathing, radiating to the third intercostal space and armpit. Later, additional symptoms have appeared, including tinnitus, nasal congestion when lying down, and coordination issues causing abnormal gait. On January 10, 2025, the patient was observed by a family physician, who suspected syphilis. Serology tests confirmed the diagnosis with results showing RPR 1:8 and TPHA 1:1280. The patient's last sexual encounter was three years ago. A dermatovenerologist evaluated the patient on January 23, scheduling hospitalization for January 27. Testing on January 28 showed no specific changes. On January 29, a cerebrospinal fluid (CSF) sample was collected, with a Treponema pallidum result of 0.54 (negative). CSF protein was normal at 0.301 g/L. History suggests the initial syphilis infection occurred approximately three years ago, indicating a late-stage presentation. The patient was hospitalized for 14 days, receiving IV Penicillini 3 million IU 6×/day, followed by single administration of Benzathine benzylpenicillin 2.4 million IU IM. Symptoms improved, though mild neurological issues persist. Regular neurology follow-ups will be required. Due to past chest pain, ongoing cardiology consultations are also needed. The patient was discharged for outpatient follow-up.

Conclusions

This case highlights the challenges of diagnosing late-onset neurosyphilis and the risk of irreversible neurological damage if left untreated. Early detection through regular STD screening is crucial in preventing such cases, ensuring timely treatment before severe complications develop.

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Meningioma Metastasis to the Lungs- an Extremely Rare Case of a 54-year-old Patient

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Background

Meningioma is the most common benign intracranial tumor, although malignant behavior as metastatic spread, has also been described. In fewer than 1% of patients, meningiomas metastasize to distant extracranial sites, making such occurrences extremely rare. Due to their infrequency, limited information is available to guide physicians in assessing the risk of metastasis in meningioma patients. This case report aims to explore this unusual presentation, focusing on the diagnostic and therapeutic challenges associated with metastatic spread from a primarily intracranial tumor.

Case Report

We present a case of a 54-year-old female patient with a history of meningioma and lung metastasis. The patient underwent initial surgical intervention in 2016 for the removal of a left frontal region meningioma. A recurrence was noted in 2020 in the left orbital region, necessitating further surgical intervention. A follow-up assessment in 2022 revealed pulmonary lesions in the middle and lower lobes. Histopathological examination of a lung biopsy confirmed these lesions as metastatic meningioma. In April 2024, the patient presented to the Department of Neurosurgery seeking treatment for progressive meningioma involvement of the skull base, maxillary sinus, frontal sinus, and nasal cavity, with concurrent destruction of the medial wall of the left orbit. The patient reported headaches, dizziness, and deteriorating vision in the left eye. Physical examination revealed exophthalmos of the left eyeball and sensory disturbance in the left frontal-jaw area. Given the worsening vision, surgery was planned using an endoscopic technique with a transnasal approach.

Conclusions

Meningioma metastases are extremely rare and often pose an underestimated challenge of modern neurosurgery. Our case highlights the importance of considering metastatic spread in patients with a history of atypical or anaplastic meningiomas, especially when new pulmonary lesions are detected. Early recognition and accurate differentiation from primary lung tumors or other metastases are crucial for appropriate management. To optimize the treatment of patients with metastatic meningiomas, further research is needed to identify the underlying mechanisms of these tumors.

Minimal Invasive Trans-eyelid Approach to a Sphenoid Wing Meningioma in 71-year-old Patient: Case Report.

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Background

Meningioma is the most common benign intracranial tumor, accounting for about one-third of all primary brain and central nervous system tumors. The incidence of meningiomas is higher in women, with a ratio of 2:1, and the peak occurrence is in the fourth decade of life. Due to the benign nature of most meningiomas, the 5-year survival rate exceeds 90%. In the case of symptomatic meningiomas, surgery is the treatment of choice, and modern medicine increasingly emphasizes minimally invasive methods. One such approach is the trans-eyelid approach, which is particularly suitable for older individuals and provides good treatment outcomes for lesions not only located in the anterior cranial fossa and the sellar region but also in the middle cranial fossa, especially around the sphenoidal wings within a 2 cm range and in the spheno-orbital region.

Case Report

A 71-year-old patient with a history of cardiac arrest and myocardial infarction was admitted to the Department of Neurosurgery at the Medical University of Białystok. The patient was diagnosed with a right-sided sphenoid wing tumor diagnosed as a meningioma. The lesion was discovered during diagnostic workup for symptoms of hemiparesis of TIA nature in the Neurology Department. Due to the morphology of the lesion, the patient's age, and a significant cardiological history, the patient was qualified for surgery via a minimally invasive transorbital approach. The postoperative course was uncomplicated, the patient's condition remained good, and the healing of the surgical wound on the eyelid was normal, without signs of infection. After performing follow-up imaging studies and excluding the need for further surgical treatment, the patient, in good general, local, and neurological condition, was discharged home.

Conclusions

The trans-eyelid approach is a safe and minimally invasive technique that provides effective access for the resection of lesions located in challenging regions of the skull base. This approach offers the advantage of a reduced risk of complications typically associated with more invasive methods, while ensuring a great cosmetic outcome. Given its ability to preserve functional integrity and minimize postoperative scarring, the trans-eyelid approach is a valuable option, particularly for older patients or those with other comorbidities, as it combines both functional and aesthetic benefits in the management of cranial base tumors.

Nasu-Hakola Disease: A Rare Genetic Cause of Dementia – Case Report

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Background

Nasu-Hakola disease (PLOSL) is a rare hereditary neurodegenerative disorder caused by mutations in TREM2 or TYROBP genes. It presents with progressive early-onset dementia and pathological bone fragility. Due to its overlapping clinical features with other neurodegenerative conditions, misdiagnosis is common, particularly in cases initially attributed to Fahr's disease or other leukoencephalopathies.

Case Report

We present a case of a 45-year-old female who developed progressive cognitive decline, recurrent epileptic seizures, and multiple pathological fractures. Neuroimaging revealed cortical-subcortical atrophy, extensive leukoencephalopathy, and basal ganglia calcifications, initially leading to a misdiagnosis of Fahr's disease. However, genetic testing identified pathogenic variants in the TREM2 and TYROBP genes, confirming Nasu-Hakola disease as the underlying cause of dementia and skeletal abnormalities. The patient received symptomatic treatment, including antiepileptic therapy, cognitive support, and orthopedic management with calcium and vitamin D supplementation. Despite these interventions, the disease progressed to severe functional impairment and loss of independence. We present a case of a 45-year-old female who developed progressive cognitive decline, recurrent epileptic seizures, and multiple pathological fractures. Neuroimaging revealed cortical-subcortical atrophy, extensive leukoencephalopathy, and basal ganglia calcifications, initially leading to a misdiagnosis of Fahr's disease. However, genetic testing identified pathogenic variants in the TREM2 and TYROBP genes, confirming Nasu-Hakola disease as the underlying cause of dementia and skeletal abnormalities. The patient received symptomatic treatment, including antiepileptic therapy, cognitive support, and orthopedic management with calcium and vitamin D supplementation. Despite these interventions, the disease progressed to severe functional impairment and loss of independence.

Conclusions

This case emphasizes the critical role of genetic testing in identifying rare hereditary causes of early-onset dementia. Nasu-Hakola disease should be considered in patients presenting with both cognitive decline and unexplained bone pathology. Increased awareness and early genetic screening can improve diagnostic accuracy, facilitate targeted management strategies, and enhance patient care in rare neurodegenerative conditions.

Primary Central Nervous System Vasculitis. A Case Report

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Background

Primary central nervous system vasculitis (PCNSV) is a rare idiopathic vasculitis that affects small and medium-sized blood vessels in the brain and/or spinal cord without signs of systemic vasculitis. Its clinical picture is highly variable, ranging from headaches, cognitive and behavioral changes to acute focal neurological deficits, seizures, and impaired consciousness. Despite advancements in imaging, invasive diagnostics remain necessary, with brain biopsy as the gold standard for PCNSV diagnosis, albeit with limitations. This case underscores the diagnostic and therapeutic challenges of PCNSV.

Case Report

A 70-year-old male presented with progressive neurological symptoms over six months, including lower limb weakness, gait instability, and recurrent falls. Examination revealed right-sided hemiparesis (muscle strength 4/5 on the right arm, hand, and leg, along with 3/5 strength on his right foot), right-sided hyperreflexia, and spastic-ataxic gait. Extensive immunological, rheumatological, and oncological workups were unremarkable. Magnetic Resonance Imaging (MRI) suggested encephalitis or small-vessel vasculitis, while cerebrospinal fluid (CSF) analysis showed mild lymphocytic pleocytosis, elevated protein and Immunoglobulin G levels. An autoimmune encephalitis CSF panel detected unclear antibodies. Black-blood MRI confirmed progressive small-vessel vasculitis. There was no evidence of large vessel vasculitis on MRI or brachiocephalic vessel Computed Tomography. Brain biopsy showed nonspecific perivascular lymphocytic infiltration, suggestive of vasculitis but not excluding autoimmune encephalitis. Initial steroid therapy failed, and five plasma exchanges yielded minimal improvement. Two doses of rituximab led to transient motor recovery. Despite oral steroid maintenance, the patient was rehospitalized after six weeks with acute urinary retention, right hemiplegia, and bulbar syndrome. Over two months, condition deteriorated due to pneumonia, bedsores, sepsis, and patient died.

Conclusions

Early recognition and treatment of PCNSV are crucial to prevent irreversible neurological decline. However, the disease's rarity and diagnostic complexity often delay intervention, adversely impacting prognosis and quality of life.

Subdural Hematoma with Complications of Intracranial Hematoma and Anticoagulation Challenges

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Background

The management of subdural hematoma (SDH) in patients with mechanical heart valves (MHV) requiring anticoagulation presents a significant clinical challenge. The need to prevent thromboembolic complications must be assessed carefully because of the risk of intracranial bleeding. This case highlights the complexity of anticoagulation management in a patient with MHV following traumatic brain injury (TBI).

Case Report

A 71-year-old male with a history of MHV replacement (June 2023) due to chordae tendineae rupture and anticoagulation therapy with warfarin experienced a severe head trauma on January 21, 2025, resulting in a right-sided subdural hematoma (SDH). On admission, INR was >4, GCS 5 requiring human prothrombin complex and urgent craniotomy for hematoma evacuation. After surgery, the patient was treated in the intensive care unit (ICU), where anticoagulant treatment was discussed further between the cardiologist and neurosurgeon. They determined that due to the unstable intracranial clot, therapeutic doses of anticoagulants are contraindicated at this time. Only prophylactic doses of low molecular weight heparin (LMWH) could be administered. The postoperative course was complicated by recurrent ICH, cerebral oedema, and midline shift requiring a re-craniotomy on January 26, 2025. The patient's condition remained critical, with persistent coma GCS 4-5 and right-sided movement response but left-sided plegia, requiring mechanical ventilation. On February 1, 2025, a repeated CT scan showed significant negative dynamics, with progressive ischemic and hemorrhagic changes and oedema. The neurosurgeon recommended terminating anticoagulation therapy and further neurosurgical intervention was non-indicated due to the extent of brain injury. The patient developed ventilator-associated pneumonia, treated with vancomycin based on blood culture results showing MRSA. Hemodynamic instability persisted, requiring vasopressors. By February 6, 2025, the patient remained in a deep coma GCS 5, with no signs of neurological recovery. A tracheostomy was performed (02.03) to facilitate long-term ventilation. Despite continuous medical management, the patient's prognosis remained critical. With the persistent risk of both haemorrhage and thrombosis, the strategy for anticoagulation treatment remained the same, to administer LMWH.

Conclusions

This case highlights the anticoagulation challenges to prevent thromboembolic events and to control hemorrhagic risk in critically ill patients with TBI.

Tofersen for Patients with SOD1-associated Amyotrophic Lateral Sclerosis: a Case Report

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Background

Amyotrophic lateral sclerosis (ALS) is the most common adult-onset motor neuron disease characterised by degeneration of upper and lower motor neurons. The symptoms of ALS include dysarthria, dysphagia, muscle weakness, fasciculations, and dyspnea, with the disease progressing to respiratory failure. The average life expectancy of patients with ALS is 3-5 years. Although the most cases of ALS are sporadic, about 10% of cases are familial. Mutations in SOD1 are found in 15–25% of familial cases and 1-2% of ALS cases overall. Tofersen is a recently approved medication that reduces expression of SOD1.

Case Report

A 74-year-old male was consulted by a neurologist due to muscle twitching and numbness in hands at night in September 2023. A pathogenic variant (NM_000454.5:c.446T>C) in the SOD1 gene was previously identified due to a family history of ALS (patient's daughter diagnosed with ALS at 31, father at 78, and uncle at 53). In October 2023, an electroneuromyography (ENMG) revealed bilateral carpal tunnel syndrome, no changes of axonal lost or muscle denervation was seen at that time. In February 2024, muscle ultrasound showed fasciculations in the right dorsal interosseous muscles and left deltoid muscle, and an ENMG in April indicated fasciculations and mild chronic neuropathic changes without acute denervation symptoms in C7 myotome on the left. The patient reported changes in gait and difficulty swallowing in May which led to further evaluation and diagnosis of ALS, considering the identified SOD1 variant. The treatment with Tofersen was started with intrathecal injections. After initial treatment, the patient reported more frequent headaches and cramps at night. After few more treatment months mood fluctuations, impaired memory, appetite and weight loss were reported. Neurophysiological testing and brain MRI was performed but now changed was found, CSF shown pleocytosis. Neurological examinations noted mild dysphonia and fasciculations in the right calf muscles, the left leg seemed to drag when walking. No other symptoms or side effects were reported.

Conclusions

A 74-year-old male with ALS caused by pathogenic SOD1 gene mutation is receiving treatment with Tofersen. While he has experienced weight loss and neurological symptoms, the direct impact of Tofersen remains unclear. Further evaluation is necessary to determine whether the treatment has provided any clinical benefit, as memory or mood disturbances have not been previously reported as side effects of Tofersen.

Visual Snow Syndrome: a Case Report

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Background

Visual snow syndrome (VSS) is a rare disorder which manifests as countless flickering white or black dots in the entire visual field in both eyes lasting longer than 3 months. Patients compare their vision as the 'snow' on a badly tuned television. Additional symptoms include photophobia, spontaneous photopsia, nyctalopia, entoptic phenomena, palinopsia, irritability and difficulty to concentrate. Often tinnitus and migraine with or without aura co-occur with VSS or worsen the symptoms of the syndrome. Etiology of VSS is often associated with hypersensitivity to external and internal stimuli as well as hypermetabolism and increased grey matter volume in lingual gyri in visual cortex.

Case Report

Twenty-year-old male patient presented with persistent flickering in both eyes lasting over 6 months. The patient had no comorbidities and did not report use of illicit drugs. A complex neuro-ophthalmic examination was performed. His visual acuity was 1.0 in both eyes. Automated perimetry showed normal visual fields of both eyes. Fundoscopy showed no abnormalities. Ocular ultrasound detected no pathology. Electroretinography (ERG) and visual evoked potentials were unremarkable. Brain magnetic resonance imaging (MRI) revealed no abnormalities. Electroencephalography (EEG) of the brain was normal. After ruling out ophthalmic and neurological disorders, VSS was diagnosed.

Conclusions

We report a case of a rare visual snow syndrome in a young adult. It is important for the physician to obtain a detailed patient's medical history. If the examination (medical history, biomicroscopy, fundoscopy, perimetry, ERG, EEG, MRI) results rule out other neuro-ophthalmic disorders, VSS should be taken into consideration. Currently, there is no specific treatment for this syndrome. Medical therapy with benzodiazepines or antiepileptic medications could be considered for some patients evaluating possible benefits and risks. Nonpharmacological approach such as yellow-blue tinted or polarized spectacle lenses may also relieve symptoms of VSS. For patients with VSS it is recommended to avoid triggers, manage stress and keep right work and rest balance.

When Aggression Signals Neurodegeneration - a Diagnostic Challenge in Frontotemporal Dementia

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Background

Frontotemporal dementia (FTD) is a neurodegenerative disorder characterized by progressive degeneration of the frontal and temporal lobes, leading to behavioral, language, and cognitive impairments. It typically manifests between the fifth and seventh decades of life and is the most common cause of early-onset dementia before 65. FTD is strongly associated with pathogenic variants in MAPT, GRN, and C9orf72.

Case Report

57-year-old woman was brought to the emergency room by her daughter following an episode of aggressive behavior. The patient had no recollection of the incident and denied its occurrence. A further interview revealed a one-year history of behavioral changes, significant memory impairment and food refusal. Family history was notable for a behavioral disorder with aggression in her father. On neurological examination, the patient was conscious with preserved superficial logical verbal contact. She was autopsychically oriented (aware of her own identity) but allopsychically disoriented. Short- and long-term memory impairments were present. There were none meningeal signs or focal neurological deficits. Brain CT scan revealed small lesions within the deep structures of both temporal regions. Neuropsychological examination showed significant cognitive decline, with deficits in executive functions, short- and long-term auditory memory, as well as impairments in attention processes and visuospatial functions. The patient exhibited depressed mood, increased agraphia, and constructional apraxia. Additional blood tests were normal. Onconeuronal and neuronal surface antibodies in blood and cerebrospinal fluid (CSF), were negative. The CSF analysis revealed elevated total and phosphorylated tau, a positive beta-amyloid 1-42 level, and a negative beta-amyloid 1-40 level. The Aβ42/Aβ40 ratio was within the normal range. Based on clinical, laboratory, and imaging findings, a diagnosis of behavioral variant of FTD was made. The patient was prescribed fluoxetine and referred for outpatient care.

Conclusions

FTD diagnosis is challenging due to symptom overlap with other neurodegenerative and psychiatric disorders. Therefore, a multi-modal approach with incorporating neuroimaging, fluid biomarkers, genetic testing, and patient history is essential. Elevated tau levels indicate neurodegeneration, but are not specific to FTD. A normal Aβ42/Aβ40 ratio helps differentiate FTD from Alzheimer's disease, as the latter is typically characterized by a decreased ratio due to amyloid deposition.

Neuroborreliosis in a Patient with Seropositive Neuromyelitis Optica Spectrum Disorder (NMOSD) – a Rare Case Report"

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Background

Neuromyelitis optica spectrum disorder (NMOSD) is a rare autoimmune neurological disease characterized by demyelinating lesions mostly in the optic nerves, spinal cord, and brainstem. In seropositive NMOSD (70%), serum autoantibodies targeting the water channel aquaporin-4 (AQP4)-IgG play a pathogenic role in astrocyte destruction. Secondarily, damage to oligodendrocytes and neurons occurs. Neuroborreliosis is one of the manifestations of Lyme disease involving the central and peripheral nervous system. Symptoms of neuroborreliosis may include acute transverse myelitis, encephalitis, optic neuritis, and cranial nerve palsy.

Case Report

A 64-year-old woman was firstly admitted to the Neurology Department in October 2017. Over the last 12 years, the patient has had 3 episodes of spinal cord injury. Neurological examination revealed right arm paresis, lower limb paraparesis, hypoesthesia from Th8 down, and sphincter disorders. Spine MRI showed an extensive C2-C5 spinal cord lesion. Laboratory tests confirmed AQP4-IgG positivity and NMOSD was diagnosed. Treatment with inebilizumab (anti-CD19) was initiated. The patient was relapse-free for the next 3 years. In October 2020 the patient was admitted with fatigue, walking disorders, appetite loss, and lower back pain. Examination showed psychomotor slowdown, moderate lower limb paraparesis, right peripheral facial paralysis, and hearing loss on the left side. Brain and spine MRI detected a new, small lesion in pons and thoracic spinal nerve root enhancement. Lumbar puncture revealed opalescent cerebrospinal fluid (CSF) with monocyte-predominant pleocytosis (209) and elevated protein (232 mg%), with no specific markers of other diseases. After another collection of CSF and serum, both had high levels of IgM and IgG against Borrelia burgdorferi, absent previously, diagnosing neuroborreliosis. After intravenous ceftriaxone (2 g/day) treatment, radicular pain subsided and walking ability improved.

Conclusions

Early Lyme neuroborreliosis presents with nonspecific symptoms, such as fatigue and myoarthralgia, mimicking various conditions, including demyelinating disorders. Bannwarth syndrome (BWS), a typical but nonspecific manifestation of early neuroboreliosis includes meningitis, radiculitis, cranial nerve palsies, radicular pain, and pleocytosis in CSF. Concomitance of BWS with NMOSD poses a significant diagnostic challenge, but early and accurate treatment may prevent irreversible neurological complications.

Neurology & Neurosurgery Session

Session Coordinators:
Aleksandra Deroń, Martyna Najmrocka

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Polskie Towarzystwo Neurochirurgów

Sekcja Młodych Neurologów
Polskie Towarzystwo Neurologiczne

Acute Intracranial Stenting after Mechanical Thrombectomy in Ischaemic Stroke

Authors

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Trustee of the paper

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Introduction

Intracranial atherosclerotic disease (ICAD) is a prevalent cause of acute ischaemic stroke and carries a high risk of recurrent stroke despite appropriate medical management. The role of endovascular treatment for symptomatic ICAD has been debated due to high rates of periprocedural complications in randomized clinical trials.

Aim of the study

The primary aim of this study is to assess the effectiveness, safety, and potential complications in patients who have undergone acute intracranial stenting after failed mechanical thrombectomy (MT).

Materials and methods

MT procedures carried out at a single institution between November 2019 and December 2024 were reviewed retrospectively, and patients who underwent intracranial stenting were selected. The first patient, a 52-year-old woman, underwent intracranial stenting of the middle cerebral artery (MCA) via radial access, using CREDO 5.0 stent. The second patient (60-year-old man) received a MT through radial access utilizing a CREDO Heal 4.0/20 mm stent in MCA. The third patient, a 67-year-old woman, underwent the procedure via femoral access with a CREDO 10.5 stent in the basilar artery. Information about the type of access, catheter, vessel occlusion, MT technique, comorbidities, complications and recanalization rate were reviewed.

Results

Throughout the research period, three patients underwent intracranial stenting after MT. Successful recanalization was achieved in all three patients. The mean NIHSS score on admission was 18.3 points and average procedural time was 81 minutes. Mean hospitalization time was 14.3 days. The additional use of stent retriever as a MT technique was observed in one patient. All of the above-mentioned patients have experienced successful recanalization with a TICI score of 3. No intracranial hemorrhage, vessel perforations or cerebral edema occurred in any patient. One patient developed pneumonia, leading to an extended hospitalization of 27 days.

Conclusions

This study demonstrates that although intracranial stenting may carry serious risks, this procedure was beneficial for the above-mentioned patients, as none of them experienced a recurrent stroke or required neurosurgical intervention. If MT fails and ICAD is suspected, acute stenting becomes the management of choice. Nevertheless, further research on intracranial stenting and advancements in this treatment strategy may continue to revolutionize standards of care for patients with ICAD who could benefit from this procedure after failed MT.

Conceptual Design of Mobile Application for Dementia Caregivers: Profiling Potential Users, Identifying Needs and Key Features

Authors

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Introduction

Dementia is a progressive neurodegenerative disorder that significantly impacts both patients and their caregivers. Despite extensive caregivers' needs there is limited number of mobile applications designed for dementia caregivers, especially for Polish population.

Aim of the study

This study was designed to suggest a concept of mobile application for Polish dementia caregivers to mitigate the difficulties they face by identifying their needs and key features and additionally to profile potential users of such application.

Materials and methods

Study group contained 129 dementia caregivers [111 females, 18 males]. Each dementia caregiver completed a structured questionnaire providing demographic and caregiving-related data and dividing participants into two groups: those who expressed a need and willingness to use such an application (G1, 101 participants) and those who did not (G0, 27 participants). The chi-square (χ^2) test was used to determine significant differences between two groups. Respondents were also asked to evaluate functionalities of the conceptual application. The findings from this analysis contributed to define the key features.

Results

The study found differences between group G1 and G0. They included: survey completion method ($p=0.0029$), level of education ($p=0.0035$), sustenance source ($p=0.0198$), self-assessment of economic status ($p=0.0434$), severity of experienced financial difficulties ($p=0.0326$), parental status of care recipients ($p= 0.0184$), primary caregiver status ($p=0.0285$), assessment of family support ($p=0.0155$), acquisition of dementia-related knowledge from online sources ($p<0.0001$), computer use ($p<0.0001$), and moreover hindsight knowledge gap in caregiving. 58% of respondents expressed willingness to use tools enabling them to track care recipients' location in such an app. 67% of them would like to have an in-app dementia guide. 65% participants would like to communicate with other caregivers within the application.

Conclusions

Dementia caregivers expressed interest in using an application which improves caregiving quality, provides educational resources about the disease and fosters community engagement. Statistically significant differences between G1 and G0 supported the identification of a potential user profile.

Endoscopic Endonasal Treatment in Patients withs Crooke's Cell Adenomas

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Introduction

Crooke's cell adenoma (CCA) is a rare subtype of pituitary adenoma (<1%). CCAs are usually invasive, may exhibit aggressive behavior, and often recur. Thus, the treatment of CCAs is difficult and might not result in a complete remission.

Aim of the study

The aim of this study was to assess characteristics of a group of patients with CCAs treated with endoscopic endonasal resections.

Materials and methods

The study is a retrospective analysis of a series of 18 patients (6 women and 12 men) treated from the 2015 to 2024 by the endoscopic transsphenoidal surgeries for CCAs. The mean age of the patients was 48.3 years (18-77 years), and the mean follow-up period was 5.3 years (0-11 years).

Results

Preoperatively 8 patients had visual function deterioration (44.4%), 8 patients had Cushing's disease (44.4%), 6 patients had hypopituitarism (33.3%), 4 patients had headaches (22.2%). Gross total resections were achieved in 6 out of 8 patients with Cushing's disease (75%), and in 7 out of 10 patients with silent adenomas (70%). Most patients (88.9%) had macroadenomas. Five patients (27.8%) had an intra-operative cerebrospinal fluid leak, and a reconstruction of the sella with a fat tissue graft. Postoperatively 75% of the patients showed varying improvement in visual field defects and visual acuity. The only complication was transient diabetes insipidus (DI) observed in 3 patients (16.7%). One patient progressed to pituitary carcinoma, had four subsequent resections, and eventually died. The remission of Cushing's disease was achieved in 6 patients after surgery (75%).

Conclusions

Endoscopic transsphenoidal treatment of patients with CCAs is safe and associated with a low complication rate. The patients are younger and have more resections than in usual pituitary adenomas.

Epidemiology and Clinical Features of Nummular Headache: A Meta-Analysis with Diagnostic Considerations

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Introduction

Nummular headache (NH), also known as coin-shaped cephalalgia, is a rare primary headache disorder. This condition has been first described in 2002 by Pareja et al. [1], who reported a series of 13 patients with distinctive type of pain, exclusively affecting a circumscribed cranial area, which were sufficient to be defined as a new headache entity. The epidemiology of this headache remains unknown, as well as there is lack of studies systematically synthesizing the data of its clinical features.

Aim of the study

This meta-analysis aimed to evaluate the prevalence of NH among adult patients seeking medical attention for a headache, relative frequencies of clinical features of NH, and to discuss its key diagnostic dilemmas.

Materials and methods

Pubmed, Embase, Medline and ScienceDirect were thoroughly searched for observational studies reporting the relevant data regarding NH diagnosed in accordance with ICHD-2, ICHD-3β, ICHD-3 or Pareja's original study. Random-effects meta-analysis was performed in order to calculate the pooled prevalence estimates (PPE) and the I2 statistics was used to measure the between-study heterogeneity. The PRISMA guidelines were strictly followed by the study's structure. The JBI critical appraisal tool was used to evaluate the risk of bias of included studies. This meta-analysis has been pre-registered in PROSPERO (ID: CRD42024570719).

Results

Out of initial 2441 records, 17 studies met all of the inclusion criteria. The mean age of onset of NH was 47.26 (SD = 16.99). The PPE of NH in adult patients evaluated for a headache in a clinic-based setting was 0.7% (95%CI: 0.2-2.4), with slight female predominance (females = 0.5%, 95%CI: 0.2-1.4 vs males = 0.3%, 95%CI: 0.1-0.8). The shape of the headache was round/circular in 78.4% (95%CI: 71.9-83.7) and oval/elliptical in 21.6% (95%CI: 16.3-28.1) of patients. In 7.5% (95%CI: 2.7-19.0) of individuals pain had multifocal location and 59.1% (95%CI: 49.7-68.0) of NH sufferers experienced pain exacerbations. The pain was most prevalent in the strictly parietal region (43.0%, 95%CI: 37.4-48.7) of the cranium and had pressing quality (51.4%, 95%CI: 41.6-61.1).

Conclusions

The results of our study showed that NH is a very distinct and relatively rare to encounter headache disorder. Due to its unique clinical phenotype, physicians need to be aware when a patient presents with a small, well-localized round/oval headache in the cranium region.

No funding

Mechanical Thrombectomy in treatment of Posterior Circulation Strokes.

Authors

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Introduction

Mechanical Thrombectomy (MT) has proven its success in treatment of ischemic stroke. Endovascular procedures are now a golden standard for occlusions in the anterior cerebral circulation. However, there is still not enough data for its efficacy in posterior circulation (PCS), which tend to have higher mortality and often lead to severe complications.

Aim of the study

The primary purpose of this study is to assess the efficacy and safety of MT as a treatment for acute ischemic strokes in posterior cerebral circulation. Therefore, we conducted single-center case analysis evaluating the outcome.

Materials and methods

MT procedures in a single institution, from November 2019 to December 2024, were retrospectively evaluated and patients with PCS were among them selected. Information on demographic, coomorbidities, vessel occlusion, complications, recanalisation rate and clinical outcomes were reviewed.

Results

Thirty five (35) patients had undergone MT as a treatment of PCS with the mean age of the 67,9 years. Mean procedural time was 70,9 minutes. Mean hospitalization time was 20,5 days with mean NIHSS score on admission of 15,4 points. The additional use of stent retriever as a MT technique was observed in 51,4% cases. TICI 3 recanalization was achieved in 79,4%, followed by TICI 2b in 11,8% cases. There was no access complications. Some patients have experienced iatrogenic post-op complications (31,8%), with the highest rate of pneumonia. Most common score on mRS at the discharge was 6 (30,8%), followed by 0 (23,1%) and 4/5 (23%).

Conclusions

The MT has proven its effectiveness and safety for treatment of PCS, as in the majority of cases TICI 2b/3 were achieved. However, based on mRS score we may still observe the huge impact of PCS on the disability and mortality of patients.

Middle Meningeal Artery Embolization for Chronic Subdural Hematoma - Analyzing the Safety and Efficacy of the Method

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Introduction

Middle meningeal artery embolization (MMAE) has been gaining recognition as a promising, minimally invasive treatment modality for the management of chronic subdural hematoma (cSDH). It is used either as an adjunct or an alternative to surgical drainage.

Aim of the study

We aimed to evaluate the safety and efficacy of MMAE in cSDH patients.

Materials and methods

169 patients underwent MMAE for the management of cSDH - either postoperatively or as a treatment modality alone. Onyx polymer was the primary embolic agent used. Alternatives such as microspirals and microsphere were employed in patients not eligible for general anaesthesia. Depending on the agent, adequate microcatheters were utilized. We assessed effectiveness of the procedure and peri-procedural adverse events.

Results

26 (16.05%) patients underwent embolization only, while 136 (83.95%) were assigned for combined management - that including 4 (2.94%) cases of MMAE within 7 days post surgery and 132 (97.96%) cases of delayed MMAE. MMAE was successful in 158 (93.49%) patients. There were 4 (2.37%) cases of cSDH recurrence and 11 (6.51%) patients that required reoperation.
Procedural complication rate was 9.47%, with some of the adverse events being facial nerve paresis (3 cases), partial blindness in the ipsilateral eye, impaired blood supply to the skin of the frontal area, MMA dissection, vasospasm of the internal and external carotid arteries (1 case each). 3 patients developed a hematoma in the groin, with 1 of them resulting in critical ischaemia of the lower limb. In 1 case a postprocedural pseudoaneurysm of the common femoral artery was reported. In 4 cases a fragment of the microcatheter detached during the procedure and in 1 case residual traces of the Onyx were observed in the area of the superolateral quadrant of the orbit.

Conclusions

Given the high success rates and relatively low complication rates, MMAE appears to be a safe and effective method, potentially beneficial in prophylaxis to reduce recurrence rates in cSDH. However, directly comparing our study group with a group of patients undergoing surgery alone could shed some more light on that matter.

Morphology and Morphometry of External Occipital Protuberance and its Variants in Paediatric Population

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Introduction

External occipital protuberance (EOP) is an anatomical landmark located on the posterior aspect of the occipital squama, with the prevalence of its variants (EOPVs) in the adult population estimated at around 43%. Excessively developed bony protuberance may be a clinical concern as a cause of discomfort and pain, in specific cases necessitating surgical intervention. Recently in the literature there have been some attempts to gauge the EOPVs, albeit lacking a coherent classification and excluding children.

Aim of the study

The aim of the study was to provide a detailed morphological and morphometric description of the EOPVs in the paediatric population. In this study a new, refined, coherent terminology and classification regarding EOPVs is utilised.

Materials and methods

Retrospective analysis of head CT scans (0.5mm slice thickness) of 345 paediatric patients, aged 0-18 years, divided into four age groups. 3D reconstruction techniques were used to facilitate detailed morphological description of EOPVs.

Results

An increase in EOPV prevalence in paediatric population was demonstrated and the occurrence of EOPV was linked to changes in occipital bone morphology and its delamination. A new EOPV definition and classification is introduced and utilised, in which the variants are split into two types (marked Type I and Type II), according to their morphological appearance. In general population Type I is more common than Type II. Prevalence in the oldest age group matches the previously reported occurrence among adults, which implies the completion of the development process and enables morphological and morphometric comparison. EOPVs occur more often in males with higher Type II prevalence than in females.

Conclusions

Contrary to what was believed, the EOPVs develop in children (not in adults) with the most notable increase in incidence at the age of 12-13 years old. The study also showed a link between the occipital bone morphology and the EOPV occurrence, shape and type. While it is still not possible to precisely mark factors influencing the EOPV formation, a basic predictive model was constructed, with a high negative prediction rate. The new definition and typology is reliable, coherent and decreases the observer bias, while also establishing a concise framework for further research and clinical use.

Prevalence and Impact of Triggering and Inhibitory Factors on Epileptic Seizures: A Cohort Study

Authors

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Introduction

Epilepsy presents with diverse clinical features, including focal or generalised seizures, altered consciousness, motor and sensory disturbances, autonomic dysfunction, and cognitive or psychiatric comorbidities. Its etiology includes structural, genetic, infectious, metabolic, immune and unknown causes. This study assesses the frequency and impact of emotional, sensory, physical and other factors.

Aim of the study

In adult general epilepsy clinic population, this study aims to: 1)identify the prevalence and impact of emotional, cognitive, sensory, motor, dietary, physical, and other factors; 2)assess patients' ability to induce or prevent seizures; 3)analyse trigger-seizure latency.

Materials and methods

The Cohort study of 429 patients (≥1 seizure/year) was surveyed over two years (2022–2024) at Vilnius University Hospital Santaros Clinics using a standardised questionnaire assessing triggers, inhibitory factors, and latency. Data were analysed as percentages, excluding missing values. Ethical approval was not required due to anonymous surveys, as confirmed by the Biomedical Research Implementation Team.

Results

Among participants,36.6% reported seizures triggered "sometimes",8.6% "frequently" and 6.8% "always". Inhibitory factors were noted by 24.2%, 6.3% and 2.1%, respectively. Negative emotions triggered seizures in 38.9%, while positive emotions inhibited them in 14.5%. Sensory triggers were significant: loud sounds affected 20.7%,visual stimuli 10% and environmental factors (e.g.hot water,physical stress) over 15%. Seizures occurred within seconds in 12.8%, minutes in 26.6%, hours in 17.5% and days in 0.2%, with immediate onset in 10.7%. Voluntary provocation occurred in 4.7%, while 12.1% could avoid seizures. The impact of 76 additional triggers will be addressed in the presentation.

Conclusions

Key triggers include sleep deprivation, emotional/physical stress, loud sounds, phenomena of déjà vu and alcohol consumption. Most effective inhibitors were physical activities (e.g. sports, singing, orgasm) and positive emotions. Some stimuli (e.g. light, fever, menstruation) had dual effects. Fewer patients could voluntarily provoke seizures, while more than twice as many could suppress or avoid them. Seizures typically occurred within minutes post-trigger, followed by hours, seconds and immediately, with rare cases after days. Based on patient responses, 6.76% may exhibit reflex epilepsy traits. However, further evaluation via EEG, provocative tests, neuroimaging or genetic analysis is needed.

The study received no funding.

Retrospective Analysis of Patients in Myasthenic Crisis Hospitalized in Reference Neuromuscular Centre in 2023-2024.

Authors

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Introduction

Myasthenic Crisis (MC) is a life-threatening condition of Myasthenia Gravis (MG), characterized by respiratory muscle weakness requiring intubation. It occurs in 10-20% of patients with generalized MG during disease course.

Aim of the study

The aim of this study was to assess preceding factors of MC, intubation and hospitalization length and complications of MC.

Materials and methods

A retrospective analysis of hospital medical records of all patients with MC hospitalized in the Neurology Department of Central University Hospital of Medical University of Warsaw from 1st of January 2023 to 31st of January 2024. Patients' demographics, MG history, preceding factors, intubation and hospitalization length, treatment and complication of MC were analyzed.

Results

There were 9 MC patients (M: 44.4%), 1 patient (11.1%) had a history of MC in the past. The mean age at MC onset was 62+/-27.6 years (14-99). 77.78% of patients had LOMG. Mean MG duration until MC was 26.3 +/- 26.1 months (1-84), for EOMG 28+/-26.9, for LOMG 25.9+/-28.0 months. 100% of the patients were AChRAb(+) MG. In 22.2% of patients there was a known preceding infection before MC, most commonly pneumonia (11.1%) and urinary tract infection (UTI, 11.11%) but in 66.7% elevated CRP, in 33.3% bacteriuria and leucocyturia at admission were found. 11.1% of MCs were preceded by rapid change in therapy, 11.1% by electrolyte disturbance. All the patients were electively intubated, in 44.4% pCO_2 retention (>50mmHg) was found in the last blood gas analysis directly before intubation. 22.2% of patients were treated with IVIG, 44.4% with PLEX, 33.3% required both (IVIG after PLEX). No in-hospital death was recorded. Mean length of intubation was 15.7+/-10.2 days (5-29). Mean ICU hospitalization length was 32.4+/-15.2 days
(10-56). MC was complicated with pneumonia (77.8%), sepsis (22.2%), pulmonary embolism (11.1%), ICU neuropathy (11.1%), UTI (11.1%), sepsis, 1 patient required tracheostomy (11.1%). 100% of patients after MC were treated with glucocorticoids, 55.56% with nonsteroidal immunosuppression.

Conclusions

The most common known preceding factors of MC are infections as well as rapid change in the standard therapy but still in number of cases no known preceding factor can be identified. MC remains life-threatening condition but with accurate diagnosis and appropriate treatment including elective intubation due to progressive symptoms of acute respiratory insufficiency and inducing treatment with IVIG or PLEX, can be reversible.

Sedentary Lifestyle Is a Modifiable Risk Factor for Cognitive Impairment in Patients on Dialysis and after Kidney Transplantation

Authors

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Introduction

Chronic kidney disease (CKD) is a risk factor for cognitive impairment (CI), and this risk is the highest in patients with end-stage kidney disease (ESKD). The possible mechanisms contributing to CI in CKD are not fully understood. However, as a multifactorial disease, CI may be influenced by several potentially modifiable lifestyle and behavioral factors that may reduce or increase the risk of dementia.

Aim of the study

The aim of this study was to evaluate the associations between the known modifiable risk factors for dementia and the risk of CI in patients with ESKD treated with renal replacement therapy. The Charlson Comorbidity Index and the risk of CI in patients with ESKD were also assessed.

Materials and methods

In this cross-sectional study, 225 consecutive patients with ESKD treated with different modalities of renal replacement therapy were assessed for cognitive decline using the Addenbrooke's Cognitive Examination (ACE-III) test. Information was also collected on modifiable risk factors for dementia, medical history and demographics.

Results

This study included 117 patients after kidney transplantation (KT) and 108 patients with ESKD undergoing peritoneal dialysis and hemodialysis. The prevalence of modifiable risk factors for dementia differed between the groups; KT patients were more likely to be physically active, residing in cities with populations of less than 500,000 inhabitants, and were less likely to suffer from depression. Furthermore, the KT group had a lower Charlson Comorbidity Index score, indicating less severe comorbidities, and a lower risk of CI (3.6 ± 1.67 vs. 5.43 ± 2.37; $p = 0.001$). In both the KT and dialysis groups, patients with CI were more likely to have a sedentary lifestyle (45% vs. 9%, $p = 0.001$ and 88% vs. 48%, $p = 0.001$, respectively), whereas lower educational attainment and depression had a significant negative impact on ACE-III test results, but only in KT patients. Finally, cognitive function in dialysis patients was negatively affected by social isolation and living in urban areas.

Conclusions

Modifiable risk factors for dementia, particularly a sedentary lifestyle, are associated with a higher risk of CI in patients treated with different renal replacement therapy modalities. As CI is an irreversible condition, it is important to identify lifestyle-related factors that may lead to dementia in order to improve or maintain cognitive function in patients with ESKD.

This research received no external funding.

Significance of Macroscopic and Microscopic Features of meningiomas in Surgical Treatment and Prognosis

Authors

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Introduction

Meningiomas are the most common primary intracranial tumors arising from the arachnoid mater. Their clinical manifestation may vary from incidental non-symptomatic findings to recurrent and malignant infiltrative tumors. The 5th 2021 World Health Organisation (WHO) classification categorises meningiomas into three grades of their increasing malignant potential and includes histopathological and molecular features. Thus, differences in clinical course require consideration of various parameters beyond sole grading.

Aim of the study

The aim of this study was to examine the difference in the clinical course of meningiomas depending on their pathologic subtype and brain invasion.

Materials and methods

This is a retrospective analysis of the history of patients with intracranial meningiomas treated surgically in the Department of Neurosurgery in the years 2009-2024. We examined 498 patients whose full medical records were available, including tumor localisation and size, histopathological subtype, brain invasion status combined pre- and postoperative neurological status and history of recurrence. Data was collected, stored in database and analysed statistically.

Results

Analysis was performed on 437 cases of G1, 53 cases of G2 and 8 cases of G3 meningiomas according to their histological subtype. Macroscopic brain invasion was present in 10, 25 and 38% of cases respectively. Statistical significance was observed in higher recurrence rate in cases of higher histological grades and was not influenced by macroscopic brain invasion. On the other hand, brain invasion but not histological grade was associated with postoperative neurological deterioration.

Conclusions

Our material depicts how different parameters of meningiomas influence the clinical course and prognosis. It warrants inclusion of multiple features in their management and neurosurgical practice.

The Impact of Chronic Anticoagulation on ICU Outcomes in Ischemic Stroke Patients: A Retrospective Cohort Analysis from MIMIC-IV

Authors

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Introduction

Stroke remains a leading cause of morbidity and mortality, often requiring intensive care management. However, the impact of chronic anticoagulation on survival and complications in ischemic stroke patients admitted to the ICU is unclear. This study explores whether prior anticoagulation therapy modifies ICU outcomes.

Aim of the study

To determine if pre-ICU anticoagulation influences ICU survival in ischemic stroke patients and to assess its effects on length of stay, hospital mortality, and major bleeding.

Materials and methods

Using a retrospective cohort design, we examined adult ischemic stroke (ICD-10 I63.) patients in MIMIC-IV admitted to the ICU ≥24 hours. We excluded hemorrhagic stroke (I61.), missing medication data, and hospice discharges. Chronic anticoagulation (warfarin, DOACs, or long-term heparin) before ICU admission was our primary exposure; non-anticoagulated patients served as comparators. We collected baseline demographics and comorbidities. Outcomes included ICU and hospital mortality, length of stay, and major bleeding. We performed t-tests and chi-square analyses, followed by Kaplan-Meier survival curves with log-rank tests. Logistic regression modeled ICU mortality, adjusting for age, CHADS-VASc, renal function, and sepsis. Propensity score matching was employed if baseline imbalances arose. Moreover, we performed advanced predictive modeling (logistic regression, symbolic regression, XGBoost), splitting data into 70% training, 10% validation, and 20% testing, and determine the best threshold using Youden's index.

Results

Among the preliminary cohort, 30% were on chronic anticoagulation. Baseline characteristics indicated more atrial fibrillation in the anticoagulated group. Kaplan-Meier analysis showed no significant difference in ICU survival (log-rank p=0.08), though trends favored reduced hospital mortality. Adjusted regression gave an OR near unity (OR=1.02, 95% CI 0.85–1.21) for ICU mortality. Preliminary CHADS-VASc-based models yielded an AUC of 0.69, with a slight but nonsignificant rise in major bleeding.

Conclusions

Pre-ICU anticoagulation did not substantially alter ICU survival in this early analysis, although mortality trends were lower in anticoagulated ischemic stroke patients. Minor increases in bleeding risk were observed. While our findings are preliminary, they suggest that prior anticoagulation may offer some protective effect, definitive conclusions require further validation with a fully powered cohort and advanced predictive modeling to clarify clinical benefits.

Obstetrics, Gynecology & Perinatology Session

Session Coordinators:
Julia Sieńczyk, Iga Łukasiewicz

Knowledge and behavior of female students non-medical fields of study cervical cancer prevention'

Authors

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Introduction

Cervical cancer remains one of the most common malignancies among women in Poland, with high mortality rates and low five-year survival. In 2020, 3,862 new cases and 2,137 deaths were recorded, with most diagnoses occurring at an advanced stage. Early detection significantly improves treatment outcomes.

Aim of the study

This study aimed to assess the knowledge and health behaviors of female students in non-medical fields regarding cervical cancer prevention

Materials and methods

The research included an online survey conducted between April 19 and May 7, 2023, involving 158 participants who completed a 37-question questionnaire covering cervical cancer knowledge, preventive behaviors, and demographic factors. Additionally, a review of English-language scientific literature was conducted to provide context and compare findings with global research on cervical cancer awareness and prevention.

Results

Results indicate that prevention attitudes are influenced by sociodemographic factors such as social conditions, age, and having children. While awareness of cytological exams is satisfactory, knowledge about HPV vaccination and hormonal contraception is low. Most students engage in preventive behaviors, including avoiding smoking, maintaining a healthy diet, and undergoing regular screenings.

Conclusions

These findings highlight the need for targeted educational initiatives to improve awareness and prevention efforts.

Assessment Of Quality Of Life And Social Activity Of Women Of Post-Reproductive Age According To The Results Green Scale And Kupperman Menopausal Index

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Introduction

Increasing life expectancy and prolongation of working age today acquires not only medical, but also socio-economic importance both in Ukraine and in other countries of the world.
According to forecasts of the World Health Organization (WHO), in the world by 2050 about 1.2 billion women, that is, about a sixth of the world's population, will be in the postmenopausal period. The importance of studying this problem is determined by the fact that it has social, medical and demographic significance.

Aim of the study

to assess the quality of life and social activity of women of reproductive age, by conducting questionnaires and sanitary and educational work among the population.

Materials and methods

We interviewed 150 women aged 50 to 65 years: of which Zhytomyr - 50, Khmelnytsky -50, Ternopil - 50 respondents. To assess the quality of life of women, we used the Green climacteric scale, and the Kupperman menopausal index.

Results

The average age of patients was 58 ± 2.5 years, the beginning of menopause was noted 50 ± 1.33 years. We found that 72% of respondents work in a public institution and 28% of people do not work or are pensioners. It was determined that 67% live in rural areas, and 33% are residents of the city. Cardiovascular disorders, namely arterial hypertension, were observed in 40% of respondents, diseases of the endocrine system: type 2 diabetes mellitus -7%, thyroid disease - 13%, and had an aggravated hereditary history (menopausal syndrome) - 10%. According to the results of the assessment of Green's climacteric scale, we found the presence of anxiety or depression - in 55% of respondents of them Zhytomyr - 19%; Khmelnitsky - 20%, Ternopil - 16%. The presence of somatic disorders - 51%, of which Zhytomyr - 16%; Khmelnitsky - 18%, Ternopil - 17% Violation of vasomotor function -16% of them Zhytomyr - 6%; Khmelnitsky - 5%, Ternopil — 6%. Analyzing the Kupperman menopausal index, we found that 66% of respondents have a weak manifestation of menopausal syndrome, and 15% of women surveyed have a moderate degree.

Conclusions

According to the results of our study, 53% of women did not know that the symptoms they experience are related to menopause, or that there are consultations and treatment options that can help and improve their quality of life. That is why the complex of preventive measures that we proposed will provide an opportunity to prevent a number of somatic, vasomotor, psycho-emotional manifestations in women of the climacteric period.

Analysis of Pregnancy and Perinatal Outcomes of Preterm Birth Complicated by Preterm Rupture of Member

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Introduction

Preterm birth (PB) remains a leading factor of perinatal morbidity and mortality, with a frequency of 10% and no downward trend. Almost half of preterm cases are preceded by preterm rupture of membranes (PRM), significantly increasing neonatal risks.

Aim of the study

To evaluate the course of pregnancy and the consequences of preterm birth in women with preterm rupture of membranes in preterm pregnancy.

Materials and methods

A retrospective clinical and statistical analysis of 287 pregnancy and childbirth cases and newborn observation cards that were treated and delivered at the Kyiv Maternity Hospital in 2021-2024. Patients were divided into the main group (MG) - 123 cases of PB with PRM, the comparison group (CompG) - 105 cases of PB without PRM, and the control group (CG) - 59 cases of women with full-term pregnancy and urgent delivery. Statistical processing was conducted using descriptive and variational statistics. Differences were defined as possible at $p<0.05$.

Results

Over half of the pregnant women in the MG - 67 (54.5%) had five or more sexual partners (CompG - 33 (31.4%), CG - 12 (20.3%), $p<0.05$), every fourth - 31 (25.2%) had early or late menarche (CompG - 23 (21, 9%), CG - 4 (6.7%), $p<0.05$), which was reflected in a significant minority of gynecologically healthy pregnant women among MG women - 24 (19.5%) (CompG - 33 (31.4%), CG - 37 (62.7%), $p<0.05$). The reproductive history was dominated by spontaneous miscarriages (MG - 17 (19.7%), CompG - 6 (7.2%), CG - 2 (8.0%), $p<0.05$) and preterm births (MG - 9 (10.5%), CompG - 14 (16.3%). The highest concentration of birth streptococcus was found in the vaginal biocenosis of MG women (Str. Agalactiae - 71 (57.7%) / 4.61±0.39 lg CFU/ml (CompG - 10 (21.3%) / 4.02±0.43 lg CFU/ml, CG - 2 (16.7%) / 4.12±0.41 lg CFU/ml, $p<0.05$). Newborns born to women of MG had the majority of cases of severe asphyxia - 77 (62.6%) (CompG - 38 (36.2%), CG - 4 (6.7%), $p<0.05$), type I SRB - 52 (42.3%)(CompG - 18 (17.1%), CG - 2 (3.4%), $p<0.05$), antenatal infection - 72 (58.5%)(CompG - 13 (12.4%), $p<0.05$).

Conclusions

Women with the presence of these risk factors should be classified as a high-risk group for preterm labor complicated by preterm rupture of membranes at the stage of pregnancy planning and antenatal care. Vaginal infections play a key role, highlighting the need for early detection and treatment. Additionally, prematurity, Streptococcus Agalactiae carriage, and latent period duration significantly impact neonatal complications, necessitating prolonged neonatal intensive care.

Assessment of the Diet of Breastfeeding Women in Maternity Wards in Kraków

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Introduction

Breastfeeding is the gold standard of infant nutrition. The milk produced by the mother provides all the essential nutrients necessary for the proper growth and development of the child. Although milk production occurs independently of the mother's nutritional status, it may deplete her energy reserves and micronutrient stores. For this reason, a breastfeeding woman's diet should be carefully balanced daily to ensure the intake of all essential nutrients. First days after childbirth are a particularly sensitive nutritional period for both mother and child, making it crucial to focus on dietary needs in maternity wards.

Aim of the study

The aim of this study was to conduct a qualitative and quantitative assessment of meal plans intended for breastfeeding women in maternity wards in Kraków. This paper presents partial results—specifically, the qualitative assessment of meal plans—from a master's thesis of the same title.

Materials and methods

The study covered four hospitals with active gynecology and obstetrics departments in Kraków. The qualitative assessment of meal plans was conducted using a scoring method by Starzyńska and the Bielińska test with modifications by Kulesza et al.

Results

According to the Starzyńska scoring assessment, the meal plans for breastfeeding women in hospitals A, B, C, and D received 17, 25, 20, and 20 points, respectively, indicating unbalanced dietary provisions and the presence of errors that could be corrected. The Bielińska test, modified by Kulesza et al., showed that most main meals (breakfast, dinner, and supper) were classified as rational—types 5, 6, and 7. Additionally, the study revealed that the meal plans featured a high frequency of vegetables, fruits, and dairy products.

Conclusions

The hospital diet offered in maternity wards should be properly balanced, with the majority of meals being nutritionally appropriate. Eliminating all dietary errors in meal plans is crucial.

Comparative Analysis Of Vitamin D Content In Pregnant Women With Vomiting And In Women With Physiological Course And Trimester Of Pregnancy

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Introduction

The most common complication of early pregnancy is nausea and vomiting of pregnant women. Vomiting of pregnant women is a pathological condition that occurs in the early stages of pregnancy up to 16 weeks and is accompanied by unpleasant symptoms for the woman. In today's conditions, the frequency of nausea and vomiting is observed in 60-80% of pregnant women, and the need for hospitalization and special treatment occurs in 12-17.8% of pregnant women. In case of impaired function of the hepatobiliary system, vomiting is observed three times more often. There is evidence that vitamin D plays an important role in maintaining normal liver function. According to the International Endocrinological Society, vitamin D deficiency is determined by the level of 25(OH)D in the blood serum less than 20 ng/ml, 20–30 ng/ml is insufficiency, the optimal level is more than 30 ng/ml.

Aim of the study

Determine vitamin D levels in pregnant women with vomiting and in women with a normal first trimester of pregnancy.

Materials and methods

100 pregnant women with symptoms of vomiting of pregnancy (main group) were examined for the content of vitamin D in the blood serum, and the control group included 30 women with a physiological course of the first trimester of pregnancy.

Results

The study compared vitamin D levels in pregnant women with vomiting (the main group) and without (the control group). Main findings: Only 18% of pregnant women with vomiting had normal vitamin D levels, while in the control group this figure was 63.3%. Vitamin D deficiency was observed in 38% of women in the main group and 30% in the control group. Vitamin D deficiency was found in 44% of pregnant women with vomiting and only in 6.7% of the control group. A relationship was also established between the severity of vomiting and vitamin D levels: with a mild degree of vomiting, normal D levels were found in 61.1% of women. With a moderate degree - only in 33.3%. With a severe degree - only in 5.6%, while vitamin D deficiency reached 65.9%.

Conclusions

The results of the study demonstrated that pregnant women with vomiting have a deficiency and insufficiency of vitamin D, which requires therapeutic correction. In a third of pregnant women with a physiological course of the first trimester of pregnancy, an initial deficiency of vitamin D is observed, which, if pregnancy complications occur, may lead to an absolute deficiency of this vitamin. Vitamin D deficiency and deficiency are directly correlated with the severity of vomiting.

Comparison of Pregnancy and Neonatal Outcomes Following Elective and Emergency Cerclage Insertion: a Ten-year Retrospective Cohort Study.

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Introduction

Cervical insufficiency (CI) is a painless cervix dilation in the second or early third trimester due to a structural or functional defect. However, CI is often diagnosed retrospectively. It causes the inability of the cervix to retain the fetus. This condition increases significantly the morbidity associated with extreme. Women diagnosed with cervical incompetence and dilatation in midtrimester are offered interventions to prolong the duration of pregnancy, with the mainstay of therapy being emergency cerclage. A prophylactic cerclage may be provided for women with a history of extremely preterm birth due to isthmic cervical incompetence.

Aim of the study

The aim of this study was to compare the obstetric outcomes of elective and emergency cerclages.

Materials and methods

A 10-year retrospective analysis, from January 1, 2015, to February 29, 2024, of pregnancies with indications for cervical cerclage. Data on pregnancies and neonates were collected to compare study groups.

Results

Of the 114 pregnant women who underwent cervical cerclage, 34 were excluded from further analysis due to incomplete perinatal data. The final analysis included 80 patients, of whom 75 were singleton pregnancies and 5 were twin pregnancies. Prophylactic cervical cerclage was performed in 47 (59%) and emergency cerclage in 33 (41%) of all analyzed cases. No cases of iatrogenic membrane rupture were noted during the cerclage procedure. Births after 37 weeks of gestation were more common in the prophylactic cerclage group ($p = 0.041$). Pregnancies ending in labor before 28 weeks of gestation and between 28 and 32 weeks of gestation were significantly more common in the rescue cerclage group ($p < 0.0001$). The mean prolongation of gestation (measured as the period between cerclage insertion and delivery) was higher in the elective cerclage group compared with the elective cerclage group (18.3± vs. 12.3± weeks; $p < 0.0001$). The mean gestational week at cerclage removal was also higher in the elective group (36± vs. 31.4± weeks; $p = 0.027$). Deliveries in the extreme prematurity period were 3 times more frequent in the rescue cerclage group.

Conclusions

Emergency cerclage effectively prolongs pregnancy and is a safe procedure in urgent cases. Proper patient selection and perinatal experience may play a significant role in determining when to decide to perform cervical cerclage, as earlier placement of prophylactic cerclage sutures is associated with a lower risk of extremely premature birth.

Comparison of the Prevalence of Seminal Plasma Allergy Symptoms with Confirmed Seminal Plasma Allergy Rates in Lithuania

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Introduction

Human seminal plasma (HSP) allergy is a rare clinical diagnosis characterized by localized or systemic allergic reactions to seminal plasma proteins. While the condition is likely underdiagnosed due to limited awareness, its true prevalence remains unclear.

Aim of the study

The aim of our study is to assess the prevalence of symptoms resembling HSPA, identify commonly reported manifestations, and determine whether women experiencing these symptoms have a true allergy to seminal plasma.

Materials and methods

A total of 298 women participated in this study. Initially, an anonymous online questionnaire was conducted, inviting women who had had contact with men's semen to participate. The questionnaire included questions regarding allergological anamnesis and clinical symptoms after contact with sperm during or after sexual intercourse. Additionally, 40 women were tested with a skin prick test (SPT) using centrifuged semen to identify allergic reactions to seminal plasma. A positive test result was defined as a wheal with hyperemia equal to or greater than that of the histamine control. The data obtained was analyzed using MS Excel and IBM SPSS Statistics 28.0.

Results

Out of 298 women, who participated in the survey, 110 (36,91%) reported allergy-like symptoms after contacting sperm. The most frequently reported localized symptoms included genital discomfort (63,64%), burning (52,73%), redness (44,55%), and itching (60,91%). Notably, only 24,33% of women who participated in a survey and experienced allergy-like symptoms, consulted with a medical professional regarding this issue. Of the 40 women who underwent SPT, only 2 (5,00%) exhibited a positive allergic reaction to HSP. Both women reported having experienced symptoms similar to HSP allergy at least once in their lifetime. Women with confirmed allergy to seminal fluid were sensitized to the dog allergen Can f 5, a prostatic kallikrein protein expressed in the male dog's prostate.

Conclusions

In conclusion, the study highlights a significant proportion of women report symptoms suggestive of HSP allergy, yet medical consultation remains infrequent. However, true allergic sensitization to seminal plasma appears to be rare. The observed cross-reactivity with Can f 5 suggests a possible immunological link between HSP allergy and sensitization to prostate-derived allergens.

Delivery Outcomes Of Women With And Without COVID-19 Infection During Pregnancy

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Introduction

This study compares delivery outcomes between women with and without COVID-19 during pregnancy.

Aim of the study

To evaluate delivery outcomes based on whether the mother had a COVID-19 infection during pregnancy or not.

Materials and methods

A retrospective cohort study covering all women who gave birth at the Obstetrics and Gynecology Department of Lithuanian University of Health Sciences Kauno Klinikos from 01/01/2021 to 12/31/2021 (gestation 22-42 weeks) was conducted. A total of 2954 women with singleton pregnancies were identified from the Birth registry database. Women who at any time during the pregnancy had COVID-19 were included in the COVID group (CG, n=272), and those who did not were included in the non-COVID group (NCG, n=2682). The delivery outcomes of interest included types of delivery, induction, amniotomy, stimulation, postpartum hemorrhage. Characteristics were compared between women who had and did not have COVID-19 during pregnancy.

Results

Most deliveries were carried to term – the average pregnancy duration was similar in both groups with a median of 39 weeks. The overall preterm birth rate was 9.9%, however, in CG the rate of preterm births was significantly higher, 14.0%, $p = 0.017$. The rate of natural deliveries was similar: 71.3% in CG and 74.6% in NCG. It was observed that postpartum hemorrhage was more frequent among mothers in CG, 8.1%, $p = 0.041$. A larger proportion of deliveries started spontaneously (CG 61.0%, NCG 63.7%), with no significant difference between the groups.
However, more than half of the deliveries involved labor induction, specifically 62.9% in the CG group and 62.2% in the NCG group. The most common reason for cesarean section (CS) was repeat cesarean section, with a total of 164 cases (5.6%). When evaluating the CG and NCG groups, the frequency of this indication was similar (CG 4.0%, NCG 5.7%). The second most common reason for CS was unstable fetal condition, accounting for 5.1% in total (150 cases), with similar frequencies in both groups (CG 7.0%, NCG 4.9%). A significant difference was observed when CS was performed due to unstable maternal condition. This reason was more frequent in the CG group, at 5.1%, compared to 1.4% in the NCG group ($p<0.05$).

Conclusions

In both groups, spontaneous vaginal deliveries prevailed but the CG had a statistically significantly higher incidence of preterm births and postpartum hemorrhage. The overall trend for CS did not differ but significantly higher number of CS were performed in the CG due to the mother's condition.

Prevalence Of Primary Dysmenorrhea And Other Menstrual Symptoms And Their Impact On The Learning Factors Among 3rd Year Medical Students At The Lithuanian University Of Health Sciences

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Introduction

Menstrual pain is a frequent issue among young women. Although it greatly affects daily activities, including academic performance, the majority choose self-care over seeking medical treatment [1]. The total prevalence of primary dysmenorrhea among students ranges from 66.1 % to 71.69 % [2] and has shown an increasing trend over the past decade [3]. Irritability, mood swings, and tension are the most commonly reported emotional symptoms, while fatigue and menstrual cramps are the most prevalent physical symptoms during the menstrual phase [4].
Over 70% of girls complain of tiredness, headaches, and appetite changes during their menstrual period.

Aim of the study

(1) To analyse the prevalence of menstrual symptoms; (2) to determine the relationship between menstrual symptoms and learning factors among medical students.

Materials and methods

A cross-sectional study was conducted at Lithuanian University of Health Sciences (LSMU) using an anonymous online questionnaire. A total of 90 third-year Lithuanian medical students from LSMU Faculty of Medicine participated, with a response rate of 45%. Data were analyzed with IBM SPSS Statistics 30.0.0.0. The Chi-Square test was applied for data examination.
Statistical significance was set at $p < 0.05$.

Results

Ninety third-year female medical students participated in this study. Among respondents, 90 % experienced menstrual symptoms. The most common menstrual symptoms reported were lower abdominal pain (80.2 %), irritability (63.3 %), and increased breast tenderness (60 %). Other symptoms, such as gastrointestinal issues (56.7 %) and weakness (48.9 %), were also frequently reported. Most students (45 %) typically studied for 2–4 hours on regular days, but this percentage dropped to 34.6 % during menstruation. When assessing the relationship between menstrual symptoms and academic factors, the lack of motivation was linked to gastrointestinal issues, reduced learning efficiency to irritability, difficulty concentrating to sleep disturbances, and lower academic attendance to weakness and nausea ($p < 0.05$).

Conclusions

Most students experienced menstrual symptoms, negatively affecting concentration, learning efficiency, motivation and academic attendance. Study hours also decreased during menstruation. These findings highlight the need for better academic support and awareness regarding the impact of menstrual symptoms on female students' education.

Reluctance To Certain Methods Of Contraception And The Place Of Residence – Is There An Association?

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Introduction

The popularity of different contraceptive methods continues to grow, including among the young people. In addition, in the Internet era, misinformation about the contraception is omnipresent and many people remain unaware of the real mechanisms of action, side effects or effectiveness of certain methods. All of these factors can significantly influence preferences and opinions about these methods and can create unjustified aversion to some of them.

Aim of the study

To investigate the impact of place of residence on reluctance to certain contraceptive methods.

Materials and methods

The survey included a sample of 414 female students from localities with populations of less than 50,000 (199), 50,000 to 100,000 (45), 100,000 to 500,000 (64) and more than 500,000 (106). The majority of respondents were aged from 18 to 25 years old, with only 10.87% aged 26 years old or more. The data was collected using a 16-question survey distributed to potential female respondents via social media and open for a two-month timeframe. The survey included questions on preferred and rejected methods of contraception.

Results

The majority of respondents were reluctant to use natural methods of contraception (60.1%), while the least aversion was to mechanical forms of contraception (10.1%). 4.4% of women indicated that there was no method they would reject. When comparing responses of participants from cities of more than 500,000 inhabitants and those of less than 50,000 inhabitants, there was a statistically significant correlation (28.3%/40.2%) between place of residence and reluctance to use hormonal contraception other than oral (vaginal ring, patch, implant, injections), as female students from smaller towns were more reluctant to use of aforementioned methods. In addition, we noted a trend regarding preference for oral hormonal contraception containing estrogens and progestins, for which female students from larger cities (over/under 50,000 residents - 45.1%/36.7%) showed greater reluctance.

Conclusions

The results confirm the existence of a correlation between place of residence and reluctance to specific methods of contraception among Polish female students. This relationship may be due to the lower availability of specialized gynecologists with up-to-date medical knowledge in small towns and the resulting lower variety of methods they prescribe or recommend, among which pills containing estrogens and progestins lead the way, as well to the preexisting prejudices.

Vitamin D Levels and PCOS - a Retrospective Study of Patients From the Silesian Region

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Introduction

Polycystic ovary syndrome (PCOS) is one of the most common endocrinopathies in women of reproductive age. In recent years, the role of vitamin D in hormonal and metabolic regulation has received increasing attention, especially in patients with PCOS. Deficiency of this vitamin may contribute to the severity of symptoms of the syndrome by, among other things, affecting ovarian function.

Aim of the study

To retrospectively investigate the existence of a correlation between serum vitamin D (25-Hydroxyvitamin D) levels in patients with diagnosed PCOS, hospitalised between December 2021 and June 2024 at the Department of Gynaecological Endocrinology, Prof. K. Gibiński University Clinical Centre, Katowice, in the context of their place of residence.

Materials and methods

The medical records of 1541 hospitalised patients were analysed for the study. 1343 patients resided in the Silesian region, the remaining 198 patients resided in other provinces in Poland. Women aged 18-43 years participated in the study. Inclusion criteria were: age >18 years, clinically confirmed PCOS.

Results

The largest group consisted of patients residing in the Silesian province (1343 patients) and as many as 54.8% represented the age group 18-25 years. The majority of patients (77%) showed vitamin 25(OH)D deficiency. There was a correlation between the age of patients and serum vitamin D levels regardless of their place of residence. A statistically significant correlation between PCOS type and age was found in the general group of patients, irrespective of place of residence and in the group residing in the Silesian Province. The mean age of the patients is the lowest in the group with PCOS type 1 among all types and is 24.9 regardless of place of residence.

Conclusions

The vast majority of patients with PCOS have deficient or insufficient vitamin D levels. A positive correlation between age and vitamin D concentration is noted in these patients. There is a positive correlation in terms of age differences in the different PCOS phenotypic groups.

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POLSKIE TOWARZYSTWO HEMATOLOGÓW I TRANSFUZJOLOGÓW

Polskie Towarzystwo Onkologii Klinicznej

Analysis of Clinical Data in Hereditary Spherocytosis Patients – Insights of The Children's University Hospital in Lublin

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Introduction

Hereditary spherocytosis (HS) is an uncommon inherited hemolytic anemia that presents a range of clinical manifestations. These can vary from mild to severe forms of hemolytic anemia accompanied by jaundice, hypersplenism, and gallstones.

Aim of the study

The objective of this study is to evaluate the occurrence of HS among children in the Lublin province, along with the clinical and laboratory findings related to these cases.

Materials and methods

The participant group consisted of 37 children receiving treatment at the Department of Pediatric Hematology, Oncology, and Transplantology in Lublin between 2019 and 2024. The diagnosis of hereditary spherocytosis was confirmed for all patients through the EMA test. We reviewed medical records to gather information on: the age of the patient at diagnosis, gender, results of hematological tests, clinical symptoms observed upon clinic admission, family medical history, and any complications.

Results

Over the last five years, a total of 37 patients with HS were identified, with a gender distribution of 43.59% female and 56.41% male. Of these, 70% had a family history of the condition, primarily from maternal (46.15%) or paternal (38.46%) sides. Diagnoses predominantly occurred by age 1 (64.86%), with the oldest diagnosed patient being 11 years old. Spleen enlargement was noted in 62.16% of patients, while only 5.41% showed no enlargement. Gallstones were detected in 10.82% of the cohort, leading to surgical removal in some cases. Blood transfusion requirements varied, with 16.21% not needing any, and others receiving multiple transfusions. Splenectomy was performed in 29.72% of patients, with complications reported in some instances. Additionally, 10.81% experienced a haemolytic crisis, while 40.54% had severe infections requiring hospitalization.

Conclusions

This research represents one of the limited studies conducted in Poland focusing on the clinical and laboratory characteristics of patients with congenital spherocytosis. The findings indicate that the most prevalent symptom was splenomegaly. Most cases of spherocytosis were identified within the first year of life, and there was a noted occurrence of the condition in previous generations. In the studied cohort, boys were diagnosed more frequently than girls, although this difference was not significant. The results indicated no distinct correlation between the clinical presentation and associated clinical outcomes. More extensive studies are needed involving a larger patient population.

None declared

Biochemical and Clinical Predictors of Parathyroid Carcinoma: A Retrospective Analysis

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Introduction

Parathyroid cancer is one of the rarest malignant tumors, accounting for less than 1% of primary hyperparathyroidism cases. Symptoms associated with excessive parathyroid hormone (PTH) secretion and hypercalcemia typically manifest earlier than the invasion of adjacent structures. Macroscopic differentiation between parathyroid carcinoma and benign adenoma is challenging, posing a significant diagnostic difficulty. Primary radical surgical treatment plays a crucial role in reducing the risk of disease recurrence.

Aim of the study

The objective of this study was to identify risk factors that could facilitate the early recognition of individuals with an increased likelihood of parathyroid cancer diagnosis.

Materials and methods

A retrospective analysis was conducted on 344 patients who underwent surgery for primary hyperparathyroidism at the National Institute of Oncology in Warsaw (NIO PIB) between 2017 and 2024. The analysis included clinical and biochemical factors that may aid in distinguishing parathyroid cancer from other parathyroid disorders, such as adenomas.

Results

The study included 344 patients (288 females, 56 males) with a mean age of 56.15 years (range: 18–88). Parathyroid cancer accounted for 2.3% of cases (n=8). Patients diagnosed with parathyroid carcinoma were slightly younger than those with benign lesions (mean age 50.75 vs. 56.28 years, $p>0.1$). The median serum calcium level was insignificantly higher in the carcinoma group (2.96 mg/dL), compared to 2,85 mg/dL in the adenoma group ($p=0.23$). Tumor size and PTH levels were significantly higher in the carcinoma group (10.8 ml vs 1.06 ml, $p<0.001$ and 1290.6 pg/ml vs 224.4 pg/ml, $p< 0.025$, respectively). Importantly, a lower
PTH-to-tumor volume ratio was observed in malignant cases, suggesting a distinct biochemical profile.

Conclusions

Parathyroid carcinoma is characterized by significantly larger tumor size, higher PTH levels, and increased serum calcium concentrations compared to benign parathyroid lesions. These findings suggest that PTH and calcium levels may serve as potential markers for differentiating parathyroid carcinoma from non-malignant conditions. Low PTH-to-tumor volume ratio observed in carcinoma cases may further aid in distinguishing malignant from benign parathyroid diseases. Early identification of these parameters could help in the early detection of parathyroid cancer, optimize treatment strategies, and improve patient outcomes.

Comparison of Standard-of-Care Treatment and Menin Inhibitors in KMT2A-Rearranged and/or NPM1-Mutated Acute Myeloid Leukemia: A Retrospective Observational Study

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Introduction

Acute myeloid leukemia (AML) is an aggressive neoplasm derived from precursor transformed myeloid cells, in which immature blastic cells replace marrow elements. Recent guidelines emphasize the importance of molecular alterations present in AML in therapeutic decisions.
The nucleophosmin 1 gene(NPM1) mutation (NPM1mut) is one of the most common, whereas patients with lysine methyltransferase 2A gene(KMT2A) rearrangements (KMT2Ar) have an unfavorable prognosis. Molecularly targeted therapies, including menin inhibitors (MI) for patients with those alterations remain an area of intense research with ongoing clinical trials.

Aim of the study

The study aims to compare therapeutic endpoints, including overall response rate(ORR),time to response(TTR) and duration of response(DoR), in patients with NMP1 mutations or KMT2A rearrangements treated with the current Standard of Care (SoC) against published data on the same endpoints achieved with MI (Revumenib and Ziftomenib)

Materials and methods

Retrospective, observational study evaluating therapeutic outcomes in 42 patients treated in Holy Cross Cancer Center, diagnosed with AML with KMT2Ar and/or NPM1mut documented by next-generation sequencing.Patient data obtained from electronic medical recordsincluded disease classification, treatment regimens, ORR, TTR, DoR, adverse events (AE) (grade ≥3).A comprehensive literature search was conducted using PubMed.

Results

Of the 42 patients diagnosed with AML included in the analysis, 6 was diagnosed withKMT2Ar and 37 with NPM1mut. Patients were treated according to SoC. In the 1st-line treatment, ORR for both groups was 71.43%. In the 2nd-line, 50%. Revumenib and Ziftomenib's ORR, according to literature data, was appropriately 53% and 25%. The important fact is that MI have been studied for their efficacy inrelapsed/refractory(R/R) AML. TTR of SoC patients were 35 days in 1st and 40 days in 2nd-line, whereas for revumenib it was 57 days. DoR of SoC patients was 207 days after 1st and 189 days after 2nd-line. Comparing to literature, revumenib's treatment DoR was 270 days. For ziftomenib there was no available data for TTR or DoR. In SoC groups of analysed patients, grade 3/4 AE were common.

Conclusions

There is a need to find an appropriate place for MI in the treatment of AML.SoC regimens achieve ORR more frequently than MI, but with shorterDoR. Patients treated with SoC therapies have a higher risk of serious AE.Significant results of this study may influence the current therapeutic approach in AML.

Entosis - an Ambiguous Potential Prognostic Factor in Breast Cancer

Authors

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Introduction

Entosis is a recently described phenomenon in which one cell engulfs a neighboring cell, forming the cell in cell (CIC) structure. Discrepancies concerning entosis occurrence rate (EOR) as a prognostic factor can be found in the literature. In studies based on patient cohorts with various cancers, high EOR seems to be an independent factor of worse prognosis. In the previous study, based on a cohort of breast cancer patients, our team has demonstrated that EOR correlates with Ki67 and HER2 markers expression. However, other studies suggest that CIC formation can be associated with better prognosis.

Aim of the study

The main objective of this study was to assess the potential correlation of EOR with survival status and metastasis formation in breast cancer patients.

Materials and methods

To correlate EOR with survival status, an analysis of human tumor tissue microarray (TMA) slides (core diameter: 1.5 mm; TissueArray.Com LLC; Derwood, MD, USA) was performed. In total, 40 breast cancer specimens were analyzed. Analysis of each specimen was conducted by 7 researchers independently, verified by a certified pathologist. For each analyzed case, information regarding survival status after the 84 months observation period, age, grading, staging, TNM score and expression of Ki67, HER2, ER, PR markers was obtained. After collecting data, a one-way ANOVA statistical test was performed, followed by post-hoc Tukey-Kramer analysis.

Results

EOR in group 1 (patients with primary breast cancer who after surgery and after the observation period were free of cancer) was on average 5,43 entotic structures (ES) per mm2 of tumor tissue. Group 2 (patients who died from cancer during the observation period) was characterized by an EOR slightly lower than group 1 (on average 4.08 ES per mm2). Comparison of groups 1 and 2 did not meet the statistically significant level (p=0,934). Surprisingly, EOR in group 3 (patients who had primary breast cancer and a metastasis to a lymph node, but survived the observation period) was significantly higher (on average 19,7 ES per mm2), reaching statistical significance in comparison with group 1 (p=0,01635) and group 2 (p=0,01054).

Conclusions

Our results suggest that entosis is a regulated process, associated with metastasis formation. However, as entosis is an energy consuming process, patients destined "not to survive" are characterized by lowered EOR. Further research is needed to confirm EOR as a useful prognostic factor. In future studies we recommend correlation of EOR with patients survival status.

This study was supported by the Ministry for Science and Higher Education grant number SKN/SP/568596/2023.

Hematological Parameters as Indicators of the Efficacy of Allogeneic Hematopoietic Stem Cell Transplantation

Authors

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Introduction

Allogeneic hematopoietic stem cell transplantation (allo-HSCT) is the most effective tumor immunotherapy available to date. This procedure is used for the treatment of various high-risk types of leukemia, bone marrow aplasia, and several nonmalignant hematological diseases. Chemotherapy or radiotherapy is part of the conditioning regimen, which weakens the immune system and prepares the body for the engraftment of healthy transplant cells. After the procedure, the patient is monitored for any signs of transplant rejection or graft-versus-host disease (GvHD). Profound neutropenia and thrombocytopenia persisting for four weeks after allo-HSCT suggest an increased risk of GvHD.

Aim of the study

This study aimed to compare hematological parameters in patients 7 days before allo-HSCT, 7 and 30 days after transplantation, as well as to evaluate transplant acceptance in relation to these parameters.

Materials and methods

The results of 36 adult hemato-oncology patients with lymphoma or acute myeloid leukemia, aged 49 ± 13 years, were included in this retrospective study. Patients underwent conditioning according to specified protocols. The 5-DIFF morphology was measured 7 days prior to, as well as 7 and 30 days after the procedure, using an automated hematology analyzerSysmex XN-1000.

Results

Median white blood cell (WBC) counts were significantly different: 3.35 (0.10 - 8.44) G/L (day -7) vs. 0.13 (0.01 - 5.51) G/L (day 7+), ($P<0.001$) and 0.13 (0.01 - 5.51) G/L (day 7+) vs. 4.71 (0.05 - 18.7) G/L (day 30+), $P<0.001$. As a result of the treatment, the platelet (PLT) count decreased significantly one week after allo-HSCT (134.5 (20.0 - 331.0) G/L vs. 23 (3.0 - 315.0) G/L), $P<0.001$. Compared to the values obtained one week after the therapy, a statistically significant increase in PLT was observed one month after transplantation, presenting values of 23 (3.0 - 315.0) G/L vs. 133.5 (15.0 - 388) G/L, $P<0.001$. The number of red blood cells (RBC) remained at a relatively similar level during the monitored period.

Conclusions

Our study showed that bone marrow regeneration in patients following conditioning and allo-HSCT was effective, providing a basis for concluding that the graft was successfully accepted.

Immunological Background of Anti-cancer Responses Modulated by Immune Checkpoint Inhibitors in Non-small Cell Lung Cancer (NSCLS) In Vitro Model.

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Introduction

Lung cancer is the leading type of cancer with high morbidity and mortality regardless of patient's gender. Non-small-cell lung cancer (NSCLC) accounts for about 85% of all lung cancers. Current treatment for NSCLC is based on surgical resection, chemotherapy, radiotherapy, and targeted therapy, with poor therapeutic effectiveness. Immunotherapy with immune checkpoint inhibitors (ICIs) has revolutionized the treatment of NSCLC. Despite much progress in the understanding of immunological responses to ICI in lung cancer, there are still many knowledge gaps to fill.

Aim of the study

Our study aimed to assess anti-cancer immunological responses modulated by immune checkpoint inhibitors in the NSCLS in vitro model.

Materials and methods

Lung cancer A-549 and H2030 cells were cultured in the presence of PBMC and selected immune checkpoint inhibitors: anti-CTLA-4, anti-PD-1, anti-PD-L1. After 48 hours, cancer cells were collected to assess changes in proliferation and viability by flow cytometry. Similarly, PBMC were collected to evaluate the differences in their activation status. Finally, cell culture supernatants were used for the assessment of secreted cytokines.

Results

First, we found that anti-PD-L1 was the only one able to further reduce the proliferation of H2030 cancer cells compared to co-culture with PBMC alone. Interestingly, that effect significantly differed from the model involving A549 cells. Subsequently, we demonstrated visually that blockage of the selected immune checkpoint proteins improved the effective reduction of lung cancer cell expansion in co-culture. Furthermore, we confirmed that applying an ICI does not affect lymphocyte viability. Pro- and anti-inflammatory cytokines profiling revealed significant variations in co-cultures between A549 and H2030 cell lines.

Conclusions

Our study showed that the application of immune checkpoint inhibitors modulated immunological response in a way that allowed the maintenance or improvement of at least the anti-cancer effects obtained in the co-culture of lung cancer cells with PBMC. Our study provides the basis for further research on the selected ICIs' effects on anti-cancer responses and their potential for application in NSCLC therapy.

Lymphadenectomy in Treatment of Soft Tissue Sarcoma Patients

Authors

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Introduction

Soft tissue sarcomas (STS) are uncommon malignancies with infrequent lymphatic involvement. Presence of lymph nodes metastases is associated with adverse prognosis, hence the accurate staging and opting for precise treatment option is crucial in patients with STS. The role of lymphadenectomy in treatment of STS has yet to be clarified.

Aim of the study

This study aimed to evaluate effect of lymphadenectomy (LND) on the treatment outcomes in patients with soft tissue sarcomas.

Materials and methods

The long-term survival outcomes of patients undergoing LND at sarcoma unit were retrospectively analyzed. Relapse-free survival (RFS) and overall survival (OS) were estimated using the Kaplan-Meier method.

Results

54 sarcoma patients, who underwent LND, were included in this analysis. Among them, the most common sarcoma type was epithelioid sarcoma - diagnosed in 21 (38.9%) patients, followed by clear cell sarcoma - 13 (24.1%). Other patients were diagnosed with rhabdomyosarcoma - 11 (20.4%) or synovial sarcoma 2 (3.7%). Majority of the patients underwent the LND due to clinically suspected lymph node involvement - 44 (81.5%), but 10 (18.5%) patients underwent completion LND after positive sentinel lymph node biopsy. Among them, in case of only 1 (10%) patient(s) additional metastases were found in the dissected lymph nodes. In 12 (27.3%) patients who underwent the LND due to clinically suspected lymph node metastases, the lymph nodes turned to be metastases-free. The median RFS was 6.1 (95% CI: 4.2 - 13.2) months
(m) in patients undergoing LND due to clinically suspected metastases and 83.7 (95% CI: 17.7 - NA) m in patients undergoing completion LND after positive SLNB. The median OS was, respectively, 20.7 (95% CI: 15.5 - 38.2) m vs 72.7 (95% CI: 50.5 - NA) m. Among the patients, who had LND due to clinically suspected metastases, the absence of lymph node metastases on histopathological examination was related with an improved RFS: 13.6 (95% CI: 6.6 - NA) m vs
4.2 (95% CI: 3 - 12.8) m in case of presence of the metastases (p=0.01).

Conclusions

The lymph node dissection in sarcoma patients requires further investigation. This study suggests that presence of metastases in dissected lymph nodes is related with adverse prognosis.

Personalization in The Diagnosis of Head and Neck Squamous Cell Carcinoma - a Distant Vision of The Future or The Present?

Authors

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Introduction

Squamous cell carcinoma (SCC) in the head and neck region is one of the greatest challenges of modern oncology, both due to its complicated location and aggressive nature. Their presence is associated with a high risk of recurrence and has a significant impact on functions that are crucial to the patient's quality of life, such as speech, breathing, swallowing or facial movements. In addition, the treatment of these tumors requires special attention in the context of maintaining functionality and aesthetics. Fast, precise and comprehensive diagnostics, including both primary and secondary lesions, is a key element in improving patient prognosis. Although histopathology remains the gold standard in oncological diagnostics, it is worth considering an innovative diagnostic approach to improve the effectiveness of early detection of squamous cell carcinoma in the craniofacial and neck areas. The proposed use of infrared spectroscopy (IR) allows for obtaining unique, molecular information on the structure of biological tissues, which opens up new perspectives in the precise detection and asessment of neoplastic lesions in the early stages of the disease.

Aim of the study

The aim of the study was to evaluate the application of infrared spectroscopy as an innovative approach to monitoring molecular changes of neoplastic transformation in head and neck SCC foci.

Materials and methods

Samples were collected from patients referred to Cranio-Maxillofacial Surgery for squamous cell carcinoma (SCC) management. Fourier-transform infrared (FTIR) spectroscopy was conducted using an Agilent Cary 640 FTIR spectrometer, covering 4000–400 cm^{1} at 2 cm^{1} resolution. The obtained spectra underwent chemometric analysis, focusing on the second and third principal components for detailed evaluation.

Results

Our studies have shown that using IR spectroscopy we are able to distinguish cancerous tissue from non-cancerous tissue by identifying characteristic marker bands on the spectra of biopsy samples. These markers correspond to changes at the vibrational level of molecules such as lipids, proteins, nucleic acids and carbohydrates. This means that we are able to detect cancerous transformation at the molecular level, which can be a valuable complement to histopathological diagnostics today.

Conclusions

We believe that with the development of research, the method will be implemented in clinical practice, in the field of early diagnostics, personalized treatment, real-time intraoperative diagnostics and preventive tests.

Prognostic Significance of the Systemic Immune-Inflammation Index in Muscle-Invasive Bladder Cancer

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Introduction

The meta-analyses indicate that the Systemic Immune-Inflammation Index (SII) is an emerging noninvasive biomarker with significant prognostic potential for urothelial carcinoma (UC). Studies have consistently shown that elevated SII levels are associated with a poorer prognosis, regardless of the treatment strategy, tumor type, or specific cutoff values used. This growing body of evidence highlights the potential utility of SII in risk stratification and prognostic assessment of UC patients, making it a promising candidate for further clinical validation and integration into routine oncological practice.

Aim of the study

This study aimed to evaluate the prognostic significance of SII in patients with muscle-invasive bladder cancer (MIBC) undergoing radical cystectomy (RC) in the era of neoadjuvant chemotherapy (NAC).

Materials and methods

A retrospective analysis was performed using data from MIBC patients treated with NAC and RC with curative intent between March 2017 and December 2024. SII was calculated using the formula: SII = P × N / L, where P, N, and L represent baseline peripheral blood platelet, neutrophil, and lymphocyte counts per liter, respectively. Disease-free survival (DFS) and overall survival (OS) were defined as time from treatment initiation to disease progression or death, respectively. Statistical analyses included ROC curve analysis, Kaplan-Meier survival curves, and Cox regression models.

Results

A total of 37 patients were included, with a median follow-up duration of 39.7 months (95% CI: 17.5–48.2). Death occurred in 46% of cases. All patients received NAC, and RC was performed in 78% (29/37) of cases. ROC curve analysis showed that the area under the curve (AUC) for SII in OS evaluation was 0.509, with an optimal cutoff value of 1143.15. Univariate analysis indicated a favorable trend for lower SII levels, ECOG 0/1 status, and cystectomy performance in relation to OS and DFS. However, in multivariable analysis, no independent prognostic factors were identified for predicting DFS and OS.

Conclusions

This study did not establish SII as an independent prognostic factor for DFS and OS in MIBC patients undergoing NAC and RC. However, a favorable trend was observed for lower SII levels, better ECOG performance status, and cystectomy performance. These findings highlight the need for further prospective studies with larger cohorts to better define the role of SII as a prognostic biomarker in MIBC management.

Health Knowledge and Behaviors of Female Students of Non-Medical Fields in Breast Cancer Prevention

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Introduction

The changing structure of society has made cancer the main challenge of modern medicine. Breast cancer is currently the most common type of cancer. Each year, more than 14 million cases of this cancer are recorded worldwide. In most highly developed countries, programs and educational campaigns are conducted to promote a healthy lifestyle and raise awareness about cancer prevention. Although we are still unable to determine the exact causes of breast cancer, there are many risk factors that can be controlled to prevent or minimize the risk of developing the disease. For this reason, breast cancer prevention and the promotion of healthy behaviors are extremely important. Raising awareness among women about prevention methods, symptoms, diagnostics, and treatment of this disease is essential to improving early detection, implementing more effective treatment, and, most importantly, increasing the chances of recovery.

Aim of the study

The aim of this study was to assess the level of knowledge and health behaviors of female students of non-medical fields in breast cancer prevention.

Materials and methods

The research method was a diagnostic survey, and the research technique was a questionnaire. Research tools – A proprietary questionnaire created specifically for this study, consisting of 24 questions, including 4 multiple-choice questions, while the remaining ones were single- choice. In addition, a review of scientific literature was also conducted.

Results

The study showed that female non-medical students have a low level of knowledge about breast self-examination. Only 22.3% knew the correct timing for the exam, while 59.5% were unsure. More than half (53.7%) knew that self-examinations should start at age 20, and 64.25% understood that it involves both visual and tactile examination. Women with a good financial status or a family history of breast cancer were more knowledgeable. Over half (58.7%) had never performed a self-examination, while others did so with varying frequency.

Conclusions

In conclusion, the level of knowledge about breast cancer prevention among female non- medical students is low. It can therefore be inferred that preventive programs and educational campaigns do not effectively reach these groups of women, or that women do not show a willingness to increase their knowledge in this area.

A Case Report of Histopathologically Proven CNS-GvHD, Possibly Triggered by Lenalidomide

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Background

Graft-versus-host disease (GvHD) is one of the major complications following allogeneic hematopoietic stem cell transplantation (allo-HSCT). Organs typically impacted include the skin, liver, and gastrointestinal tract. However, recent evidence suggests that the central nervous system (CNS) can also be a target of chronic GvHD, with some new cases being published. The clinical manifestations of CNS GvHD are highly variable and often nonspecific, which makes diagnosis particularly challenging. It can mimic various neurological conditions, including demyelinating diseases, immune-mediated encephalitis, and cerebrovascular disorders. As it is extremely rare, standardized treatment algorithms are lacking, and the prognosis remains poor. A rare case of histopathologically proven chronic CNS GvHD will be presented, highlighting its clinical features and potential therapeutic considerations.

Case Report

A 43-year-old woman underwent allo-HSCT from a matched unrelated donor for IgA lambda multiple myeloma (MM). 9 months post-alloHSCT (15 days after starting Lenalidomide for disease progression), the patient presented to the VUL SK emergency department with nausea, vomiting, general weakness, and vertigo that lasted for two weeks and worsened. MRI showed subcortical lesions with cerebrospinal fluid analysis showing no signs of neuroinfection. As the patient's condition deteriorated and she developed speech impairments and myoclonus, affecting the left side of the face and I-III fingers of both hands, CNS GvHD was suspected and confirmed histopathologically. High-dose methylprednisolone, mycophenolate mofetil, and ibrutinib were ineffective. Improvement was achieved with extracorporeal photopheresis, rituximab, and ruxolitinib. A sustained CNS GVHD response was reached, and the patient remains in complete MRD-negative MM remission 3 years and 2 months post-transplantation.

Conclusions

This case report illustrates the diagnostic challenges of chronic central nervous system involvement in graft-versus-host disease - a rare complication following allo-HSCT. This case is unique because CNS GvHD was histopathologically confirmed and may have been triggered by Lenalidomide. Further research is essential to improve the management and prognosis of this rare complication.

Does Inherited Predisposition Come with Greater Resistance in Myeloid Neoplasms? A Case Study of AML Patient with Germline Mutation

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Background

In recent years several germline mutations associated with predisposition to myeloid neoplasms, among them acute myeloid leukemia (AML), have been identified. One of them is DEAD-box RNA helicase 41 (DDX41) gene mutation, located on chromosome 5. The 5th edition of the WHO classification of hematolymphoid tumours classifies this variant as myeloid neoplasm with germline predisposition without a preexisting platelet disorder or organ dysfunction.
Obvious impact on choosing and screening familial donor for allogeneic haematopoetic stem cell transplantation (alloHSCT) is recognized. However, since the role of germline mutations in AML is a relatively new discovery, we lack cohort studies. Therefore, our knowledge about treatment and prognosis of these patients is still limited.

Case Report

In 2023 a 49-year-old woman was admitted to the hospital with diagnosis of AML. Next generation sequencing showed FLT3-ITD mutation and DDX41 P/LP germline variant. Because of the FLT3 mutation, the patient initially received induction chemotherapy with DA60 and midostaurin, however she did not respond. Therefore, an urgent need for a reinduction therapy was needed and FLAG-IDA protocol was used. Although disease remission occurred, there was no data on minimal residual disease. At the same time potential familial donor was tested for DDX41 mutation and the results came back negative. Consequently, a decision was made to proceed with alloHSCT. Unfortunately, in March 2024 she reported to our clinic with a relapse and a poor prognosis. This time, however, FISH results showed no changes in the fifth chromosome, while NGS revealed clonal evolution and appearance of somatic mutation TET2. Given that the relapse occurred in less than a year, she was treated with azacitidine and venetoclax and after achievement of remission she was qualified to the second alloHSCT with an unrelated donor. The transplantation was performed in August of 2024. 6-months follow up did not show relapse, however the hematopoietic chimerism is decreasing, which is not a favorable sign.

Conclusions

The treatment of AML patients with germline mutations is highly complex. Although we have some knowledge on how to screen potential transplantation donors, still little is known about a proper choice of induction chemotherapy and managing relapse.

From Luminal to Triple Negative: A Case Report on Receptor Conversion and Adaptive Therapy in Breast Cancer

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Background

Breast cancer is a heterogeneous disease with subtypes that vary in their biology, treatment response, and prognosis. Identifying the tumor subtype using steroids receptors (ER, PR), HER2 expression, and the Ki-67 proliferation index is essential for guiding therapy. However, as the disease progresses, shifts in tumor biology may occur, potentially impacting treatment efficacy. Biopsy of metastatic lesions is therefore pivotal in evaluating these changes and refining therapeutic strategies.

Case Report

The case concerns a female patient primarily diagnosed with luminal breast cancer in 2010 [ER 100%, PgR 90% HER2 1+]. Applied treatment included right-sided tumorectomy and adjuvant radiotherapy, as well as hormone therapy (tamoxifen). In 2020, the patient noticed nodules located on the right breast. Furthermore, an ultrasound examination revealed an 18-mm lesion classified as BIRADS 4c in the left breast . Biopsies of the abnormalities revealed following results: [ER: 100%, PGR: 90% HER2: (0), Ki67: 30%] - left breast, [ER 1%, PGR 0%, HER2 2+ Ki67 40%] -
right breast. The microscopic image and immunoprofile, as well as clinical picture, were consistent with lobular breast carcinoma. The patient underwent neoadjuvant chemotherapy (TC regimen), followed by bilateral mastectomy and subsequent adjuvant hormone therapy (letrozole). By 2021, a progression manifested with aggressive skin lesions and metastases involving the bones, mediastinal lymph nodes and the lungs. Following biopsy indicated receptor conversion to triple negative breast cancer with a high proliferation index. Despite sequential treatment with carboplatin and capecitabine, the disease continued to progress. In October 2023, third-line therapy for TNBC with sacituzumab govitecan was initiated, resulting in a partial response in thoracic nodules and stabilization of bone metastases.

Conclusions

This case highlights the importance of repeated biopsies during disease progression, enabling the monitoring of changes in the tumor's biological subtype and the subsequent adjustment of treatment. Breast cancer, in particular, necessitates such monitoring due to its potential for dynamic shifts in tumor biology, as demonstrated in this case. Regular re-evaluation of receptor status is crucial for optimizing therapy, improving clinical outcomes and tailoring treatment strategies to the evolving nature of the disease.

Genetic Complexity in AML: A Case Report on Rare Genetic Alterations and Treatment Outcomes

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Background

Acute myeloid leukemia (AML) is a heterogeneous hematological malignancy with diverse molecular background and a poor prognosis despite recent progress. AML is characterized by different cytogenetic and/or molecular aberrations, such as gene fusions or point mutations, enabling genetic-based classification.

Case Report

A 39-year-old male presented with gingivitis, recurrent sciatica, and herpes labialis. His blood tests revealed leukocytosis ($27x10^3/\mu l$) with mainly monocytosis, mild anemia, severe thrombocytopenia, and 68% blasts in the blood smear. He received cytarabine as frontline therapy for suspected acute leukemia. A bone marrow biopsy revealed a complex karyotype with KMT2A gene rearrangement involving t(9;11). Molecular testing employing panel sequencing with NGS (next-generation sequencing) identified a pathogenic, canonical BRAF V600E mutation, a variant of uncertain significance in the KMT2D gene, and a novel variant in FLT3-ECD. The patient was diagnosed with AML with KMT2A rearrangement and classified to adverse-risk group according to ELN 2022 guidelines. The patient underwent DA60 (daunorubicin, cytarabine) induction chemotherapy and reinduction with FLAG-IDA (fludarabine, cytarabine, idarubicin, granulocyte colony-stimulating factor). Six months after diagnosis, the patient achieved complete molecular remission and underwent an allogeneic hematopoietic stem cell transplant from an unrelated donor. After 10 months, the patient relapsed with 50% KMT2A rearranged blasts. He received experimental CLIA-VEN (cladribine, high-dose cytarabine, idarubicin, venetoclax) chemotherapy, achieving molecular remission with minimal residual disease of 0.027%, followed by retransplantation four months later.

Despite preemptive VenAza (venetoclax, azacitidine) treatment, he relapsed again and died within two years of diagnosis. Unfortunately, BRAF mutation could not be employed as a therapeutic target in this patient.

Conclusions

BRAF mutations are common in solid tumors but rare in myeloid neoplasms such as AML. Their impact on disease progression remains unclear, though in some studies, BRAF mutations correlate with poor prognosis. In this case, the complex karyotype and BRAF mutation coexisting with other rare genetic alterations potentially influenced poor prognosis and were associated with an aggressive form of AML. Early identification of rare genetic changes using NGS may be crucial for searching for treatment strategies and predicting disease progression in recurrent AML.

Hemophagocytic Lymphohistiocytosis (HLH) Triggered by EBV in the Context of DiGeorge Syndrome – A Case Report

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Background

Hemophagocytic lymphohistiocytosis (HLH) is a life-threatening hyperinflammatory syndrome caused by excessive immune activation, leading to multi-organ dysfunction. It can be primary (genetic) or secondary, often triggered by infections (EBV), malignancies, or autoimmune diseases. DiGeorge syndrome is a rare congenital disorder characterized by thymic hypoplasia, T-cell deficiency, hypoparathyroidism, and congenital heart defects with haploinsufficiency or pathogenic TBX1 variants playing a key role. Its clinical presentation varies and the occurrence of only a few, minor abnormalities may delay diagnosis until adulthood. While HLH is not commonly associated with DiGeorge syndrome, some cases suggest a potential link.

Case Report

In November 2021, a 51-year-old woman with hypoparathyroidism, hearing impairment, chronic neutropenia, and resolved hepatitis C was admitted with high-grade fever (38.9°C), fatigue, and night sweats. Laboratory tests revealed mild pancytopenia (WBC $1.46\times10^3/\mu L$, Hb 9.9 g/dL, PLT $102\times10^3/\mu L$), elevated ferritin (3,315 ng/mL), and high ESR (110 mm/h). A trepanobiopsy was performed and during the hospitalization her condition improved, allowing her to be discharged while awaiting results. A week later, she was readmitted with worsening pancytopenia (WBC $0.8\times10^3/\mu L$, Hb 7.3 g/dL, Plt $15\times10^3/\mu L$), pleural effusion, splenomegaly, and lymphadenopathy.
Additional findings included severe hyperferritinemia (91,000 ng/mL), hypertriglyceridemia (866 mg/dL), and hypofibrinogenemia (149 mg/dL). The combined clinical and laboratory findings were consistent with an HLH diagnosis based on HLH-2004 criteria. There was a high EBV viremia (73,000 copies/mL). The patient was treated with the HLH-94 protocol (etoposide, dexamethasone) and rituximab for EBV. Her condition improved, ferritin normalized and EBV load dropped to 695 IU/mL. She was discharged in good condition. In January 2022, she contracted SARS-CoV-2, triggering HLH relapse. Despite retreatment, her condition worsened, leading to multi-organ failure and death in March 2022. Genetic testing confirmed a TBX1 mutation, diagnosing DiGeorge syndrome, which could contribute to her immune dysregulation and HLH susceptibility.

Conclusions

This case indicates the relationship between genetic immunodeficiency, viral infection, and HLH. It also shows the problems of diagnosing genetic disorders in adulthood, especially if the manifestations of the disease are not pronounced or delayed.

SMARCA4-Deficient Undifferentiated Tumor – An Emerging Challenge in Oncology – Case Report

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Background

SMARCA4-deficient undifferentiated tumor (SMARCA4-DUT) is an aggressive malignant neoplasm discovered in 2015, linked to SMARCA4 (BRG1) gene mutations, which plays a key role in the BAF chromatin-remodeling complex. It progresses rapidly and is extremely invasive.
SMARCA4-DUT mainly arises in the thoracic cavity and is often misdiagnosed due to overlapping histological features with other tumors. At first it was characterized as sarcoma, later as high-grade cancer, but due to its unclear pathogenesis currently stays classified as a undifferentiated tumor. It commonly affects middle-aged smokers, with a median age of 48 years and a notable male predominance. Efficient treatment has still not been established.
Median overall survival revolves around 4–7 months.

Case Report

A 64-year-old male smoker, without any chronic treatment, was referred to the Department of Thoracic Surgery because of SVCS (superior vena cava syndrome), weight loss, and nonspecific chest discomfort. A round shadow in the upper field of the left lung was found on an X-ray.
Further diagnostics with computed tomography (CT) confirmed that the finding was localized in the anterior mediastinum. Moreover, it revealed sternum infiltration, a left lung tumor, metastasis to the adrenal gland, an enlarged retrocaval lymph node, and suspected infiltrative changes in the pancreas. A parasternal mediastinotomy was performed. The intraoperative examination preliminarily showed a poorly differentiated non-small-cell lung carcinoma (NSCLC). Further histopathological and immunohistochemistry examinations revealed the mass as SMARCA4-DUT, with a prominent lack of BRG1 expression. The patient's critical condition significantly limited the available treatment options.

Conclusions

We chose this case to present SMARCA4-DUT, a newly discovered type of tumor that most commonly arises in the thoracic cavity but has also been reported in other regions. Due to its rarity and unknown nature, it remains unclassified and is widely misdiagnosed. As oncology is a continuously evolving field, further research is crucial to improving diagnostic accuracy, establishing optimal treatment strategies, and enhancing patient outcomes. Given the rapid progression and poor prognosis associated with SMARCA4-DUT, ongoing investigations and collaborative efforts are essential to advancing clinical management and improving survival rates.

Ophthalomology

Session Coordinators:
Sylwia Adamus, Jakub Kowalski

Preoperative Oral Bromazepam for Pain and Anxiety Management in Female Blepharoplasty Patients: A Retrospective Study

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Introduction

Upper blepharoplasty (BP), performed for both aesthetic and functional purposes, is among the most common facial surgical procedures. Studies indicate that up to 38% of patients experience significant preoperative anxiety before eyelid surgery, which can negatively affect both medical and psychological outcomes. Noninvasive sedation with oral benzodiazepines is a well-established method for perioperative anxiolysis and can improve the patient experience. However, there is a lack of studies evaluating the benefits of premedication in comparison to control groups in facial aesthetic procedures such as blepharoplasty.

Aim of the study

To assess the effect of preoperative oral bromazepam on pain and anxiety levels in female patients undergoing BP.

Materials and methods

This retrospective study included 113 female patients who underwent BP at the Republic Vilnius University Hospital in 2023. Patients were divided into two groups: the control group (CG) (n=51), which received no premedication, and Group 1 (G1) (n=62), which was administered preoperative oral bromazepam (BZ). Pain and anxiety levels were assessed using the Visual Analog Scale (VAS). Data normality was tested using the Shapiro-Wilk and Kolmogorov-Smirnov tests.
Statistical analysis was performed using the Mann-Whitney U and unpaired t-tests, with a significance level 0.05.

Results

No statistically significant differences were observed in demographic parameters between the groups. Patients in CG reported significantly higher levels of pain during anesthetic injections (Mdn=5) compared to those in G1 (Mdn=2) ($p<0.0001$). Individuals in CG experienced more pain during the operation (Mdn=2) than those in G1 (Mdn=1) ($p=0.0123$). Postoperatively, a higher proportion of patients reported pain in CG than in G1 ($p=0.0327$). Individuals in CG also reported significantly higher levels of preoperative anxiety (Mdn = 5) compared to those in G1 (Mdn=3). A greater percentage of patients in CG felt anxiety during the operation (Mdn=3) compared to G1 (Mdn = 1). Postoperatively, significantly more patients in CG experienced anxiety (Mdn=1) than in G1 (Mdn=0). Patients in CG (Mdn=2) reported experiencing pain for more days postoperatively than those in G1 (Mdn=1) ($p=0.0025$).

Conclusions

Preoperative BZ significantly reduces pain and anxiety before, during, and after blepharoplasty. Additionally, it shortens postoperative pain duration by several days. These findings suggest that BZ is an effective premedication strategy for BP and should be incorporated into daily practice.

Funding: None

Subjective Perception of Chronic Disease Compared to Objective Diagnostic Test Results Assessing the Visual System in Patients Treated for Glaucoma

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Introduction

Glaucoma is a disease characterized by optic nerve damage, often leading to vision loss. Patients with glaucoma may experience anxiety about potential vision loss, which can decrease their quality of life. However, there is often a difference between patients' subjective experiences of visual deterioration and the objective clinical findings.

Aim of the study

To compare the subjective experiences of patients receiving ophthalmic care in a glaucoma clinic with the results of objective diagnostic tests assessing the condition of the visual system.

Materials and methods

The study included 137 patients with different stages of glaucoma optic neuropathy(GON). Patients were assigned to different groups based on the severity: early stage-24 patients, mean age 63.9±14.8 years, moderate stage 53 patients, mean age 70.7±12.6 years and advanced stage 60 patients, mean age 72.1±11.8 years. Each group included patients on one or two medications or who had undergone glaucoma surgery. The subjective feeling of the disease was checked using a specific questionnaire-POEM. The PSS-10 psychological stress-test was used to check the stress level caused by a chronic disease. All patients had ophthalmic examinations included visual acuity tests, spectral-domain optical coherence tomography(SD-OCT) and intraocular pressure(IOP) measurements. The results compared subjective perceptions with objective clinical findings.A retrospective analysis of GON progression and visual acuity decrease in 1 year observation was done.

Results

Nearly 60-70% of patients were scared of losing their vision due to GON. The feeling that the glaucoma interfered with daily life depended on the severity-from 25% in early stage to 40% in advanced stage. Retrospective analysis of 1 year glaucoma follow-up revealed that visual acuity decreased in over 40% of patients and nearly 35% of patients reported a subjective decreasing of their visual conditions. The PSS-10 test showed that patients in the early stage of GON were more stressed about their health compared to patients with more advanced glaucoma.

Conclusions

Most of examined patients had fear of potential vision loss. The impact of the disease on daily life increased with glaucoma progression. Structural changes in the optic nerve and decreasing visual acuity were observed in most of the patients after 1 year follow up. Subjective sensation of visual deterioration wasn't always correlated with objective findings. These results highlight the importance of medical and psychological support in glaucoma management.

The Creation of a New Rapid Access Macular Service for Patients With Neovascular Age-related Macular Degeneration at University Hospital Waterford

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Introduction

Age related macular degeneration (ARMD) is the leading cause of severe irreversible vision loss in Ireland. For those with neovascular ARMD (nARMD), earlier intervention with intravitreal anti-VEGF results in better outcomes. There has been a 26 fold increase in the demand for this service in Ireland in the last decade resulting in demand outpacing the current established pathway in our center. The Royal College of Ophthalmologists Commissioning Guidance states that treatment for nARMD should be offered within 14 days of referral.

Aim of the study

This study aims to evaluate the impact of a Rapid Access Macular Service (RAMS) at Waterford University Hospital on reducing wait times for intravitreal anti-VEGF treatment in patients with newly diagnosed nARMD. The goal of our study was to streamline the referral pathway and minimize any delays in diagnosis and treatment.

Materials and methods

A retrospective analysis of the pathway to treatment for 103 patients currently attending the Macular Unit at UHW for treatment of nARMD was carried out. Data collected included wait times from date of referral to date of clinic visit and first treatment, along with source of referral and number of visits prior to initiating treatment. A new Rapid Access Macular Service (RAMS) was then introduced whereby opticians could refer suspected newly diagnosed nARMD via telephone consultation directly to the dedicated appointment slots in the macular service. This service was prospectively audited, again collecting data including wait times from referral to treatment.

Results

111 eyes of 103 patients were included in the retrospective review. The mean wait time from referral to appointment was 67.3 days and to treatment was 135.1 days. Following the introduction of RAMS, the prospective audit showed a mean wait time of 5.8 days from referral to clinic and 15.8 days from referral to treatment. This represented a 7.8 fold decrease in time waiting from referral to first injection

Conclusions

The initial audit highlighted the inconsistency of referral pathways and lengthy wait times for treatment in the existing service. In the interventional re-audit, newly diagnosed nARMD patients were streamlined to a single clinic avoiding unnecessary delays in diagnosis and treatment. The intervention of the RAMS resulted in reduced wait times from referral to clinic assessment and first anti-VEGF injection treatment for patients diagnosed with nAMD according to auditing standards for macular services by the Royal College of Ophthalmologists.

The Effect of Diabetes Mellitus Type 2 on Corneal Endothelium Cells

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Introduction

Corneal endothelium consists of a single layer of cells that plays a significant role in maintaining the optical transparency of the cornea. Certain conditions can adversely affect corneal endothelial cells. Diabetes mellitus (DM) is a metabolic disease that has a profound impact on various systems in body and may lead to changes in all ocular structures including the cornea.

Aim of the study

The study aimed to evaluate corneal endothelial morphology in patients with diabetes mellitus type 2 (T2DM) and healthy controls. Additionally, the study aimed to identify potential factors influencing corneal parameters in individuals with DM.

Materials and methods

The prospective study included thirty-four patients with T2DM and thirty-two healthy controls. All participants underwent non-contact specular microscopy to evaluate four corneal endothelial parameters in both eyes: cell density, coefficient of variation in endothelial cell size, percentage of hexagonal cells, and thickness. One eye was randomly chosen for analysis, to avoid bias due to the intercorrelation of values between the eyes of the same patient. The duration of DM, age, gender, and HbA1c levels were recorded.

Results

Patients with T2DM presented decreased endothelial cell density compared to controls (2120.567±647.288 and 2414.323±481.895 cells/mm2, p=0.047) and increased thickness (562.367±42.440 and 528.355±55.160 μm, p=0.009). However, the two groups did not differ statistically in any other measured corneal parameter. In the diabetic group, the multivariate analysis revealed a significant association between decreased endothelial cell density and increased HbA1c (p=0.014), but not with duration of DM. There was no statistical association between increased thickness and increased HbA1c or duration of DM.

Conclusions

Our study indicates that the corneal endothelium in patients with DM is affected. Patients with T2DM have lower endothelial cell density and thicker corneas than healthy subjects. Since corneal endothelium is characterized by its inability to renew, DM can consequently induce irreversible cell loss. The clinical significance of our findings suggests a heightened focus on diabetic corneal complications, underscoring the necessity of controlling course of the T2DM and conducting regular eye examinations for patients with T2DM.

A Rapidly Progressing Dacryocystitis Unmasking Underlying B-Cell Non-Hodgkin's Lymphoma

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Background

Dacryocystitis is typically an infectious inflammation of the lacrimal sac, often caused by obstruction of the nasolacrimal duct. However, in rare cases, non-infectious etiologies, such as malignancies, can mimic or present as dacryocystitis.

Case Report

An 85-year-old female patient presented with a small, pale spot in the medial canthus, which gradually swelled. Initially self-treated with compresses, suspecting a common cold. On November 27, 2024, she consulted an ophthalmologist due to increasing swelling around the lacrimal sac. Antibacterial eye drops (Sol. Levofloxacin) were prescribed without improvement. By December 17, 2024, as the swelling progressed, she self-initiated Augmentin 1000 mg. On December 24, 2024, she presented to the ophthalmology emergency unit at University hospital with persistent symptoms. Her medical history was unremarkable except for her daughter's oncological diagnosis. Examination revealed severe swelling in the lacrimal sac area, with ocular motility intact. Given the lack of response to antibiotics and worsening symptoms, a CT scan was performed on December 27, 2024, revealing oncological changes infiltrating retrobulbar tissues, medial rectus muscle, ethmoid cells, and nasolacrimal duct. Antibacterial therapy was discontinued, and symptomatic treatment initiated. Subsequent CT of the abdomen and chest ruled out metastatic spread. On January 2, 2025, she underwent cataract surgery of the right eye with concurrent biopsy from the lacrimal sac region on the left side.

Histopathology confirmed diffuse large B-cell non-Hodgkin lymphoma, stage IVB per Ann Arbor classification. A PET/CT scan on January 30, 2025, identified hypermetabolic activity in the left orbit with bone invasion and cervical lymph nodes. The patient was scheduled for chemotherapy on February 12, 2025. However, she was readmitted on January 31, 2025, due to orbital bleeding and rapid tumor growth. CT confirmed tumor progression. She received corticosteroids and supportive care before transfer to the oncology center.

Conclusions

Rapidly progressive dacryocystitis unresponsive to standard therapy necessitates prompt imaging to exclude malignancy. Early biopsy is vital for definitive diagnosis and timely oncological management. This case highlights the need to consider malignancy in atypical presentations, particularly when symptoms persist despite antibiotics. CT plays a crucial role in differential diagnosis, revealing infiltrative patterns beyond simple infection.

Acute Visual Impairment in a Young Woman: A Case Report

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Background

Acute visual loss can result from various causes, including optic neuritis (ON), ischemic optic neuropathies, retinal artery or vein occlusion, retinal detachment, vitreous hemorrhage, and other conditions. ON is the most common optic neuropathy in young women and is frequently associated with demyelinating diseases. It presents with decreased visual acuity, central scotoma, painful eye movements, and abnormal color vision.

Case Report

A 40-year-old woman presented to the emergency department with acute visual impairment in her left eye as her initial clinical symptom. Ophthalmological examination revealed impaired color vision and significantly reduced visual acuity in the left eye. Best corrected visual acuity (BCVA) was 1.0 (Snellen chart, Landolt C optotype) in the right eye and 0.01 in the left eye. Visual field testing confirmed a central scotoma in the left eye. Eye movements were normal, but a relative afferent pupillary defect (RAPD) was present in the left eye. Fundoscopic examination showed normal optic nerve discs and no retinal pathology. Optical coherence tomography (OCT) revealed normal retinal nerve fiber layer (RNFL) thickness in both eyes. Visual evoked potential (VEP) testing demonstrated delayed P100 latency bilaterally. Neurological examination revealed positive pyramidal and cerebellar signs. Magnetic resonance imaging (MRI) of the brain showed highly active demyelinating lesions, meeting the criteria for spatial and temporal dissemination, along with active left optic neuritis involving the intracanalicular, intracranial, and chiasmatic regions. According to the 2017 McDonald criteria, the patient was diagnosed with multiple sclerosis (MS). Intravenous methylprednisolone therapy (1 g/day) was administered for five days, followed by oral prednisone according to a tapering regimen (1 mg/kg). After treatment, left-eye visual acuity significantly improved (BCVA 1.0), and visual field examination showed no defect. The patient was referred for follow-up consultations with a neurologist.

Conclusions

We present a case of sudden visual impairment due to ON. This case highlights optic neuritis as the initial manifestation of MS and emphasizes the importance of distinguishing it from other causes of sudden visual impairment. Early and accurate diagnosis is crucial for timely and appropriate treatment.

Bilateral Serous Retinal Detachment in the Emergency Setting: A Rare First Manifestation of Metastatic Cancer

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Background

Acute bilateral vision loss is a critical symptom that requires urgent evaluation in the emergency setting, as it may indicate serious underlying conditions, including malignancy. Serous retinal detachment (SRD) is a rare but significant manifestation of systemic disease, and its etiology can range from inflammatory and infectious disorders to neoplastic processes.
Misdiagnosis as an inflammatory condition, such as Vogt-Koyanagi-Harada (VKH) syndrome, can delay appropriate oncologic workup and treatment. We present a case of a patient with bilateral serous retinal detachment who was referred to the emergency department for suspected VKH syndrome.

Case Report

A 49-year-old female with no prior ophthalmologic or oncologic history presented to the emergency department with sudden bilateral vision loss, severely impacting her daily life. She had experienced mild visual disturbances for six months, but in recent days her symptoms worsened significantly. Due to bilateral serous retinal detachment, she was suspected to have Vogt-Koyanagi-Harada (VKH) syndrome. Slit-lamp examination was unremarkable, but fundoscopy and OCT confirmed serous retinal detachment with macular involvement. Ocular ultrasound revealed bilateral choroidal thickening, and laboratory tests showed mild inflammatory markers without signs of infection or autoimmunity. Given the atypical presentation, an urgent systemic workup was initiated, leading to the discovery of a right breast mass with pathologic axillary lymph nodes. Histopathology confirmed invasive ductal carcinoma, and the patient was referred for systemic chemotherapy.

Conclusions

Bilateral serous retinal detachment in the emergency setting requires immediate systemic evaluation, as it may be the first sign of life-threatening malignancy. Early recognition and a broad differential diagnosis are crucial to avoid misdiagnosis. Confusing this condition with an inflammatory disorder, such as VKH, could have delayed life-saving oncologic treatment. This case highlights the importance of rapid multidisciplinary assessment in patients with acute vision loss.

Challenges of Thygeson's Superficial Punctate Keratitis Overlapping with Progressive Keratoconus: A Case Report

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Background

The overlap of progressive keratoconus (KC) and Thygeson's Superficial Punctate Keratitis (TSPK) poses significant diagnostic and management challenges. Keratoconus distorts the cornea, affecting vision, while TSPK adds recurrent lesions, light sensitivity, and discomfort. Both conditions disrupt the tear film, worsening symptoms. TSPK lesions can obscure imaging needed to track keratoconus progression.

Case Report

A 27-year-old male with myopia and progressive keratoconus presented to the Department of Ophthalmology with six months of ocular irritation, tearing, and declining vision. Slit lamp examination revealed granular opacities in the superficial cornea of both eyes without conjunctival hyperemia, leading to a clinical suspicion of TSPK. Initial PENTACAM mapping showed severe corneal steepening (Kmax: right eye 66.0 D, left eye 72.5 D) and thinning (pachymetry: right eye 393 μm, left eye 432 μm). Treatment with dexamethasone 0.1% eye drops, artificial tears, and nighttime ointment was initiated, resulting in symptomatic improvement and slight reductions in Kmax (right eye 65.2 D, left eye 72.2 D). Despite initial stabilization, significant KC progression in the left eye prompted accelerated corneal cross-linking (A-CXL) to halt further deterioration. However, during follow-up, recurrent TSPK exacerbations complicated KC monitoring. Each episode presented with ocular irritation, photophobia,
greyish-white epithelial lesions, and minimal ciliary injection, temporarily increasing Kmax values, particularly in the untreated right eye. These exacerbations obscured corneal topography, delaying critical decisions about KC progression and the need for A-CXL. Recurrent TSPK episodes were managed with topical corticosteroids (dexamethasone or fluorometholone), artificial tears, and adjunctive therapies such as cyclopentolate and oral diclofenac. While TSPK symptoms and lesions resolved after treatment, they frequently recurred, complicating the accurate assessment of KC progression. Ultimately, progressive KC in the right eye was confirmed after TSPK resolution, and A-CXL was performed to stabilize the condition.

Conclusions

This case highlights the diagnostic and therapeutic challenges posed by overlapping TSPK and KC, emphasizing the need for careful management of TSPK to enable accurate KC progression assessment and timely intervention.

How Can Anticoagulant Drugs Lead to Vision Deterioration?

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Background

Hemorrhagic choroidal detachment (HCD) is a rare but serious complication of anticoagulant therapy. It occurs due to serous fluid or blood accumulation in the suprachoroidal space, leading to choroidal elevation. In hemorrhagic cases, the direct cause is vessel rupture, potentially from hemostatic disorders induced by anticoagulants. Risk factors include hypertension, atherosclerosis, previous hemorrhages, and anticoagulant or antiplatelet medications.
Symptoms may involve sudden visual acuity loss, eye pain, and a sensation of fullness in the eyeball. Diagnosis relies on fundus examination, ocular ultrasonography, and optical coherence tomography (OCT), if feasible.

Case Report

The case describes a hemorrhagic choroidal detachment occurring during anticoagulation therapy with a new-generation drug. A female patient presented to the emergency department due to a sudden decrease in visual acuity. She had been taking a new-generation anticoagulant containing rivaroxaban as the active ingredient (a direct and reversible factor Xa inhibitor) for six weeks. Additionally, she was on long-term medication for heart failure and hypertension. She denied any drug allergies. Fundus examination of the left eye revealed a vitreous hemorrhage, preventing further assessment of the posterior segments and optical coherence tomography. An ultrasound examination was performed, revealing two hemorrhagic choroidal detachment bullae. A diagnosis of vitreous hemorrhage with hemorrhagic choroidal detachment of the left eye, likely due to anticoagulation therapy, was made. The examination of the right eye showed no significant pathological changes. The patient was prescribed etamsylate and troxerutin and was advised to switch to an anticoagulant with a lower risk of bleeding complications under the supervision of her attending physician. She was scheduled for a follow-up ultrasound examination of the left eye in one month.

Conclusions

Indications for anticoagulation therapy should be thoroughly assessed before initiation.
New-generation anticoagulants, such as those containing rivaroxaban, may cause more bleeding complications compared to older-generation drugs. Furthermore, their side effects can lead to severe and permanent vision deterioration. Surgical treatment can be considered if discontinuation of the anticoagulant is possible. Unfortunately, even after surgery, the prognosis for vision improvement remains highly uncertain.

Late Metastases of Cutaneous and Uveal Melanoma: A Case Series

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Background

Melanomas are neoplasms arising from melanocytes. Cutaneous melanoma represents 90% of cases, less common are uveal (<4%) and mucosal. Cutaneous melanoma has the potential to metastasize to any organ or site. Common sites include skin, subcutaneous tissue, lymph nodes, lungs, liver, and brain. Metastases typically occur within a few years after the initial diagnosis. Late metastasis is far less common. Uveal melanoma is the most common primary ocular malignancy in adults. Approximately half of patients will die of metastatic disease. It spreads most commonly to the liver (90% cases), lung (24%) and bone. Metastases usually occur within the first 5 years following diagnosis. We herein present 3 cases of patients with a history of melanoma that relapsed more than 5 years after resecting a primary tumor.

Case Report

A 51-year-old male, nonsmoker, presented with cough and hemoptysis over a month. Computed tomography (CT) revealed a 72x76 mm right lower lobe mass infiltrating the right inferior pulmonary vein and left atrium. The patient reported the removal of a lesion from the back 20 years earlier that was diagnosed as melanoma. Bronchofiberoscopy with sampling of the bronchial mucosa revealed a melanoma infiltrate. A 72-year-old female was admitted with a diagnosis of a right lung tumor. She had a history of eye enucleation due to a choroid melanoma over 5 years earlier. A CT revealed a polycyclic 18x17 mm mass adherent to the pericardium and a few smaller subpleural nodules. Right segment 5 and fragments of the right upper lobe were resected. A pathologic exam described melanoma metastases to the lung and pleura. A monitoring CT revealed further metastases in the right upper and lower lobes. A 72-year-old woman with a history of choroid melanoma was admitted to hospital 20 years after the eye enucleation. A roentgenogram showed a round shadow in the left upper lobe. A left upper lobectomy was performed and a pathologic exam revealed a melanoma. After 5 years, a progression of nodule in right segment 6 was detected and a wedge resection was performed revealing another focal lesion of metastasis. 7 years later a hypodense 13x15 mm nodule in hepatic segment 8 appeared. Therefore the patient was referred to the Oncology Department.

Conclusions

Melanoma is an aggressive cancer with a high risk of metastasis and death. No clear consensus exists on how long patients should be under surveillance after 5 years of remission. Therefore we should not undermine the risk of a relapse.

Purtscher-Like Retinopathy in course of Acute Alcoholic Pancreatitis

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Background

Purtscher's retinopathy is an occlusive microvasculopathy linked to cranial trauma, often causing significant visual decline within hours to days. A non-traumatic variant, Purtscher-like retinopathy, occurs with systemic conditions like pancreatitis, renal failure, and autoimmune diseases. Incidence is estimated at 0.24 cases per million annually but may be underdiagnosed due to asymptomatic cases. Prognosis is poor, with only 23% of eyes improving by at least four Snellen lines and 50% by at least two.

Case Report

A 43-year-old male was admitted on January 24, 2025, following a week-long episode of excessive alcohol consumption. His medical history included two prior episodes of acute pancreatitis (2022 and 2023) and a three-year history of chronic alcohol dependence, without previous addiction treatment. Upon admission, he was diagnosed with alcoholic liver disease, acute alcoholic pancreatitis, secondary thrombocytopenia, and visual disturbances. An ophthalmological consultation on January 28, 2025, revealed normal anterior segments in both eyes. The patient's visual acuity was significantly reduced: right eye (OD): 0.2 sc. and left eye (OS): 0.2 sc. A refraction assessment was performed, revealing no significant refractive errors. Intraocular pressure was measured at 12 mmHg (OD) and 13 mmHg (OS). Ocular motility was assessed and found to be normal, with no evidence of diplopia. Pupillary response to light was present following pharmacologic dilation, and color vision was normal. A preliminary visual field examination showed no apparent restrictions. Ophthalmoscopic examination revealed optic discs with well-defined margins, segmental narrowing of retinal vessels, and cotton wool spots within the macula and peripheral retina bilaterally. Optical Coherence Tomography (OCT) confirmed macular edema, while angio-OCT demonstrated ischemic retinal areas in both eyes.
Based on these findings, the patient was diagnosed with Purtscher-like retinopathy. At follow-up on February 4, 2025, the patient demonstrated significant visual improvement. His pinhole visual acuity improved to OD: 0.8, OS: 0.9, and intraocular pressures were recorded at 15 mmHg (OD) and 17 mmHg (OS).

Conclusions

This case highlights a rare presentation of Purtscher-like retinopathy due to acute alcoholic pancreatitis and liver disease, with favorable visual recovery. Early recognition and ophthalmologic evaluation are crucial, as timely intervention may improve prognosis.

The Role of Preventive Examinations in Detecting Asymptomatic Ophthalmic Disorders – Case Report

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Background

Preventive ophthalmic examinations allow for the early detection of conditions that may be asymptomatic but, in advanced stages, can lead to vision loss. They can also indicate systemic diseases, including genetic syndromes. A standard preventive eye examination includes assessing visual acuity, measuring intraocular pressure, and examining the fundus after pupil dilation to detect retinal and choroidal abnormalities. Additional tests, such as ocular ultrasound, fluorescein angiography, or OCT, may be performed if needed.

Case Report

A female patient attended a routine preventive ophthalmic examination with pupil dilation, during which a peripheral retinal nodule was detected. During this visit, an ultrasound and color fundus photography were performed, and an urgent follow-up fluorescein angiography was scheduled. Fluorescein angiography confirmed the presence of a retinal capillary hemangioma, leading to a referral for genetic testing due to suspected von Hippel-Lindau syndrome. During the follow-up visit after angiography, the patient reported a deterioration in distance visual acuity. She admitted to not wearing glasses for a long time. Additionally, she regularly sewed at night under poor lighting conditions. She also reported symptoms of dry eye syndrome. Physical examination revealed multiple café-au-lait spots on the hips and lumbar region, as well as small red lesions on the abdomen. The patient's medical history included multiple organ cysts, restless legs syndrome, and sensory disturbances in the feet (burning, tingling), which were treated with antiepileptic drugs during exacerbations. At the oncology center where she was referred, the diagnosis of von Hippel-Lindau syndrome was confirmed. Diagnosis: Myopia in both eyes, presbyopia, dry eye syndrome, and von Hippel-Lindau syndrome.

Conclusions

This case highlights the importance of performing preventive eye examinations, even in the absence of noticeable ophthalmic symptoms, as they enable the early detection of potentially serious conditions. In this patient, the lesions detected during the preventive examination were part of a broader ophthalmic diagnosis. Along with the presence of characteristic skin changes and organ cysts, they raised the suspicion of a genetic syndrome, which was ultimately confirmed through further testing.

Unusually Long Sickness: A Challenging Orbital Abscess Case

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Background

Orbital abscesses and periorbital infections are conditions associated with a high risk of morbidity due to potential complications such as vision loss and intracranial dissemination. The infections often result from trauma, sinusitis, or hematogenous spread. Secondary infections may aggravate the situation, requiring prompt diagnosis and treatment.

Case Report

A 59 year-old woman presented to the Emergency department with severe swelling of her left orbital region caused by two unconnected traumatic events to the same eye. The initial trauma happened 1,5 months ago, when a box with firewood struck her left orbital region, resulting in inflammation of the area. Antibiotics provided temporary improvement. The second trauma occurred one day before her admission to the ED and involved accidentally hitting her left eye on a wardrobe corner. According to the patient, the second trauma triggered pus discharge from the eyelid. The skin was stiff, suggesting an abscess. After abscess drainage she was admitted to Ophthalmology Department. CT scan the next day revealed periorbital cellulitis, abscess formation with gas inclusions, and sinus involvement. Treatment included antibiotics, corticosteroids, and ointments. She was discharged 5 days later with recommendations on wound care. The patient readmitted after 5 days with complaints of ongoing purulent discharge. Subsequent MRI revealed chronic ischemic changes in the brain, persistent frontal sinus inflammation and a suspicion of osteoma or mycetoma in the left frontal sinus. Older CT dated a year ago described a subdural hematoma caused by a head trauma while being heavily intoxicated by alcohol. The patient admitted having numerous different traumatic accidents in her past medical history. She was discharged after 10 days since her second admission with significant improvement in health status and a necessity for a follow-up visit.

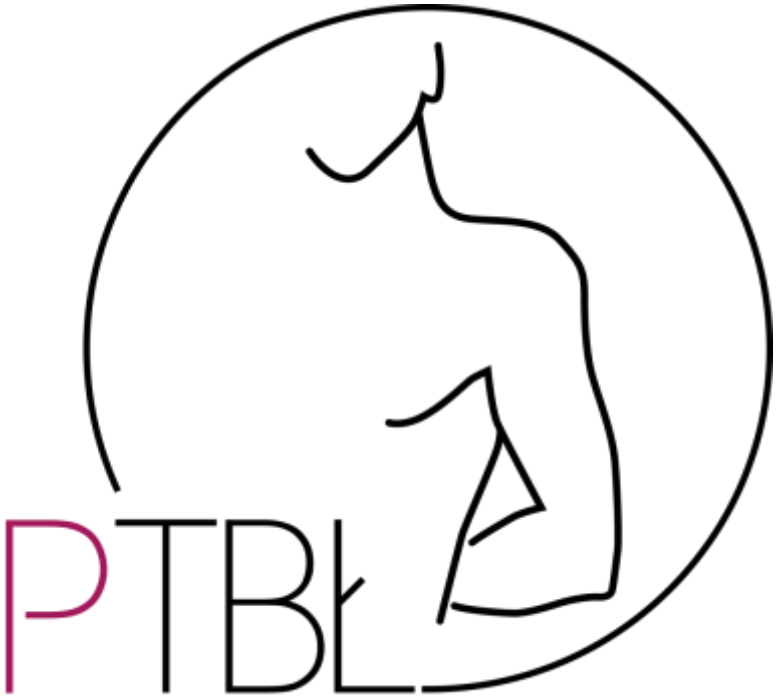
Conclusions

This case underscores the complexity of periorbital infections, particularly in patients with recurrent trauma. Prior to suspected osteoma finding on MRI, poor wound healing and long treatment duration could have been explained by non-compliance and weakened immunity due to chronic alcohol abuse. However, the abovementioned finding might suggest that the described problem had a multifactorial etiology – a combination of alcohol-related consequences and structural changes caused by the process. Proving or denying the proposition requires a deeper investigation and further monitoring of the patient.

Orthopaedics & Traumatology Session

Session Coordinators:
Maciej Mirgos, Jakub Domański

Honorary Patronage:



A Customized Framework for Below-Knee Reconstruction in Combat Trauma Surgery

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Introduction

Combat-related high-energy explosive limb injuries caused by modern weapons occur in 52.3% of cases. Extensive contusions with uncertain tissue condition, along with limb severance and high complication risks, lead to amputations in 10% of injured patients. The primary cause of repeated surgical interventions is the difficulty in determining the optimal amputation level after combat injuries, due to significant soft tissue and bone damage. Below-knee reconstruction procedures are highly complex, as traditional methods are often not feasible and require an individualized approach. A reconstruction that preserves the knee joint is crucial for achieving key functional outcomes, including improved prosthetic use, enhanced mobility etc.

Aim of the study

Is to develop an individualized framework to prevent transfemoral amputations for below-knee combat trauma cases

Materials and methods

A total of thirty patients, aged 23 to 54 years (average age 36.9 years), were included in this study. All participants underwent primary below-knee amputation. The study cohort was divided into two groups: the first (main) group, which consisted of 16 patients, and the second (control) group, which included 14 patients. Patients in the main group required an individualised approach for their residual limb management while the control group consisted of patients whose lower extremities were treated using techniques, such as Burgess amputation. Statistical analysis was conducted using MS Excel.

Results

Patients in the main group underwent an average of 3.4 ± 0.5 recurrent debridements, which was significantly higher than the control group's average of 1.54 ± 0.3 ($p = 0.01174$). The average wound healing time in the main group was approximately 1.91 times longer compared to the control group (121.625 ± 31.2 days vs. 63.6 ± 15.7 days). However, no significant difference in overall healing outcomes was observed between the groups ($p = 0.3843$). Functional assessments in both the post-acute and long-term rehabilitation phases showed no significant differences between the personalized amputation strategy group and the standard amputation strategy group.

Conclusions

A personalized approach to below-knee amputation preserves the knee joint and reduces the risk of transfemoral amputation while achieving similar functional outcomes to conventional methods. Implementing an individualized framework for below-knee reconstruction in combat trauma surgery ensures effective residual limb management and facilitates successful rehabilitation outcomes.

Do Forearm or Hand Bone Injuries Affect Hand Grip Strength in Young Male Adults?

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Introduction

Hand grip strength (HGS) measurement serves as a key metric in assesing neuromuscular function, overall fitness and rehabilitation process.

Aim of the study

The aim of the study was to analyse the impact of various factors like hand laterality, age and previous forearm or hand bone injuries on HGS in young male adults.

Materials and methods

The study was conducted using K-Grip dynamometer, which measured the average HGS of each hand in kilograms, during three 5-second intervals with 3-second rest periods between trials.
The study was conducted on 50 men born between 1998 and 2006. The participants were stratified into groups by age, dominant hand and a history of hand or forearm bone injuries. Average HGS of the dominant and non-dominant hand was measured in all individuals. A comparison was made between the results of the group with past hand or forearm bone fractures and the group without such injuries.

Results

The average HGS of the dominant hand in the group without a history of forearm or hand injuries (39,35 kg) was 2,1 kg higher in comparison to non-dominant hand (37,25 kg). The average HGS value in the group with past injuries of the dominant hand totalled 34,01 kg, meaning it was 5,34 kg lower than in individuals without a history of fractures. Concurrent trend was observed for the non-dominant hand, because men with previous fractures achieved the average HGS result of 35,68 kg, so 1,57 kg higher in comparison to participants without injuries in the past. The highest average HGS value was recorded in the group of males born in 1999 (43,9 kg), whereas the lowest value was observed in men born in 2005 (33,72 kg).

Conclusions

Conditioned by factors like age or upper limb bone fractures, HGS may vary a lot. Based on age, no significant tendencies were observed among participants. Individuals without any injury history achieved higher results in their dominant hands on average. A history of forearm or hand bone injuries led to reduced HGS compared to males with no prior fractures in this region.

Don’t Repeat Our Mistakes- Complications and Management of Total Femur Replacement

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Introduction

Total femoral replacement (TFR) was a technique originally developed to replace the femur after resection of malignant tumours. However, the indications for it have expanded overtime, as it became a limb salvage procedure after failed endoprosthetic replacements and trauma.

TFR is a complex surgical technique associated with high complication rates.

Aim of the study

The aim of this article was to present the management of complications and offer actions to take to reduce the risk for complications.

Materials and methods

A retrospective review of a series of eligible patients from two independent hospitals was conducted. The included patients’ characteristics were collected in a spreadsheet in MS Excel.

Results

The study included 19 patients, 8 oncological cases and 11 cases with TFR as a revision procedure after failed endoprosthetic arthroplasty and/or trauma. Ten patients (53%) suffered local complications. The frequency of complications: hip dislocations four cases (21%), mechanical implant failure 2 cases, infection 4 patients (21%), wound healing problems five patients (26%) and one patient (5%) presented symptoms of an allergy to the implant. Six patients (32%) underwent revision surgeries after the TFR procedure, no patient required amputation.

Conclusions

TFR is a procedure associated with high complication rates, infection and wound healing problems being the most frequent ones. Effective treatment of infection should include: antibiotic therapy, surgical debridement, use of antibiotic-loaded cement to cover the prosthesis, in severe cases a two-stage revision.

Funding: None

Evaluation of Lumbosacral Transitional Vertebrae in Generating Low Back Pain: a Meta-analysis and Systematic Review of the Literature

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Introduction

Lumbosacral transitional vertebrae (LSTV) is a congenital spine anomaly in which the enlarged transverse proccess of fifth lumbar vertebrae can fuse with first sacral segment forming sacralisation or lumbarisation. Low back pain (LBP) has the highest prevalence globally among musculoskeletal conditions and is the leading cause of disability worldwide. Various authors tried to investigate the relationship between LSTV and LBP in their local populations with different results but the correlation remained unclear.

Aim of the study

Aim of this study was to unambiguously determine if LSTV can be an independent cause of LBP.

Materials and methods

Pubmed, Embase and ScienceDirect were searched for clinical-control studies in which authors analyzed prevalence of LSTV in both control group (without low back pain) and in a study group (with low back pain). Only studies where patients had non-specific low back pain with no underlying pathology were included. Pooled odds ratio was calculated using MetaXL under random effects model. The Aqua tool was used to assess the reliability of the included studies. PRISMA guidelines were strictly followed throughout the whole study process.

Results

Our meta-analysis included 12 studies with 9910 patients. Pooled odds ratio was calculated to be 1,35 (95%CI 1.15-1.58) which means that existence of LSTV significantly increases the chances of low back pain. Additional data showed the prevalence of LSTV in symptomatic population to be at 18.9% (95%CI=0.15-0.23) while in asymptomatic population to be at 13.1% (95%CI=0.11-0.15) which confirms the correlation.

Conclusions

Our study is the first to unequivocally show an association between LSTV and LBP globally. LSTV is an independent and significant risk factor for lower back pain. When examining a patient suffering from low back pain, it is important to keep lumbosacral transitional vertebrae in mind as a potential separate cause of pain, especially when there is no other apparent pathology visible on diagnostic imaging. If LSTV is present in such a patient, surgical treatment to resect the enlarged transverse processes of the lumbosacral junction is worth considering.

Gait Analysis Following Unilateral Total Knee Arthroplasty: A Pilot Study

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Introduction

Osteoarthritis (OA) leads to pain, stiffness, and impaired mobility, significantly affecting patients' quality of life. Total knee arthroplasty (TKA) is the best treatment option for end-stage OA, with patient satisfaction rates of 80–85%. With proven techniques and reliable instrumentation surgeons should focus on patients' postoperative care to improve TKA satisfaction rate. Since not all patients experience the same deficits or dysfunctions, rehabilitation seems essential to regain proper gait pattern.

Aim of the study

This preliminary study aims to analyze gait parameters after TKA and provide insights for future research. Our findings may demonstrate that patients can restore a symmetrical gait pattern in both limbs, emphasizing the role of rehabilitation and its impact on the TKA effectiveness.

Materials and methods

We analyzed gait parameters in 40 patients after unilateral TKA. The inclusion criteria were symptomatic primary unilateral OA, classified as grade 3 or 4 on the Kellgren-Lawrence scale and the ability to walk without assistive devices. Exclusion criteria were severe contralateral knee OA, previous lower limb surgery, neurological disorders, mental illness, connective tissue disease, obesity (BMI >35 kg/m^2). Patients were asked to walk 50 meters barefoot with a portable sensor (Baiobit, Rivelo) strapped to their waist. All parameters were measured during a follow-up appointment six months after the surgery. Then the Gait Qualuty Cycle Index value (GCQI%) was calculated from a device-specific formula.

Results

There were 18 females and 22 males included in the study. Mean age was 68 [+/- 6,3] There was no significant difference in between the operated and non-operated limb. A slight difference of the Gait Cycle Quality Index (GCQI%) was observed between the operated and non-operated limb (88.0 vs. 87.5), however no statistical significance ($p>.8$).

Conclusions

This preliminary study showed no significant difference in gait parameters between the operated and non-operated limb after TKA. These findings are highly promising, as they suggest the function of the operated limb is no worse than non-operated one. The results were consistent across all patients, suggesting that gait recovery is independent of the rehabilitation protocol. Although these results suggest a symmetrical walking pattern after TKA, further research on a larger, more representative and heterogenous patients group is needed to assess long-term impact on gait pattern and its possible compensatory mechanisms.

Index Finger Pollicization in Radial Hand Deficiency.

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Introduction

Radial hand deficiency (RHD) type IV, characterized by thumb aplasia or hypoplasia, severely impairs hand function due to the absence of pincer grip. While forearm reconstruction (e.g., ulnarization) addresses skeletal alignment, secondary procedures such as index finger pollicization are critical to restore thumb functionality.

Aim of the study

This study aims to evaluate the surgical technique and functional outcomes of index finger pollicization following ulnarization in children with RHD, with a focus on pincer grip restoration and quality-of-life (QoL) improvements.

Materials and methods

17 patients (21 hands) diagnosed with RHD underwent index finger pollicization. One of the major disabilities of the hand was lack of the pincer grip. Operation was performed according to Manske technique. Patient functional outcomes were evaluated before and 2 months after the surgery. The Shriners Hospital Upper Extremity Evaluation (SHUEE), the Pediatric Outcomes Data Collection Instrument (PODCI) forms were used to assess patients' quality of life (QoL) and upper extremity function.

Results

After 6 weeks of hand immobilization followed by upper extremity rehabilitation, the results were as follows: PODCI mean 67.2 out of 100 (Standardized Mean) in Upper Extremity Scale (mean 48.3/100 preoperatively) and 78 out of 100 (Standardized Mean) in Global Functioning Scale (mean 67.9/100 preoperatively), SHUEE Dynamic Positional Analysis mean score was 57 out of 72 (48.8/72 preoperatively). All patients achieved a functional pincer grip postoperatively, and no major complications were observed during the follow-up period.

Conclusions

Index finger pollicization combined with ulnarization gave satisfying results regarding QoL and upper extremityfunction. Further research needs to be completed in order to assess predictability and efficiency of index finger pollicization.

Outcomes of Femoral Neck Fracture Treatment in Patients Aged 40–65: Osteosynthesis or Hip Joint Arthroplasty?

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Introduction

For patients over 65 with femoral neck fractures, total hip arthroplasty (THA) is recommended, while young patients typically undergo osteosynthesis (OS). This study analyzed patients aged 40–65, where clear indications for either method are lacking.

Aim of the study

To evaluate treatment outcomes for femoral neck fractures in patients aged 40–65.

Materials and methods

A retrospective study analyzed 103 patients treated for femoral neck fractures at Riga Traumatology and Orthopedics Hospital (June 2019–December 2022). Fractures were classified using Garden and Pauwels classifications. Surgical methods and implants were assessed alongside outcomes like hospitalization duration, perioperative results, revision surgery rates, and osteosynthesis reposition quality (e.g., tip-apex distance, neck-shaft angle, Parker's ratio). A telephone questionnaire (53% response rate) evaluated functionality and pain via the Oxford Hip Score (OHS) and Numeric Pain Rating Scale (NPRS). Groups were matched by gender, BMI, and ASA score.

Results

THA was performed on 73 patients (25 cemented, 28 hybrid, 20 uncemented), while 30 underwent OS (19 dynamic hip screws, 10 intramedullary nails, 1 cannulated screws). More unstable fractures (Pauwels III, Garden IV) were treated with THA, whereas less displaced but unstable fractures (Garden II, Pauwels II/III) received OS. THA patients had longer hospital stays and delayed surgery compared to OS (both $p<0.001$), with significantly higher intraoperative blood loss and surgery duration (both $p<0.001$). THA patients had a 17-fold higher risk of blood transfusions, while OS patients had a 2.87 times higher risk of revision surgery. Women were more likely to require revision surgery after OS than THA ($p=0.002$). Postoperative X-rays showed no significant difference in reposition quality between OS patients requiring revision and those who did not. Revision causes included avascular necrosis or nonunion for OS and periprosthetic fractures for THA. Functional outcomes (OHS) and hip pain (NPRS) showed no significant differences between treatment methods.

Conclusions

THA is associated with increased risks of blood transfusions and prolonged hospitalization, while OS carries a higher risk of revision surgery within three years, particularly in females. Pauwels III fractures, with a worse prognosis for nonunion and instability, were more often treated with THA. Long-term functional and pain outcomes did not differ between groups.

These factors should guide treatment decisions in this specific patient population.

Predicting Sports Injuries Based on the Anatomical Structure of the Knee

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Introduction

Three types of knee injuries account for the majority of sports injuries: ACL tears, patellar dislocations, and meniscus tears. Although each is characterized by a slightly different mechanism of injury, a traumatic force acting on the knee and several pathological movement patterns occurring at the same time may lead to any of them. Identifying the types of knee structure that may predispose to each of the most common sports injuries could provide an indication for healthy individuals of which injuries they are most predisposed to, and this for athletes could be a helpful preventive tool.

Aim of the study

The purpose of this study was to verify whether predisposition to specific types of injury can be predicted from the specific structure of the knee in healthy athletes with no prior injuries when an injury more complex than one simple pathological movement pattern happens. Determining certain predisposition criteria for the most common sports injuries and examining them in healthy athletes can provide an opportunity to modify the training process accordingly.

Materials and methods

We analyzed 259 MRIs in patients hospitalized between 2014 and 2023 for ACL rupture, first-time patellar dislocation or meniscus tears. Patients included in the study had isolated injuries and no previous history of them. The mean age of the patients was 31.74 years (range 14-67). The parameters measured were: TT-TG, TT-PCL, PTA, SA, IS and the type of Dejour dysplasia was assessed. The results were compared between the 3 groups of patients, where each of the injuries were analyzed as the study group compared to the rest of them.

Results

The study didn't detect any anatomical factors clearly predisposing to meniscus tears, although it showed that patients with meniscus tears had significantly lower ($p<0.05$) TT-TG values compared to those with ACL and patellar injuries. It also showed that patients with elevated TT-PCL had increased risk of ACL injuries (mean value 22.32mm, $p<0.05$) and those with elevated PTA, SA and IS had an increased risk of patellar dislocations (mean values 21.32, 149.13, 1.39, $p<0.05$). In addition, the observed dysplasia significantly predisposes to the dislocation.

Conclusions

Tibial tuberosity lateralization indicate the risk of both patella dislocation and ACL injury. Athletes with increased patellar tilt, trochlear dysplasia or patella alta should be aware of the significantly greater risk of patellar dislocation. Meniscus injuries seem to be affected only by force and mechanism of movement.

Prevalence, Characteristics and Clinical Significance of Os Calcaneus Secundarius: A Systematic Review with Meta-analysis

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Introduction

The common presence of anatomical variations on the foot and ankle region may be oftentimes associated with painful syndromes. For medical professionals, their resemblance to fractures may pose a diagnostic conundrum, particularly following an incident. Os calcaneus secundarius (OCS), is a rare accessory ossicle located between the anterior process of the calcaneus and the navicular bone. Up to this date, the epidemiology of OCS is not established and poorly understood, as it varies between 0.1% to 15.2% across different studies.

Aim of the study

This study aimed to synthesize the relevant data regarding the prevalence of this accessory ossicle and key clinical aspects, to provide a comprehensive summarization of the existing knowledge, subsequently helping clinicians make a precise diagnosis and plan treatment

Materials and methods

A thorough search of Pubmed/Medline, Embase, and ScienceDirect was conducted for studies presenting relevant information on OCS. The structure of this study strictly adhered to the PRISMA guidelines and was pre-registered on PROSPERO (ID: CRD42024626488). The random-effect model has been used to calculate the pooled prevalence estimates (PPE). The I2 statistic and the 95% prediction intervals were used to evaluate the heterogeneity. The AQUA tool has been used to assess the reliability of all studies. Publication bias was evaluated using the Doi plots, LFK index, and subgroup analysis.

Results

In total, 25 articles (25 029 feet), qualified for the inclusion into the quantitative analysis. The PPE of OCS was 1.1% (95%CI: 0.7%-1.6%). There was no significant difference in the prevalence of OCS between sex-based subgroups. The PPE of OCS in studies that used X-ray was 0.7% (95%CI: 0.4%-1.2%) and was substantially lower than in the cadaver-based subgroup, which was 4.4% (95%CI: 2.4%-8.0%; 95%PI: 0.00-0.45). The highest PPE of OCS was noted in Europe – 1.6% (95%CI: 1.1%-2.5%), and the lowest in Asia - 0.5% (95%CI: 0.4%-0.8%).

Conclusions

In order to minimize orthopedic consultations or even procedures, clinicians should be aware of the significance of the potential encounter of this anatomical variety. Differentiating between an anterior process fracture and the OCS is particularly crucial in the emergency room because of their distinct treatment protocols. Familiarity with the anatomy of OCS in the imaging studies, such as its regular shape with blunt edges and smooth cortical margin to the bone fragment, can help avoid unnecessary immobilization or casting in patients without fractures.

Reconstructing the Hip: The Triple Pelvic Osteotomy Combined with VDRO

Authors

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Introduction

Developmental Dysplasia of the Hip (DDH) is a disorder of abnormal hip joint development resulting in dysplasia, subluxation, and possible dislocation secondary to capsular laxity and mechanical instability. Treatment varies form conservative approach, surgical reduction and eventually pelvic osteotomies combined with capsulorrhaphy and/or varus derotation osteotomy (VDRO). A distinctive form of pelvic osteotomy is Triple Pelvic Osteotomy (TPO), characterized by its ability to reorient the acetabulum in all three planes of space

Aim of the study

This study aims to evaluate the surgical technique and radiological outcomes of TPO combined with VDRO in DDH group. The postoperative remodeling of the acetabulum was a primary focus of investigation throughout the study.

Materials and methods

18 patients (20 hips) with a mean age of 10.6±2.3 years (range 7.9-14.3) diagnosed with DDH underwent TPO with VDRO combined. TPOs were performed through the Smith-Petersen approach and VDROs through the lateral proximal femoral approach, using a single continuous incision for each combined procedure. Surgery was followed by intenive physiotherapy. Mean postoperative follow-up time was 2.95 ± 1.76 years (range 0.62 to 5.93 years). The acetabular index (AI), Reimer Index (RI), Center Edge Angle (CEA), Acetabular Depth-Width Ratio (ADR), Congruity Index(CI), Tonnis grade of dislocation (TG) and Sharp's Angle (SA) were used to evaluate the results. HipDysplasiaApp software was used to analyse the data.

Results

The AI decreased from 32 degrees±5.15 to 7.4 degrees±5.94, the RI decreased from 76.11 degrees±23.0 to 11.4 degrees±9.71, the lateral CEA increased from -30.33 degrees±35.55 to 41.0 degrees±9.75, the ADR increased from 20.22±5.12 to 26.67±5.86, the CI increased from 47.11±19.91 to 92.8±9.63, the TG decreased from 2.44±0.88 to 1.0±0, the SA decreased from 54.67±4.09 to 25.6±6.88 in the DDH group at last follow-up, indicating significant improvement.

Conclusions

The combination of Triple Pelvic Osteotomy (TPO) and Varus Derotation Osteotomy (VDRO) in the treatment of Developmental Dysplasia of the Hip (DDH) demonstrates significant improvements in hip joint stability and acetabular remodeling. Further research needs to be completed in order to assess the durability of above mentioned corrections

Funding: None

The Use of Mixed Reality in Arthroscopic Elbow Arthrolysis Surgery. Description of the Method and Early Results.

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Introduction

Elbow stiffness is a pathology that can have multiple causes. Degenerative changes are one of the most common, a specially in active population. Even a small restriction, of elbow movement particularly if painful can cause significant impairment of the patient's activity. Arthroscopic arthrolysis with removal of osteophytes have been effective treatment, however it relies on accuracy of bone resection. Therefore mixed reality and holographic imaging may provide appropriate guidance.

Aim of the study

The aim of the study was to assess the effectiveness of mixed reality guidance during arthroscopic elbow arthrolysis in degenerative contracture.

Materials and methods

Study was based on prospective range of movement evaluation of 41 patients with degenerative elbow contracture underwent arthroscopic release, including resection of osteophytes and reshaping of fossae. 20 patients had the procedure done with mixed reality guidance (HOLO), and 21 without (NO-HOLO). Holograms were created from CT scans and used with a mixed reality viewing system (RSQ HOLO, RSQ).

Results

The arch of motion (ROM) was significantly better in the HOLO group both intraoperatively (128° ± 10 vs 121° ± 12, $p = 0.016$) and at 1-week follow-up (110° ± 17 vs 96° ± 15, $p = 0.041$). The HOLO group also had a smaller intraoperative extension deficit (2° vs 6°, $p = 0.02$). Gain of motion 6 months after arthroscopy was bigger in HOLO group by 11° ($p=0,039$).

Conclusions

Utilizing mixed reality during arthroscopic release in degenerative contracture appears to enhance the ability to restore range of motion during the procedure and in the early follow-up period. Holographic support seems to facilitate a better understanding and identification of any impinging osteophytes that require removal.

A Novel Minimally Invasive Technique for Closed Eight-Plate Implantation

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Background

The eight-plate technique is widely used in the treatment of growth deformities in children. The standard approach requires a skin incision and tissue dissection, which increases the risk of complications and prolongs recovery time. This study presents a novel minimally invasive method for eight-plate implantation without the need for an open skin incision.

Case Report

The growth plate is located using radiographic imaging. A Kirschner wire is then manually inserted into its center to stabilize the plate position. The upper and lower fixation points of the plate are identified using imaging, and additional Kirschner wires are manually inserted into these locations. The central Kirschner wire is removed before plate implantation. After removing the plate, the remaining wires serve as guides. Small (0.5 cm) incisions are made at the marked entry points of the Kirschner wires. A periosteal elevator is used to atraumatically separate the muscles from the bone, creating a space for the plate. The plate is inserted beneath the muscles, and its upper and lower ends are blindly located and secured by reinserting the Kirschner wires into the preformed canal. The plate is then fixed with cannulated screws. After the procedure, two mattress sutures are placed, one for each incision. A sterile dressing is applied and removed after 10 days.

Conclusions

Minimally invasive eight-plate implantation offers a promising alternative to conventional surgical methods. This technique allows for successful eight-plate implantation without open soft tissue dissection. The minimally invasive approach may reduce the risk of infection, limit tissue damage, and accelerate patient recovery. The obtained results indicate that the closed technique provides comparable outcomes to the conventional open method. Clinical case analysis confirms that limb axis correction occurs at the same rate as in the traditional open technique.

Prevention of Revision Amputation Surgery with the Use of Copper Dressings - a Case Series

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Background

Major leg amputations are frequently associated with complications such as wound dehiscence, stump ischemia, skin tension, subcutaneous hematoma, pressure necrosis, and infections, leading to extended hospitalizations and repeat surgeries. Current surgical interventions, while effective, are resource-intensive and carry risks of additional morbidity. Copper dressings, known for their antimicrobial and tissue-healing properties, offer a non-surgical alternative.
This case series demonstrates how conservative treatment with copper oxide dressings can resolve complications typically requiring surgical intervention.

Case Report

Six Diabetic patients were treated at the outpatient orthopedic clinic Five patients had a transtibial amputation and one transfemoral. The complication etiology was pressure necrosis, stump ischemia, dehiscence due to tension of the sutures, and late dehiscence and necrosis from uncertain etiology. A bilayer copper dressing protocol was employed, with an active copper oxide layer applied to the wound bed for its chemical effects and an adhesive copper layer applied on top to reduce mechanical tension. Dressings were changed once or twice weekly, depending on wound exudate levels and patient compliance. The average wound area was 19.65 cm^2 (SD=10.47), and complete wound closure was achieved in an average of 84.67 days (SD=25.4). No surgical interventions were required. Healing was characterized by bacterial control, accelerated autolytic debridement, granulation tissue formation, and epithelialization

Conclusions

This case series underscores the potential of copper dressings to promote healing in amputation stump complications traditionally treated surgically. By combining the necrolytic, angiogenic, and granulation-promoting effects of copper, these dressings provide a low-cost, patient-friendly alternative that aligns with the "continuum of care" concept. Despite the small sample size, these findings suggest a need for larger, controlled studies to validate this approach. This paradigm shift could reduce healthcare costs, minimize patient morbidity, and improve outcomes in a wide range of wound care settings.

Reconstruction of Post Burn Digital Extensor Tendons Loss . (A case report)

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Background

A 10 year old girl sustained flame burns in her right hand, part of forearm and part of chest and face 2 years back at the age of 8 years . She was treated conservatively with dressings followed by some physiotherapy after healing . After 6 months, when she visited her doctor for her pigmentation and scar problems , she was advised coconut oil massage and physiotherapy for restricted movements of right hand . When she reported to us 6 months back in our clinic with complaints of inability to extend her index and middle fingers of left hand was her priority over altered pigmentation over dorsum of hand .

Case Report

On Clinical examination it was found that she had no active extension at PIP and DIP joints ,however both the joints were soft and supple .Sensations were intact and both the fingers had intact digital vessels on mini Doppler scan . Skin was thicker and had variable pigmentation over the surface . X-ray of the digits and hand did not not reveal any abnormality of bone or joint except little subluxation of PIP joint of middle finger. We planned the exploration through dorsal zig - zag incision and extensor tendon graft to connect the proximal end of extensor digitorum tendon in extensor hood . Distally extensor tendon was split into a central slip and two lateral slip . Distal slip was sutured to the residual end of the extensor digitorum . distal insertion at the base of distal phalanx . Proximal two lateral slips were fixed to the middle of the middle phalanx with prolene '4' passing through a drill hole in the middle phalanx and securing to each other and around the bone . Surgery was performed under tourniquet and under brachial Block Anesthesia . Palmaris longus tendon was harvested from the same forearm through an incision in wrist using Tendon Tunneler .All the wounds were closed in two layers using '5' Vicryl and '6' proline . 1.2 mm Axial K wires were inserted in both the digits and kept for 2 weeks for immobilization and healing of new insertion sites .

Conclusions

After check dressing on 5th POD and suture removal on 10th POD, K wires were removed after 2 weeks. Physiotherapy with fomentation started then with gentle passive mobilization and active movements at MP joints and then on PIP and DIP joints , gradually increasing the range of movements and resistance for gaining strength on weekly protocol .

Restoring Function: A High-Stakes Microsurgical Reconstruction of a Severely Traumatized Hand

Authors

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Background

Severe hand injuries involving deep and superficial flexor tendon damage present significant reconstructive challenges. This case highlights a complex microsurgical reconstruction of flexor tendons of fingers II-IV, digital artery repair of the index finger, and nerve reconstruction of fingers II-IV, along with ORIF of a proximal phalanx fracture of the fourth finger and thumb/fifth finger stump plasty. The injury was caused by an accident involving a power saw, resulting in partial amputation of the left thumb, complete amputation of the fifth finger, and a severe laceration of the metacarpal region. The patient, a 54 years old male, was initially treated in a local hospital before being transferred to our clinic for specialized reconstructive surgery.

Case Report

The procedure was performed under brachial plexus anesthesia with temporary ischemia and intraoperative fluoroscopy. The surgical field was prepared under standard sterile conditions, and thorough debridement was conducted. Identified structures exhibited extensive damage. Open reduction and K-wire fixation of the fourth finger proximal phalanx fracture were performed. Deep and superficial flexor tendons of fingers II-IV were reconstructed using Adelaide sutures. Index finger digital artery and digital nerves of fingers II-IV were repaired with Prolene 9-0 and 8-0. Due to significant nerve loss, reconstructive tension was high. Arterial patency was confirmed. Hemostasis, skin plasty, suturing, and cast splint immobilization were completed.

Conclusions

Postoperative assessment showed stable fixation, adequate circulation, and no immediate complications. The microsurgical approach successfully ensured tendon, vascular, and nerve continuity, optimizing functional recovery. This case highlights the feasibility of complex microsurgical reconstructions in severe hand trauma, emphasizing meticulous surgical planning, intraoperative precision, and comprehensive postoperative care.

Simultaneous Bilateral Joint Replacement - How Far Can We Go?

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Background

Osteoarthritis is the most common cause of replacement surgeries of the large joints such as the hip and the knee, which are already a daily occurrence in orthopedic departments. What's more, the problem of osteoarthritis is affecting an increasing percentage of the population of highly developed societies, due to the aging population and obesity epidemic. Recently, there has been an increase in the number of procedures performed simultaneously on both affected joints during a single surgical procedure, however unilateral are still the routine.

Case Report

A 44-year-old patient was admitted to the Department of Orthopaedics and Traumatology of the Medical University of Warsaw for simultaneous bilateral total hip replacement because of the coxarthrosis on the background of polyarticular dysplasia. The patient was without significant medical comorbidities. The procedure was performed with preoperative planning, determining the proposed anatomical corrections and selecting the prosthesis components. Personalized implants with custom-made stems were used. The patient was discharged one week after the procedure. Eight months later, he was admitted again and qualified for simultaneous bilateral knee replacement. The procedure was once again performed using preoperative planning with sizing of the personalized implants and assessing the need of anatomical corrections. The patient was discharged three days after the procedure. In total, the patient underwent surgical treatment of osteoarthritis of four major joints using personalized implants over the course of two surgical procedures in eight months. He spent a total of 12 days in the hospital, and all procedures went without complications in the peri- and post-operative periods.

Conclusions

There is an increasing need for major joint replacement procedures, which is predicted to still be growing. In this situation, in patients with bilateral symptomatic osteoarthritis who are not significantly burdened by other health problems, moving toward routinely performing these surgeries simultaneously could represent a significant improvement in the osteoarthrosis treatment process. The advantages of this approach are a single hospitalization of the patient, the need for a single rehabilitation, a single exposure to anesthesia-related complications and lower costs. At the same time, such a procedure carries greater risks due to greater blood loss and longer anesthesia, so proper patient qualification is necessary.

Spaghetti Wrist: Complex Tendon, Nerve and Vascular Reconstruction

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Background

Spaghetti wrist is a severe volar wrist injury involving complete transection of multiple tendons, nerves, and arteries, often leading to significant functional impairment. Proper surgical intervention is critical for optimal recovery. This case presents a patient with a traumatic spaghetti wrist injury requiring complex microsurgical reconstruction of FDP III-V, FCU, ECU, the ulnar artery, and the ulnar nerve.

Case Report

A 28 years old female patient sustained multiple lacerations to the right upper extremity after impacting a glass door while intoxicated during a domestic altercation. Initial treatment included primary wound closure and foreign body removal. She was transferred for further surgical management. Under brachial plexus block anesthesia, the surgical field was aseptically prepared. Optical magnification was used for precision. The incision was extended for irrigation and exploration. Flexor muscle bellies were damaged, but the ulnar nerve was intact. Muscle repair was performed (Monoplus 3/0). The carpal tunnel was released, revealing complete transections of FDP III-V and FCU and partial injury of ECU. Tendon reconstruction was performed using the Adelaide technique (Prolene 3/0) for flexors and Kessler method (Prolene 3/0) for ECU. Post-reconstruction, fingers maintained cascade positioning. The ulnar artery was microsurgically prepared and irrigated with papaverine. Anastomosis was performed (Prolene 8/0), with subsequent patency confirmed. The ulnar nerve was reconstructed using epineural sutures (Prolene 8/0). Hemostasis was secured, skin was closed, and a sterile dressing with a plaster splint was applied. The patient was stable postoperatively. A discussion was held regarding the extent of injury and potential functional outcomes.

Conclusions

This case underscores the complexity of spaghetti wrist injuries, requiring meticulous microsurgical reconstruction for tendon, nerve, and vascular integrity. Despite a successful operation, long-term rehabilitation and possible secondary procedures are needed for optimal functional recovery. Alcohol-related injury risks highlight the need for patient education and preventive measures.

Pediatrics Session

Session Coordinators:
Krystian Fornal, Małgorzata Michalska

Honorary Patronage:

National Consultant in the field of Pediatric Nephrology

Analysis of Sleep Quality in Patients with Type 1 Diabetes and Their Caregivers

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Introduction

Type 1 diabetes (T1D) is a chronic autoimmune condition that affects individuals of all ages. It results from the destruction of insulin-producing β-cells in the pancreatic islets, leading to impaired blood glucose homeostasis. In 2017, the American Diabetes Association (ADA) included sleep pattern assessment in its Standards of Medical Care in Diabetes, highlighting growing evidence of the relationship between sleep quality and glycemic control. Sleep disturbances—including insufficient sleep, irregular sleep schedules, daytime sleepiness, difficulty falling asleep, and frequent nighttime awakenings—can have significant psychological, physiological, and behavioral consequences.

Aim of the study

The aim of our study was to analyse sleep quality among the population of Individuals with Type 1 Diabetes and their caregivers. In particular, we focused on the correlation between sleep quality and the feeling of being well-rested in patients with type 1 diabetes and caregivers of individuals with T1D.

Materials and methods

Using Google Forms, we designed a survey divided into three sections. These included general questions about sleep quality in the context of hypoglycemia, sleep onset latency and sleep quality based on the Athens Insomnia Scale, as well as an assessment of current well-being using the CHIC scale. Among 59 respondents, 42 (71,2%) were Individuals with Type 1 Diabetes, and 17 (28,8%) were caregivers of people with Type 1 Diabetes.

Results

Among caregivers, 87.5% (14/16) experience anxiety about nocturnal hypoglycemia in their child, which negatively impacts their sleep quality. Additionally, 75% (12/16) of caregivers have an alarm set to monitor the child's blood glucose levels. In 100% of this group, this practice adversely affects sleep quality. Among all respondents, 61% (36/59) report difficulty falling asleep, while 54% (32/59) report frequent or very frequent nocturnal awakenings or complete insomnia. A total of 72.9% (43/59) of respondents rate their sleep quality as unsatisfactory.

Conclusions

In conclusion, based on our study, the sleep quality of patients with type 1 diabetes and their caregivers is impaired. Further research is needed to deepen our understanding and explore potential implications. We are planning to continue investigating this topic to provide more comprehensive insights and contribute to future advancements in this field.

Effect of Oral Nutritional Supplements Administration on the Management of Children with Picky Eating and Underweight: a Systematic Review and Meta-analysis.

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Introduction

Picky eating (PE) is used to describe behavior characterized by eating a limited variety of foods and/or unwillingness to try new foods, despite the ability to eat a broader diet, and/or strong food preferences. Avoidant/restrictive food intake disorder (ARFID) is considered a severe form of PE. It is characterized by the avoidance of certain foods or food groups entirely and/or restriction of food intake, due to lack of interest in food, high sensitivity to sensory characteristics of food, and/or fear of aversive consequences of eating. PE may lead to lower intake of specific foods and food groups, and underweight. Oral nutritional supplements (ONS) are dietary foods for special medical purposes which are concentrated sources of energy, protein, and other selected nutrients, and may be provided in addition to normal food to increase energy and nutrient intake when required.

Aim of the study

This systematic review aimed to evaluate the efficacy and safety of ONS in managing children with ARFID and/or PE alongside dietetic consultation (DC).

Materials and methods

We systematically searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, and EMBASE from 2000 to March 2024 for randomized controlled trials (RCTs) that compared the use of ONS (regardless of type and dosage) to any comparator in children of any age with ARFID or picky eating. The primary outcome was growth (reported using any measures) during the intervention.

Results

We summarized 5 RCTs involving 874 randomised children with picky eating and underweight. All RCTs assessed the use of ONS with DC compared to DC only. In three RCTs, there was an increase in weight, weight-for-height and weight-for-age in the ONS + DC group compared to the control group. Adverse events were reported in all RCTs, with no difference found between groups at 90 days (meta-analysis of 3 RCTs; relative risk [RR]=0.92, 95% confidence interval [CI], 0.71 to 1.20, n=573) and at 180 days (1 RCT; RR=1.16, 95% Cl 0.85 to 1.59, n=35). Fewer children with upper respiratory tract infections were found in the ONS+DC group compared to the DC only group (meta-analysis of 2 RCTs; RR=0.62, 95% Cl, 0.42 to 0.91, n=359).

Conclusions

This systematic review provides moderate evidence supporting the combined use of ONS and DC in managing picky eating and underweight in children. However, further research is needed to assess long-term outcomes and to better understand the potential benefits and risks of this approach.

Funding: Medical University of Warsaw

Evaluation of Treatment Results with the MiniMed™ 780G Hybrid Closed Loop System in Children and Adolescents with type 1 Diabetes

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Introduction

Automated insulin delivery (AID) systems have revolutionized the management of type 1 diabetes (T1D). The Medtronic MiniMedTM 780G insulin delivery system is an advanced hybrid closed loop technology available for children with T1D in Poland. Previous studies have demonstrated significant improvements in glycemic control when this system was applied.
Patients experienced prolonged time in range (70-180mg/dl; TIR), time in tight range (70-140mg/dl, TITR), and reduced time above range (TAR).

Aim of the study

The aim of this study was to reveal the real-world data from AID users chronically treated in the 3rd reference Pediatric Diabetology Clinical Center in Poland.

Materials and methods

The patients were recruited from the Department of Pediatric Diabetology and the Diabetic Outpatient Clinic at the Clinical Hospital. Children aged 1–17 years with over 3 months duration of T1D, treated ≥3 months with AID MiniMedTM 780G, with >70% Smart GuardTM Auto Mode and CGM registration time >70% were included. Insulin pump and continuous glucose monitoring (CGM) system's reports in the most recent 14 days were recorded using Care LinkTM Clinic software.

Results

172 users of AID with a median age of 12,73 years (10,25;15,46) were included in the study. Median diabetes duration was 4,61 years (1,63;7,39). The Smart Guard Auto ModeTM was active over 96,50% (93,00;99,75) of registration time. Almost all participants had applied the optimal settings - consistent use of a glucose target (GT) of 100 mg/dL (100%) and 88% active insulin time (AIT) of 2 h. Insulin faster aspart (Fiasp, Novo Nordisk) was the most commonly used type of insulin (49,4%). The CGM data analysis showed a median TIR of 78% and TITR of 56%. Most participants achieved the recommended TIR target >70% (84,3%) and almost 90% of them retain the expected TITR>50%. TAR was low - 16% (11;20) for TAR >180 mg/dl and 250 mg/dl, 3% (1;5) for TAR >250mg/dl. Patients experienced very few episodes of hypoglycemia - 2% (1;3) between 70mg/dl and 54mg/dl, without hypoglycemia episodes below 54mg/dl. Patients with longer TIR had more stable glycemia and lower CV level (r-0,68). Those who entered a larger amount of carbohydrates to the bolus calculator had better TIR. We also found a negative correlation between TIR (r -0,17), TITR (r-0,16) and set AIT.

Conclusions

This study demonstrates that most Medtronic MiniMedTM 780G users with optimal settings of the system achieve the TIR target value >70% and alos preserve the TITR target >50%.

Exercise Tolerance in Pediatric Population of Patients with Syncope Undergoing Treadmill Stress-testing

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Introduction

Most published studies in adult populations fail to demonstrate a significant difference in exercise capacity between individuals with a history of exercise induced syncope compared to healthy controls.

Aim of the study

The aim was to evaluate if this applies to pediatric population, as patients with syncope often report reduced exertional tolerance.

Materials and methods

A retrospective review of exercise stress test data was conducted at a tertiary pediatric cardiology center, covering the period 2010-2022. Inclusion criteria consisted of: no structural heart defect or any other serious condition, age 10-18 years. Patients were then grouped according to clinical presentation: the study group included patients with history of exercise induced syncope and no significant abnormality on echocardiography, resting and Holter ECGs, while the control presented with non-cardiac chest pain, palpitations, or benign arrhythmias.
Groups were matched not to differ significantly in age, height, or weight. Participants underwent standardized Bruce protocol to maximal exertion, with HR and BP measurements obtained at the conclusion of each 3-minute exercise stage, and at rest every minute. Data is presented as mean±SD, median(Q1-Q3). Statistical significance was $p<0.05$. Excel and WizardPro were used.

Results

An initial cohort of 1,532 tests was identified. After application of inclusion and exclusion criteria 493 patients, 1 study each were analyzed. 159 patients were allocated in the syncope, and 334 in the control group. Due to a higher proportion of girls, known to have physiologically lower exercise capacity in the syncope group, a matching subgroup analysis followed. In baseline characteristics, adjusted for gender, age was comparable in both groups (girls:14.6±2.01 vs. 14.84±1.79 years, p=0.35; boys:14.07±2.26 vs. 14.73±2.06 years, p=0.088). No significant differences were observed in height (girls:163.05±9.93 vs. 162.37±10.01 cm, p=0.59; boys:168.94±13.56 vs. 169.98±12.59 cm, p=0.666) or weight (girls:55.06±12.67 vs. 55.35±9.99 kg, p=0.845; boys:60.83±16.37 vs. 59.51±13.09 kg, p=0.632). No significant differences in exercise capacity based on exercise duration in minutes (girls:11.12±1.83 vs. 10.97±1.95, p=0.53; boys:13.07±2.48 vs. 12.54±2.00, p=0.21) was found.

Conclusions

Accounting for sex, syncope patients presented with exercise capacity comparable to healthy control. More detailed analysis including an actual healthy population furthermore assessing the role of exercise as a preventative measure of syncope is crucial.

Management of Pain in Children with Acute Otitis Media in Emergency Department

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Introduction

Biases, misconceptions, and lack of standardized pain assessment lead to inadequate pain assessment and treatment in children. Acute otitis media (AOM), a common childhood infection and key reason for pediatric emergency visits, highlights this problem, with inconsistent pain assessment despite its prevalence and associated discomfort.

Aim of the study

This study aims to evaluate pain assessment and management in children referred for acute otitis at our pediatric emergency department (PED).

Materials and methods

Methods: This single-center, retrospective study was performed in our PED from January 1st to December 31st, 2023. Data of patients presenting with AOM were collected from the hospital medical health record system. Children with chronic conditions and previous ear surgeries were excluded. Collected variables: demographics (age, gender), time of arrival, symptoms and their onset, previous consultation (GP, ENT, hospital), previous AOM, vaccinations, otoscopy, lab tests (CRP), hospitalization, treatment (antibiotics, pain killers, off-label). Pain severity was assessed using the Visual Analog Scale (VAS). Data were further stratified by age, symptoms, treatment plan and treatment approach to evaluate trends in pain assessment and management. P-value <0.05 was considered statistically significant.

Results

223 patients were included, a median age of 5 years (range: 3-8), and 49.3% were female. The majority (83.9%) were aged between 1 and 12 years. Most children (n=194) arrived at the PED without prior consultation. Symptoms had been present for less than 48 hours in 50.5% of cases, yet only 6.9% were documented as having a fever. The assessment of fever was inconsistent, and its relationship with pain management remained unclear. Pain evaluation was conducted for 73 patients (32.7%) and 57.5% reported moderate to severe pain (VAS 4-10). Out of 222 patients, 166 were systematically given painkillers, from whom 137 were not evaluated for pain, and 29 had mild pain (VAS < 4). In 150 patients (67.3%), pain was either not assessed or minimally documented.

Conclusions

Pain assessments were not systematically conducted for each patient, resulting in 67.3% of cases being unrecorded. Out of 137 patients, there was no documented pain evaluation; however, they still received painkillers, suggesting treatment choices were frequently made without an objective assessment. These findings highlight the need for standardized pain assessment tools to ensure appropriate and evidence-based pain management in pediatric AOM cases.

A 16-year-old Boy with Mixed Features of Type 1 and Type 2 Diabetes – a Case of Double Diabetes

Authors

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Background

Traditionally, diabetes in pediatric population was classified into either type 1 diabetes—an autoimmune condition characterized by β-cell destruction and absolute insulin deficiency—and type 2 diabetes—a metabolic disorder associated with insulin resistance and relative insulin deficiency. However, recent evidence suggests a growing overlap between them, leading to the recognition of a hybrid form that exhibits characteristics of both T1D and T2D—a "double" or "hybrid" diabetes.

Case Report

A 16-year-old boy with a history of increasing body weight for six years was referred to the Department of Pediatrics, Endocrinology, Diabetology with Cardiology Division due to fasting hyperglycemia of 216 mg/dl. On the day of admission his height was 177 cm, weight was 142 kg and BMI was 45.33 kg/m^2. He was in overall good condition and had no alarming symptoms such as polyuria, polydipsia or weight loss. Laboratory test results showed HbA1c of 10.17%, random glycemia of 202 mg/dl, fasting hyperglycemia of 156 mg/dl and 120 minutes after a meal 246 mg/dl. High insulin secretions were noted on an empty stomach and after a meal. The HOMA index was 13.9. C-peptide concentrations were high (9.0 ng/ml). Blood gas analysis showed no abnormalities. Urine analysis did not show acetonuria or glucosuria. Considering the laboratory findings and clinical picture, the patient was diagnosed with T2D A low-calorie diet with restriction of simple sugars was initiated together with basal subcutaneous insulin (Abasaglar, 7 IU) and oral metformin (Siofor, 1000 mg 2 times a day), which resulted in an improvement of his glycemia profile. During a six day hospitalization a weight loss of 6 kg was achieved. Due to hypertension nebivolol (Nebilet 5 mg/day) treatment was introduced. The patient was instructed to continue treatment and visit the clinic for the result of anti-pancreatic antibodies in a month. The results turned out to be positive for anti-ICA, anti-GAD, anti-IA2 and anti-ZnT8 indicating the possibility of mixed nature of diabetes mellitus despite previous assumptions.

Conclusions

This case reinforces the importance of comprehensive evaluation—including autoantibody screening—in adolescents who present with hyperglycemia, regardless of their obesity status. It is also crucial to identify double diabetes patients who need individualized and flexible treatment plans that can respond to the complexity of the overlapping pathogenic mechanisms of their disease.

A Rare Case of a Patient with Hepatosplenic T-cell Lymphoma Complicated by Hemophagocytic Lymphohistiocytosis

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Background

Hepatosplenic T-cell lymphoma (HSCTL) is a rare extranodal lymphoma of mature T lymphocytes, infrequently diagnosed in both adults and children. HSCTL is associated with poor prognosis. Hemophagocytic lymphohistiocytosis (HLH) is a rare hematologic disorder marked by uncontrolled immune cell proliferation, triggering a cytokine storm and intense inflammatory response.

Case Report

A 13-year-old patient was admitted to the Department of Pediatric Oncology and Hematology in Warsaw with a 3-month history of fever, hepatosplenomegaly, and diffuse molluscum contagiosum, without lymphadenopathy. Due to progressive cytopenia and elevated sIL-2R and ferritin levels (HLH criteria), HLH was diagnosed, and steroid therapy was initiated. A diagnosis of stage IV HSCTL was established based on histopathological examination of liver biopsies.
The liver, spleen, hepatic hilar lymph nodes, central nervous system, and bone marrow were affected. The search for a hematopoietic stem cell donor was initiated. Chemotherapy with the ICE regimen (Ifosfamide, Carboplatin, Etoposide) was initiated, resulting in clinical improvement and temporary resolution of fever. Due to rapid recurrence of fever and elevated biochemical markers of HLH, a relapse of HLH was diagnosed. Full HLH treatment protocol (CyA, steroids, VP16) was introduced, but it did not result in disease remission. Anakinra was added to the treatment, leading to symptom resolution and a decrease in HLH biochemical markers. The ICE chemotherapy regimen (second cycle) was continued, along with intrathecal triple therapy due to primary central nervous system involvement. In response assessment, PET/CT showed a limited metabolic response (Deauville score 4), with no morphological response on CT. Given the partial response to treatment, chemotherapy was switched to hyperCVAD. The treatment was complicated by cytokine release syndrome following cytarabine administration.

Conclusions

HSCTL accounts for less than 1% of all lymphoma cases. The optimal treatment approach for this lymphoma subtype has not been established, but aggressive regimens for non-germinal lymphoma, particularly those utilizing purine analogs, and prompt qualification for allogeneic hematopoietic stem cell transplantation (alloHSCT), supported by the literature, appear to be the most appropriate. In cases of chemotherapy-resistant lymphomas, HLH complications may pose an additional clinical challenge and significantly complicate the treatment of the underlying disease.

Delayed Diagnosis of Vertical HIV Infection in a 16-Year-Old Girl

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Background

Human immunodeficiency virus (HIV) infection can present with diverse clinical manifestations, often resembling autoimmune or inflammatory diseases. In children, it is most commonly transmitted from mother to child, with symptoms appearing as early as infancy.
Early diagnosis is crucial, as delays can lead to severe complications such as recurrent infections, growth retardation, and organ involvement. In recent years, an increased focus on parasitic infections has sometimes led to misattributed symptoms and overlooked diagnoses.

Case Report

A 16-year-old female was admitted due to a respiratory tract infection, lymphadenopathy, arthritis, uveitis, and recurrent right knee swelling with severe pain. Physical examination revealed splenomegaly, generalized lymphadenopathy, and enlarged salivary glands.
Additional tests showed elevated ESR, hypergammaglobulinemia, increased IgG, IgA, IgM, and eosinophilia. High-resolution CT of the lungs revealed restrictive changes, confirming pneumonia. No improvement after roxithromycin, doxycycline, and cefuroxime. Bartonella infection was excluded, and toxocariasis was confirmed. Albendazole and steroids provided temporary relief before symptoms worsened. Due to treatment challenges, an infectious disease specialist was consulted, prompting a review of the patient's medical history. Since childhood, she had experienced growth and weight retardation, recurrent respiratory infections, chronic inflammatory conditions (Crohn's disease and juvenile idiopathic arthritis), persistently elevated CRP, thickened tympanic membranes with hearing loss, chronic gastritis, atrial septal aneurysm, joint bursitis, herpes infections, reactive lymphoid nodules on colonoscopy, cervical lymphadenopathy, elevated AlAT, AspAT. Further evaluation confirmed HIV+ at the AIDS stage, with mother-to-child transmission. Family history revealed the mother HIV+ had a history of substance abuse.

Conclusions

This case underscores the need for a systemic diagnostic approach in young patients with multiple inflammatory conditions. Clinicians should consider unifying etiologies rather than treating symptoms in isolation. The increasing trend of attributing symptoms to parasitic infections or singular causes may delay diagnosis. HIV screening should be included in the differential diagnosis of chronic autoimmune and inflammatory diseases, especially when standard treatments fail. Raising awareness of such cases is essential for improving early detection and patient outcomes.

Do Liver Cysts Always Indicate Echinococcosis?

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Background

Hepatic echinococcosis typically arises from Echinococcus granulosus or, less frequently, Echinococcus multilocularis. The parasite forms cystic or infiltrative lesions in the liver, which may remain asymptomatic or manifest as nonspecific abdominal symptoms. Diagnosis relies on imaging (ultrasound, CT, MRI) and serologic tests (ELISA, Western blot). Prognosis depends on lesion type, size, location, and timeliness of intervention. Burkitt's lymphoma is a highly aggressive non-Hodgkin lymphoma that may present with atypical clinical manifestations in pediatric patients. Early diagnosis and initiation of therapy are crucial for prognosis, yet the clinical picture can be misleading, potentially delaying proper treatment.

Case Report

A 12-year-old boy was admitted with suspected hepatic echinococcosis due to a positive anti-Echinococcus IgG serology and hepatic lesions observed on ultrasound. Since October 2022, he reported daily abdominal pain, occasional nocturnal awakenings due to pain, near-daily episodes of isolated vomiting, and significant weight loss (approximately 5–6 kg over one month). Imaging revealed multiple solid hepatic lesions suggestive of metastatic changes, as well as a pathological mass in the right iliac fossa. Further oncological workup, conducted at a tertiary referral center, confirmed a diagnosis of Burkitt's lymphoma. During multi-agent chemotherapy, the patient experienced serious complications, including sepsis and acute respiratory failure with alveolar hemorrhage; however, treatment ultimately proved successful. In May 2023, he achieved complete remission.

Conclusions

This case underscores the importance of a broad differential diagnosis when evaluating potential parasitic infections, particularly when the clinical presentation (abdominal pain, weight loss, vomiting) and laboratory findings (positive IgG titers for Echinococcus) could suggest an alternative etiology. In Burkitt's lymphoma, rapid diagnosis and the prompt initiation of intensive oncological treatment are paramount for a favorable outcome. Sudden weight loss and recurrent vomiting should always raise the suspicion of a possible malignancy. This case highlights the need for diagnostic vigilance and a holistic approach when parasitic infections are considered.

Intussusception as a First Presentation of Celiac Disease in a 16-month-old Girl

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Background

Celiac disease (CD) is an immune-mediated enteropathy resulting from the interaction between dietary gluten and the immune system in genetically predisposed individuals. The immune response leads to intestinal damage and malabsorption. Classic symptoms in children include abdominal distention, chronic abdominal pain, diarrhea, anemia, weight loss, and failure to thrive. CD exhibits high clinical variability and a broad spectrum of intestinal and extra-intestinal symptoms. There are various potential complications and comorbidities of celiac disease related to malabsorption and/or chronic immune activation. The association between celiac disease and intussusception has rarely been reported.

Case Report

A 16-month-old girl with persistent abdominal distension was admitted to the hospital due to loss of appetite, repetitive vomiting, and increased irritability. On physical examination, her abdomen was distended with hyperactive bowel sounds; diffuse tenderness was noted on palpation, but no palpable mass was detected. Laboratory tests were within normal ranges, and there was no failure to thrive. Ultrasound imaging revealed a "target sign," characteristic of intussusception, located in the proximal jejunum. The girl underwent laparoscopic surgery, during which the intussusception was reduced. Due to the thickened jejunal wall, a sample of the intestine was taken for histopathological examination. Immunological testing showed significantly elevated anti-tissue transglutaminase antibodies, raising suspicion of celiac disease. Histopathology revealed Marsh 3c enteropathy, confirming the diagnosis of celiac disease. A strict gluten-free diet was initiated. The child's condition improved within one month, and most symptoms resolved.

Conclusions

Intussusception is a common abdominal pathology in children under three years old. It is typically idiopathic. In rare cases, it can be secondary to conditions that cause inflammation and thickening of the intestinal wall, such as celiac disease. Recognizing the potential coexistence of these two conditions is crucial for preventing complications, including recurrent intussusception and complications of untreated celiac disease. Celiac testing is strongly recommended in children with intussusception and preexisting clinical signs suggestive of celiac disease.

PHOX2B Frameshift Mutation in a Newborn with Hirschsprung's Disease and Neuroblastoma Treated with CADO Therapy: a Case Report

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Background

Neuroblastoma(NB) is the most common solid, extracranial malignant neoplasm of childhood, that arises in the sympathetic nervous system. NB can occur in patients affected with other neural crest disorders or malignancies, such as Hirschsprung disease(HD) and congenital central hypoventilation syndrome (CCHS). Mutation in the paired-like homeobox 2B gene(PHOX2B) connects those three diseases together. PHOX2B produces a transcription factor crucial for the differentiation of neural crest progenitor cells into neural lineages of the autonomic nervous system. It plays a key role in its development. PHOX2B is a highly sensitive and specific marker for identifying ganglion cells. In colonic specimens, it is expressed in all ganglion cells, regardless of their differentiation stage.

Case Report

A 2-day-old newborn was referred to the clinic with a tense abdomen, was poorly reactive to stimuli, dehydrated. After excluding gastrointestinal obstruction, a seriogram of the lower gastrointestinal tract and a biopsy were performed, which led to the diagnosis of HD. Because of significantly dilated sigmoid loops, a multi-stage approach was decided intraoperatively.
Bronchoscopy performed during the operation, due to the intermittent stridor and oxygen desaturation while sleeping, revealed compression on the right bronchus and trachea. Further chest CT, MRI showed multiple tumor masses extending from Th2 to L5. Cytogenetic analysis identified neuroblastoma, N-myc(-), SCA(+), NCA(+), leading to the chemotherapy following the LINES protocol, group 3. Due to unsatisfying treatment of four cycles of VP/Carbo, two cycles of CADO were implemented, which later led to successful resection of the tumor. It turned out to be a ganglioneuroblastoma intermixed. After undergoing treatment for NB, the patient had radical surgery for HD performed. At age 18 months, a follow-up chest X-ray raised suspicion of recurrence.. PET CT and biopsy confirmed ganglioneuroma maturing, not requiring treatment. Molecular testing detected a frameshift mutation in PHOX2B.

Conclusions

This case highlights the importance of a multidisciplinary approach in planning a proper management of neurocristopathies. The mutation in PHOX2B suggests a shared pathophysiology among neurocristopathies, including CCHS, although the patient was not diagnosed with this specific condition. Given PHOX2B's crucial role in neural crest development, its immunohistochemical staining may serve as a valuable diagnostic tool for identifying HD and NB.

Recurrent Hypoglycemia as a Presenting Feature of Pituitary Dysfunction in a 3-year-old Girl Child : A Case Report on Missed Diagnosis

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Background

Recurrent hypoglycemia in early childhood can be a critical indicator of underlying endocrine disorders, including pituitary dysfunction, requiring prompt investigation to prevent metabolic and developmental complications.

Case Report

A 3-year-1-month-old female patient presented with a history of neonatal hypoglycemia on the second day of life, initially attributed to suspected malnutrition. Her medical history revealed an episode of pneumonia with concomitant hypoglycemia at the age of one year. At three years old, she experienced a viral respiratory infection complicated by hypoglycemia and a seizure. The patient was born following an uncomplicated pregnancy, with a birth weight of 3,290 g and a length of 49 cm. On physical examination, her weight was recorded as 12.6 kg (-1.5 SD), and her height was 86 cm (-3 SD), indicating significant growth retardation. Additional phenotypic findings included short fingers, small hands, and sparse occipital hair.Thyroid findings noted “Thyroid TR 0.” Further diagnostic workup included magnetic resonance imaging (MRI) of the head with contrast to assess the hypothalamic-hypophyseal region. An X-ray of the left hand was performed to determine bone age. Comprehensive laboratory analysis was conducted to evaluate endocrine function, including assessments of cortisol, adrenocorticotropic hormone (ACTH), thyroid hormones and growth hormone stimulation with Clonidine . Diagnostic evaluation revealed hormonal deficiencies consistent with pituitary dysfunction. Morning laboratory findings showed ACTH 14.4 pg/mL, cortisol 1.94 μg/dL (6.2-19.4), Thyroid-stimulating hormone (TSH)3.8 mU/L, and free thyroxine (FT4) 8.08 pmol/L(12,1-22). Growth hormone stimulation testing yielded somatotropic hormone (STH) 0.955 ng/mL at its peak (>10 ng/ml).
Bone age assessment using the RUS method resulted in 93 points, corresponding to a bone age of 1.6 years (SD ±6 months). Brain MRI revealed a hypoplastic adenohypophysis (vertical size: 1.8 mm) and an ectopic neurohypophysis located posterior to the auditory nerve junction.

Conclusions

Repeated hypoglycaemia should be definitely investigated and can be an early sign of pituitary dysfunction, often caused by deficiencies in cortisol and growth hormone. Since these hormones are crucial for glucose regulation, persistent hypoglycemia should prompt a thorough endocrine evaluation to ensure timely diagnosis and management, preventing further complications.

Funding: No funding

PhD Basic & Preclinical Science Session

Session Coordinators:
Anna Mateusiak, Zuzanna Chadysz

Application of Biochemical Methods in Predicting Liver Graft Steatosis During Hypothermic Oxygenated Machine Perfusion

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Introduction

In the context of organ scarcity, liver grafts from extended criteria and steatotic donors are becoming increasingly important. However, due to their susceptibility to ischemic-reperfusion injury and poor outcomes there remains a need for robust assessment methods to predict graft function and eligibility, which are critical for successful transplantation. This study investigates the correlation between biochemical analyses of perfusion fluid during hypothermic machine perfusion and hepatic steatosis findings from histopathology, aiming to enhance pre-operative liver quality prediction.

Aim of the study

This study aimed to establish if any association exists between the real-time biochemical anayses of perfusate and liver graft steatosis level as identified by histopathology, in deceased donor orthotopic liver transplantation.

Materials and methods

Following bioethics approval, perfusion fluid (20 mL) was collected at the start and end of each perfusion process (1–4 hours) from approximately 30 transplants. Samples were pseudonymized and stored at -80. Biochemical assays included turbidity measurement (Exton's method), lipid quantification (Sulphophosphovanillin method), arginase activity (Chinard method), and ketone body ratio analysis (Mellanby and Williamson method, modified by Tomaszewski et al.). Results were compared to histopathological steatosis percentages.

Results

Pearson correlation coefficients indicated a weak positive correlation between steatosis and turbidity ($R = 0.3783$), ketone body ratios ($R = 0.2206$), and lipid concentrations ($R = 0.1442$).
Arginase activity had a moderate positive correlation ($R = 0.5949$) with statistical significance ($P = 0.0011$, $p < 0.01$). Turbidity also demonstrated significance at $P = 0.0517$ ($p < 0.10$).

Conclusions

Findings suggest that elevated arginase levels, characteristic of derangements in lipid metabolism and pro-inflammatory states in tissues, are also reflected through perfusion fluid analysis, as supported by histopathological reports. Although further validation is necessary, this study highlights the potential of biochemical monitoring during perfusion as a predictive tool for graft assessment. This suggests that arginase activity and perfusate turbidity provide optimistic results and should be the point of investigation for further studies.

Differential Expression of HS-Metabolizing Enzymes in Normal and Malignant Immune Cells

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Introduction

Metabolism of HS and L-cysteine in immune cells remains underinvestigated despite the prospective functions in cellular homeostasis and pathology. Literatures' evidences suggest that enzymes, such as: 3-mercaptopyruvate sulfurtransferase (MPST), thiosulfate sulfurtransferase (TST), cystathionine β-synthase (CBS) and cystathionine γ-lyase (CTH) have significantly different expression profiles in leukocyte subpopulations and malignant cell lines what could lead to specific immunomodulatory function.

Aim of the study

This study objects to clarify differential expression of major HS-metabolizing enzymes in normal leukocytes and malignant immune cells subtypes. Through comparison of basal and activated cells, it will help to determine the function of these enzymes in immune cell function and their role in leukemogenesis.

Materials and methods

Data were compiled from multiple high-throughput online databases including GENT2, LeukemiaDB, BioGPS, Immunological Genome Project, Human Atlas Protein and others. Complementary literature reports and experimental data, Western blot analyses, and microarray RNASeq data, were integrated. Comparative analyses were performed across different immune cell types (innate vs adaptive) and leukemic/malignant models.

Results

In normal leukocytes, MPST expression is generally higher than TST, particularly in phagocytic cells like dendritic cells and monocytes. Notably, granulocytes exhibit variable expression of TST, which can suggest variability related to oxidative stress. In contrast, CBS and CTH expression is low in resting cells but is greatly inducible upon immune stimulation. Leukemic cells show extreme dysregulation; e.g., MPST expression in B-cell Burkitt lymphomas is tenfold higher than in normal B-cells, while chronic myeloid leukemia cells contain the highest expression of MPST, TST, and CTH. It suggests that abnormal sulfur metabolism is linked with proliferative potential and disease formation.

Conclusions

The differential expression profiles of sulfurtransferases (MPST, TST) as well as cystathionine β-synthase and cystathionine γ-lyase in normal versus malignant leukocytes emphasize their potential as anticancer targets. Changes in MPST and TST expression, together with inducible CBS and CTH expression, indicate a complex regulatory pathway essential for immune cell activation and leukemic proliferation. Clarification of the mechanistic role of these enzymes in immune regulation and their manipulation in anticancer strategies should be the aim of future investigations.

Elevated Expression of TIM-3 and Galectin-9 in Colorectal Cancer: Associations with KRAS, NRAS, BRAF, PIK3CA, AKT1, MSI status, and Cytokine Networks

Authors

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Introduction

TIM-3 and its ligand, Gal-9, function as immune checkpoint molecules. The TIM-3/Galectin-9 axis plays a crucial role in CRC progression by promoting immune suppression and tumor growth. The impact of KRAS, NRAS, BRAF, and PIK3CA gene mutations, as well as microsatellite instability (MSI) status, on the expression of TIM-3/Gal-9 axis proteins has not been fully elucidated.

Aim of the study

The aim of this study was to examine the concentrations of TIM-3 and Gal-9 proteins in CRC tissues and in surgical margin tissues free of cancer cells, and to investigate the associations between the expression of TIM-3 and Gal-9 proteins with mutations in the KRAS, NRAS, BRAF, PIK3CA, AKT1 genes, and MSI status, and with expression of 48 cytokines.

Materials and methods

TIM-3 and Gal-9 protein levels in tissue homogenates obtained from 136 patients were quantified using ELISA kits. Mutations in the KRAS, NRAS, BRAF, PIK3CA, and AKT1 genes were assessed in 106 CRC tumors using RT-PCR. MSI status was examined in a subset of 77 CRC tissues using IHC method. The concentrations of 48 cytokines were measured in 77 CRC tissue homogenates. To investigate the associations between cytokine expression and TIM-3 and Gal-9 protein levels, we performed PCA.

Results

TIM-3 and Gal-9 protein levels were significantly elevated in CRC tissues compared to surgical margin tissues ($p < 0.05$ and $p < 0.001$, respectively). No significant differences in TIM-3 and Gal-9 protein expression were observed concerning TNM scale parameters, tumor stage, grading, or MSI status. TIM-3 expression was significantly increased in tumors with PIK3CA gene mutations ($p < 0.05$, $n = 7$). No significant differences in TIM-3 and Gal-9 protein concentrations were observed in relation to the other examined gene mutations. Significant positive correlations were found between TIM-3 and Gal-9 expression, and cytokines associated with the: NOD-like receptor signaling pathway (respectively $p < 0.05$, $R = 0.49$, and $p < 0.005$, $R = 0.51$), positive regulation of lymphocyte migration (respectively $p < 0.001$, $R = 0.6$, and $p < 0.05$, $R = 0.43$), among many others.

Conclusions

The expression of the TIM-3/Gal-9 proteins is increased regardless of KRAS, NRAS, BRAF, AKT1 gene mutations and MSI status. The associations between TIM-3/Gal-9 protein expression highlight the significant role of the groups of cytokines linked to examined annotations, in modulating the elevated expression of TIM-3/Gal-9 axis proteins.

This research was funded by the Ministry of Education and Science, Poland, grant number SKN/SP/570127/2023, and by Metropolitan Fund for Science Support of the Silesian Voivodeship.

Exploring the Potential Energy Surface (PES) of β-Cyclodextrin: Insights from crystal structure analysis and stability simulations.

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Introduction

Beta-Cyclodextrin (β-CD) is a cyclic heptasaccharide composed of glucose units linked by α-1,4 glycosidic bonds. The 3D structure of β-CD resembles a hollow truncated cone with a hydrophobic cavity allowing the incorporation of non-polar molecules. It is particularly critical since many active pharmaceutical ingredients (APIs) are low water-soluble molecules, limiting their oral bioavailability. The presence of many primary and secondary hydroxyl groups facilitates the formation of intramolecular hydrogen bonds resulting in numerous β-CD conformations that can differ in their stability.

Aim of the study

The aim of this study was to investigate the Potential Energy Surface (PES) of β-CD using two types of approaches: nature-based and computational conformational search. The first approach includes the recognition of the spectrum of numerous conformations of β-CD already registered in the Cambridge Crystallographic Data Center (CCDC). The second approach utilizes molecular modeling methods to generate the most stable conformations of β-CD.

Materials and methods

The β-CD molecules extracted from β-CD complexes registered in the CCDC have been optimized using DFT methods with dispersion correction. The calculations have been performed in two settings: in vacuo and using the implicit solvation model. The resulting conformations have been grouped into clusters based on the Gibbs free energy (ΔG). Simultaneously, the conformational search has been conducted using quench and annealing methods. Next, the generated conformations have been optimized at the DFT level. Additionally, the quantitative structure-activity relationship (QSAR) analysis has been performed to determine the molecular descriptors of guest molecules that formed complexes with β-CD.

Results

It was found that despite the relatively small size, the Potential Energy Surface (PES) of β-CD is complex and there are several possible conformations. The incorporation of guest molecules into the CD cavity significantly affects the conformation of β-CD. The initial structure used for computational conformational search impacts the generated molecules.

Conclusions

Based on the research the β-CD conformations can differ notably in their stability. Consequently, the choice of the appropriate CD conformation could significantly impact the results of theoretical investigations of host-guest complexes with β-CD. Therefore, selecting the proper conformation could be crucial for accurately predicting properties such as the binding affinity of a molecule to CD.

This study was supported by the Medical University of Warsaw (grant number 8/F/MB/N/24)

Identification of Novel Binding Partners of Mixed-Lineage Kinase 4

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Introduction

Mixed-Lineage Kinase 4 (MLK4) is overexpressed in various cancers and linked to poor prognosis. It promotes migration, invasiveness, DNA damage response, and chemoresistance in triple-negative breast cancer (TNBC). However, a comprehensive understanding of the MLK4 network driving cancer advancement requires further research.

Aim of the study

This study aims to investigate the MLK4 interactome to uncover its molecular mechanisms in cancer progression and aid therapy development.

Materials and methods

To achieve this goal, we employ coimmunoprecipitation (co-IP) coupled with mass spectrometry to investigate the MLK4 interactome in TNBC cells – HCC1806. Then, the candidates are validated by co-IP followed by immunoblotting, immunofluorescent and fractionation experiments. An in vitro kinase assay using inactive GST-MLK4β kinase domain is applied to determine whether any candidates are MLK4 direct substrates. Moreover, phenotypic assays such as colony formation, migration and comet assay are conducted to elucidate the functional implications of these interactions in cancer cells.

Results

The 54 new interactors of MLK4 were identified. They were involved in cell cycle, PI3k/Akt signaling, MAPK signaling. These hits were mostly present in cytosol, nucleus or plasma membrane in cellular component terms. Afterward, 14-3-3 - the scaffold proteins, GNL3 - a nucleolar protein, MLK1 - another MLKs member, RAN – a RAS-related nuclear protein and MYBBP1A - a transcriptional regulator were validated as potential MLK4 – binding partners. Interestingly, MYBBP1A is chosen for further validation cause it modulates p65 (NF-kB) activity, which is regulated by MLK4 in DNA damage and chemoresistance in TNBC cells (Marusiak 2019, Mehlich 2021). The interaction of MLK4 and MYBBP1A localizes in the nuclei, which was confirmed by co-staining and fractionation experiments. Notably, this interaction is disrupted under doxorubicin treatment, indicating a dynamic regulatory response to chemotherapy.

Conclusions

The interaction of MLK4-MYBBP1A was selected for deeper validation to understand the molecular mechanisms of MLK4 signaling promoting cancer progression. We confirmed the interaction between MLK4 and MYBBP1A in the nuclei under basal conditions. Moreover, this interaction may be interrupted upon chemotherapeutic treatment. Further study will investigate the role of this network in functional roles of this network in DNA damage response through p65 signaling and the nuclear function of MLK4 in regulating cancer cell behaviors.

Impact of Oral Aspirin Challenge on Innate Lymphoid cells in Patients with Aspirin-exacerbated Respiratory Disease

Authors

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Introduction

Previous studies have confirmed the increase in the quantity of group 2 innate lymphoid cells (ILC2s) in nasal scrapings accompanied by decrease of blood ILC2s in patients with aspirin-exacerbated respiratory disease (AERD) after intranasal administration of cyclooxygenase-1 inhibitor. We hypothesized that activation of ILCs by oral aspirin may play a role in acute reactions to aspirin and the mechanism of inflammation in AERD.

Aim of the study

To assess the role of ILCs in sputum and blood in patients with AERD during aspirin-induced bronchospasm and to assess the differences between patients with eosinophilic and non-eosinophilic airway inflammatory phenotypes of asthma.

Materials and methods

Among 24 patients with confirmed AERD induced sputum, blood and urine were collected at baseline and during bronchospasm induced by oral aspirin challenge. Sputum and blood ILCs were evaluated using flow cytometry.

Results

We observed significant increase in blood ILC1s count ($p<0.001$) and percentage ($p=0.003$) during aspirin induced bronchospasm. No significant changes in induced sputum (IS) ILCs were observed, but the number of detected IS ILCs was very low. Patients with eosinophilic asthma phenotype had higher baseline sputum ILC3s percentage ($p=0.048$) compared to non-eosinophilic phenotype. We observed significant decrease of induced sputum supernatant (ISS) PGE2 ($p=0.004$), PGD2 ($p=0.045$), LTB4 ($p=0.045$) and 15-oxo-ETE ($p=0.045$) during aspirin induced bronchospasm. No significant changes were observed in ISS LTE4 ($p=0.337$).

Conclusions

Blood ILC1 cells are increased during oral aspirin-induced bronchospasm in patients with AERD, but the number of sputum ILCs is depleted at baseline therefore, no reliable changes in ILCs can be detected during bronchospasm.

This work was supported by the National Science Centre, Poland (Narodowe Centrum Nauki), grant number: 2018/31/B/NZ5/00806.

MLK4 Signalling in the Communication Between Macrophages and Breast Cancer Cells

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Introduction

Triple-negative breast cancer (TNBC) is an aggressive subtype of breast cancer with limited treatment options. Previously, our group reported that MLK4 kinase is highly upregulated in TNBC patient samples, and high level of MLK4 are correlated with significantly shorter overall survival. Additionally, we demonstrated that MLK4 activates NF-κB signalling and promotes a mesenchymal phenotype in TNBC cells. Tumour-associated macrophages (TAMs) can create a tumour-promoting microenvironment, thereby enhancing cancer aggressiveness. To date, no studies have investigated the role of MLK4 in TNBC-TAM communication.

Aim of the study

The goal of this study is to describe the MLK4 signalling in the cross-talk between TAMs and TNBC cells.

Materials and methods

In this project, we examined M2 macrophages (pro-tumourigenic) derived from human monocytic cells (THP-1), human monocyte-derived macrophages (hMDM), and two TNBC cell lines - SUM149 and HCC1806 with inducible MLK4 knockdown. We applied the co-culture approach, colony formation, migration and invasion assays, RNA sequencing, and cytokine arrays.

Results

The co-culture experiments showed that the presence of M2 macrophages can boost the proliferation, migration, and invasion of TNBC cells. Importantly, the knockdown of MLK4 in TNBC cells significantly reduces these effects. Furthermore, we explored the MLK4-dependent changes in gene expression of TNBC cells stimulated or not by co-culture with M2 macrophages. Gene ontology analysis confirmed that genes whose expression was increased as a result of M2 macrophage stimulation and high MLK4 levels are involved in migration, invasion, and metastasis processes (e.g., WISP1, ADAM12, and MMP28). Moreover, we investigated the changes in the secretome landscape using cytokine arrays. The CXCL1 chemokine was marked out as one of the most significantly elevated factors. Next, we performed phenotypic assays using CXCL1 to mimic co-culture conditions. Our data showed that CXCL1 treatment does not increase the proliferation of TNBC cells but significantly fuels the migration of TNBC cells in an MLK4-related manner.

Conclusions

We showed that MLK4 can regulate the proliferation, migration, invasion, and gene expression of TNBC cells induced by tumour-supporting macrophages. Our data indicate the connection between MLK4 and CXCL1 signalling. The results from this study will describe the complex dependencies between TNBC cells, TAMs, and MLK4. Hopefully, they will lead to the design of new anti-cancer treatments for TNBC patients.

MicroRNA Signatures in Diabetes and Myocardial Infarction: in silico Prediction and Validation Analysis

Authors

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Introduction

Type 2 diabetes mellitus (T2DM) significantly increases the risk of myocardial infarction (MI), the leading cause of heart failure (HF) and a major contributor to mortality, with HF affecting approximately 17% of patients following severe acute myocardial infarction (AMI).

Aim of the study

This study explores selected miRNAs, identified based on literature and characterized through bioinformatic analysis, and their expression differences in MI patients with diabetes and non-diabetes by experimental validation analysis to investigate the role of non-coding RNAs in disease severity and prognosis.

Materials and methods

106 patients with available baseline and 26-week plasma samples were included in the analysis of 212 longitudinal samples, with RNA analyses conducted. MiRNA expression quantified via qPCR, and analyzed with statistical methods including ROC and multivariate logistic regression, to evaluate miRNA diagnostic and predictive value.

Results

miRNA expression changes in AMI patients based on diabetes status, with miR-210 increasing and miR-21 decreasing after 26 weeks in both groups, while miR-210 was lower and miR-195-5p higher in diabetes patients compared to non-diabetes patients at both time points ($p<0.05$). In the acute phase of MI, diabetes patients had significantly higher miR-210-5p expression than non-diabetes patients ($p<0.0001$), with baseline miR-210-5p showing substantial diagnostic value (AUC = 0.811, 95% CI: 0.70–0.92, $p = 0.000006$) in ROC analysis. Patients with severe AMI had significantly higher baseline miR-1-5p expression ($p=0.002$), which was associated with AMI severity (AUC: 0.748), and combining miR-1-5p with eGFR and NT-proBNP further improved predictive accuracy (AUC: 0.827, 95% CI: 0.70–0.96).

Conclusions

MiR-210, miR-21, and miR-1-5p, showed a significant role in understanding the pathophysiology of AMI and its association with diabetes status and disease severity. The diagnostic value of miRNAs, suggests their potential as biomarkers for AMI, with combined panels such as miR-1-5p, eGFR, and NT-proBNP offering enhanced predictive accuracy.

This work was funded by the Polish Medical Research Agency, implemented with grant 2019/ABM/01/00037, Medical University of Warsaw (grant number: 11/M/MBM/N/21

Molecular Characteristic and Antibiotic Susceptibility of Clostridioides Difficile Strains Isolated from Symptomatic Polish Patients

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Introduction

Clostridioides difficile is a major pathogen responsible for healthcare-associated infections, particularly in patients undergoing antibiotic therapy. The increasing resistance to treatment poses a significant clinical challenge, reducing therapeutic efficacy and raising the risk of recurrent infections. Available literature contains data on C. difficile susceptibility in Poland, while our study expands this knowledge.

Aim of the study

The aim of the study was to determine toxigenicity, PCR-ribotype and antibiotic susceptibility of clinical C. difficile strains isolated in 2023.

Materials and methods

A total of 38 randomly selected C. difficile strains, isolated from Polish adults, symptomatic patients hospitalised in 2023 were used for the analyses on molecular characteristics and antibiotic susceptibility. Toxin genes (tcdA, tcdB and cdtA and cdtB) were detected by multiplex PCR. PCR-ribotype was determined using capillary gel-based electrophoresis. The susceptibility on 14 antibiotics was assessed using the E-test method. The results were interpreted using EUCAST's breakpoints and ECOFFs.

Results

The analyzed strains belonged to PCR-ribotypes: RT027 (n=19, A+B+CDT+), RT014 (n=6, A+B+CDT-), new ribotype RT955 (n=3, A+B+CDT+), and RT078 (n=2, A+B+CDT+). The rest n=8 toxigenicity (A+B+CDT-) strains belonged to the PCR-ribotypes were identified as: RT001, RT003/014, RT014, RT081, RT106, RT464, RT015-like, and RTAl-9-1. All strains were susceptible to amoxicillin/clavulanic acid, tetracycline, meropenem, ertapenem, and metronidazole, but fully resistant to benzylpenicillin, ceftazidime, rifampin, and ciprofloxacin. Resistance to moxifloxacin, imipenem, clindamycin, erythromycin, and vancomycin was observed in 58%, 66%, 47%, 63%, and 3% of strains, respectively. Ribotype 027 exhibited significantly higher resistance to moxifloxacin ($p = 0.0000$), imipenem ($p = 0.0004$), and erythromycin ($p = 0.0000$). Additionally, strains producing binary toxin exhibited significantly higher resistance to moxifloxacin ($p=0.0000$), imipenem ($p=0.005$), and erythromycin ($p=0.0000$).

Conclusions

1. The epidemic, hypervirulent strain of ribotype RT027 dominated in the strains isolated from clinical patients. 2. Among the tested strains, a new strain of ribotype RT955, not previously described in the literature, appeared in patients. 3. Resistance to moxifloxacin, imipenem, clindamycin, and erythromycin was mainly observed in RT027 and RT955 4. One strain (RT014) was vancomycin-resistant.

This research was funded by the Polish National Science Centre, project no. 2021/43/B/NZ6/00461

Rituximab-resistance Shapes Sensitivity to Effector-Cell Mediated Cytotoxicity in B-cell Lymphoma

Authors

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Introduction

For over 30 years, rituximab (RTX) has been central to immunotherapies targeting CD20-positive B cell lymphomas. Despite its high efficacy, long-term clinical use has shown that resistance develops in over one-third of patients, presenting a persistent unmet medical need. While extensive studies have investigated RTX-resistant B-cell lymphoma cell lines, the underlying mechanisms remain unclear. Notably, our characterization of RTX-resistant cell lines revealed reduced sensitivity to effector-mediated cytotoxicity.

Aim of the study

To investigate molecular mechanisms responsible for decreased sensitivity of RTX-resistant B cell lymphoma cell lines to cytotoxicity mediated by effector cells such as NK cells or CAR-T cells.

Materials and methods

In this study, three established B-cell lymphoma cell lines with acquired resistance to RTX were used as in vitro models. First, using fluorochrome-conjugated antibodies we assessed changes in the expression of activating and inhibitory ligands, adhesion molecules, and death receptors on the surface of these cells. Next, we investigated sequential stages of recognition and killing of RTX-resistant cell lines by NK cells, using NK92-CD16 as the effector cell model. Flow cytometry-based methods were employed to evaluate NK cell degranulation, conjugate formation, and detachment from target cells. Finally, RNA sequencing was performed to analyze differential gene expression and identify key altered signaling pathways.

Results

Among the three investigated RTX-resistant cell lines, multiple surfaceome alterations were observed. However, these changes do not appear to be related to the decreased sensitivity to effector cells. NK92-CD16 cells retained efficacy in degranulating, forming conjugates, and detaching from RTX-resistant cells comparable to wild-type counterparts, indicating unaffected target-effector contact. Focusing on the molecular changes within RTX-resistant cell lines, we identified several differentially expressed signaling pathways associated with apoptosis. A closer examination revealed key proteins involved in mediating resistance to effector cells.

Conclusions

Decreased sensitivity of RTX-resistant B-cell lymphoma cell lines to effector cells is related to the deregulation of apoptosis-related pathways, rather than defects in target effector cell interactions.

Funded by National Science Centre Poland: 2022/45/N/NZ6/01691, 2023/05/Y/NZ6/00174

Single-cell RNA Sequencing of Umbilical Cord Blood CD133+ and CD34+ Hematopoietic Stem and Progenitor Cells: Insights into Purinergic Signaling

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Introduction

Purinergic signaling plays a fundamental role in regulating hematopoietic stem and progenitor cell (HSPC) behavior, influencing processes such as proliferation, differentiation, and obilization. This study investigates the intricate interplay between purinergic P2X, P2Y, and P1 receptors in modulating HSPCs, highlighting their opposing yet complementary effects that contribute to cellular homeostasis -a "yin-yang" balance.

Aim of the study

This study aims to characterize the expression patterns and function of purinergic receptors and associated signaling enzymes in CD133+ and CD34+ HSPCs from human umbilical cord blood (HUCB). By employing scRNA-seq, we seek to elucidate the role of purinergic regulation in stem cell fate and function, to identify novel therapeutic targets for hematological disorders.

Materials and methods

Single-cell RNA sequencing (scRNA-seq) was performed on sorted CD133+Lin-CD45+ and CD34+Lin-CD45+ HSPCs to analyze their transcriptional profiles, focusing on purinergic receptors (P2X, P2Y, and P1) and enzymes involved in extracellular nucleotide metabolism. Lineage differentiation antigens were initially analyzed to classify HSPC clusters. Data processing and clustering were conducted using Seurat, with downstream functional analysis via Reactome pathway enrichment. To assess functional outcomes, we evaluated migration responses to ATP, ADP, UTP, and UDP, along with colony-forming unit (CFU) assays.

Results

Our findings identified 14 transcriptionally distinct clusters for both CD133+ and CD34+ populations. The expression of P2RX1 and P2Y8 was significantly upregulated across multiple clusters in CD133+ cells. Similar trends were observed in CD34+ cells. Differential expression of CD39, CD73, and ENPP family members revealed distinct purinergic landscapes between CD133+ and CD34+ populations, suggesting functional divergence in nucleotide metabolism.
Additionally, migration assays demonstrated that mononuclear cells (MNCs) isolated from UCB responded to ATP, ADP, UTP, and UDP, confirming the functional role of purinergic signaling in HSPC mobilization.

Conclusions

This study highlights the yin-yang balance of purinergic signaling in HSPC regulation. The differential expression of P2X and P1 receptors suggests potential therapeutic targets for optimizing stem cell function. Functional assays confirmed MNC migration in response to ATP, ADP, UTP, and UDP, supporting purinergic signaling role in HSPC mobilization. Our future work will incorporate receptor inhibitors to further dissect these pathways.

OPUS NCN, UMO-2022/45/B/NZ3/00476

The Impact of Post-myocardial Infarction Heart Failure and High-fat Diet on P53 and Sirtuin 1 Levels in the Heart

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Introduction

Myocardial infarction (MI) is a significant cause of heart failure (HF) development. Nutritional factors, including high-fat diet (HFD), may affect cardiac remodeling after MI. The role of pathways related to P53 and SIRT1 proteins has been implicated in HF pathogenesis. P53 regulates cell cycle arrest and apoptosis, while SIRT1, a NAD+-dependent deacetylase, exerts protective properties by promoting cell survival and metabolic regulation. It is also linked with longevity. The relations between these proteins in the HFD and post-MI HF context remain insufficiently understood.

Aim of the study

This study aims to evaluate the impact of HFD and post-MI HF on the expression of p53 and SIRT1 proteins.

Materials and methods

The study was conducted on 30 left ventricles of the hearts obtained from male Sprague Dawley rats. The animals were fed with a standard diet (NFD, 3.6% fat) or HFD (31% fat) from the 4th week of age for the following 12 weeks. At 12 weeks of age, the rats underwent left coronary artery ligation (NFD-HF, HFD-HF) or sham surgery (NFD-SO, HFD-SO). Four weeks after the procedure, tissues were collected for analysis. Plasma NT-proBNP concentration was measured using the ELISA test, and the levels of P53 and SIRT1 proteins in the left ventricle were assessed by Western blotting. Two-way ANOVA was performed to analyze the effect of the diet and post-MI HF on the expression of P53 and SIRT1 proteins.

Results

NT-proBNP plasma levels were significantly higher in the NFD-HF and HFD-HF groups than in the NFD-SO and HFD-SO groups ($p = 0.0001$ and $p = 0.0213$, respectively). There was a significant interaction between the effects of the diet and post-MI HF on P53 protein expression in the left ventricle ($F(1, 25) = 31.32$, $p < 0.0001$). Significantly higher levels of P53 were demonstrated in NFD-HF compared to NFD-SO, while a similar effect was not observed between HF and SO rats maintained on HFD. Additionally, a significant effect of diet on the level of SIRT-1 protein in the left ventricle was demonstrated ($p < 0.0001$). Especially, SIRT1 levels in the left ventricle were significantly higher in HFD-fed rats both post-MI HF and SO compared with corresponding NFD-fed rats.

Conclusions

In post-MI HF, HFD may impact cellular stress responses mediated by P53, potentially affecting apoptosis and cell cycle regulation in cardiac tissue. The expression of SIRT1 protein seems to be enhanced by HFD. This increase may be compensatory due to the harmful properties of HFD toward the myocardium.

This research was funded by the Ministry of Science and Higher Education (SKN/SP/601343/2024).

The Expression of TNF-α in Synovium and Periarticular Adipose Tissue of Rheumatoid Arthritis Patients

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Introduction

Rheumatoid arthritis (RA) is a progressive autoimmune disease that leads to both structural and functional joint damage, often resulting in physical disability. The pathogenesis of RA is complex and involves interactions between fibroblast-like synoviocytes and immune cells, which trigger the release of pro-inflammatory factors like tumor necrosis factor alpha (TNF-α), contributing to chronic inflammation. Although osteoarthritis (OA) also causes cartilage destruction, its underlying causes and mechanisms remain poorly understood. Recent studies have highlighted the significant role of adipose tissue in the development of RA, suggesting that the inflammatory processes in adipose tissue, the synovial membrane, and cartilage are closely interconnected.

Aim of the study

The study aimed to examine the concentration of TNF-α in the synovium and infrapatellar fat pad of patients with RA and compare it to the levels in the corresponding tissues of patients with OA.

Materials and methods

The study included 15 patients with RA (mean age 60.5 ± 5.3 years) and 15 with OA (mean age 65.3 ± 7.8 years) who were undergoing joint replacement surgery as a part of normal care. OA patients were used as the control group due to the different underlying pathogenesis of these two diseases. During surgery, blood, synovial membrane, and fat pad samples were collected from each patient. TNF-α concentrations were determined using a magnetic bead-based multiplex assay according to the manufacturer's protocol (Bio-Plex Pro Human Cytokine
16-plex, Bio-Rad). Values were compared between groups with Mann–Whitney U-test.

Results

There was no significant difference in TNF-α concentration between RA and OA patients in either the synovial tissue (0,00652 vs 0,006601 pg/ml; $p = 0,604$) or infrapatellar fat pat tissue (0,017972 vs 0,019242 pg/ml; $p = 0,885$). However, the concentrations of TNF-α were higher in infrapatellar fat pad cells compared to synovium in both RA (0,017972 vs 0,00652 pg/ml; $p < 0,05$) and OA patients (0,019242 vs 0,006601 pg/ml; $p < 0,05$).

Conclusions

Our results suggest that TNF-α is a component of the inflammatory cascade present in tissues of both rheumatoid arthritis and osteoarthritis patients. Moreover, the data indicate that the periarticular adipose tissue could play a role in the pathogenesis of both diseases, as relatively high TNF-α expression suggests the ongoing inflammatory process. However, the data requires further verification on a larger sample size, preferably using healthy tissue as additional controls.

Internal Funding

The Impact of Plant Compounds with Anti-cancer Properties on Liposomal Doxorubicin in Triple Negative Breast Cancer Oncological Therapy

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Introduction

Breast cancer remains one of the most prevalent malignancies worldwide, with triple-negative breast cancer (TNBC) being its most aggressive and treatment-resistant subtype. Due to the lack of targeted therapies, TNBC patients often face limited treatment options and poor prognosis. Nanoparticle-based drug delivery systems, such as liposomal formulations, have emerged as promising strategies to enhance chemotherapy efficacy. Doxorubicin (DOX)-loaded liposomes, combined with plant-derived compounds exhibiting antioxidant and anticancer properties, may improve drug delivery, increase cytotoxic effects on cancer cells, and offer a novel approach for TNBC treatment.

Aim of the study

The purpose of the research was to develop effective liposomal preparations containing liposomal doxorubicin (DOX) in combination with plant-derived compounds with antioxidant and anti-cancer properties. The obtained liposomal formulas were analyzed in terms of their effectiveness in triple-negative breast cancer (TNBC) treatment.

Materials and methods

Ultrasonic homogenization method was used to obtain liposomal systems containing DOX and one/two plant compounds. For measuring the size, the stability and degree of polydispersity of nanoparticles dynamic light scattering (DLS) was used. Fluorescence spectroscopy was used to analyze the DOX release profile from liposomes at different pH values. To evaluate the effectiveness of the obtained liposomal formulations, the two cell viability tests have been released - the MTT test for 2D cell cultures and the PrestoBlue test for 3D cell cultures. The cytotoxic effect was assessed on the MDA-MB-231 cell line, a representative model of aggressive triple-negative breast cancer. Additionally, confocal microscopy was employed to evaluate the effect of the formulations on the size of spheroids in 3D culture.

Results

Stable liposomal formulations with a uniform size distribution were obtained, suitable for drug delivery applications. Liposomes containing DOX in combination with plant-derived compounds exhibited increased cytotoxicity against cancer cells and influenced key cellular mechanisms related to drug resistance.

Conclusions

The developed formulations have potential for TNBC treatment by enhancing cytotoxic efficacy and reducing systemic toxicity through selective tumor targeting. Future studies will focus on in vivo testing and evaluating their impact on chemoresistance mechanisms in TNBC.

PhD Clinical & Health Science Session

Session Coordinators:
Kacper Pająk, Jan Topczewski

Assessing Adherence to Quality Criteria and Its Impact on Clinical Outcomes in Staphylococcus Aureus Bacteremia: A Retrospective Study at a University Hospital

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Introduction

The 30-day mortality rate of Staphylococcus aureus bacteremia (SAB) according to published data ranges from 10% to 30%. Since 2021, an electronic bacteremia monitoring system has been implemented at Pauls Stradins Clinical University Hospital (PSCUS) to enhance the reporting bacteremic patient to infectious disease physicians. Quality criteria (QC) have been implemented to improve care and reduce mortality in SAB patients.

Aim of the study

The aim of the study is to evaluate adherence to QC and its impact on SAB hospital mortality.

Materials and methods

We collected data on hospital mortality and the rates of community-acquired (CA) and hospital-acquired (HA) SAB from January 1, 2021 to December 31, 2024. For a detailed analysis, patients hospitalized during a period of one month (October) each year from 2021 to 2024 were selected, analysing risk factors affecting mortality. The analysis included adherence to six QC: follow up blood cultures, source control, echocardiography, early initiation of antistaphylococcal therapy and its adequate duration, ID physician consultation.

Results

Over four years, 514 primary SAB episodes were identified, with an incidence of 2.77/1,000 hospital admissions: CA-SAB 1.31/1,000 (47%) and HA-SAB 1.47/1,000 (53%). Overall hospital mortality was 37.2%, with a statistically significant difference observed in patients aged ≥66 years (47%) compared to younger patients (21%) (Chi-square, $p<0.001$). The detailed analysis included 50 patients. One-month adherence to QC was 57% in 2021, 61% in 2022, 85% in 2023, and 88% in 2024. The Kruskal–Wallis test showed a statistically significant difference in QC adherence between 2021, 2022, and 2024 ($p= 0.036$). The highest improvement of adherence was observed for the QC of early initiation of antistaphylococcal therapy and its adequate duration. Sepsis was present in 70% (35/50) of patients at the time of index culture, and septic shock occurred in 40% (20/50) during hospitalization. The source of SAB was unknown in 30% of cases. The median time to therapy initiation for CA-SAB was 6 hours (IQR 3-13.5).

Conclusions

Hospital mortality for SAB is higher than reported in published data. Adherence to QC has statistically improved over the years and the bacteremia surveillance monitoring system has facilitated the timelier initiation of antistaphylococcal therapy. The study identified additional factors affecting mortality as high rates of an unknown source of infection, delays in initiating empiric antibiotic therapy in CA-SAB septic patients.

Common Variable Immunodeficiency: An Inobvious Lead In Patients With Non-Infectious Uveitis

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Introduction

Common variable immunodeficiency (CVID) is a group of disorders characterized by low serum immunoglobulin levels (mostly IgG and IgA) and decreased populations of B cells (CD19+) and T cells (CD3+/CD4+). Patients suffer from recurrent infections, especially respiratory and gastrointestinal, and some develop autoimmune diseases.

Aim of the study

The study aimed to raise awareness of CVID as a possible cause of uveitis and to prove the usefulness of immunoglobulin levels testing in patients with non-infectious uveitis.

Materials and methods

Five female patients with bilateral uveitis, aged 25-66 years, underwent laboratory and imaging diagnostics, including standard serum laboratory tests, immunological serum tests, chest x-rays, chest CTs, and head MRIs. The ophthalmological examination included visual acuity, intraocular pressure, slit lamp, and fundus examination, followed by ocular USG, OCT, and FA.

Results

All of the presented patients were diagnosed with CVID. Ophthalmological examination revealed iritis and mature cataract in one patient and posterior uveitis in the other four patients, in three cases coexisting with retinal vasculitis and macular edema.

Conclusions

Underlying CVID should be considered in patients with uveitis. The standard treatment method for immunodeficient patients would be regular immunoglobulin substitution, not immunosuppressive therapy, as in most cases of uveitis. Patients presenting with uveitis and retinitis should undergo immunological diagnostics.

Funding: None

Epidemiological Trends of Stroke among Patients Hospitalized for Atrial Fibrillation (AF) in Poland in the Years 2017-2021: a Nationwide Study Based on over One Million AF Hospitalizations

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Introduction

Stroke represents a significant global health concern, being one of the leading causes of both mortality and morbidity. Atrial fibrillation (AF) is the most prevalent sustained cardiac arrhythmia, and is associated with a five-fold increase in the risk of stroke. Strokes resulting from AF are more likely to be fatal or to result in severe disability. Despite the reduction in the incidence of stroke that has been achieved through the implementation of oral anticoagulation therapy, further investigation into the epidemiological trends of stroke is warranted.

Aim of the study

The aim of this study was to present recent data on the epidemiology of patients hospitalized with AF and stroke in Poland and to compare patients diagnosed with AF and stroke to those with AF, in whom stroke did not occurred.

Materials and methods

This is a retrospective, population-based study conducted using hospital discharge records. Data covered 1,225,424 cases of AF hospitalizations reported in 2017-2021.

Results

During the study period, a total of 1,225,424 hospital admissions of patients with AF were documented. The study group comprised 629,324 male patients (51.36%)and 596,086 female patients (48.64%). Within the study group, a subgroup of patients hospitalized with the diagnosis of stroke was identified, accounting for 65,029 cases (5.3%). The mean age during hospitalization was higher in the stroke subgroup – 78 vs 73 years, $p<0.0001$. The gender distribution in the stroke subgroup was 27,030 (41.6%) males and 37,997 (58.4%) females, while in patients who were not diagnosed with stroke, the gender distribution was 51.9% males and 48.1% females, $p<0,0001$. The mean length of hospitalization was longer in the stroke subgroup compared to the rest of the study population, with an average of 16 days as opposed to 6 days, $p<0.0001$. 71% of hospitalizations in the stroke subgroup were first-time admissions in the study subgroup, constituting 3.8% of all hospitalizations related to AF during the study period. Among first-time AF hospitalizations, stroke accounted for 6.6% of cases.

Conclusions

Patients diagnosed with AF and stroke tend to be older and they are more likely to be female. In the stroke subgroup the mean length of hospital stay was longer, what is inevitably associated with greater costs. The study has limitations due to its retrospective nature, but these are outweighed by the size of the study group and the relevance of the results obtained – they might influence health policy in the field of cardiology and neurology.

Evaluating the Feasibility of Genetic Counselling as a Telehealth Service

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Introduction

The COVID-19 pandemic profoundly impacted healthcare delivery, including the traditionally face-to-face practice of genetic counselling. Telehealth emerged as an innovative solution, offering remote genetic counselling services while minimizing infection risks.

Aim of the study

This study evaluates the feasibility of genetic counselling as a telehealth service during the pandemic; focusing on patient satisfaction, session outcomes, and the broader implications for accessibility and efficiency in healthcare delivery. Five cases spanning various specialties were analyzed, highlighting high patient satisfaction and a preference for online counselling. This research underscores the transformative potential of telehealth in genetic counselling and identifies areas for future research, such as privacy concerns and long-term outcomes.

Materials and methods

This study employed a descriptive design to evaluate patient outcomes and experiences with telehealth-based genetic counselling during the COVID-19 pandemic. The research was conducted at a genetic counselling center that transitioned to telehealth to maintain service continuity.

Results

High Patient Satisfaction: All participants rated their telehealth sessions positively (Table 3), with 60% giving the highest possible rating (Figure 3). Preference for Telehealth: Despite the availability of in-person counselling, all Diverse Case Distribution: Pediatric cases constituted the majority, possibly reflecting parental concerns about exposing children to public spaces during the pandemic (Figure 1). 60% of the cases referred were pre-test counselling cases showing that there was no bias to obtain in-person consultation when there might be a need to give sample. (Figure 2). Effective Follow-Up: Four out of five cases required follow-up, highlighting the importance of continuity in genetic counselling, which telehealth effectively facilitates.

Conclusions

The COVID-19 pandemic accelerated the adoption of telehealth in genetic counselling, demonstrating its feasibility and acceptance among patients. This study highlights telehealth's potential to transform genetic counselling by improving accessibility and convenience without compromising the quality of care. Expanding this approach beyond the pandemic could bridge gaps in healthcare delivery, particularly in underserved regions.

Exploring Individual Entrepreneurial Orientation and the Relationship with Sociodemographic Factors: Evidence from Kosovo

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Introduction

Entrepreneurship is being a crucial construct for nowadays works and specially in healthcare sector. Individual entrepreneurial intention of nurses seems to be very important regarding the profession ensuring them more space for innovation, visibility and new spaces for them.

Aim of the study

In this study we examined nurses' individual entrepreneurial intention and the sociodemographic factors affecting their entrepreneurial intention. By exploring those factors, we intend to give recommendations about the development about these mindset and behavior.

Materials and methods

The methodology of the study is of quantitative nature and we conducted a survey through a validated questionnaire. The sample of this study consisted 300 nurses from three healthcare level institutions from Kosovo. In order to analyze the data, the program SPSS21 was used.

Results

According to the results the level there is a different level of individual entrepreneurial intention among different education level, different genders and different levels of experience. Regarding the gender, males seem to have the highest individual orientation level. Also, the level of education seems to have a relationship with IEO whereas nurses with high school had the highest level among other nurses. Years of experience affects IEO, while nurses who have an average work experience(6-10 years of experience) have a higher level of individual entrepreneurial orientation.

Conclusions

This study highlights the importance of IEO for healthcare workers and also the important effect that sociodemographic factors have in this behavior. Furthermore, this study provides empirical evidence from a Kosovarian context by bringing new insights about nurses working in countries healthcare institutions. Further studies need to explore those relationship deeper.

Markers of Inflammation Detected by a Complete Blood Count are Associated with Coronary Atherosclerosis and Reflect Its Severity

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Introduction

Inflammation is crucial in coronary artery disease (CAD) development. As additional markers of inflammation, some complete blood count (CBC) parameters are investigated.

Aim of the study

The aim was to assess relationship between CBC readings and CAD severity in stable angina pectoris (SAP) patients.

Materials and methods

This retrospective study enrolled 166 patients who met inclusion criteria (no comorbidities other than arterial hypertension, dyslipidaemia) and were treated at Kaunas Clinics Cardiology Department from July 2023 to August 2024. CAD was assessed by coronary angiography (CA) or computed tomographic coronary angiography (CCTA). Patients who underwent CA were divided according to CAD severity by Gensini score: from 0 to 11; 12 to 35; more than 35.
According to CAD-RADS score: CAD-RADS 0; CAD-RADS 1 and 2; CAD-RADS 3; CAD-RADS 4 and 5. Systemic inflammatory response index (SIRI) was calculated - monocyte-to-lymphocyte ratio (MLR) multiplied by neutrophils, systemic immune-inflammation index (SII) – platelets multiplied by neutrophil-to-lymphocyte ratio (NLR). Statistical analysis was performed using Mann-Whitney-U, Kruskal-Wallis, $\chi 2$ tests, Spearman correlation coefficient.

Results

The mean age was 61.4 (10.38) years, 57.8% (n=96) were male. Patients with CAD had lower lymphocyte-to-monocyte ratio (LMR), higher NLR, SIRI, MLR, and SII compared to patients without CAD ($p<0.001$; $p=0.01$ for SII). According to CAD severity, NLR, MLR, SII and SIRI values increased and LMR decreased gradually with increasing Gensini score ($p<0.001$). LMR decreased ($p<0.046$) and SIRI ($p<0.001$) increased gradually with increasing CAD-RADS score. SII ($r=0.511$, $p<0.001$), NLR ($r=0.567$, $p<0.001$), SIRI ($r=0.474$, $p<0.001$), MLR ($r=0.356$, $p<0.001$), LMR ($r=-0.355$, $p<0.001$) correlated with severity of CAD according to Gensini score. The CAD-RADS score correlated with NLR ($r=0.365$, $p<0.001$), LMR ($r=-0.454$, $p<0.001$), MLR ($r=0.455$, $p<0.001$), SIRI ($r=0.522$, $p<0.001$).

Conclusions

NLR, LMR and SIRI appear to be valuable indicators of inflammation, and SIRI is the best CAD severity predictor in SAP patients of all the other CBC parameters assessed.

Osteomyelitis, Prosthetic Joint Infection Caused By MDR and XDR Gram-negative Bacteria – Clinical Characteristics, Treatment Course, Outcome in Hospital of Traumatology and Orthopaedics from Year 2021 to 2024

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Introduction

The significance of gram-negative bacteria (GNB) in pathogenesis of osteomyelitis (OM) and prosthetic joint infections (PJI) is increasing today. GNB make the treatment of OM, PJI more challenging due to the patient's comorbidities and the specific antibiotic susceptibility of the microorganism. Nowadays, increasing concern is raised by antibiotic resistance, which significantly impacts treatment options. Cases of OM, PJI caused by resistant GNB have been little studied in the medical literature.

Aim of the study

The aim of this study is to investigate cases of resistant GNB (MDR, XDR) OM, PJI, determine the pathogen, its resistance profile, clinical characteristics, antibiotics used, surgical procedures, length of hospitalization, and treatment outcome.

Materials and methods

A retrospective study, medical histories of 68 patients with diagnosis of OM and PJI hospitalized in Hospital of Traumatology and Orthopaedics from year 2021 to 2024 were studied and analysed using IBM SPSS statistics.

Results

From 68 patients 40 met the research criteria. 33 were male (82,5%), 7 were female (17,5%). The mean age was 56,3 years. The length of hospitalization in average was 44 days (minimum 2, maximum 194 days), 27,5% of patients were hospitalised repeatedly. 95% were hospitalised and 45% had data of antibacterial therapy used previously within past year. Approximately 30% of patients had diabetes, adiposity, chronic kidney disease. 32% had no previous medical history. The most important cause of OM was soft tissue infection (30%), followed by open fracture related OM (25%), osteosynthesis related infection (20%). The most frequent microorganisms were Klebsiella (52,5%), Acinetobacter (20%). 30% were polymicrobial. Enterobacteriaceae showed resistance to carbapenems 14,5% of cases, Pseudomonas and Acinetobacter – 100% of cases. Carbapenems were used in 50% of cases, for 16 days in average, maximum 42 days.

Polymyxins was used in 42,5% of cases, for 27,5 days in average, maximum 52 days. 87% of cases had 3 or less operations, 80% got discharged from hospital without amputation.

Conclusions

Most of the patients with MDR or XDR GNB OM or PJI were over 55 years old, male, and had a history of prior hospitalization. These patients underwent prolonged courses of intravenous antibacterial therapy and multiple surgical procedures, which serve as risk factors for further hospital-acquired infections.

Outcomes of Recurrent Versus Naïve Keratitis: a 6-year Study from a Tertiary Referral Center

Authors

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Introduction

Microbial keratitis is a potentially blinding condition that must be treated emergently to preserve vision. Corneal melting and ulcerating disrupt corneal clarity and lead to irreversible scarring - the fifth main cause of vision loss worldwide. Microbial keratitis tends to reoccur, which is usually associated with more intensive and prolonged treatment. Although previous studies identified some risk factors for recurrence (contact lens wear, ocular trauma, prior ocular surgery), we still lack data quantifying the recurrence rates of keratitis and the subsequent corneal damage it causes.

Aim of the study

This study aims to provide a comprehensive analysis of the frequency of keratitis recurrences and evaluate whether recurrent keratitis is associated with measurable visual deterioration compared to naïve keratitis.

Materials and methods

We analyzed 1303 patients diagnosed with clinical suspicion of microbial keratitis at the Independent Public University Eye Hospital in Warsaw, Poland, over six years (2018–2023). Inclusion criteria were at least one documented episode of microbial keratitis and an age ≥ 18. Patients were divided into two cohorts: Group 1: Patients with recurrent keratitis (n=233) and Group 2: Patients with naïve keratitis (n=1070).

Results

The recurrence rate of keratitis was 17.9% (233 of 1303 patients). Visual acuity at admission did not differ significantly between the recurrent and naïve keratitis groups. However, visual acuity was worse among patients with at least three episodes. Median logMAR for 1 vs 2 vs 3 recurrences were: 0.30 (0.08–0.67) vs. 0.60 (0.12–1.30) vs. 0.44 (0.20–0.92), p=0.049. Univariate logistic regression identified contact lens usage as a significant risk factor for recurrence (OR 2.37, 95% CI: 1.84–3.08, p<0.001), including its improper use (OR 2.25, 95% CI: 1.42–3.66, p=0.001). In the multivariate logistic regression model, post-corneal transplant status was strongly associated with worse logMAR scores at admission (OR 0.11, 95% CI: 0.02–0.32, p<0.001).

Conclusions

The recurrence rate of keratitis was determined to be 17.9%, regardless of etiology. A higher number of recurrences did not determine the decrease in visual acuity. Age and history of keratoplasty were the most significant risk factors for vision acuity deterioration, emphasizing the need for targeted interventions in at-risk populations.

Relationship between Vimentin, a New Biomarker of Atherosclerosis, and the Degree of Coronary Atherosclerosis

Authors

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Introduction

Initial studies show that vimentin, an endothelium damage marker, levels correlate with the presence of coronary artery disease (CAD). New biomarkers could be an important prognostic tool to identify patients at an increased risk of atherosclerosis at early stages.

Aim of the study

We aimed to assess the association of Vimentin relationship with inflammation level in SAP patients.

Materials and methods

This is a retrospective study of 131 eligible patients (pts) who met the inclusion criteria (no comorbidities except hypertension, dyslipidaemia) and were diagnosed with stabile angina pectoris (SAP). Pts underwent ankle-brachial index (ABI) assessments, carotid artery ultrasound (CAU), and necessary blood tests. Pts were divided: 1)according to high-sensitivity C-reactive protein (hs-CRP): normal, slightly, moderately or highly elevated; 2)according to ABI (normal and abnormal ABI), 3)according to SAP presence. The presence of CAD was assessed by coronary angiography (CA) or computed tomographic coronary angiography (CCTA). In CA group, CAD severity was assessed by the Gensini score; in CCTA group, CAD severity was assessed by CAD-RADS score.

Results

The mean age was 55.24 (10.19) years and 52.7% (69) were male. Vimentin concentration in CAD pts was higher in comparison with those without CAD (186.93 (7.81-2081.0), and 70.82 (7.81-399.0), p=0.022 respectively). There was a significant weak correlation between Vimentin levels and CAD severity as assessed by the CAD-RADS (r=0.298, p=0.023) and a strong correlation between CAD severity as assessed by the Gensini (r=0.640, p=0.002). Vimentin levels correlated statistically significantly with hs-CRP levels (r= 0.277, p=0.017). Vimentin level (146.54 ng/ml (7.81-2081)) in the normal ABI group was significant lower than in the abnormal ABI group (320.78 ng/ml (76.81-823.68), (p=0.014)). Vimentin concentrations correlated reversibly with ABI values in right and left limbs (r= -0.286, p=0.020; r= -0.273, p=0.026, respectively). Vimentin levels correlated with age (r=0.273, p=0.019), leukocyte (r=0.266, p=0.023), neutrophil (r=0.250, p=0.033), SIRI (r=0.231, p=0.049), NLR (r=0.259, p=0.027), and right carotid artery intima-media thickness (r=0.268, p=0.034).

Conclusions

Vimentin levels correlated with CAD severity (assessed by the Gensini), ABI, thickening of the carotid intima media and SIRI. Vimentin may reflect the degree of atherosclerosis.

Pharmacy Session

Session Coordinators:
Milena Majewska, Natalia Nalborczyk

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1H NMR as a Rapid Method to Verify the Quality of Dietary Supplements with Exogenous Amino Acids

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Introduction

NMR spectroscopy is a rapid, non-destructive and untargeted analytical method. NMR spectroscopy is also described as a ,,fingerprinting" method due to the possibility to identify and quantify compounds of complex mixtures by analyzing differences and similarities between various spectra registered in the same conditions. For this reason, it can be used for quality control of pharmaceuticals, food products, beverages, plant extracts or dietary supplements.
Since dietary supplements containing exogenous amino acids (EAA) are commonly used, especially by people working out at the gym, the methods for rapid quality control are demanded.

Aim of the study

The aim of our study was to apply 1H NMR in fast and routine examination of composition of selected dietary supplements with EAA from Polish market.

Materials and methods

In this study we analyzed five EAA dietary supplements obtained from Polish market. 1H NMR spectra of amino acids standard and samples were registered using an Avance Neo 400 NMR spectrometer. All samples were dissolved in D2O. The major compounds of the studied supplements were identified through analysis of the acquired spectra and data found in the literature. They were also quantified using calculated integrals of signals deemed to be the most representative for each major compound, taking into account the number of protons assigned for the peak and the corresponding molar mass.

Results

In every supplement 1H NMR spectrum, each of the major compounds had at least one clear signal, which enabled its quantification, with some exceptions. For leucine and citrulline, an estimated integrals' value was calculated from an overlapped signal deemed to be the most representative. Some differences between obtained results and the declared composition of the EAA dietary supplements were observed. The most frequent disparities concerned lysine, valine and tryptophan.

Conclusions

1H NMR analysis may be used in rapid control of quality of dietary supplements with EAA. It doesn't demand time consuming sample preparation and the interpretation of the spectrum is simple.

Assessment of Schizophyllum Commune Mycelial Growth in the Presence of Erythromycin for Potential Bioremediation Applications

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Introduction

Erythromycin (ERY), a widely used macrolide, is frequently detected in municipal and industrial wastewater, contributing to antibiotic resistance and disrupting aquatic ecosystems. Effective ERY removal requires innovative approaches like mycoremediation, which leverages fungal biodegradation . Identifying ERY-tolerant fungi is essential for their ability to thrive and contribute to ERY degradation in contaminated environments.

Aim of the study

This study evaluated the growth and tolerance of the ligninolytic fungus Schizophyllum commune to ERY for potential mycoremediation.

Materials and methods

The experiments were run in triplicate flasks containing Sabouraud Dextrose Broth (SDB) supplemented with erythromycin lactobionate at concentrations of 0.01, 0.1, 1, 10, 100, and 1000 mg/L. The media were inoculated with S. commune mycelium and incubated in a rotary shaker for 14 days at 26°C in darkness. The resulting biomass was harvested via centrifugation and quantified as dry weight. The effect of ERY on fungal growth was assessed by establishing the fungal tolerance ratio (FTR) [1] relative to an antibiotic-free control and by calculating the EC50 value (the concentration at which 50% of the effect occurs). The ERY content was measured on days 1 and 14 using LC-MS.

Results

S. commune exhibited high tolerance (>100%) across a broad range of ERY concentrations (0.01–100 mg/L). The highest FTR values appeared at low ERY concentrations (0.01–1 mg/L), where biomass yield exceeded that of the control culture by approximately 40–50%. Growth inhibition was observed only at the highest tested concentration of 1000 mg/L ERY, leading to a biomass reduction of about 61%. The EC50 value exceeded 1000 mg/L. The ERY concentration in the post-culture medium at the highest applied antibiotic concentration decreased to approximately 20% of the initial value.

Conclusions

S. commune demonstrated substantial tolerance to ERY, as evidenced by its ability to grow across a wide range of antibiotic concentrations. The increased biomass yield at low ERY concentrations suggests a potential metabolic adaptation, possibly involving the utilization of erythromycin as an additional carbon source. Additionally, the significant removal of ERY at the highest tested concentration indicates its partial degradation or adsorption. These findings suggest that S. commune may be a viable candidate for remediation strategies in ERY-contaminated environments where actual antibiotic concentrations are considerably lower than those tested in this study.

Development and Validation of UPLC-MS/MS Method for Monitoring Nintedanib in Plasma of Patients with Progressive Pulmonary Fibrosis Associated with Rheumatoid Arthritis

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Introduction

Nintedanib (NIN), a tyrosine kinase inhibitor, suppresses key processes involved in the progression of pulmonary fibrosis (PF) and is used to treat patients with progressive pulmonary fibrosis associated with rheumatoid arthritis. The most common adverse events during NIN therapy are gastrointestinal, including severe diarrhea, nausea, vomiting. Other frequently reported side effects include cough and bronchitis. These adverse events often lead to permanent dose reductions or treatment discontinuation. Therapeutic Drug Monitoring (TDM) can help manage and optimize drug administration by measuring drug concentrations, thereby minimizing adverse effects and enabling patients to remain on therapy.

Aim of the study

This study aimed to develop and validate a new bioanalytical UPLC-MS/MS method for determining NIN and its active metabolite (BIBF 1202) in the plasma of patients with fibrosing interstitial lung disease.

Materials and methods

Sample preparation was performed using protein precipitation with an extraction mixture of acetonitrile and 2M sodium carbonate. Analytes and the internal standard (Nintedanib-d3) were detected using mass spectrometry (MS) in positive ion mode electrospray ionization by MRM. Chromatographic analysis was conducted on a Zorbax SB-C18 column maintained at 40°C using isocratic elution. The mobile phase consisted of 0.1% formic acid and acetonitrile (35:65 v/v), delivered at a flow rate of 0.3 mL/min. The total analysis time was 5 minutes.

Results

The method was validated according to EMA guidelines over a concentration range of 2.00–200.00 ng/mL. Calibration curves showed strong correlation coefficients for NIN (0.9991) and its metabolite BIBF-1202 (0.9957). Within-run and between-run precision and accuracy at the LLOQ were evaluated, yielding relative standard deviations (RSD) of 2.96% and 4.53% for NIN, and 5.51% and 6.72% for BIBF 1202, with accuracy ranging from 102.2% to 107.3% and 98.0% to 101.8% for NIN, and 104.3% to 114.2% and 99.1% to 104.9% for BIBF 1202, respectively. Method stability was confirmed through a series of experiments, including short-term stability testing. The analytes remained stable in plasma for up to 4 hours at 30°C, meeting the bias criteria of ≤15%.

Conclusions

The proposed method was successfully applied to analyze nintedanib and its metabolite in plasma samples collected at two time points: trough (pre-dose concentration) and 2–3 hours post-administration (maximum concentration) in patients receiving NIN therapy.

This study was funded through a mini-grant (Grant No. 21/F/MG/N/24) provided by Medical University of Warsaw.

Evaluation of the Biological Activity of Two Structurally Similar Opioid-Neurotensin Hybrid Peptides Towards Acetylcholinesterase

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Introduction

Modern methods of pharmacotherapy are based on the creation and use of new forms of medicinal compounds that allow for increasing the effectiveness of therapy for many diseases. Such compounds, which presently arouse great interest in the medical world, are compounds with a hybrid structure. It is even suggested that hybrid compounds are a more effective medicine for the treatment of various diseases than combined therapy due to the reduction of some of the side effects that may occur in the case of the administration of a mixture of two drugs. Bearing in mind that effective pharmacotherapy is still being sought to combat a number of neurodegenerative diseases, including Alzheimer's disease, and one of the molecular targets of this disease turns out to be acetylcholinesterase, herein, we present preliminary results of the study of the activity of two hybrid compounds with opioid-neurotensin pharmacophores linked with each other on acetylcholinesterase activity.

Aim of the study

The aim of this work was to investigate the effect of two recently synthesized hybrid compounds, 1 and 2, containing N-terminally located opioid and C-terminal neurotensin pharmacophores in their structure, on the enzymatic activity of acetylcholinesterase and to determine all kinetic parameters of acetylcholinesterase in the presence of the investigated compounds.

Materials and methods

Enzyme activity was tested in a control serum system and in the presence of the hybrid compounds using a kinetic method by measuring the change in absorbance at a wavelength of 417 nm.

Results

For the compounds tested, a decrease in acetylcholinesterase activity was observed in the range of 15.3%-88.2% for compound 1 and 3.0%-91.02% for compound 2. Kinetic studies were conducted in time intervals t0 (for the initial time) and t2 (for the final time) of the reaction. Based on the performed studies, it is clearly visible that both compounds (1 and 2) show a very strong inhibitory effect on AChE activity. Studies have also shown differences in the potency of both compounds where compound 2 was found to be a more potent AChE inhibitor compared to compound 1.

Conclusions

Due to the very strong AChE-inhibiting effect mediated by compounds 1 and 2 in in vitro studies, they may become a serious alternative to existing compounds used in the treatment of Alzheimer's disease. However, to fully confirm the therapeutic efficacy of both compounds, additional in vivo studies are required. In addition, the mechanism of action should also be revealed.

Hot or Not? The Possible Health-Promoting Effect of Chilli Peppers - Analysis of Composition and Biological Activity

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Introduction

Capsaicin is an alkaloid, which is a main active substance in a fruit of chilli pepper, known as a Capsicum annuum. It is frequently used in cooking or as a spice, but it is also used in medicine for its properties, such as antioxidant, anti-inflammatory and analgesic. In chili pepper fruits, there can be identified various compounds, that are responsible for its health-promoting properties like vitamins, flavonoids and capsaicinoids.

Aim of the study

To identify and characterize the composition and antioxidant properties of extract obtained from 5 different varieties of chilli peppers and then compare the content of capsaicinoids in individual parts of the plant – pericarp, placenta and seeds.

Materials and methods

In the study, fruit bodies, placenta and seeds were separated from the obtained fruits of 5 varieties of chilli peppers, which were freeze-dried, powdered and alcohol extracts were prepared. Then they were used for antioxidant studies (FRAP test and total polyphenols determination) and 1H NMR analysis. Chemometric methods were applied to analyse the 1H NMR spectra. Screening of biological activity (antitumor activity) was performed using AutoDock software.

Results

We identified the presence of capsaicin in each sample, the highest in extracts from seeds and placenta. 1H NMR analysis supported with chemometric methods allows distinguishing samples according to the type of chilli pepper and part of the plant. Antioxidant studies confirmed that chilli peppers are a good source of compounds with antioxidant activity (especially fruit body and placenta). Our research shows that the compounds contained in various varieties of pepper may have anticancer activity by inhibiting Aurora A kinase.

Conclusions

Chilli peppers are a source of health-promoting compounds that have antioxidant activity and may act as antitumor agents. Analysis of the docking results suggests that there is probably no relationship between the strength of the interaction with the TRPV1 receptor and the Aurora A kinase.

The study was a part of project students mini-grant 4/F/MG/N/24, carried out from 2024 to 2025, financed by a subvention for science obtained by the Warsaw Medical University.

Hot-Melt Extrusion Coupled with Cyclodextrins - a Green Future for Difficult-to-Solubilise Plant Substances

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Introduction

Among active substances of plant origin, one of the biggest problems of their bioavailability is their solubility in water. This problem is well illustrated by the use of organic solvents during the extraction process of plant raw materials. This action allows the dissolution and subsequent extraction of active ingredients from the raw material compared to using water as a solvent. Currently, it is possible to increase the solubility of plant-derived API by using Cyclodextrins. However, this process requires the initial use of organic solvents. The future for increased API solubility using Cyclodextrins appears to be Hot-Melt Extrusion.

Aim of the study

The aim of the study was to obtain a formulation to increase the solubility of isoflavone (Formononetin) using a combination of Cyclodextrins together with Hot-Melt Extrusion technology as a solvent-free method.

Materials and methods

In this study, HP-β-cyclodextrin and Copovidone were used to obtain a formulation with Formononetin to optimise the Hot-Melt Extrusion process. To confirm the efficacy of the method, formulations were prepared using polymer alone, polymer together with a previous use of co-solvent method to obtain Formononetin inclusions with Cyclodextrins. The obtained formulations were analysed using X-ray powder diffraction (XRPD), differential scanning calorimetry (DSC) and Fourier transform infrared spectroscopy (FT-IR). In the further part, the solubility of mixtures relative to formononetin was determined.

Results

A formulation using only Cyclodextrin and hot extrusion technology showed the same efficiency in dissolving formononetin as a formulation using pre-dissolution of Cyclodextrin and formononetin to produce inclusions, followed by hot extrusion technology. In addition, the XRPD study showed that it produced an amorphous sample with increased efficiency and was more effective than HME alone without Cyclodextrin.

Conclusions

Study proves that the combination of Hot-Melt Extrusion technology along with Cyclodextrins may be a promising future for increasing the solubility of plant-derived substances without the use of organic solvents

Noradrenaline Decreases the Cytotoxic Effect and Apoptosis Induced by LPS and Aβ Aggregates in Human Microglial Cells (HMC3)

Authors

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Introduction

Alzheimer's disease (AD) is the most prevalent neurodegenerative disorder, characterized by the accumulation of amyloid-beta (Aβ) plaques and neuroinflammation. Noradrenaline (NA) was reported to exert an anti-inflammatory effect on activated microglial cells in AD, although with an unclear mechanism of action. Thus, it is vital to further characterise the pathways by which NA could modulate glial activity and innate immune responses in the brain.

Aim of the study

This study investigates the protective effects of noradrenaline (NA) on human microglial cells (HMC3) exposed to lipopolysaccharides (LPS) and Aβ aggregates—major contributors to inflammation and cellular damage in AD.

Materials and methods

In the experiments, HMC3 cells were exposed to IC50 LPS or IC50 Aβ and treated with 25 and 50 μM NA. The cytotoxicity of the compounds was measured using the XTT colorimetric assay and Pierce LDH Cytotoxicity Assay. The immunocytochemical staining for Aβ was performed to assess the expression of extra- and intracellular Aβ aggregates. The colorimetric caspase-3 assay was used to evaluate the level of apoptosis. The expression of mRNA and proteins associated with ER stress (DDIT3, BAX, BCL2 and HIF-1α) were evaluated by TaqMan Gene Expression Assay and Western blot, respectively.

Results

NA treatment at 25 μM and 50 μM in HMC3 cells exposed to IC50 LPS or IC50 Aβ resulted in a significantly increased proliferation of HMC3 cells, reduced expression of both extracellular and intracellular Aβ deposits, reduced caspase-3 activity, decreased expression of HIF-1α and pro-apoptotic DDIT3 and BAX, and increased expression of anti-apoptotic BCL-2, leading to enhanced cell survival, when compared to that of the HMC3 cells treated only with IC50 LPS or IC50 Aβ.

Conclusions

Our results demonstrated that NA holds promise as a therapeutic target to address microglial dysfunction and potentially slow the progression of AD. Its neuroprotective effects, particularly in reducing inflammation and regulating microglial activity, may contribute to the development of a novel treatment strategy against in AD.

The project was financed by the Minister of Science Program "Studenckie koła naukowe tworzą innowacje" (grant no. SKN\SP\602622\2024).

Preparation and Characterization of Thermosensitive In-Situ Gel Nanoemulsion of Antiviral Agent for Ocular Delivery: Ex-Vivo Corneal Irritation and Toxicity Test Evaluation

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Introduction

Ocular herpes simplex infection is a major cause of visual morbidity worldwide. It may be treated by acyclovir (ACV). The bioavailability of ACV to the ophthalmic epithelium is low. ACV in the form of ophthalmic ointment must be used every 4 hours.

Aim of the study

The aim of this study is to preparation of in situ gel nano emulsion (NE) of ACV as an ocular drug delivery system to improve its ocular drug bioavailability and enhance the pre corneal residence time.

Materials and methods

The solubility of ACV in various components was measured. Composed of results of solubility the pseudo ternary phase diagrams of oil (triacetin), surfactant (poloxamer 188, poloxamer 407), co-surfactant (transcutol P) was developed. At different surfactant/co-surfactant weight ratios (1:1, 2:1, 1:2) were constructed by water titration method. O/W NE of ACV were prepared by spontaneous emulsification method. The temperature at which the physical state of the NEs changed was regarded as the gelation temperature. Based on initial release studies, formulations with the slowest release characteristics were subjected to further physicochemical investigations such as particle size, polydispersity index, pH, refractive index, osmolality and viscosity. Accelerated stability tests such as Heating-cooling cycles,
Freeze-thaw cycles and Centrifugation were performed. The optimized formulation was chosen for excised bovine corneal permeation, hen's egg test-chorioallantoic membrane and modified Draize tests to evaluate its ocular permeation and irritation.

Results

The optimum formulations of in situ gel NEs showed a sustained release pattern compared to market product. Particle size analysis revealed that all samples were in nanometric scale below 100nm with suitable polydispersity index. Investigation of physicochemical characteristics such as pH, refractive index, osmolality and viscosity showed that all formulations were acceptable for ophthalmic use. No physical instabilities such as creaming, cracking and phase separation were observed during stability studies. Based on the permeation study results, drug permeation of optimum formulation was about 2.8-fold higher than the control solution.
Irritation tests illustrated that the optimum in situ gel NE could be well tolerated by the eye.

Conclusions

these results showed the superiority of in situ gel NE to ophthalmic ointment to enhance bioavailability and prolong the pre corneal residence time of ACV.

Production of Bioactive Secondary Metabolites Using In Vitro Cultures of the Endemic Species Aralia Cachemirica Decne. Hairy Roots

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Introduction

Aralia cachemirica Decne. is an endemic Himalayan shrub valued for its hypoglycemic, anti-inflammatory, and immunomodulatory properties. It contains specialized metabolites, including triterpenoid saponins and phenolic acids. Due to its limited natural distribution, alternative methods for obtaining its bioactive compounds are needed. Biotechnological approaches, such as in vitro cultures and hairy root systems, offer a controlled and sustainable means of metabolite production while preserving wild populations.

Aim of the study

This study aims to establish in vitro cultures of A. cachemirica and induce hairy roots using Agrobacterium rhizogenes, as well as confirm genetic transformation. The research focuses on evaluating the biosynthetic potential of the hairy roots for secondary metabolite production.

Materials and methods

In vitro cultures were initiated from Index Seminum seeds, sterilized, and germinated on WPM medium. Hairy root cultures were induced by infecting seedlings with A. rhizogenes strains ATCC 15834, A4 and LBA 9402. Transformed root lines were selected and maintained on SH medium with antibiotics and later without it. Genetic transformation was confirmed by PCR (rol genes). The phytochemical profile of methanolic extracts was analyzed using UHPLC-DAD-ESI-MS^3, while UHPLC-DAD was used for quantitative analysis.

Results

For the first time, an in vitro culture of Aralia cachemirica was established. Hairy roots were successfully induced using A. rhizogenes two strains ATCC 15834 and A4, while no transformation was observed with strain LBA 9402. Two fast-growing, morphologically distinct lines were selected per strain (ACT-ATCC-M2, ACT-ATCC-O3, ACT-A4-K8 and ACT-A4-B9). PCR confirmed rol gene integration. UHPLC-DAD-ESI-MS^3 analysis identified triterpenoid saponins (e.g., araloside A) and phenolic acids (e.g., isochlorogenic acid A). Quantitative analysis revealed variations in metabolite production efficiency among the selected lines.

Conclusions

Hairy root cultures of A. cachemirica were successfully established, providing a scalable and sustainable system for secondary metabolite biosynthesis. The presence of triterpenoid saponins and phenolic acids confirms their phytopharmaceutical potential. Given their unique metabolite profile, these cultures offer a promising platform for producing bioactive compounds for pharmaceutical and cosmetic applications. Further optimization of culture conditions could enhance metabolite yields, improving their applicability in industry.

Synthesis and Biological Evaluation of Tyrosinase Inhibitor for Melanoma Treatment

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Introduction

4,4'-(sulfanediyldimethanediyl)diphenol [IT] was first identified and isolated from Gastrodia elata Blume. Isolating IT from plant material is not very efficient. The IT content of material from different crops is variable. The most efficient method for obtaining IT is chemical synthesis. IT is the most potent tyrosinase inhibitor known. Tyrosinase is an enzyme involved in pigment synthesis in pigment cells - melanocytes. Melanoma cells also produce melanin,

Aim of the study

The aim of the research is to optimise the synthesis conditions, physico-chemical and structural characteristics and to determine the sensitivity of different melanoma cell lines to IT.

Materials and methods

The synthesis of IT was performed by Bunte salts as intermediates. In order to simplify the synthesis, the indirectly formed Bunte salts were not isolated. 4-Hydroxybenzyl alcohol and sodium thiosulphate were placed in the flask. Acid solutions were added dropwise to the resulting suspension and heated by maintaining the temperature in the 60-80oC range. Formic, acetic, propionic, citric and hydrochloric acids were used as acids. The drained product was washed several times with water and left to dry in air. The structure of IT was determined using X-ray and spectroscopics (FTIR and NMR) methods. The IT content of the crude reaction product was determined by HPLC. The effect of IT on the viability of MNT1 was assessed using MTS assay.

Results

The results obtained indicate that citric acid used in the IT synthesis reaction gives better yields than acetic acid described in the literature. Cellular results indicate that melanoma cells are sensitive to the presence of IT.

Conclusions

The results obtained indicate that IT synthesis occurs more efficiently in the presence of acids of higher potency than acetic acid. The results of the structural studies will be helpful for the design of other tyrosinase inhibitors or selective active substances on melanoma cells.

This work was financially supported by Medical University of Warsaw, grant number 20/F/MG/N/24.

Synthesis of Novel Non-Natural Amino Acids as Building Blocks for Peptide Analogues with Potential Biological Activity

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Introduction

Advances in molecular biology and synthetic peptide methodologies have paved the way for the design of new peptide analogues as therapeutic agents. Structural peptidomimetics are particularly relevant to this study because of the use of non-natural amino acids as building blocks. These modifications can enhance bioavailability and interactions with biological structures, potentially leading to improved pharmacological efficacy. Among various synthetic methods, multicomponent reactions (MCRs) especially the Strecker reaction offer an efficient method to obtain α-amino acids. Recent interest in sulfoximines is caused by their role as bioisosteres of secondary amines, ketones, and hydroxyl groups, making them attractive candidates for modification of amino acid scaffolds.

Aim of the study

This study aims to develop a Strecker reaction-based synthesis of sulfoximine derivatives of tyrosine, serine and others. These novel non-natural amino acids are intended for use as building blocks in solid-phase peptide synthesis (SPPS) to prepare biologically active peptide analogues.

Materials and methods

The synthetic strategy initiates with the Strecker reaction, various aldehyde and ketones serves as the substrate with trimethylsilyl cyanide (TMSCN) and dimethyl sulfoximine, producing an α-aminonitrile intermediate. Subsequent acid hydrolysis transforms the intermediate into the corresponding α-amino acid. Reaction progress is monitored by thin-layer chromatography and liquid chromatography-mass spectrometry and the final structures are confirmed by nuclear magnetic resonance spectroscopy and mass spectrometry. The sulfoximine derivatives of α-amino acids are then use in peptides synthesis via SPPS

Results

The optimized synthetic route of Strecker reaction allowed us to obtain sulfoximine derivatives of α-amino acid as building blocks. The SPPS-based peptide synthesis was led by an optimization of conditions for peptide assembly on Rink and Wang resins. Additionally, a high-performance liquid chromatography (HPLC)-based method for purifying the synthesized peptides was developed. Incorporation of sulfoximine building blocks into SPPS enabled the efficient assembly of peptide analogues with potential biological activity

Conclusions

This work demonstrates that sulfoximine-modified amino acids are effective building blocks for peptide synthesis. Their incorporation might improve the physicochemical properties and biological activity of peptides with potential therapeutic applications, justifying further pharmacological investigations

The study was supported by Medical University of Warsaw.

The Secrets of Witch Broom: A Journey into Traditional Medicine and Phytochemistry

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Introduction

Fungal infections of trees are often unnoticeable until some markers appear. Certain Taphrina species can induce metabolic alterations within plants belonging to birch (Betula) genus. Under favorable conditions, these alterations can lead to uncontrolled, tumor-like proliferations on branches, resulting in a condition known as Witches' Broom disease. The easily recognizable Witches' Brooms, which are highly mutated portions of the tree, were used in traditional Sami medicine to treat skin ailments. The Sami prepared an extract by boiling the infected birch branches in water and then applying it directly to the affected skin. Some evidence suggests potential anticancer, anti-migration, and anti-inflammatory properties of these extracts.
However, further scientific investigation is required to validate the efficacy and safety of these traditional practices.

Aim of the study

This study aimed to determine the chemical composition of Witch Broom and evaluate the validity of its traditional use in the treatment of skin diseases.

Materials and methods

A total of three samples were collected from different locations (Liverpool, UK; Berlin, Germany; and Helsinki, Finland). The aqueous extracts were analyzed by LC-MS. A total of 17 compounds have been found among which some were annotated as characteristic metabolites for Witch Broom. The effect of the investigated extract on the viability of human keratinocyte cells (HaCaT) and human melanoma cells (HTB-140) was determined by MTT assay. Also,
anti-migration (scratch assay), anti-inflammatory (IL-6 and IL-8) and anti-bacterial aspects of the extract were tested.

Results

The MTT assay revealed lower cytotoxicity towards cancerous cells, with IC50 values of 487.5 μg/mL for melanoma cells and 260.9 μg/mL for keratinocyte cells. A scratch assay confirmed that non-toxic concentrations of the extract inhibited keratinocyte migration. After 20 hours, cell migration was inhibited by approximately 96.0+- 6.8 % at a 62.5 μg/mL, 91.1+-8.9 % at 31.3 μg/mL and 45.6+-14.3 % for 15.6 μg/mL. Finally, the anti-inflammatory (IL-6 and IL-8) and anti-bacterial properties of Witch Broom aqueous extracts were evaluated.

Conclusions

The results support ethnopharmacological use of Witch Broom extract in the treatment of skin conditions with the inflammatory background. The study justifies the traditional topical application of Witch Broom.

The Use of Sulfoximines in the Mannich Reaction

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Introduction

Our research focuses on the technologies that give access to new, more sophisticated chemical space and to the intensive research on novel functional groups that can improve the characteristics of the investigative agents. Within the project we are expanding yet largely unexplored chemical space of drug-like sulfoximine class and by widening scope of multicomponent reactions which are important tools in modern drug discovery, as they proceed with high atom economy and use simple, one-pot procedures, which makes them suitable for time- and cost-efficient tools for generating investigative new compounds for drug discovery.
We present current results of optimization as well as scope and limitation of one of important types of multicomponent reactions - Mannich MCR.

Aim of the study

The goal of this project was to find an optimal conditions for the Mannich reaction and to obtain the sulfoximine derivatives, which can be used for the synthesis of new types of drugs.

Materials and methods

We used a large set of commercially available substrates: sulfoximines and a.o. carbonyl compounds, (hetero)arenes and acids as efficient catalyst. The products were isolated using standard chromatography (normal and reverse-phase) methods, identified and characterized using LC-MS and NMR techniques.

Results

We completed the optimization of model Mannich reaction. We implemented the developed protocols to the synthesis of diversity-oriented set of novel sulfoximine-based class of compounds. Broadening of the scope of reactions is still in progress.

Conclusions

Mannich reaction is a robust and versatile tool for obtaining new sulfoximine scaffold of potential use in medicinal chemistry and chemical biology.

Physiotherapy Session

Session Coordinators:
Wiktoria Gąsior, Klaudia Dwornikiewicz

Honorary Patronage:

Analysis of the Trapezius Muscle in Musicians

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Introduction

Musicians spend many hours in non-ergonomic body positions suited to the instrument they play. Frequent complaints of musculoskeletal pain hinder their further professional development and impinge on their daily lives. The neck and shoulder areas are most often affected.

Aim of the study

The purpose of the pilot project was to analyze the tenderness of the trapezius muscles on both sides of the body in musicians vs. a control group. Gender, values of thoracic and lumbar curvature of the spine, and position of the upper angles of the shoulder blades were used as mediating variables.

Materials and methods

The study included 80 adults (age: 19.7±1.72), equally divided into musicians (n=40, K:70%, M: 30%) and a control group (n=40, K:65%, M=35%). Mean seniority of playing an instrument: 10.19±3.06 years, 4.85±1.8 per week, 1.95±0.95h per day. On clinical examination, a Wagner algometer was used to assess tenderness of the trapezius at the C7 and Th4 levels, a Rippstein plurimeter was used to measure curvature of the spine, and a ruler was used to align the shoulder blades.

Results

The group of musicians showed higher sensitivity of the trapezius muscles in the distribution to the measured points C7 - P:25.3±7.9 N/cm2, L: 24.7±8.8 N/cm2, Th4 - P:23.9±7.7 N/cm2, L: 23.6±8.9 N/cm2, vs. the control group: C7 - P:33.8±9.1 N/cm2, L: 36.2±10.4 N/cm2, Th4 - P:34.7±0.2 N/cm2, L: 38.0±11.3 N/cm2. Lower values of tenderness measurements in women than in men were noted regardless of the study groups. The distribution of mean spinal curvatures was as follows: thoracic kyphosis in musicians 28.35±7.43 vs control group 24.93±7.22, lumbar lordosis 29.75±6.89 vs 26.6±7.46. Musicians showed a linear relationship between the tenderness of the trapezius at the C7 level and the value of lumbar lordosis. There was no relationship of symmetrical and asymmetrical position of the shoulder blades with the tenderness of the analyzed muscle in both groups.

Conclusions

1.It was shown that the tenderness of the trapezius muscle was higher in musicians than in those not involved in playing an instrument. 2.In musicians, the tenderness of the analyzed muscle was related to the degree of lumbar curvature of the spine. 3.There were no significant correlations of age, dominant hand, number of days per week spent at the instrument with the analyzed muscle. 4. The project needs to be continued on a larger group of studied musicians with expansion to include photometric assessment of cervical lordosis of the spine in the sagittal plane.

Electromyographic and Strength Analysis of Biceps and Triceps: Implications for Muscle Efficiency and Fatigue

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Introduction

Work-related musculoskeletal disorders (WMSDs) are linked to repetitive strain and muscle imbalances in the upper limbs. While biceps activation is well studied, triceps endurance and its role in workplace fatigue prevention remain underexplored. Understanding how maximal EMG activation relates to muscle efficiency and fatigue resistance is crucial for optimizing ergonomics and reducing injury risks.

Aim of the study

This study investigates the ergonomic implications of biceps and triceps function, focusing on strength ratios, neuromuscular activation, and fatigue resistance. Additionally, it explores spectral frequency components and their role in sustaining optimal muscle performance in repetitive workplace tasks.

Materials and methods

The study included 23 participants (mean age: 24.7 ± 4.1 years), with 22 right-handed. Dynamometry and EMG data were collected at rest and maximal effort for biceps and triceps on both arms. Functional ratios (biceps/triceps strength, rest/maximal activation) and spectrum frequency comparisons were analyzed to assess fatigue resistance and ergonomic strain. Data was processed using Jamovi.

Results

Biceps exhibited higher force output than triceps, with significant differences between arms ($p < 0.001$). Mean values for the dominant biceps/triceps were 135.6 ± 21.3 N and 98.4 ± 19.2 N, while non-dominant values were 129.2 ± 25.1 N and 94.7 ± 20.6 N. Higher baseline EMG activity in the biceps, especially in the non-dominant arm (178 ± 30.5 Hz vs. 142 ± 29.8 Hz, $p < 0.001$), suggests increased strain and potential for overuse injuries. During maximal effort, triceps showed higher activation frequencies (162 ± 23.7 Hz vs. 129 ± 21.4 Hz in the dominant arm, $p < 0.001$), indicating better fatigue resistance and a stabilizing role in load-bearing tasks. Spectral analysis revealed distinct fatigue patterns, with triceps showing greater resistance to frequency shifts under prolonged exertion, emphasizing its role in sustained repetitive tasks. Triceps activation is more load-dependent than biceps, making it essential for stabilizing force output and preventing fatigue-related injuries.

Conclusions

This study identifies distinct neuromuscular activation and strength differences between biceps and triceps, with variations based on dominance, functional demands, and fatigue resistance. Biceps exhibited chronic tension at rest, increasing overuse injury risk, while triceps maintained stable activation, enhancing fatigue resistance.

Health-Promoting Aspects of Taiji Practice in the Light of Own Research and Literature on the Subject

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Introduction

Taiji (taijiquan) is an internal martial art - but mainly it is a tool for improving your health, physical performance, stability, mental concentration and sense of balance. This art comes from China and is now practiced - in various varieties - all over the world. Previous research and scientific works - mainly from the Anglo-Saxon area - clearly confirm the beneficial impact of taiji practice on the individual's condition.

Aim of the study

The aim of the study was to check whether tajji training caused a change (improvement/deterioration) in physical and mental health parameters such as: sense of balance, motor coordination, change in joint mobility, change in motor skills, respiratory efficiency, improvement in well-being and ability of concentration.

Materials and methods

The main research tool was a survey and two measurements of oxygen saturation and heart rate - before and after taiji training. The research group consisted of people practicing the Old Style Yang form of taiji regularly (at least twice a week) at the Dantian Foundation - 16 people. The study included people aged 30 to 79. .

Results

The analysis of two measurements of saturation and heart rate showed no significant difference in the saturation level before and after training and no significant difference in the heart rate before and after training. The analysis of the survey data clearly indicates an improvement in most health, physical and mental parameters, such as: sense of balance, motor coordination, change in joint mobility, change in mobility, improvement in well-being, concentration, and sense of vitality.

Conclusions

Taiji exercises do not burden the respiratory system and do not burden the circulatory system (cardiovascular), and in fact stabilize these systems. Moreover, tajiji exercises do not require muscle tension - so everyone can practice them, regardless of age and health condition.
However, it requires systematicity and focus on practice. Regular taiji practice is also an effective preventive tool against lifestyle diseases. The next step of my work will be comparative study involving a planned research group (stroke patients, according to medical recommendations) and a control group. The final step will be application of the results of my research to medical practice and rehabilitation. I intend to propose, in consultation with the rehabilitation physician, the inclusion of selected elements of taiji form (movements) and breathing elements (qigong) in the post-stroke rehabilitation of patients.

Physiotherapy Students' Knowledge Regarding the Use of Dietary Supplements in Physiotherapy

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Introduction

Dietary supplements support overall health by providing nutrients but are not as rigorously regulated or intended to treat diseases as medicines. Despite their widespread use, misconceptions about their benefits and risks persist. Physiotherapy enhances motor function through therapeutic exercises, though recovery rates vary based on fitness levels. Nutritional deficiencies can hinder progress, highlighting the importance of dietary supplementation.
Physiotherapists are often the primary point of contact for patients and should be well-informed to provide appropriate guidance. However, studies assessing physiotherapists' knowledge of dietary supplements remain limited.

Aim of the study

This study aimed to asses the knowledge of physiotherapy students regarding the use of dietary supplementation in physiotherapy.

Materials and methods

A total of 224 participants completed a self-administered questionnaire, that consisted of survey metric, questions about preferences and a knowledge test. Respondents' knowledge level was rated high with a score of 23-30 points; average between 16-22 points; and poor with a score of 15 points or less. The results were related to the following variables: gender, year of study, university, work experience, self-assessed knowledge, perceived importance and frequency of intake. Statistica 13 and Microsoft Excel were used for statistical analysis. The threshold for significance was set at $p<0.05$.

Results

The average knowledge level about dietary supplements among respondents was 38.6%. 1.34% (n=3) demonstrated a high level of knowledge, while 12.5% (n=28) had moderate knowledge, and the majority (86.16%, n=193) had poor knowledge. Medical students scored significantly higher than those from physical education or general education universities ($p=0.014$). Participants who used dietary supplements more frequently had a significantly higher self-assessment of their knowledge ($p<0.001$) and performed better on the knowledge test ($p=0.024$). Self-assessed knowledge increased with years of study ($p=0.010$); however, the level of education did not influence perceptions of the importance of this knowledge or actual knowledge levels.

Conclusions

Overall, knowledge of dietary supplements was low, with medical students and frequent users showing greater knowledge. Self-assessed competence increased with years of study, but not actual knowledge. These findings highlight the need for improved education on dietary supplements in physiotherapy.

The Role of Muscle Imbalance in Knee Pain Among Physically Active Women

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Introduction

Balanced forces in the thigh muscles are essential for proper knee joint biomechanics. However, it is not typically assessed during knee pain complaints. Weakness in the thigh's extensor and flexor muscles may impair daily activities, highlighting the importance of assessing them in clinical evaluations. Strength disorders may be related to imbalances between the quadriceps and hamstrings, or an overall insufficient strength of both muscle groups. To date, no correlation has been established between thigh muscle force imbalance and pain perception.
Physiotherapy on thigh muscle balance seems to reduce pain sensations, although research on this subject is limited.

Aim of the study

The aim of the study was to examine whether thigh muscle imbalance is associated with knee pain in physically active women.

Materials and methods

The study included 62 women aged 38-80 years (M=58.44±8.93) with an average BMI of 28.39±5.28. Participants were divided into two groups: 23 women without knee pain (BMI: 27.92±5.50, physical activity scale: M=4.44±1.77) and 39 women with knee pain (BMI: M=28.67±5.20, physical activity scale: M=4.00±1.79). Participants completed a questionnaire on their current health status. The second questionnaire contained questions about knee pain on the day of the assessment (more commonly localized in the right knee: n=15;38.5%, pain intensity: M=4.41±2.25, more often felt throughout the joint: n=20;51.3%, lasting longer than a year: n=19;52.8%, occurring during stair climbing or after exertion: n=25;64.1%). Quadriceps (AW) and hamstring (AZ) strength were assessed using a MicroFET 2.0 Wireless handheld dynamometer. The variables included the absolute length of the limb measured with a centimeter, muscle length measured with a goniometer, pelvic alignment assessed with a scoliometer.

Results

Average muscle strength distribution was: AW 163.55±44.52 N, AZ 127.98±31.27 N compared to the control group (AW: 160.59±51.60 N, AZ: 123.26±42.63 N). No significant differences in strength were found between AW/AZ: 35.57±28.30 N vs the control group 37.33±39.47 N. AW/AZ imbalance showed no association with pain onset (95% CI, p=0.839) or intensity (95% CI, p=0.555).

Conclusions

The strength of the extensor and flexor apparatus was not associated with the onset of knee pain. Thigh muscle imbalance did not influence pain symptoms. Further studies with larger sample sizes are needed.

Poster Session

Session Coordinators:
Szymon Jasik, Miłosz Rosa

Clinical and Therapeutical Complications of Juvenile Idiopathic Arthrithis (JIA)

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Introduction

Juvenile idiopathic arthritis (JIA) is a complex autoimmune disorder that continues to evolve in terms of disease course and patient outcomes within pediatric rheumatology. A key focus of ongoing research and treatment is the management of complications, which are common across autoimmune and rheumatological conditions. Early diagnosis of these complications is critical, as it enables tailored treatment strategies that address immediate concerns and prevent further health deterioration in children.

Aim of the study

This study aims to explore the clinical and therapeutic complications associated with JIA in a cohort of 167 patients diagnosed between 2020 and 2023 at "Sf Maria" Children's Hospital in Iasi, and to highlight complications that warrant attention in the management of the disease.

Materials and methods

A retrospective analysis was conducted on 167 patients diagnosed with JIA at "Sf Maria" Children's Hospital from 2020 to 2023. Data were collected on clinical and therapeutic complications, including the incidence of anterior uveitis, growth impairment, systemic inflammatory response, and medication-related side effects.

Results

Clinical complications most commonly observed were anterior uveitis, growth impairment, and a single case of macrophage activation syndrome (MAS). Inflammatory anemia and depression were also noted, reflecting the chronic inflammation and psychological impact of JIA. Therapeutic complications included corticosteroid-related issues, with leucopenia as a noted side effect of methotrexate treatment. Other prevalent complications were immunosuppression, infections, and Cushing's disease (obesity), which were frequently observed in the cohort.

Conclusions

The findings emphasize the necessity for comprehensive, multidisciplinary management of JIA to address both the physical and psychological aspects of the disease. Early detection and appropriate treatment of complications are crucial for improving patient outcomes. Further research is needed to expand our understanding of JIA and its complications, with the goal of improving the quality of life for affected children.

Positive Brain Abscess Cultures are Related to Longer Hospitalization and Worse Outcomes

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Introduction

Brain abscess is a focal intraparenchymal infection characterized by an encapsulated collection of purulent material, immune cells and other material following bacterial or fungal infection [1]. Brain abscess constitutes a critical neurosurgical condition with low numbers of positive cultures which makes additional challenges in management.

Aim of the study

The objective of this single-center study is to review our experience, to determine the predictors related to the outcome.

Materials and methods

The retrospective study recorded clinical and neuroradiological features of patients who were treated at the Lithuanian University of Health Sciences Hospital between 2018 and 2023. The patient cohort was stratified into positive (G+) and negative bacterial growth (G-) detected in pus culture. The functional status was assessed using the modified Rankin Score (mRS) at discharge. Statistical analysis was accomplished using the IBM SPSS Statistics 27.0 software package. Differences between the favourable (mRS of 0-3) and unfavourable (mRS of 4-5) outcome groups were tested.

Results

The study cohort comprised 65 patients (age mean ± SD, 52.83 ± 18.13; range 2 to 88; 42 (64.6%) male and 23 (35.4%) female). Postoperative infections with epidural or subdural empyemas (N 30, 46.2%) were excluded and only supratentorial intraparenchymal abscesses (N 35, 53.8%) were analyzed. Unfavorable outcomes were reported in 8 patients (23%), out of which 4 patients died, those patients were older (mean ± SD, 54 ± 23 vs. 74 ± 12, $p<0.05$). No culture growth was detected in 26 cases (74.3%) compared to 9 positive cases (25.7%). Within the G+ group, 5 patients (55.6%) manifested abscesses with multilobular involvement, while in the G- cohort, 10 patients (38.5%) exhibited frontal lobe abscesses ($p=0.045$). Of note, median duration of hospitalization was longer in the G+ cohort (37 ± 31 vs. 22.5 ± 19 days, $p<0.05$) also as more worse outcomes ($p<0.001$).

Conclusions

Structural factors such as deep-located abscess, extension of the infection into the ventricles with ventriculitis, obstructive hydrocephalus and multiple lesions leads to an unfavourable outcome. Of note, immunocompromised patients have an insufficient inflammatory response and therefore may not show a significant response of inflammatory markers in the poor outcome group. Aggressive treatment with surgery, if indicated, and careful management of the specimen for culture may more often improve to prescribe targeted antibiotic therapy into the pathogen to prevent irreversible outcomes.

No funding was received for this research.

Association between Physiological Variables and Morbidity of Gastrojejunals Ulcers in Adult Patients

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Introduction

Gastroduodenal ulcers are erosive lesions that develop in the gastric or duodenal mucosa due to an imbalance between protective and aggressive factors within the gastrointestinal tract. Many factors such as systemic, anatomical, resistance to H. pylori infection could be significant in the etiology such as age, gender and body mass index.

Aim of the study

To assess the prevalence, morbidity pattern and dependence of age and gender among patients with gastrojejunal ulcers in the Hospital of the Lithuanian University of Health Sciences from 2018 to 2023.

Materials and methods

Data of study was used from the Health Information Centre of the Institute of Hygiene and was calculated from the State Health Insurance Fund under the information system SVEIDRA of the Ministry of Health of Lithuania. 1530 cases of gastrojejunal ulcers were detected in the period from 2018 until 2023 in Kaunas Hospital. IBM SPSS statistics 23.0 software was used to statistically analize the data. The incidence of gastrojejunal ulcers was compared – using the Student t test, t-test for inpedendent samples criteria based on percentage distributions.
Statistical significance $p<0,05$. According to the World Health Organization (WHO), the subjects were divided into three groups by age: patients under 18, from 18 to 65 years and over 65 years of age. In this study only 2 groups were analysed – adults and seniors.

Results

From 2018 to 2023, 1530 cases of gastrojejunal ulcers were identified and 99,87% of them belonged to adults. Analysing the general trend of morbitidy of the gastrojejunal ulcers the overall incidence decreased from 22.22% to 16,79% throughout the review period. Stastitically significant difference was found between age groups ($p<0.05$) in the overall trend of morbidity of the condition.

Conclusions

The senior group have the greatest morbidity rate of gastrojejunal ulcers and women made up the majority of the patients diagnosed with it.

Identification of Novel Binding Partners of Mixed-Lineage Kinase 4

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Introduction

Mixed-Lineage Kinase 4 (MLK4) is overexpressed in various cancers and linked to poor prognosis. It promotes migration, invasiveness, DNA damage response, and chemoresistance in triple-negative breast cancer (TNBC). However, a comprehensive understanding of the MLK4 network driving cancer advancement requires further research.

Aim of the study

This study aims to investigate the MLK4 interactome to uncover its molecular mechanisms in cancer progression and aid therapy development.

Materials and methods

To achieve this goal, we employ coimmunoprecipitation (co-IP) coupled with mass spectrometry to investigate the MLK4 interactome in TNBC cells – HCC1806. Then, the candidates are validated by co-IP followed by immunoblotting, immunofluorescent and fractionation experiments. An in vitro kinase assay using inactive GST-MLK4β kinase domain is applied to determine whether any candidates are MLK4 direct substrates. Moreover, phenotypic assays such as colony formation, migration and comet assay are conducted to elucidate the functional implications of these interactions in cancer cells.

Results

The 54 new interactors of MLK4 were identified. They were involved in cell cycle, PI3k/Akt signaling, MAPK signaling. These hits were mostly present in cytosol, nucleus or plasma membrane in cellular component terms. Afterward, 14-3-3 - the scaffold proteins, GNL3 - a nucleolar protein, MLK1 - another MLKs member, RAN – a RAS-related nuclear protein and MYBBP1A - a transcriptional regulator were validated as potential MLK4 – binding partners. Interestingly, MYBBP1A is chosen for further validation cause it modulates p65 (NF-kB) activity, which is regulated by MLK4 in DNA damage and chemoresistance in TNBC cells (Marusiak 2019, Mehlich 2021). The interaction of MLK4 and MYBBP1A localizes in the nuclei, which was confirmed by co-staining and fractionation experiments. Notably, this interaction is disrupted under doxorubicin treatment, indicating a dynamic regulatory response to chemotherapy.

Conclusions

The interaction of MLK4-MYBBP1A was selected for deeper validation to understand the molecular mechanisms of MLK4 signaling promoting cancer progression. We confirmed the interaction between MLK4 and MYBBP1A in the nuclei under basal conditions. Moreover, this interaction may be interrupted upon chemotherapeutic treatment. Further study will investigate the role of this network in functional roles of this network in DNA damage response through p65 signaling and the nuclear function of MLK4 in regulating cancer cell behaviors.

MLK4 role in the cross-talk between triple-negative breast cancer cells and tumour-associated macrophages.

Authors

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Introduction

Triple-negative breast cancer (TNBC) is an aggressive subtype of breast cancer with limited treatment options. Previously, our group reported that MLK4 kinase is highly upregulated in TNBC patient samples, and high level of MLK4 are correlated with significantly shorter overall survival. Additionally, we demonstrated that MLK4 activates NF-κB signalling and promotes a mesenchymal phenotype in TNBC cells. Tumour-associated macrophages (TAMs) can create a tumour-promoting microenvironment, thereby enhancing cancer aggressiveness. To date, no studies have investigated the role of MLK4 in TNBC-TAM communication.

Aim of the study

The goal of this study is to describe the MLK4 signalling in the cross-talk between TAMs and TNBC cells.

Materials and methods

In this project, we examined M2 macrophages (pro-tumourigenic) derived from human monocytic cells (THP-1), human monocyte-derived macrophages (hMDM), and two TNBC cell lines - SUM149 and HCC1806 with inducible MLK4 knockdown. We applied the co-culture approach, colony formation, migration and invasion assays, RNA sequencing, and cytokine arrays.

Results

The co-culture experiments showed that the presence of M2 macrophages can boost the proliferation, migration, and invasion of TNBC cells. Importantly, the knockdown of MLK4 in TNBC cells significantly reduces these effects. Furthermore, we explored the MLK4-dependent changes in gene expression of TNBC cells stimulated or not by co-culture with M2 macrophages. Gene ontology analysis confirmed that genes whose expression was increased as a result of M2 macrophage stimulation and high MLK4 levels are involved in migration, invasion, and metastasis processes (e.g., WISP1, ADAM12, and MMP28). Moreover, we investigated the changes in the secretome landscape using cytokine arrays. The CXCL1 chemokine was marked out as one of the most significantly elevated factors. Next, we performed phenotypic assays using CXCL1 to mimic co-culture conditions. Our data showed that CXCL1 treatment does not increase the proliferation of TNBC cells but significantly fuels the migration of TNBC cells in an MLK4-related manner.

Conclusions

We showed that MLK4 can regulate the proliferation, migration, invasion, and gene expression of TNBC cells induced by tumour-supporting macrophages. Our data indicate the connection between MLK4 and CXCL1 signalling. The results from this study will describe the complex dependencies between TNBC cells, TAMs, and MLK4. Hopefully, they will lead to the design of new anti-cancer treatments for TNBC patients.

Preliminary report on the value of SII

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Introduction

This single-centre study aimed to evaluate the effectiveness of cetuximab and panitumumab combined with first-line chemotherapy (FOLFIRI or FOLFOX) on the survival of patients with metastatic colorectal cancer (mCRC).

Aim of the study

This study assessed the prognostic role of the Systemic Immune-Inflammation Index (SII) in mCRC.

Materials and methods

A retrospective cohort study was conducted on 83 patients with mCRC who received either cetuximab (63%, n = 52/83) or panitumumab (37%, n = 31/83) combined with first-line chemotherapy. The SII, which is based on platelet, neutrophil, and lymphocyte counts, was analysed. Receiver operating characteristic (ROC) curves were applied to determine the sensitivity and specificity of SII. Progression-free survival (PFS) was defined as the time from treatment initiation to disease progression, according to RECIST 1.1 criteria (if available) or the last follow-up date. Overall survival (OS) was defined as the time from treatment initiation to the date of death or the final follow-up. Univariate and multivariate Cox proportional hazard regression models were used to analyse clinical prognostic factors.

Results

No significant differences were observed in PFS and OS between the cetuximab and panitumumab groups (log-rank test, p = 0.9790 and p = 0.2889, respectively). The ROC curve analysis showed that the area under the curve (AUC) of SII for OS evaluation in mCRC patients was 0.630, with an optimal cut-off value of 771.12. Kaplan-Meier survival curves demonstrated that the median OS in the SII < 771.12 group was significantly higher than in the SII ≥ 771.12 group (10.7 months [95% CI, 6.28–31.64] vs. 6.3 months [95% CI, 4.54–42.83], respectively).
Similarly, the median PFS in the SII < 771.12 group was significantly higher than in the SII ≥ 771.12 group, with statistically significant differences (HR: 2.03 [95% CI, 1.15–3.57], p = 0.0142; HR: 1.73 [95% CI, 1.01–2.98], p = 0.0466, respectively). In multivariate analysis identified BMI > 30, G3 tumour grading, and high SII level as independent unfavourable risk factors for PFS in patients with mCRC. Additionally, high SII level was the only independent unfavourable risk factor for OS.

Conclusions

Cetuximab- and panitumumab-based therapies demonstrated comparable efficacy in mCRC patients. The SII emerged as a potential prognostic marker, with elevated levels correlating with poorer outcomes. These findings emphasize the importance of further investigating inflammatory markers in mCRC.

SAM, SAH, Methionine, Choline, and Betaine in Patients with Hypertension and Obesity

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Introduction

One-carbon metabolites play a crucial role in providing methyl groups for the methylation of nucleic acids, proteins, and phospholipids. S-Adenosylmethionine (SAM) is a key methyl group donor in biological methylation reactions. After donating its methyl group, SAM is converted into S-Adenosylhomocysteine (SAH). Choline is a precursor of betaine, which participates in the one-carbon cycle as a methyl group donor. Epigenetic modifications resulting from altered one-carbon metabolism may affect gene expression patterns involved in lipid metabolism and adipogenesis.

Aim of the study

The aim of this study was to evaluate the potential relationship between one-carbon cycle metabolite concentrations and the prevalence of hypertension and severity of obesity.

Materials and methods

The study involved a population of 750 individuals with obesity. Parameters such as age, weight, BMI, glucose concentrations, and blood pressure were recorded. Measurements of one-carbon metabolism markers—including SAM, SAH, methionine, choline, and betaine concentrations—were analyzed. For the quantification of these markers in human plasma, we used a newly developed and validated liquid chromatography–tandem mass spectrometry (LC–MS/MS) assay.

Results

SAM concentrations were associated with BMI and hypertension. Higher SAM concentrations were observed in patients with higher obesity classes, i.e., 167.5 ± 64.3 nM in class III obesity compared to 146.5 ± 54.6 nM in patients with class I obesity ($p = 0.02$). Similarly, in patients with hypertension, SAM concentrations were higher (164.9 ± 62.4 nM) compared to individuals with normal blood pressure ($p = 0.007$). The same associations were observed for methionine and betaine.

Conclusions

In summary, abnormalities in one-carbon metabolism may contribute to hypertension and influence obesity through various genetic and epigenetic mechanisms. Disruptions in the methionine–SAM–SAH pathway, where elevated SAM may contribute to dysfunction, possibly through effects on endothelial function and oxidative stress.

This work was supported by funds from the Ministry of Education and Science in Poland (SKN/SP/496250/2021).

Synthesis, Physicochemical Characterization, and Solubility Studies of the New Furazidin Cocrystal

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Introduction

Cocrystals may affect manufacturability (flow, compaction, processability) as well as solubility/dissolution, hygroscopicity and stability properties of drugs. The formulation of cocrystals is based on grinding at least two discrete neutral molecules at a stoichiometric ratio. Molecules in cocrystals are bond together via noncovalent bond interactions, mostly hydrogen bonding, but also van der Waals and $\pi\cdots\pi$ stacking interactions. The main benefit of cocrystallization is availability to enhance the pharmaceutical properties of drugs, without altering their therapeutic properties.

Aim of the study

Furazidin (FU), poorly water-soluble drug, an active pharmaceutical ingredient (API) used for the treatment of urinary tract infections. In this studies we present a method of a synthesis of two novel FU cocrystals and their structural and pharmaceutical studies.

Materials and methods

The selection of coformer molecules such as N-(2-hydroxyethyl)nicotinamide was based on the presence of complementary functional groups capable of forming hydrogen bond and the ΔpKa difference between them and FU. The milling method has been used successfully to obtain FU cocrystal. Fourier transformed infrared spectroscopy (FT-IR) and powder X-ray diffraction (PXRD) were used to provide information about the formation of cocrystal. Structural studies were supported by solubility tests.

Results

PXRD patterns and FT-IR spectra of the FU cocrystal are evidently different from that of starting materials. Changes of the positions, intensity of the peaks in the PXRD patterns indicate that these were not just ordinary physical mixtures. The cocrystal successfully formed by the hydrogen bonding interaction between API and coformers. Different hydrogen bond interactions in the cocrystals result in changes in the FT-IR spectra. The solubility in water and in pH 7.4 buffer and the dissolution rate of FU cocrystal were measured using ultraviolet-visible spectroscopy.

Conclusions

Solubility and dissolution research show that newly obtained cocrystal exhibited higher solubility than the FU. Therefore, it can be concluded that cocrystallization can improve the properties of the pharmaceutical solids, which showed a poor solubility or slow dissolution rate.

Searching for IL-15 Inhibitors Among Natural Polyphenols and Their Metabolites.

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Introduction

Interleukin-15 (IL-15) plays a crucial role in immune regulation, but its overexpression is associated with autoimmune diseases such as rheumatoid arthritis and inflammatory bowel disease. It drives inflammatory responses by stimulating the secretion of other pro-inflammatory cytokines, including TNF-α and IL-17, and activates the JAK/STAT signaling pathway, which plays a pivotal role in immune cell proliferation and survival. Natural polyphenols and their gut microbiota-derived metabolites have shown promising anti-inflammatory properties, yet their potential to inhibit IL-15 activity remains underexplored.

Aim of the study

This study aimed to identify natural compounds that selectively inhibit IL-15 activity and assess their potential to modulate immune responses associated with IL-15 overexpression.

Materials and methods

Nine polyphenols and their metabolites were studied: gallic acid, vanillic acid, homovanillic acid, p-coumaric acid, syringic acid, ellagic acid, protocatechuic acid, xanthohumol, and urolithin A. The cytotoxicity of these compounds was evaluated using human peripheral blood mononuclear cells (PBMCs), cultured in RPMI-1640 medium supplemented with 10% fetal bovine serum (FBS), 1% penicillin-streptomycin, and 2 mM L-glutamine. Cytotoxicity was assessed via propidium iodide staining followed by flow cytometry analysis. IL-15-induced secretion of tumor necrosis factor-alpha (TNF-α) and interleukin-17 (IL-17) was measured using ELISA. JAK/STAT pathway phosphorylation was assessed through western blot analysis using lysates from PBMCs treated with active compounds and stimulated with IL-15.

Results

Ellagic acid, xanthohumol, and urolithin A demonstrated significant inhibition of IL-15-induced TNF-α secretion in a concentration-dependent manner. The inhibition of IL-17 secretion was observed for ellagic acid and xanthohumol but was less pronounced. Cytotoxicity assays confirmed that these compounds were non-toxic at the tested concentrations. Additionally, western blot analysis revealed a slight inhibitory effect on JAK/STAT phosphorylation for urolithin A, while results for ellagic acid and xanthohumol were inconclusive.

Conclusions

The findings suggest that ellagic acid, xanthohumol, and urolithin A could serve as potential dietary modulators of IL-15 activity, offering a new perspective on nutritional interventions for autoimmune diseases. Further studies should focus on their mechanisms of action and potential therapeutic applications.

National Science Centre, Poland, grant No 022/47/D/NZ9/01272; Medical University of Warsaw, Poland, grant No M/GW/02/22

Psychiatry & Clinical Psychology Session

Session Coordinators:
Małgorzata Resiak, Anna Kułach

Honorary Patronage:

Clinical Profile of Alcohol Dependent Patients According to Lesch Typology One Year After COVID-19 Pandemic-Comparative Stude

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Introduction

In addition to physical health, COVID-19 pandemic also affects people's mental health. It has contributed to the increase in general social tension. There was and increased use of alcoholic beverages as a form of self-help. Lesch typology classifies alcoholics into allergic, anxious, depressive and compulsive type.

Aim of the study

The aim of the study is to determine the sociodemographic and clinical characteristics of alcoholics one year after the COVID-19 pandemic.

Materials and methods

The research was conducted as a retrospective cross-sectional study at Department of the Addictions, Psychiatry Clinic of the Clinical Center of Vojvodina in Novi Sad. It included 218 patients who were admitted for treatment in the period from October 2022. to October 2023. In order to classify patients according to Lesh typology, MS Windows software available in the public domain was used.

Results

Of the 218 patients treated for alcohol addiction, 83% were male with an average age of 51 (SD±11). Accoeding to Lesch typology, 51% of patients belong to type III, 21% to type I, 17% to type II and 11% to type IV.

Conclusions

The majority of patients treated for alcohol addiction are male aged 35 to 65. According to Lesch typology, the most represented type was depressive, followed by allergic, anxious and the least compulsive type. The most prevalent psychiatric comorbidities are depression and suicidal tendencies.

How Do Medical Students Rate Their Mental Health?

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Introduction

Mental health, as defined by World Health Organization, is "a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community". Medical students are known to be at a higher risk of stress, continuous psychological pressure and various learning related stressors. This prompts a need to explore the topic of mental health among medical students and their daily difficulties.

Aim of the study

The study was conducted to find out how studying medicine affects students' mental health. The purpose was to assess whether studying medicine has a negative, neutral or positive impact on psychological well-being of students.

Materials and methods

The study used an original questionnaire. An anonymous and voluntary survey was conducted among second- and third-year medical students from Cardinal Stefan Wyszynski University in Warsaw. The questionnaire included questions about emotional and psychological issues, such as sadness and melancholy, need to cry, self-esteem and anxiety. Questions related to the course of studying comprised such areas as quality of life, social contacts, daily life and physical activity. The data collected was statistically analyzed.

Results

13,7% of respondents felt dissatisfied with their self-esteem. Sadness and melancholy were experienced by 21,4% of students. 18,8% of respondents indicated they needed to cry. An aversion to looking in the mirror was experienced by 15,4% of respondents. Mood swings were reported by 32,2% of participants and concentration problems by 34,5% of students. 33,4% of respondents experienced feeling of irritation. 24% of students felt anxious about their own health and 19,6% experienced social anxiety. Generalized anxiety was experienced by 25,6% of respondents. 22,2% of students felt a lack of desire to get out of bed in the morning and 20,5% of students always or regularly experienced the sense of shame.

Conclusions

The psychological well-being of medical students appears to be significantly reduced. The findings suggest the need for medical schools to take an action that should consist of providing students with professional help from qualified specialists and promoting mental health awareness. It is crucial to pay closer attention to risk factors and find solutions to prevent mental health disorders among medical students.

Suicides in Warsaw and Its Surrounding Areas in The Context of The COVID-19 Pandemic

Authors

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Introduction

The COVID-19 pandemic emerged at the turn of 2019 and 2020. It caused many changes in the functioning of society and was a major stressor. Remote work was introduced, schools were closed, and access to healthcare, including access to psychiatric care, was restricted. Many individuals were quarantined, and media narratives emphasized that health and life were at risk. This was expected to be reflected in worsening mental health and suicide rate statistics.

Aim of the study

The aim of this study was to analyse changes in the number of suicides, the method of committing suicide and the age and gender structure of individuals committing suicide during the COVID-19 pandemic period compared to the pre-pandemic period.

Materials and methods

The data for the study were sourced from a handwritten register in which bodies undergoing forensic autopsies at the Chair and Department of Forensic Medicine, Medical University of Warsaw, are registered. The first stage involved manually transcribing the register into Excel. The initial analysis included all cases from 2019 (the year before the pandemic) and 2020 (the pandemic year) – n=2939. In this group, suicide cases were analyzed separately. Statistical significance was tested using the Chi-Square and Proportion Test.

Results

The total number of suicides in 2020 was slightly higher (n=208) compared to 2019 (n=197), with the most notable increase in suicides among children and adolescents (aged 0-19 years) – 2020: n=14, 2019: n=6, but these were not statistically significant ($p>0.05$). However, a statistically significant increase in suicide deaths was observed, where the cause of death was intentional poisoning (2019-n=5; 2020-n=17). During the pandemic, a small increase in suicides among men was noted (2019: n=152, 2020: n=162), whereas there was no change in the number of suicides among women (n=45 in both years)

Conclusions

In the first year of the COVID-19 pandemic, no significant increase in the number of suicides was observed in Warsaw and its surroundings; however, there was a noticeable increase in suicides among the youngest age group. The change in the number of suicides was not related to women. A significant change was related to the method of suicide, as there was an increase in the number of deaths from intentional poisoning.

Therapeutic Efficacy of a Chatbot-Supported Cognitive-Behavioral Therapy for Depression, Anxiety, and Social Anxiety

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Introduction

Recent meta-analyses show promising results for brief interventions using artificial intelligence-based chatbots to treat common mental disorders like depression or generalized anxiety. A previous study showed that a 2-week use of Fido, the first Polish therapy chatbot, reduced depressive and anxiety symptoms in a subclinical sample of young adults, comparable to a self-help book.

Aim of the study

This open-label, randomized controlled trial (RCT) investigates whether a chatbot-supported intervention yields similar therapeutic outcomes to traditional online cognitive-behavioral therapy (CBT) sessions in a clinical sample of adults with depression, generalized anxiety, social anxiety, and/or adjustment disorders.

Materials and methods

89 participants (aged 18-39) were randomly allocated in a 1:1:1 ratio to 3 arms: experimental (chatbot-supported CBT), active control (traditional CBT), and passive control (5-week waitlist). The experimental group received five 15-minute online sessions with a human CBT therapist and an interactive dialogue with the chatbot, covering psychoeducation, automatic recognition of cognitive distortions, Socratic questioning, distinguishing between thoughts and emotions, and gratitude practice. The active control group received five 50-minute online sessions with a human therapist, with content matching the chatbot intervention. Participants were assessed at 5 time points (before and after the intervention, and at 1-, 3- and 6-month follow-ups) using self-report instruments for measuring depression (PHQ-9, CESD-R), generalized anxiety and worry (GAD-7, PSWQ), social anxiety (LSAS, SAD-D based on DSM-V), and quality of life scales. Primary outcomes were analyzed using an intention-to-treat approach.

Results

Both chatbot-supported and traditional interventions effectively reduced symptoms of depression and generalized anxiety, with more significant therapy effects observed in the traditional CBT group. Positive effects on depression and anxiety were maintained at 1-month follow-up. However, neither active intervention showed superiority over the waitlist condition in reducing social anxiety symptoms. Data collection for the 3-month follow-up is ongoing and expected to be completed by April 2025.

Conclusions

Integrating the Fido chatbot with brief therapy sessions may effectively reduce depressive and anxiety symptoms. Chatbots may be a cost- and time-effective option for assisting psychological treatment and mental health promotion interventions.

A Rare Coping Strategy in a Sexually Abused Child - Case Report

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Background

Mental health issues related to stress have come to be increasingly understood as serious health concerns, particularly among children. Post-traumatic stress disorder, which can be induced by traumatic experiences such as abuse, violence, or natural disasters, is well documented to have long-lasting effects on a child's psychological and emotional well-being.

Case Report

We present here the case of a boy with a history of sexual abuse, who presented with an atypical coping mechanism—age regression to infant-like. This is a rare response, wherein the child regressed to the behaviors of much younger children, such as sucking his thumb and looking for infant-like comfort objects. Age regression can also be an unconscious coping defense mechanism for dealing with over-trauma, a means for the child to retreat mentally to a perceived safe, earlier stage of development.

Conclusions

This case emphasizes the importance of mental health practitioners being knowledgeable regarding the variety of coping reactions that may manifest in abused individuals, particularly those that are less common. Familiarity with both normal and pathological reactions to trauma is crucial in guaranteeing accurate diagnosis and the development of an effective treatment plan. Post-traumatic stress disorder among children and adolescents is on the rise but is frequently neglected, with many young people not receiving the help they need. It is crucial that clinicians working with such patients are sensitive to typical as well as atypical coping strategies in order to offer proper treatment. This case presentation aims to raise clinicians' awareness and understanding of the increasing prevalence of stress-related mental illness in young people and highlight the importance of early and informed intervention.

Autism Spectrum Disorder in an 18-Year-Old Woman with Developmental Delays, Sensory Sensitivities, and a History of Traumatic Brain Injury with Aphasia

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Background

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition affecting social skills, communication, and presenting in rigid behavior patterns. Its manifestation may vary significantly, which can complicate the diagnosis, especially when conditions such as traumatic brain injury (TBI) or aphasia coexist. However, determining the precise etiology of speech disorders in a patient with a history of head trauma, who also exhibits ASD-related impairments, remains challenging. Here we aim to present a case report as an example of how important unbiased view and full differential diagnosis is in patients with ASD and brain trauma where symptoms may be similar.

Case Report

This case report presents an 18-year-old woman who was born prematurely as the second twin and she was also involved in a car accident at the age of one during which she experienced severe head trauma. In early childhood the patient presented with developmental delays, including speech disorders. Throughout her school years, she faced difficulties with comprehension, analytical thinking, and social integration. Her sensory processing issues, inflexible behavior patterns, and selective eating habits further influenced her daily life. As an adult the patient experiences social difficulties, cognitive impairments, and strongly expressed sensory sensitivities. A childhood head trauma, which led to skull fractures and strabismus, added complexity to her cognitive and linguistic profile. Persistent changes in the frontal lobes were confirmed by Magnetic Resonance Imaging (MRI). However, her symptoms extended beyond the consequences of TBI and aphasia, ultimately supporting an ASD diagnosis.

Conclusions

This case highlights the necessity of early identification and personalized interventions for individuals with complex neurodevelopmental profiles. Both head injury and ASD may have affected speech development. A multidisciplinary approach is crucial in ensuring comprehensive support, fostering adaptive functioning, and enhancing overall daily life.

Bupropion for Kleine-Levin Syndrome: A Potential Approach for Symptom Relief

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Background

Kleine–Levin syndrome (KLS), also known as „Sleeping beauty syndrome“, is a rare sleep disorder of unknown cause, primarily affecting teenage boys and young men. It is characterized by intermittent hypersomnolence, hyperphagia, cognitive and behavioral disturbances, and sometimes hypersexuality. Episodes last from a week to 1–2 months, with asymptomatic intervals. No available treatment is reported as effective.

Case Report

In 2016, an 18-year-old male was hospitalized with worsening symptoms over a month. His condition began with hypersomnolence, overeating, hypersexuality, and inappropriate behavior. He reported seeing dream-like images and described feelings of detachment, as if his soul was leaving his body, and was often observed staring blankly. His mother noted aggression, irritability, cursing and inappropriate sexual language. Diagnosed with acute polymorphic psychotic disorder, he was discharged on olanzapine 5 mg, showing slight improvement. He soon returned with excessive sleep, poor hygiene, and school avoidance. His appetite had severely increased, gaining 10 kg in a month. His behavior remained abrasive, frequently cursing and blaming others, without understanding the cause of his actions. Brain MRI revealed a right temporal arachnoid cyst, anterior temporal hypoplasia, and moderate hydrocephalus. During evaluation, the patient was oriented but uncooperative, with short responses, dysphoric mood, and struggle to articulate his feelings. He appeared restless, with impaired concentration, and occasionally requested to go home or sleep. Thorough blood and urine tests, imaging, and specialist consultations, including neurology, neurosurgery, endocrinology and genetics, showed no abnormalities. He was prescribed tiapride 300 mg and carbamazepine 400 mg. In January 2025, the patient visited an outpatient psychiatric clinic, reporting increased sleepiness, hyperphagia, and low energy. His parents noted extreme irritability and avoidant behavior. Due to depressive symptoms, he was prescribed bupropion 300 mg daily. In 3 weeks, his sleepiness decreased, eating patterns stabilized, and energy levels improved.

Conclusions

Kleine-Levin syndrome is a diagnosis of exclusion, requiring the ruling out of metabolic, neurological and psychiatric disorders. Despite no effective treatment, bupropion may help alleviate hypersomnia, hyperphagia and low energy in some cases.

Delirium- a Potential Sign of Neoplasm

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Background

Delirium is a common psychiatric syndrome prevalent in elderly patients. According to the DSM-5-TR and ICD-11 it is characterized by a disturbance in awareness, orientation and attention. Etiology is heterogenous and can be attributed to infection, electrolyte imbalances, substance withdrawal or other factors disrupting homeostasis. Treating delirium is difficult as the underlying medical condition is not always apparent. This case report presents delirium as a possible indicator of physiological imbalance, such as a tumor.

Case Report

82 year old woman with a preliminary diagnosis of organic mood (affective) disorder. Presenting with visual hallucinations, suicidal thoughts, fluctuating disturbances of consciousness and delusions of persecution. Previously treated at the mental health clinic for depressive disorders with 75 mg of venlafaxine and 200 mg of quetiapine. A change in medication was made with the discontinuation of previous drugs and administration of 1mg of risperidone and 5mg of donepezil. After the change in medication the patient still exhibited qualitative disturbances of consciousness.The search for somatic cause of the delirium began with additional blood and urine tests. During the hospitalization laboratory findings revealed elevated C-reactive protein levels (CRP) 5,76 mg d/l and leukocytosis 14 000/µl. Clinical examination revealed crackles at the base of the lungs, back pain and prolonged QT interval.
Ceftriaxone 2g/day IV was started after the collection of blood and urine samples. After an initial slight decrease in CRP following 4 days of antibiotic therapy, a rise in CRP to 7.1 mg/dL and persistent leukocytosis at 15 000/µl was observed after 7 days of treatment. A neurological consultation was ordered, during which no signs suggesting central nervous system infection were observed. Due to suspected somatic causes of delirium and ineffectiveness of antibiotic therapy, the patient was transferred to the internal medicine department. During further diagnostic workup, the patient was found to have metastatic cancer of idiopathic origin.

Conclusions

This case suggests that in patients with delirium, metastatic cancer should be considered during the differential diagnosis. Thus, psychiatric symptoms such as delirium may serve as a marker of an underlying systemic disease.

Difficulties in Controlling Sexual Behaviour: A Case Report

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Background

Paraphilias are frequent, extreme, sexually stimulating thoughts, urges that cause distress or disable and demand nonconsenting people of age, adolescents or non-living objects. It tends to be undiagnosed and untreated because of its judgmental nature. This is a case of a 49-year-old man with exhibitionistic behaviour.

Case Report

The 49-year-old male patient was first admitted to a psychiatric clinic after a suicide attempt in 2012, but specific complaints about exhibitionistic impulses were reported only a few years later, when legal proceedings for the sexual abuse of minors began. After another suicide attempt, which occurred while he was incarcerated, the patient was treated in the intensive care unit. He then reported a long-term impulse control disorder, including a persistent and uncontrollable desire to expose his naked body. The need first began in childhood while living in an orphanage, where punishments for misbehavior included undressing and standing naked in the corner. The patient stated that he did not find these punishments frightening and even sought them out. As an adult, he would expose his body in public spaces and sought medical attention with false complaints about genital abnormalities, hoping that doctors would examine him. He claims that the urges appear suddenly, are uncontrollable and unrelated to sexual satisfaction, but rather to a sense of relief and euphoria that he experiences when exposing his naked body. He also claims that he has never had any sexual intercourse and does not seek it through exhibitionistic behaviour. Following these complaints, the patient was diagnosed with „Other sexual preference disorders" and prescribed Paroxetine, however the medication was taken irregularly and had no effect. Upon the persistent anxiety, adaptation difficulties and the recurrence of suicidal thoughts, the patient sought psychiatric help again. Legal proceedings resulted in the patient being acquitted, and he is currently attending a psychiatric inpatient unit. He is receiving treatment with 2 mg of Risperidone, along with psychosocial rehabilitation. Although the patient himself reports that the uncontrollable exhibitionist impulses occur less frequently, the treatment remains limited due to a lack of general resources and financial constraints.

Conclusions

This case underscores the complexities of managing paraphilic disorders and proposes the need to further the research and diagnostic opportunities.

I am a Zoophile and a Pedophile but Do I Know What That Means? - Case Report

Authors

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Trustee of the paper

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Background

A 25-year-old man is in a Forensic Psychiatry Ward with Enhanced Security due to repeated sexual activity with a minor and sexual abuse of an animal. The man has been diagnosed with moderate intellectual disability.

Case Report

The patient is a single, childless male with a middle school education. He has never held a job. He comes from a religious family with many children. He was raised by both parents. There were no issues with alcohol or violence in the home. He has a history of self-harm. His first exposure to sexuality was in school, where he received information about gender, sexuality, and contraception. He does not understand the concept of "sexual drive" or "sexual orientation." When asked about sexual preferences, he only stated that he would like to have intercourse with a woman. When asked about masturbation, he claimed to have only done it out of boredom. He reported having regular vaginal intercourse with a partner who was 5 years older than him. Information about his sex life is contradictory due to repeated confirmations and denials of the situation, making it impossible to determine the true course of events. The subject did not admit to the charges brought against him by the Court. He claimed that intercourse between him and the minor occurred only once. According to his statements, the victim initiated the sexual relations.

Conclusions

A patient with moderate intellectual disability was sentenced to 10 years of imprisonment for repeated sexual activity with a minor. According to expert psychiatrists, his ability to understand the meaning of his actions was significantly limited. After serving his sentence, the court ordered a security measure against the defendant. He is currently still in the Forensic Psychiatry Ward with Enhanced Security.

Radiology Session

Session Coordinators:
Maja Majewska, Mikołaj Bańkowski

Honorary Patronage:

National Consultant in Radiology and Imaging Diagnostics

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RADIOLOGICZNE
1925

Awareness of Point-of-Care Ultrasound Among Students of Polish Medical Schools

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Trustee of the paper

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Introduction

Point-of-care ultrasound (POCUS) is an important tool in clinical practice across all fields of medicine, aiding in rapid diagnosis, decision-making, and ultrasound-guided procedures.
Despite its growing relevance, POCUS training is not consistently integrated into medical school curricula. Understanding students' awareness and exposure to POCUS can help shape future educational strategies.

Aim of the study

This study aimed to assess the level of awareness, theoretical knowledge, and practical experience with POCUS among students at Polish medical universities. Furthermore, this study aimed to explore students' perspectives on the integration of POCUS into medical education, including their expectations regarding its teaching format, and perceived barriers to its implementation.

Materials and methods

A survey-based study was conducted among medical students and young physicians across 17 Polish medical universities. The 19-item questionnaire collected online data on participants' demographics, exposure to POCUS training during medical education, and perceptions of POCUS in medical education with perceived barriers. Responses were analyzed using descriptive statistics.

Results

A total of 353 responses were recorded. 82.7% (n=292) of respondents were in the clinical years of their studies or had already completed their medical education. Most respondents recognized the significance of POCUS in clinical practice, with 95,5% (n=336) considering it an essential skill for clinicians. However, only 4.5% (n=16) reported receiving sufficient hands-on training during their studies. The most frequently covered POCUS topic during medical studies was abdominal assessment (82.8%), while the least covered were gynecological ultrasound (26.6%) and vascular assessment with ultrasound-guided cannulation (30.2%). Regarding hands-on experience, 75.9%, (n=268) of respondents reported having performed an ultrasound examination independently <5 times during their medical education.

Conclusions

Although Polish medical students recognize the value of POCUS, their hands-on training remains limited. Integrating structured POCUS education into medical curricula and increasing access to hands-on training could enhance students' competency and confidence in its clinical application.

Reconstructing Cerebral Hemodynamics from Sparse Data Using Neural Operator Transformers

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Introduction

Cardiovascular diseases remain a major cause of mortality and disability, un- derscoring the need for improved brain hemodynamics analysis. The Circle of Willis plays a crucial role in maintaining cerebral blood flow. However, con- ventional measurement and computational methods often lack the accuracy or speed required for real-time clinical application.

Aim of the study

The primary objective of this study is to develop a computational frame- work capable of reconstructing cerebral hemodynamics from sparse clinical-like data while reducing the time complexity of traditional methods and enabling the efficient reconstruction of subject specific boundary conditions.

Materials and methods

We propose a novel compu- tational framework that integrates a one-dimensional reduced-order blood flow model with two neural operator architectures: the General Neural Operator Transformer and the Variational Autoencoding Neural Operator. Synthetic data are first generated via finite-element simulations of the 1D system under a wide range of parameter and boundary-condition variations. Surrogate model learns to predict blood velocity, area, and pressure given sparse inputs, while generative model provides a prior to ensure physiologically plausible parame- ter sampling. An inverse procedure is then employed to reconstruct full Cir- cle of Willis hemodynamics from limited clinical-like observations. Finally, the subject-specific boundary conditions are derived from the reconstructed flow and pressure waveforms via an adaptive grid search fitting procedure.

Results

Across major vessels of the Circle of Willis, our surrogate model achieves below 1% mean rel- ative errors in velocity and area predictions, maintaining approximately 3.3% global error in reconstructing entire networks from sparse measurements. The adaptive boundary-condition estimation closely reproduces the original outlet pressures, facilitating case specific parameter calibration.

Conclusions

This neural-operator- based framework enables fast, accurate Circle of Willis hemodynamic recon- struction and boundary-condition inference from limited data. By coupling rapid surrogate modeling with inverse analysis, it holds potential for real-time clinical integration and personalized digital-twin workflows in cerebrovascular diagnostics.

The authors acknowledge funding support from: W.K., J.M., M.L. are sup- ported by the Medical University of Warsaw [grant numbers 1M33/1/M/MG/N/23- 3], W.K. and J.M. are supported by Poznan Supercomputing and Networking Center [Agreement nr 1128/2310/2023, 1152/2310/2023], T.R. is supported by Wroclaw University of Science and Technology.

Reference Relaxation Time Values in T1- and T2-Weighted Sequences for Myocardial Mapping Using Magnetic Resonance Imaging

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Introduction

T1- and T2-weighted mapping techniques have become essential tools for assessing myocardial tissue characteristics in cardiac magnetic resonance imaging (MRI). However, the range of reference values for these techniques is strictly dependent on the magnetic field strength and the data acquisition software. Accurately determining the reference relaxation time values in T1- and T2-weighted sequences is crucial for diagnosing heart diseases such as myocarditis, amyloidosis, and Fabry disease, which lead to characteristic changes in relaxation times.

Aim of the study

The aim of this study was to determine the reference relaxation time values in T1- and T2-weighted mapping sequences in healthy adult volunteers examined at the University Hospital in Kraków using a Siemens Magnetom 1.5T MRI scanner.

Materials and methods

A total of 51 healthy volunteers aged 20 to 43 years were included in the study. All participants underwent cardiac MRI using a 1.5T scanner, assessing ventricular volume and systolic function. Mapping sequences were analyzed in the end-diastolic phase of the left ventricle in three long-axis projections (four-chamber, three-chamber, and two-chamber views) and three short-axis segments (basal, midventricular, and apical). Image analysis was performed by a single operator. For each participant, the mean relaxation time in T1- and T2-weighted sequences was calculated, and the normal reference range was defined as the mean ± 2 standard deviations. Statistical analyses were conducted using Statistica software. The study was approved by the Bioethics Committee of Jagiellonian University, and all participants provided written informed consent.

Results

The mean relaxation time in the T1 mapping sequence was 993.1 ms, with the lower limit of normal at 930.3 ms and the upper limit at 1055.9 ms. Similarly, for T2 relaxation time, the mean value was 45.6 ms, with the lower limit at 40.3 ms and the upper limit at 50.9 ms.

Conclusions

The obtained reference values are consistent with current literature data, confirming their validity as a reference point for future clinical studies. Establishing reference values for a specific population and equipment is crucial for the accurate interpretation of results and the diagnosis of cardiac pathologies, such as inflammatory and infiltrative diseases.

Short-Term Follow-Up of Myocardial Changes After Kidney Transplantation by Cardiac Magnetic Resonance Using Native T1 Mapping

Authors

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Introduction

Kidney transplantation improves cardiovascular outcomes in patients with reduced myocardial function and heart failure. However, detecting early structural myocardial changes remains challenging. Cardiac magnetic resonance (CMR) T1 mapping is a non-invasive imaging technique that allows early detection of diffuse myocardial tissue injury arba damage, which is valuable in assessing early cardiac changes in kidney transplant recipients.

Aim of the study

To evaluate the significance of CMR native T1 mapping in detecting and monitoring early myocardial changes during short-term follow-up after kidney transplantation.

Materials and methods

This retrospective study included 22 patients who underwent CMR using a 3 Tesla scanner baseline at the beginning of transplantation and three months later. Diastolic native T1 mapping was performed at both time points. Measurements were taken in the interventricular septum at three myocardial levels: basal, middle, and apical, using short-axis slices. Identical 1cm2 regions of interest (ROI) were placed in the same locations at both time points to ensure measurement consistency. Statistical analysis included paired t-test, repeated-measures ANOVA, and intraclass correlation coefficients (ICC) to evaluate myocardial changes over time and assess the reliability of T1 mapping measurement consistency. Data analysis was performed using SPSS Statistics 26.0.

Results

The mean time interval between the two T1 mapping scans was 83 days. T1 values in the basal myocardial segment showed a slight decrease (from 1278.09ms to 1262.04ms), but this change was not statistically significant ($p=0.122$). A significant reduction in T1 values was observed in the middle myocardial segment, with a mean decrease from 1285ms (SD=48.654) to 1250.58ms (SD=34.363), $p<0.001$. This reduction was associated with a large effect size (Cohen's $d=0.919$, $ICC=0.745$, $p=0.001$), suggesting notable myocardial remodeling. The apical segment also showed a moderate reduction, with a mean from 1286ms (SD=69.511) to 1244ms (SD=62.470), with statistical significance (Cohen's $d=0.714$, $ICC=0.747$, $p=0.003$), indicating myocardial adaptation.

Conclusions

A short-term follow-up study of patients after kidney transplantation demonstrates an interval decrease in native T1 mapping values in the middle and apical segments, indicating potentially reversible diffuse myocardial tissue injury arba damage. These findings support T1 mapping as a valuable imaging technique for monitoring myocardial changes in kidney transplant recipients.

Asymptomatic inflammation of maxillary sinus spread to orbital cavity - a case report

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Background

Odontogenic foci are generalised reactions that arise and develop in connection with an inflammatory-bacterial change located in a small space - the teeth and their vicinity. These foci can spread via various means, resulting in the infection spreading to other parts of the body.
Due to anatomical proximity of the maxillary sinus and the orbital cavity, inflammatory spread between these two structures is a potential risk. Odontogenic infections often prove difficult to diagnose. In this case report, thermographic examination is proposed as a supportive method to roentgenography.

Case Report

A 44-years old patient was admitted to the Clinic of Cranio-Maxillofacial Surgery to rule out odontogenic inflammatory foci related to ophthalmological problems. The patient displayed a chronic ocular inflammation of the left side, accompanied by vision loss, progressing during the previous 18 years. Performed orthopantomogram revealed an irregular opacity from a previously removed tooth 26, possibly correlated with earlier endodontic treatment, as noted in the patient's medical history. No radiological signs of inflammation were observed. Further investigation included an examination with a thermographic camera, which revealed a subtle unilateral temperature increase between the floor of the left and right maxillary sinuses.
Presence of a foreign body was later confirmed in a cone beam computed tomography scan. The foreign body was then removed in an intraoral access surgical procedure. Subsequent thermograms exhibited no temperature difference between the maxillary sinuses. In the follow-up, ophthalmological examination demonstrated improved condition of the left eye.

Conclusions

Thermographic devices enable the detection of early pathological changes that are clinically invisible. Utilising this non-invasive, real-time method allows for the detection of asymptomatic maxillary sinus inflammations. The case illustrates the necessity of interdisciplinary collaboration of a maxillofacial surgeon, an ophthalmologist and a radiologist.

Comprehensive Management and Treatment of Liver Cancer Case: Beyond the Guidelines

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Background

Hepatocellular carcinoma (HCC) is the most common primary liver cancer, frequently associated with underlying chronic liver disease and cirrhosis. The case described involves a patient with HCC and a history of hepatitis C virus (HCV) infection and fibrosis, managed through a variety of advanced therapeutic interventions over a period of almost two years.

Case Report

A 65-year-old female patient, diagnosed with HCV and II-III° fibrosis, experienced acute abdominal pain in late 2017. Her screening ultrasound in December 2017 revealed a mass in the right liver and elevated alpha-fetoprotein (AFP) levels (767 kU/l), leading to further investigations. MRI confirmed the presence of the HCC. The initial treatment approach included two sessions of transarterial chemoembolization (TACE) in January 2018, followed by right portal vein embolization for left liver augmentation and liver surgery. Histology confirmed right liver HCC (G2) pT1c LVI-0. Despite initial success, follow-up abdominal ultrasound and dramatic increase of AFP levels (9893 kU/l) in September 2018 indicated disease progression. The patient then began treatment with the tyrosine kinase inhibitor (TKI) Sorafenib, but despite an initial partial response, the disease continued to progress. Given the adverse effects of Sorafenib, such as rash and fatigue, the patient's care plan was revisited. In March 2019, the patient was started on immune checkpoint inhibitor Nivolumab, as a second-line systemic treatment. Remarkably, AFP levels dropped from 17432 kU/l to normal ranges. Follow-up MRI in October 2019 showed an impressive response to Nivolumab. However, treatment-related adverse effects, such as haemorrhagic rash, stomatitis, vasculitis, and pneumonitis, were noted, requiring careful management. Despite everything, the patient is now enjoying a normal life.

Conclusions

This case highlights the complexities and challenges of managing advanced HCC beyond standard treatment guidelines. The patient's journey underscores the need for personalized and adaptive treatment strategies, involving a multidisciplinary approach to achieve the best possible outcomes. The dramatic response to Nivolumab suggests that immunotherapy may offer significant benefits for patients with advanced HCC, although it comes with its own set of potential adverse effects. Further research into optimizing the management of such cases is imperative for improving patient survival and quality of life.

Effectiveness of Bland Embolization in Treating Liver Neuroendocrine Tumor Metastases: A Case Report

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Background

Bland embolization (BE) is an interventional radiology technique that involves occluding the arterial supply to liver lesions using embolic agents without the addition of chemotherapeutic drugs. BE is a technique primarily used in the treatment of liver tumors, however it can be also used in metastatic neuroendocrine tumors (NETs).

Case Report

A 51-year-old patient, a former smoker with fever and nausea underwent extensive diagnostics, including: ultrasound, Computed Tomography (CT), Positron Emission Tomography (PET) with 68 gallium-labeled somatostatin analogue, and Endoscopic Ultrasound (EUS). Confirming multiple liver metastases (30–70 mm) with a gastric fundus being the primary source. Initial treatment with lanreotide, later switched to octreotide due to side effects, failed to control disease progression. As the patient declined chemotherapy, transarterial bland embolization was performed in three stages at 4-week intervals using Embozene microspheres (500–700 μm). Post-embolization CT and PET scans revealed a one-third reduction in tumor volume, along with increased heterogeneity. Angiography confirmed successful devascularization of the lesions. Clinically, the patient experienced significant improvement, including pain relief, regained appetite, and weight gain.

Conclusions

Bland embolization, although rarely used in many Polish oncology centers, can be an effective therapeutic option for treating NET, particularly in patients who do not respond to standard therapies. The presented case demonstrates the positive outcomes of this method in progressive disease, including significant reduction in tumor volume and improvement in the patient's clinical condition. Embolization therapy offers a valuable alternative in the management of NET when conventional approaches fail, remaining the importance of personalized treatment strategies in oncology.

High-Grade Infiltrative Ductal Carcinoma: A Complex Clinical Case of Metastatic Breast Cancer

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Background

Invasive ductal carcinoma is the most common type of breast cancer, representing approximately 80% of all breast cancer diagnoses. Early detection and prompt treatment, which often includes surgery, chemotherapy, and radiotherapy, significantly improve prognosis and survival rates. However, despite advancements in treatments, managing metastatic breast cancer remains a significant challenge.

Case Report

A 33-year-old female presented with a history of invasive ductal carcinoma of the right breast (cT1N0M0) initially diagnosed in February 2022. She underwent a neoadjuvant chemotherapy and later lumpectomy with sentinel lymph node biopsy. Despite initial treatment, her condition warranted further surgical intervention, resulting in a mastectomy and reconstruction with an implant. Subsequent histological examination revealed infiltrative ductal carcinoma with high-grade nuclear polymorphism and components of ductal carcinoma in situ ypT1a N0(sn) Mx LVi1 R0, suggestive of an aggressive nature. The patient was placed on hormone therapy and continued follow-ups revealed metastases to the liver, lungs, bones, and brain. Throughout her treatment, the patient underwent multiple cycles of chemotherapy, hormone therapy, and targeted radiotherapy for brain metastases. Imaging studies consistently showed disease progression, with the appearance of new metastatic lesions and increase in size of the existing ones. Despite adjustments in her treatment plan to address complications and progression of the disease, the patient's prognosis remained poor.

Conclusions

This case illustrates the aggressive nature of invasive ductal carcinoma and the challenges associated with managing metastatic breast cancer. Despite comprehensive treatment, the patient's disease continued to progress, highlighting the need for ongoing research into more effective therapeutic strategies. Multidisciplinary approaches, including surgery, chemotherapy, radiotherapy, and hormone therapy, play a critical role in extending survival and improving the quality of life for patients with advanced breast cancer.

Post-Traumatic Cervical Pseudomeningocele: Surgical Management and Complications

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Background

Pseudomeningocele is an abnormal cerebrospinal fluid (CSF) collection resulting from a dural defect, often occurring after trauma or surgery. Unlike true meningocele, it lacks an epithelial lining and can cause symptoms like pain, dysphagia, or neurological deficits due to mass effect.

Case Report

A 22-year-old female was involved in a motor vehicle accident in August 2024, sustaining fractures of the C5-C6 vertebrae, leading to asymmetric tetraparesis. She underwent emergency cervical spine osteosynthesis with PYRAMESH and plating. In addition, a C5-C6 corpectomy was performed, along with the insertion of a vertebral implant and anterior fusion of C4-C7 using a plate and screws. In the early postoperative period, she developed a progressively enlarging right-sided neck mass, associated with dysphagia and worsening pain. In November 2024, MRI of the cervical soft tissues revealed a large pseudomeningocele spanning from C3 to the intervertebral disc gap between Th2-Th3. The collection exerted a mass effect, displacing the esophagus, trachea, and right thyroid lobe, as well as displacing the cervical blood vessels, with a more pronounced effect on the right sternocleidomastoid muscle and carotid space.
Ultrasound-guided aspiration confirmed cerebrospinal fluid (CSF) within the lesion. A multidisciplinary team recommended surgical repair, and in December 2024, she underwent dural defect closure with a microvascular flap and simultaneous lumbar CSF drainage at the L3/L4 level.. Postoperatively, she experienced a transient focal seizure affecting the left side of her face and arm; however, an EEG showed no epileptic activity. Later on she developed respiratory distress and difficulty clearing secretions. A CT scan revealed left lung atelectasis. Initially refusing bronchoscopy, she later consented, and the procedure led to significant improvement. Bronchoscopy samples grew Acinetobacter baumannii, prompting targeted antibiotic therapy. Follow-up imaging a few days later showed no further complications, and the patient was discharged in stable condition for outpatient follow-up.

Conclusions

This case illustrates the effectiveness of a multidisciplinary approach in managing post-traumatic complications. MRI and CT scans were essential for diagnosing complications like pseudomeningocele and respiratory distress, guiding surgical decisions and follow-up care.

Surgical Case Report Session

Session Coordinators:
Franciszek Mochocki, Natalia Wolanowska,
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Honorary Patronage:
National Consultant in General Surgery

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A Case Report of a Penetrating Aortic Ulcer with Pseudoaneurysm Formation

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Background

Penetrating aortic ulcer (PAU) is a subtype of acute aortic syndrome characterized by ulceration of atherosclerotic plaques that penetrate the intima and extend into the media. This condition is most commonly observed in elderly patients with advanced atherosclerosis and comorbidities such as hypertension and coronary artery disease. PAUs may progress to severe complications such as aneurysm formation, intramural hematoma and aortic rupture, all of which carry a high risk of mortality if untreated. The natural history of PAUs is variable, with some lesions remaining stable while others progress to life-threatening conditions. Mortality rates associated with ruptured aortic aneurysms are extremely high, reaching up to 90% without timely intervention. Early diagnosis and appropriate management, whether surgical or endovascular, are critical for ensuring outcomes.

Case Report

A 72-year-old woman presented to the vascular surgery department with periodic abdominal and lumbar pain. Her medical history included arterial hypertension and ischemic heart disease. Initial ultrasound imaging revealed an infrarenal abdominal aortic aneurysm.
Subsequent computed tomography confirmed the presence of a saccular pseudoaneurysm measuring 5.2 cm in diameter as a consequence of a penetrating aortic ulcer. Due to the high risk of rupture, the patient underwent elective open surgical repair that involved aneurysm resection with linear allograft replacement. Histopathological examination confirmed the presence of penetrating aortic ulcer associated with severe atherosclerosis, with no evidence of infection and connective tissue disorders. The patient was discharged with complete resolution of symptoms on postoperative day 7 without complications. At one-year follow-up, imaging demonstrated a well-functioning graft with no evidence of recurrence or further complications.

Conclusions

Penetrating aortic ulcer is a rare but serious condition, with complications carrying a high risk of mortality. Computed tomography angiography is the gold standard for diagnosis, while open surgical intervention remains the definitive treatment, ensuring excellent long-term outcomes.

Request for the grant for accommodation submitted.

A Complex Case of Eosinophilic Granulomatosis with Severe Abdominal Complications

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Trustee of the paper

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Background

Eosinophilic granulomatosis with polyangiitis (EGPA) is a rare autoimmune disease classified among vasculitides. It is characterized by eosinophilia, inflammation of small- and medium-sized blood vessels, and granulomatous changes, which can lead to multiorgan damage, including the lungs, heart, and gastrointestinal tract. This case highlights the severe course of EGPA with abdominal complications requiring coordinated treatment.

Case Report

A 31-year-old driver was admitted to the pulmonology ward in October 2024 with eosinophilic granulomatosis with polyangiitis and hypereosinophilic syndrome (HES). Initial symptoms included skin lesions and suspected eosinophilic infiltrations in the abdominal organs, lungs, and potentially the heart. Treatment with glucocorticoids (1 mg/kg) led to clinical improvement. However, peritoneal symptoms subsequently developed, and a CT scan revealed significant inflammatory changes in the small intestine. The patient was transferred to general surgery, where a laparotomy revealed hemorrhagic necrosis of approximately 80 cm of the small intestine. Resection of the affected segments (30 cm and 32 cm) was performed, and a single-barrel jejunostomy was created. Histopathology confirmed eosinophilic infiltration and thrombi. A relaparotomy 12 hours later identified further necrosis, necessitating an additional resection of 55 cm of the intestine and the creation of a second jejunostomy. Subcutaneous mepolizumab 300mg was administered to the patient. Postoperatively, the patient received care in the ICU, stabilized, and was returned to the pulmonology ward for induction therapy with cyclophosphamide. Complications included suspected hepatic vessel involvement, but supportive treatment improved liver function. The patient is currently recovering in the pulmonology ward, also undergoing treatment for COVID-19.

Conclusions

This case underscores the multisystem nature of EGPA and the complexity of managing severe complications such as intestinal necrosis caused by eosinophilic infiltrations and mesenteric vascular thrombosis. Early surgical intervention, intensive care, and a multidisciplinary approach facilitated the patient's stabilization.

-

A Rare Case of Common Bile Duct Neuroendocrine Tumor Mimicking Cholangiocarcinoma in a Young Patient

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Background

Cholangiocarcinoma (CCA) is the diagnosis carrying significant morbidity and mortality. It cannot be mistaken with any similar lesion, as extensive surgery is the only method to cure CCA. Even though imaging techniques are detailed and powerful nowadays, making correct diagnosis can still be difficult. Unfortunately, both malignant and benign biliary strictures share the same clinical symptoms. Neuroendocrine tumors (NETs) usually develop in gastrointestinal tract, pancreas or lung – therefore NETs of the bile duct are rare and account for only 0.2-2% of all gastrointestinal NETs, and these lesions are almost impossible to differentiate from CCA, however due to their low malignant potential, adequate surgical treatment leads to favorable prognosis. As there was a small number of similar cases in available literature we would like to present a case of common bile duct NET

Case Report

A 29-year old woman was admitted to the hospital because of painless jaundice, pruritus and nausea after eating. Two weeks before admission she underwent endoscopic retrograde cholangiopancreatography (ERCP) with implementation of biliary stent, due to suspected choledocholithiasis. During hospitalization magnetic resonance cholangiopancreatography (MRCP) and computed tomography (CT) revealed 18 mm tumor in the common bile duct and dilatation of intrahepatic bile ducts (IHBD).The patient was preoperatively diagnosed with CCA. The surgery involved resection of bile ducts, gallbladder and hepaticojejunostomy. In the evaluation of pathology the Ki-67 index was 36% and immunohistochemistry was positive for CD56 and chromogranin A. Finally, the diagnosis was the NET G3 of common bile duct. There were no other NETs in the gastrointestinal tract or pancreas. The patient is alive without metastasis or recurrence

Conclusions

Distinguishing CCA from rare NETs of the bile duct remains a significant diagnostic challenge due to overlapping clinical and radiological features. This case highlights the importance of considering NETs in the differential diagnosis of biliary strictures, as their lower malignant potential allows for more favorable outcomes with appropriate surgical treatment. Increased awareness and accurate histopathological evaluation are crucial for optimizing patient management and prognosis

Anaplastic Conversion of Papillary Thyroid Carcinoma: Case Report

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Background

Anaplastic Thyroid Carcinoma (ATC) is a rare, aggressive form of thyroid cancer, representing less than 2% of cases. It usually develops from well-differentiated tumors and presents as a rapidly growing neck mass. Diagnosis is typically via fine needle aspiration cytology.
Treatment options include total thyroidectomy, chemotherapy, and radiation therapy, though these have not significantly reduced mortality, with choices varying based on tumor and patient characteristics.

Case Report

A 76-year-old female with complaints of throaty voice, swallowing difficulty and pain. These symptoms lasted about six weeks. Anamnesis morbi: Six weeks ago, the patient underwent a CT scan that detected an infiltrative thyroid mass with extra-organic invasion. The diagnosis was then confirmed as T4N1bMx thyroid malignancy, and a surgical intervention was recommended. On physical examination, the thyroid enlargement to the goiter grade II was detected. On ultrasound examination, a node up to 12 mm is detected in the right lobe and up to 52 mm in the left lobe. Additional formations along the course of the masseter muscle are identified. TIRADS 5 was established. A fine needle aspiration (FNA) of the 52-mm nodule has established papillary thyroid carcinoma (Bethesda VI). Blood test results: T3 – 2,49 pg/ml, T4 – 1,13 ng/ml, TSH – 2,32 mcU/ml, Ionized Calcium – 1,19 mmol/L. The patient was referred to
left-sided extrafascial hemithyroidectomy with right lobe mass resection, and modified central and bilateral neck dissection, lymphadenectomy. A histopathologic diagnosis: Anaplastic thyroid carcinoma with signs of vascular and extrathyroidal invasion, metastases in 2-4 groups of lymph nodes (9/13) Further treatment included: monitoring by specialists, L-thyroxine replacement therapy with TSH, Tg and TgAb control; Radioiodine (I-131) therapy; scintigraphy with NaI-131. Blood test results in 24 days after surgery during 125 mcg thyroxine intake: T3 – 0,019 μOd/ml, anti-Tg—1,3 IU/ml (negative), Tg—0.2 ng/ml, and Ionized Calcium—1,15 mmol/L.

Conclusions

ATC is a highly aggressive cancer, accounting for nearly 50% of thyroid cancer deaths. About 18% survive beyond one year, and 0–10% survive for five years. Only 10% have tumors confined to the thyroid, while 44% extend into surrounding tissues, and 40% show lymph node metastasis. Treatment includes surgery, radiation, chemotherapy, and palliative care. Early detection, innovative treatments, and molecular research may improve survival rates in the future.

Bilateral Diaphragm Eventration: a Case Report

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Background

Diaphragm eventration – a rare condition characterised by a persistent elevation of one or both diaphragm domes due to muscular or nerve dysfunction arising from congenital or acquired defects. Its incidence is below 0.05 %, more common in men and typically affects the left hemidiaphragm. In adults, it is usually asymptomatic, detected incidentally. This case report highlights the imporatance of recognizing diaphragmatic eventration as a potential cause of dyspnea and the efficacy of a staged surgical approach in restoring respiratory function.

Case Report

A 62-year-old man presented with progressive dyspnea at rest, sleep disturbances and exercise intolerance worsening over two months. The patient's detailed medical history included thorasic and back trauma 5 years prior, thoracic spinal hernia surgery, abdominal wall hernia repair, and 2 years of obstructive pulmonary disease managed with bronchodilators. A chest X-ray, a CT scan and spirometry were ordered upon admission to the Department of Thoracic Surgery. Imaging revealed bilateral diaphragmatic elevation with reduced lung volumes. Spirometry confirmed restrictive ventilatory impairment. Based on these findings and impaired quality of life, surgical intervention was planned. The patient first underwent left diaphragmatic plication via thoracotomy, followed by continued physiotherapy to enhance respiratory function and exercise tolerance. The post-operative recovery was uneventful, with the expected clinical effect and reduced breathlessness. 6 months later, right-sided diaphragmatic plication was performed. Postoperatively, he experienced significant improvement in quality of life, improved respiratory function and enhanced sleep quality.

Conclusions

This case underlines the importance of recognizing diaphragm eventration as a rare but significant cause of respiratory impairment, particularly in patients with a history of thoracic trauma and underlying pulmonary conditions. A staged surgical approach, combined with physiotherapy, resulted in substantial symptom relief, improved respiratory function, and enhanced quality of life. Thus, this underscores the value of a multidisciplinary approach in maximising results and the efficacy of surgical intervention in patients with bilateral diaphragm eventration.

Case Study: a 28-year-old Female with Diffuse Intestinal Necrosis due to Postpartum B-type Aortic Dissection

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Background

Aortic dissection is a rare pregnancy complication. Most events are related to underlying aortopathies: connective tissue disease, severe hypertension or pathological aortic dilatation. Hormonal changes affecting connective tissue in pregnancy are associated with a 25-fold higher risk of dissection than in non-pregnant women. Circa 50% of cases occur in the third trimester, while postpartum incidents make up a total of 20-33%. Aortic dissection is most likely to occur between days 1 and 42 after delivery. Possibly fatal complications include stroke, myocardial infarction or visceral ischaemia leading to multi-organ failure.

Case Report

A 28-year-old woman with hypertension and tertiary obesity developed acute Stanford B-type aortic dissection on day 1 after caesarean section. A CT scan revealed diffuse intestinal necrosis, resulting in duodenal and intestinal resection, extended right hemicolectomy and cholecystectomy. On admission, the patient showed signs of cardiopulmonary failure, treated with endotracheal intubation, infusion of catecholamines and sedation. Thoracic stent graft implantation was performed on day 2 of hospitalisation. Postoperative laboratory tests showed endotoxemia and severe metabolic acidosis, electrolyte imbalance and elevated levels of liver, pancreas and kidney injury markers. Further surgical management involved total duodenal resection with gastrostomy and bile duct and pancreatic drainage. Gastrointestinal reconstruction surgery was planned for day 5, but due to the patient collapsing in the operating theatre, the procedure was postponed. On day 8, extubation was attempted, but increasing respiratory effort resulted in reintubation complicated by cardiac arrest. Reconstructive gastrointestinal surgery was performed on day 11 and the patient was successfully extubated.
Due to AKI and failure to restore renal function, the woman required renal replacement therapy during hospitalization - continuous and then cyclic. In addition, total parenteral nutrition was administered on day 3. The woman was transferred to a nutritional centre after 2 months in moderate condition.

Conclusions

Postpartum aortic dissection can lead to severe complications. The overall mortality rate is up to 18%, but non-specific symptoms can delay diagnosis and treatment, leading to fatal outcomes. Due to an increased risk of aortic dissection during pregnancy, the possibility of aortic rupture should always be considered in the differential diagnosis, regardless of medical history.

Catheter-Related Inferior Vena Cava Perforation in Hemodialysis

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Background

Dialysis catheters (DCs) are essential for vascular access in patients with end-stage renal disease (ESRD) requiring hemodialysis. However, their use is associated with various complications. Iatrogenic vascular injuries, including venous trauma, are commonly reported during DC insertion. Injury to the inferior vena cava (IVC) is very rarely reported complication but can lead to severe, potentially life-threatening consequences.

Case Report

I present the case of a 29-year-old woman with ESRD, who was transferred to our hospital in critical condition following a failed femoral vein DC insertion at another facility. The patient had no additional risk factors for perforation, and aside from ESRD, her medical history was unremarkable. She was not on anticoagulants, antiplatelet agents, or steroids. Imaging with computed tomography revealed a significant retroperitoneal hemorrhage caused by IVC perforation from the catheter. The patient underwent urgent laparotomy, during which the catheter tip was found to have extended approximately 3 cm beyond the damaged vascular wall. Surgical management included evacuation of the retroperitoneal hematoma, removal of the catheter from the perforated IVC, and suturing of the IVC. Under fluoroscopic guidance, a guidewire was advanced to facilitate proper catheter repositioning into the central venous lumen. The postoperative period was uneventful, and the catheter, now correctly positioned, allowed for the continuation of hemodialysis without further complications.

Conclusions

Dialysis catheters carry a risk of complications, including vascular perforation, which can result in life-threatening hemorrhage. Adherence to proper procedures, use of imaging techniques (fluoroscopy, ultrasound), and ensuring access to a surgical team are crucial to minimize risks. Careful patient positioning and reassessment in case of resistance during catheter insertion can also help prevent such complications.

Challenging Endovascular Treatment of a Giant Arch and Descending Ruptured Dissecting Aortic Aneurysm in Condition After EVAR; A Case Report

Authors

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Background

Open surgical repair, which requires sternotomy and cardiopulmonary bypass (extracorporeal circulation), continues to serve as the established standard of care for managing aortic arch aneurysms. Nevertheless, elderly patients presenting with significant comorbidities who are not candidates for open surgery could potentially derive advantages from a minimally invasive endovascular strategy, facilitated by advanced technologies, including the implementation of stent graft arch branch.

Case Report

A 66-year-old male was admitted from the ED for surgical intervention due to ruptured aortic arch aneurysm. The patient presented signs of shock, hypotension, and hemorrhage into the left pleura, reported chest and abdominal pain, and had a history of treatment of AAA (EVAR) 10 years prior. The urgent CTA revealed a ruptured 12 cm in diameter aortic arch aneurysm, including also an initial DTA segment, with features of rupture to the pleura, displacing the trachea, and compressing the left main bronchus. Departing BCT, LCCA, and LSA were patent.

The non-aneurysmal ascending aorta was approximately 36 mm in diameter. The abdominal aorta was slightly dilated in the post-EVAR section, with the right stent graft leg ending in an RCIAA. As a result, the patient was deemed ineligible for cardiac surgery and qualified for an endovascular procedure, which was challenging due to the previous EVAR. A triple arch branch stent graft was successfully implanted, along with two thoracic devices. Running the system via the branch of the bifurcated stent graft was a technical challenge; however, this was made achievable by the use of dilators and two extra-stiff guidewires. A right-sided iliofemoral graft was performed with a vascular prosthesis. Fine blood flow in treated vessels was achieved.

Despite intensive care following the operation, there were indications of growing multiorgan failure associated with the patient's concomitant diseases and a serious condition at the time of admission, which contributed to his eventual death.

Conclusions

The aforementioned case demonstrates that some vascular surgery procedures may supplant certain interventions previously dominated by cardiac surgery, even in especially difficult-to-provide situations. The presented case proves that ruptures within the aortic arch with an appropriate diameter of the ascending aorta may be treated with the endovascular technique, which, due to the lower risk, gives a greater chance of saving a patient with multiple loads.

Effectiveness of a Multimodal Approach in Secondary Prevention of Gastroesophageal Variceal Bleeding in Patients with Portal Hypertension

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Background

Patients with advanced liver disease frequently develop a complication, namely clinical significant portal hypertension (CSPH), which predisposes them to life-threatening gastroesophageal variceal bleeding (GEVB). In clinical practice, secondary prevention relies on endoscopic variceal ligation (EVL) and non-selective beta-blockers (NSBB). However, these approaches fail in some subsets of patients. This case illustrates the role of partial splenic artery embolization (SAE) as an adjunctive approach to secondary prophylaxis of GEVB in patients with CSPH.

Case Report

A 37-year-old male agricultural worker with toxic liver injury has been under observation at a specialized center since 2022 due to recurrent GEVB. Diagnosed with cirrhosis (Child-Pugh class B) complicated with CSPH. He experienced 18 GEVB episodes within 6 months despite undergoing EVL and NSBB therapy. His deteriorating condition led to multiple hospitalizations. The first episode of GEVB occurred on October 27, 2021. Over the next 3 months, until 16.01.2022, the patient was admitted to 4 different hospitals due to recurrent hemorrhages. During this period, he experienced 15 GEVB episodes and underwent EVL three times. On February 11, 2022, SAE was performed to selectively reduce splenic blood flow and consequently decrease portal pressure. The rationale included pronounced splenomegaly, increased splenic artery blood flow, ineffective EVL and NSBB therapy, severe thrombocytopenia (PLT 12×10/L), and a high splenoportal index (223%). During postoperative follow-up, the patient experienced 3 additional GEVB episodes, with the last one attributed to ligature slippage. Over the 12-month postoperative period, significant hemodynamic improvements were observed. One year after SAE, splenic artery blood flow velocity decreased to normal values, reflecting a 73% reduction from pre-procedure levels. The spleen volume markedly decreased from 719 cm^3 to 271 cm^3, indicating effective splanchnic circulation remodeling. This structural adaptation contributed to a rise in PLT to normal levels and the complete resolution of ascites. From 27.02.2022, onward, no further variceal hemorrhages were recorded.

Conclusions

In this case, endoscopic prophylaxis alone did not prove to be a reliable strategy for secondary prevention of variceal bleeding. A recurrence-free period was only achieved following the implementation of a multimodal approach, combining splenic artery blood flow reduction with endoscopic and pharmacologic prophylaxis.

Emergency Management of Perforated Sigmoid Diverticulitis: A Case Report

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Background

Acute perforated diverticulitis is a life-threatening complication of diverticular disease, often presenting with peritonitis and septic shock. It requires urgent surgical intervention to control intra-abdominal sepsis. The choice of surgical approach depends on patient stability, the extent of peritoneal contamination, and the severity of colonic disease. Hartmann's procedure remains a widely used option in critically ill patients, although primary anastomosis is considered in select cases. Postoperative management focuses on sepsis control, early enteral nutrition, and stoma care, with the potential for later colostomy reversal.

Case Report

A 65-year-old man with a history of hypertension, angina pectoris, and hypothyroidism presented with a 3-day history of worsening left lower-quadrant abdominal pain, diarrhea, fever, and anorexia. On admission, he was febrile (102°F), tachycardic (110 bpm), and hypotensive (95/55 mmHg), with signs of localized peritonitis. Laboratory tests revealed leukocytosis and acute kidney injury. Abdominal CT demonstrated sigmoid diverticulosis, an inflammatory phlegmon, free intraperitoneal gas, and extravasation of rectally administered contrast, confirming perforated diverticulitis. The patient underwent emergency laparotomy. Given his septic shock and intra-abdominal contamination, a Hartmann's procedure was performed, involving resection of the perforated sigmoid colon, formation of an end colostomy, and closure of the rectal stump. Postoperatively, he required intensive care support with intravenous antibiotics, fluid resuscitation, and venous thromboembolism prophylaxis. Enteral nutrition was initiated early, and the patient showed progressive clinical improvement. He was discharged after 7 days without complications. After 6 months, he underwent successful colostomy reversal following endoscopic evaluation of the remaining colon.

Conclusions

Perforated diverticulitis with septic shock necessitates prompt diagnosis and surgical management to control intra-abdominal sepsis. Hartmann's procedure remains a safe and effective option in critically ill patients, though primary anastomosis may be considered in selected cases. Postoperative care should focus on infection control, early nutrition, and stoma management. Colostomy reversal, when feasible, can restore bowel continuity and improve patient quality of life.

Gastric Carcinosarcoma: A Rare and Aggressive Malignancy with Significant Diagnostic and Therapeutic Challenges.

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Background

Carcinosarcoma is a rare malignant tumor consisting of both epithelial and mesenchymal tissue. It predominantly arises in the uterus, ovary or urinary tract. The two malignant components of this neoplasm exhibit histopathological heterogeneity. The predominant carcinomatous component is tubular adenocarcinoma. The mesenchymal sarcomatous component varies and may include, for example, osteosarcoma, rhabdomyosarcoma, or fibrosarcoma. Gastric carcinosarcoma is extremely rare, with only few cases reported in the literature thus far. Its prognosis is poor due to its aggressive nature and late detection at advanced stages.

Case Report

A 73-year-old female with a medical history of type 2 diabetes, hypertension, and gout presented to the emergency department with upper gastrointestinal bleeding and melena. Laboratory findings revealed severe anemia and elevated inflammatory markers. Endoscopy identified an 8 cm non-homogeneous mass along the greater curvature of the stomach. Initial histopathological evaluation suggested a gastrointestinal stromal tumor (GIST). CT imaging demonstrated a solid mass with calcifications, lymphadenopathy, and potential metastases to the lungs and spleen. Laparoscopic distal gastrectomy with Billroth II anastomosis was performed. Histopathological analysis revealed a grade 3 gastric carcinosarcoma, with mixed adenocarcinoma and sarcomatous components. Immunohistochemistry confirmed the presence of epithelial markers (CKAE1/AE3) and mesenchymal markers (vimentin, SATB2, synaptophysin, Ki-67), consistent with the diagnosis. The tumor was staged as pT2 according to the AJCC 8th edition. The postoperative course was uneventful, and the patient was discharged after 4 days.

Conclusions

Gastric carcinosarcoma is a rare and aggressive malignancy that should be considered in the differential diagnosis of gastric tumors. The diagnosis is confirmed through histopathological and immunohistochemical analysis of the surgical specimen, while CT imaging helps in assessing metastasis. Surgical resection with negative margins is the only curative treatment, although recurrence is common within the first year. Due to its rarity, the role of chemotherapy and other adjuvant therapies remains unclear, with limited evidence on their effectiveness. The prognosis for gastric carcinosarcoma remains poor, with survival typically ranging from 10 to 15 months post-curative surgery. Further research is needed to better understand the tumor's biology and its therapeutic options.

Granular Cell Tumor in Tracheobronchial Tree: a Case Report

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Background

The granular cell tumor (GCT) of the lung is a rare neoplasm originating from Schwann cells. GCTs can develop in various locations and may be benign or malignant. Only 2–6% of GCTs occur in the tracheobronchial tree. Chest X-rays may reveal pneumonia, mucoid impaction, atelectasis, or an endobronchial tumor; however, a definitive diagnosis requires pathological or cytological examination. Treatment options depend on tumor size and include bronchoscopic excision, laser therapy, or surgical resection.

Case Report

A 54-year-old female smoker with hypertension and a history of intramural uterine leiomyoma, treated with hysterectomy nine years ago, presented with a chronic cough and stridor lasting two months. Pulmonary function testing indicated upper airway obstruction. Chest CT revealed a tracheal tumor measuring 30 × 14 × 29 mm. Bronchoscopy identified a polypoid, whitish, NBI-negative tumor obstructing 10% of the distal third of the trachea. Histologically, the tumor consisted of clusters of oval cells with eosinophilic, finely granular cytoplasm and small nuclei, with no pleomorphism or mitosis, separated by delicate fibrovascular stroma. Immunohistochemical analysis showed tumor cells positive for S-100, CD68, and NSE, confirming the diagnosis of GCT. The patient was admitted to the surgery department for resection of the tracheal tumor. She underwent a sternotomy and resection of 35 mm of the trachea. The resection margins of the benign tumor were positive, prompting an additional 5 mm resection with laryngotracheal anastomosis. On the tenth postoperative day, secondary bleeding occurred. An emergency bronchoscopy revealed anastomotic dehiscence with a hematoma. Surgical repair was performed; however, the patient suffered a fatal outcome due to the development of acute pulmonary edema, which was confirmed at autopsy.

Conclusions

Pulmonary GCT is a rare neoplasm that requires histological and immunohistochemical analysis for definitive diagnosis. Treatment depends on tumor size, with surgical resection being necessary for larger tumors. Despite intervention, complications such as anastomotic dehiscence can be fatal, highlighting the need for careful operative and postoperative management.

Large Arteriovenous Malformation of Right Kidney with Inferior Vena Cava Malformation – a Long-term Treatment Challenge

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Background

Arteriovenous malformations (AVM) are rare conditions - <1% in general population – with tendency to decrease quality of life. The uniqueness of each case influences results of treatment.

Case Report

This case presents 29-year-old female referred to the vascular surgery due to unsuccessful treatment of AVM of right kidney with dilation and malformation of part of IVC, which started 8 years ago and consisted of 9 embolization procedures of large, high-flow AVM and excision of malformation of right renal vein. The treatment was divided to several key steps (resulting in total of 9 interventions): embolization of the outflow part of kidney malformation and its partial supply, reconstruction of malformed part of IVC, excision and removal of the kidney, embolization of remnants of AMV. Firstly, the partial embolization of outflow part of AMV was achieved with use of EASYX material, resulting in blood flow reduction and need of further embolization. During second embolization, due to migration of material, ZILVER stents to the proximal part of CIA and stent to distal part of CIA and proximal part of EIA on right side were implanted. After removal of IVC filter- which was implemented between procedures, angio-CT showed extensive thrombosis in the place of IVC malformation. Endovascularly venous stents BEYOND using double barrel method were implanted (2 on each side). Followed by relining of stents on both sides using WALLSTENTs to increase the density of stent mesh. Later imaging revealed presence of 3 aneurysms near the location of branching of lumbar arteries from the aorta, which were embolized with use of spirals. Then partial embolization of part supplied by branches of lumbar arteries and remnant of kidney artery was achieved with mixture of GLUBRAN-2 and lipiodol. This was later followed by embolization of 2 branches supplying remnant of IVC malformation with the use of glue. Resulting in the sufficient control of blood flow to attempt kidney removal. The surgery was successful, however resulted in reoperation due to post operation bleeding and hematoma formation later. Afterwards, final attempt at embolization of remnants of malformation branching from right IIA and right EIA was performed with glue mixture. In control imaging there were no large vessels supplying AVM visible.

Conclusions

Large AVMs present significant risk of bleeding and require multi step approach with meticulous planning with use of various materials to provide satisfactory outcome for the patient.

Neck trauma-associated thyroid hematoma leading to the diagnosis of follicular thyroid carcinoma

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Background

Thyroid cancer, particularly follicular thyroid carcinoma, is a rare condition in young adults, accounting for approximately 5% of thyroid malignancies in this age group. Traumatic thyroid injuries secondary to blunt neck trauma are also uncommon and most often occur in patients with pre-existing thyroid pathology.

Case Report

In September 2022, a 19-year-old woman was admitted to the Department of Endocrine Surgery due to a mass in the left thyroid lobe following a neck injury sustained during combat sports training. Fine-needle aspiration biopsy (FNAB) was performed twice, confirming the benign nature of the lesion (Bethesda II). The patient was qualified for thermal ablation. Before the procedure, 70 mL of hemolyzed hematoma, which constituted a significant component of the mass, was evacuated. However, upon needle puncture, intratumoral bleeding occurred, leading to the cancellation of the thermal ablation. Contrast-enhanced CT was performed, ruling out vascular injury. The imaging revealed a 68 mm tumor displacing the trachea and compressing the left cervical vessels. A left-sided thyroid lobectomy was performed. Postoperative histopathological examination confirmed follicular thyroid carcinoma (encapsulated variant with angioinvasion) with a staging of pT3aNxLV1R0. The patient was subsequently qualified for completion thyroidectomy followed by radioactive iodine therapy.

Conclusions

As isolated thyroid hematomas are rare, standardized management guidelines are lacking. When such lesions are identified, the possibility of coexisting malignancy should be considered, particularly given that neoplastic changes can predispose the thyroid gland to traumatic alterations.

Novel Technique for Emergency Repair of Mycotic Aortic Aneurysm Rupture Without Dedicated Equipment

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Background

Mycotic Aneurysm of the Aorta (MAA) is a rare but serious condition, primarily caused by Salmonella and Staphylococcus spp. with an incidence of 0.6-2% of all aortic aneurysms and a perioperative mortality rate reaching up to 44%. Due to the high risk of rupture, it is a life-threatening condition requiring prompt diagnosis and treatment. However, no definitive guidelines exist for its management. Standard therapy for MAA include open surgical repair, endovascular aortic repair (EVAR), and antibiotic therapy, most often combined with surgical intervention. The following case report presents an innovative approach to the urgent management of a ruptured mycotic aneurysm of the abdominal aorta in the absence of dedicated equipment.

Case Report

A 76-year-old female presented to the emergency department with abdominal pain, vomiting, and constipation lasting four days. Computed tomography (CT) revealed an old pseudoaneurysm of the abdominal aorta, without signs of active bleeding. The patient was transferred to the vascular surgery department of Cracow University Hospital, where she was urgently qualified for EVAR of abdominal aorta. Due to unavailability of fenestrated stent graft the surgeon created an opening with a scalpel in Medtronic Endurant II stent for superior mesenteric artery. The aperture was then reinforced with wire and surgical threads to enhance strength and improve visibility under fluoroscopy. The preparation took place in the operating room next to the patient. After its implantation, a covered stent graft functioning as a branch to the superior mesenteric artery was deployed. The procedure and perioperative period were uneventful. Based on culture results we implemented targeted antibiotic therapy against Staphylococcus aureus. On day 11 after surgery a CT scan revealed fluid space in left pleural cavity which was drained. In the following days, inflammatory markers decreased, and the patient's condition improved. On day 16 of hospitalisation patient was discharged home in good general condition.

Conclusions

Thanks to the use of 3D reconstruction based on CTA of visceral vessels, highly experienced surgeons can successfully adapt stent grafts to the anatomical conditions of individual patients in emergency situations. Moreover, combined surgical treatment involving stent implantation and targeted antibiotic therapy can yield excellent outcomes in the management of MAA, even in cases involving challenging pathogens such as Staphylococcus aureus.

Odontogenic Sepsis Leading to Descending Mediastinitis: A Rare but Severe Complication After Parathyroidectom

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Background

Primary hyperparathyroidism is a common endocrine disorder, typically managed surgically. Descending mediastinitis is a life-threatening condition, especially when its origin is a surgical site infection following thyroidectomy. When it occurs, it is usually localized around the cutaneous incision; however, in some cases, it can extend to the mediastinal cavity. It is most commonly secondary to an abscess in the oral cavity, pharyngeal infections, oesophageal perforation, or infections in cervical areas.

Case Report

A 59-year-old woman was urgently admitted due to nausea, muscle weakness, and loss of appetite, with a history of atrial fibrillation and hypertension Laboratory tests revealed significant hypercalcemia with elevated parathyroid hormone levels, confirming primary hyperparathyroidism caused by a right parathyroid adenoma. A right thyroid lobectomy with adenoma removalresulted in decreased PTH levels and calcium normalization.Initial stable postoperative recovery was interrupted on day two by rising CRP levels, dyspnea, and
right-sided abdominal pain. The patient developed bilateral pleural effusions, lung atelectasis, and postoperative gas collections due to a streptococcal infection, treated with thoracocentesis and wound revision. Her condition deteriorated, with respiratory and circulatory failure requiring pleural drainage. She also developed anisocoria and generalized seizures, suggesting cerebral edema due to septic encephalopathy or possible cerebral venous thrombosis.. An otolaryngology evaluation identified a severely carious upper molar, which was extracted.
Cultures from the infected tooth also grew S. pyogenes, suggesting a probable odontogenic source of sepsis. While it remains uncertain whether the dental infection triggered bacteremia before surgery or exacerbated postoperative complications, the presence of the same pathogen in multiple sites indicates a likely hematogenous spread.Following targeted antibiotic therapy and continued pleural drainage, the patient gradually improved and was discharged in stable condition without further complications.

Conclusions

This case illustrates a rare but severe complication following parathyroidectomy, where an undiagnosed dental infection may have contributed to S. pyogenes sepsis and neurological deterioration. The presence of a dental infection as a potential source emphasizes the need for thorough preoperative dental evaluation, especially in patients undergoing head and neck surgery.

Post-Transfusion Purpura Following Kidney Transplantation: A Rare and Challenging Diagnosis

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Background

Post-transfusion purpura (PTP) is a rare and potentially life-threatening complication of blood transfusion or organ transplantation. It is characterized by severe thrombocytopenia occurring 5–10 days post-exposure to alloantigens, with an incidence of approximately 1 in 50,000–100,000 transfusions. PTP results from alloantibodies targeting platelet-specific antigens, typically HPA-1a, leading to the destruction of transfused and autologous platelets.
Early recognition and treatment are essential to prevent fatal outcomes.

Case Report

We present the case of a 57-year-old man with end-stage kidney disease secondary to IgA nephropathy which over a decade progressed to focal segmental glomerulosclerosis. He underwent a deceased donor kidney transplant in October 2024, following years of hemodialysis. Postoperatively, he developed complications including ureter necrosis requiring graft nephrectomy, sepsis, and pancytopenia. Despite platelet transfusions, his platelet count declined from 160,000/μL to <20,000/μL within five days, accompanied by purpura on his extremities. Extensive investigations ruled out pseudo-thrombocytopenia, disseminated intravascular coagulation, bone marrow suppression, drug-induced thrombocytopenia, heparin-induced thrombocytopenia (which was deemed unlikely as the patient had not received heparin during his treatment), and other immune-mediated conditions. Detection of anti-HLA class I antibodies confirmed the diagnosis of post-transfusion purpura. Treatment included plasmapheresis (4L FFP) and intravenous immunoglobulin (IVIG) at 0.5 g/kg for three days, resulting in a significant platelet count recovery. The patient's condition gradually improved with continued supportive care, including antibiotic therapy, renal replacement therapy, and rehabilitation.

Conclusions

PTP is a rare but serious complication that poses diagnostic challenges, particularly in critically ill patients. This case underscores the importance of a systematic approach to thrombocytopenia in ICU settings, integrating clinical, laboratory, and immunological findings. Early recognition and multidisciplinary management, including haematology consultation, are crucial for optimizing outcomes. Further research is needed to refine diagnostic and therapeutic strategies for PTP, particularly in transplant populations.

Pseudoaneurysm of the Popliteal Artery as a Complication of Infective Endocarditis.

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Background

A pseudoaneurysm is a locally contained hematoma outside an artery or the heart due to damage to the vessel wall. Most often, pseudoaneurysms are a complication of using vascular access for endovascular surgery. A rare cause may be a vegetation from the aortic valve in patients with infective endocarditis, which is presented in this paper.

Case Report

Patient 54-year-old male diagnosed with infective endocarditis and a vegetative change on the aortic valve. The patient was hospitalized in the Neurology Department due to a hemorrhagic stroke of the left occipital region. For three weeks before the stroke, the patient took Rivaroxaban 15 mg due to thrombosis of the left peroneal vein. In CT scans of the head, the hemorrhagic focus did not show signs of progression and its complete regression was noted.
During hospitalization, an ECHO examination revealed a round, pedunculated structure on the aortic valve leaflets. For this reason, the patient was transferred to the Cardiology Department. The patient was qualified for aortic valve replacement surgery. Aortic valve replacement was performed. In the interview before the surgery, the patient had an embolism of the right posterior tibial artery, most likely caused by a piece of vegetation from the aortic valve leaflets. The patient reported severe pain in the right lower limb both before and after the surgery. For this reason, an angio-CT scan of both lower limbs was ordered, in which a pseudoaneurysm of the popliteal artery was observed. Most likely, the fragment of vegetation that caused the artery embolism led to inflammation of the vessel wall and then to a break in the continuity of the vessel wall, which was the cause of the pseudoaneurysm. After consultation with vascular surgeons, the date of the vascular surgery was set. The patient underwent surgery during which the damaged fragment of the popliteal artery wall was removed, a patch from the occluded popliteal vein was applied, and then the lumen of the operated artery was widened with intravascular angioplasty. The course of the procedure was uneventful. The patient was checked in the surgical clinic, during which no abnormalities were found and the patient's condition was good.

Conclusions

Vegetative changes in patients with infective endocarditis are a rare cause of pseudoaneurysms, but as the above example indicates, they should be taken into account when diagnosing complications in these patients.

Rectum Front Wall Necrosis with Hartmann's Procedure: a Case Report

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Background

Bowel necrosis and perforation often presents itself as a high-risk injury with mortality rate ranging between 30% and 70%. It is a significant challenge for the surgeon due to non-specific early symptoms followed by rapid disease progression and fast deterioration of patient's health. The aim of the report is to demonstrate the management of a complicated rectal necrosis patient.

Case Report

A 45-year-old inmate male presented to Emergency department with complaints of severe abdominal pain that lasted for three days. Upon admission the patient was hemodynamically unstable, physical examination revealed tense abdomen and positive peritoneal signs.
Abdominal CT revealed pneumoperitoneum, ascites, and rectum necrosis. Surgical treatment was indicated. Method of choice: Hartmann's type frontal rectum resection. Abdominal cavity was severely contaminated by feces. After flushing, sigmoid colon was divided with a GIA cassette. The necrotic zone was resected. A colostomy was created. Patient spent two days in the ICU and was discharged from the hospital in a week. After 15 months the patient was readmitted to the hospital as planned for colostomy closure. During the procedure adhesiolysis was performed, followed by colostomy excision and supraanal-sigmoanal anastomosis. The patient did not develop any complications and was discharged for outpatient control in a week.

Conclusions

Early diagnosis and timely intervention are crucial in managing a complicated rectal necrosis patient. Treatment modality which includes Hartmann's procedure along with abdominal drainage and antibiotic therapy provides a substantial possibility of a positive outcome. It is also important to educate the patient on colostomy maintenance, regardless if temporary or permanent. The necrosis had developed in the front wall of rectum, which is an atypical localization of bowel necrosis. The exact cause of the illness in this case remains unknown.
Keeping in mind that the patient was an inmate in a prison suggests that rectal trauma – voluntary or violent – might have taken place.

Rare Surgical Puzzle: Appendiceal Duplication in a 10-year-old Boy - a Case Report

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Background

Appendix anomalies are an exceptionally rare occurrence, most often diagnosed by accident in adult patients during surgeries unrelated to appendectomy. We present a case of a 10-year-old male patient who, after a previous appendectomy, was admitted to the Emergency Department (ED) due to persistent abdominal pain and fever.

Case Report

The patient was admitted to the ED due to ongoing abdominal pain lasting for two days, located above the right wing of ilium. Symptoms weren't accompanied by nausea and vomiting. The patient had a temperature of 38,9°C with good response to the antipyretic medication. The ultrasound examination revealed hypodense bands of inflammation up to 15 mm thick with clearly distinguished vascularization and a visible retrocaecal, limited area of dense fluid without detectable flow, measuring 21 x 5 mm. The surrounding adipose tissue showed signs of inflammation. Levels of C-reactive protein were elevated. Abdominal X-ray did not reveal any signs of air beneath the diaphragm. Left intestinal loops, located subdiaphragmatically, were dilated and filled with gas. Blood culture indicated influenza A - Oseltamivir was administered. During the physical examination, the patient was in stable general condition, under the effect of analgesics. No signs were observed that would indicate a cause of symptoms other than the inflammation in the abdominal cavity. The test results for the identification of rotavirus, adenovirus, and norovirus antigens were negative. CT scan with contrast revealed a tubular intestinal structure with slightly thickened walls. An exploratory laparoscopy was performed. It disclosed the inflamed peritoneum with the base of the appendix in a typical place, from which the additional appendix, located partially retroperitoneally, emerged. The additional structure was later removed. There was a scar on the cecum after the previous appendix resection.

Conclusions

Duplication of the appendix is an extremely rare phenomenon, occurring in only 0.004%–0.009% of cases in patients after appendectomy. There are less than 100 appendiceal anomalies reported in the literature, which makes the presented case particularly attractive. Duplication of the appendix may be omitted in the differential diagnosis of symptoms located in the right lower abdomen due to its rare - but possible - occurrence, causing many diagnostic difficulties.

Surgical Management of Inferior Vena Cava Sarcoma: Reconstruction of Inferior Vena Cava with Vascular Prosthesis and Hepatic Resection

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Background

Sarcomas are rare, heterogeneous connective tissue malignancies characterized by aggressive behavior with a tendency for local invasion and distant spread. When located in the retroperitoneal space, they present a particular risk due to their proximity to numerous vital organs. Sarcomas involving the inferior vena cava (IVC) and nearby structures require complex surgical interventions, including multivisceral resections and vascular reconstructions.

Case Report

A 52-year-old male with retroperitoneal sarcoma involving the IVC was admitted to the surgical ward for operative management. The patient had previously undergone neoadjuvant chemotherapy aimed at disease stabilization. Computed tomography revealed a 103x68x66 mm tumor involving the IVC with its total occlusion and significant collateral circulation, preventing IVC obstruction symptoms. Additionally, infiltration of the right lobe and segment 1 of the liver was suspected and the tumor was in contact with the right adrenal gland and the right kidney. The patient underwent multivisceral resection, including IVC resection with
"en-bloc" partial hepatectomy extended to the right renal capsule and part of the right adrenal gland, followed by IVC reconstruction using a synthetic prosthesis. Intraoperative ultrasonography confirmed good blood flow through the vascular prosthesis. Histopathology classified the tumor as a grade 2 leiomyosarcoma originating from the IVC, an exceptionally rare location for sarcoma development. All margins were negative and there was no infiltration of surrounding organs. Postoperatively, the patient developed acute kidney injury, which resolved after conservative treatment. Moreover, routine radiological assessment revealed vascular prosthesis thrombosis. However, due to well-developed collateral circulation and no symptoms, there was no indication for invasive treatment. By postoperative day 4, the patient's condition improved, and he was subsequently discharged on the 12th day in stable condition. 5 months after discharge, the patient remained in good general health, with no evidence of tumor recurrence.

Conclusions

Retroperitoneal sarcomas require unique management due to their proximity to critical structures. In this case, the multidisciplinary approach allowed effective combined treatment, including neoadjuvant chemotherapy and resection with vascular reconstruction. The application of a synthetic prosthesis, despite thrombosis risk, enabled radical IVC resection and convenient reconstruction.

Surgery Session

Session Coordinators:
Ola Malik, Marta Maksimowska

A Focused Analysis of Head and Neck Burns: Clinical Characteristics and Lessons Learned

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Introduction

Head and neck (HN) burns present a unique clinical challenge due to potential airway obstruction, aesthetic and functional consequences. Despite this, there is a lack of extensive data.

Aim of the study

Our study aimed to compare hospitalized HN burn patients with those with burns in other locations (non-HN), providing a closer look at this specific patient subpopulation.

Materials and methods

We conducted a retrospective analysis of 1378 adult burn patients admitted to the Department of Burns and Plastic Surgery, University Hospital Brno, from January 2016 to December 2022. The HN group (n=539) was compared to the non-HN group (n=839) regarding demographic data, burn characteristics, and treatment parameters. We used chi-square for categorical and t-test for continuous variables ($\alpha = 0.05$).

Results

HN patients were predominantly males (74.21% vs 25.79%, $p<0.001$). The average age of HN patients (44.56, IQR=31-57) was lower than the age of non-HN patients (49.45, IQR=34-63, $p<0.001$). The mean total body surface area (TBSA) was higher in the HN group (10.8 vs 4.75, $p<0.001$). The mean hospital stay was longer in HN patients compared to the control group (17.99±17.69 vs 15.77±11.42 days, $p=0.001$). They were more likely to need ICU care (33.21% vs 11.44%, $p<0.001$) and had longer ICU stay (22.32±19.88 vs 18.56±12.26 days, $p=0.05$). Both groups had a high incidence of wound infections (77.74% vs 77.83%, $p=0.97$). Inhalation trauma (IT) was more frequent in HN group (9.46% vs 0.95%, $p<0.001$). Third-degree burns were more common in non-HN patients (53.43% vs 78.06%, $p<0.001$). Surgery was more frequent in the non-HN group (49.72% vs 70.20%, $p<0.001$), while immediate surgical procedures were more common in the HN group (23.93% vs 6.67%, $p<0.001$). There were no recorded deaths in the HN group, in the non-HN group we recorded 4 (0.48%). The leading mechanisms of burn injury for HN patients were flame (66.98%) and explosion (16.70%), whereas in the non-HN group, burns were mostly caused by hot liquids (38.74%) and flame (27.53%).

Conclusions

Most HN patients were male, younger, and with higher TBSA compared to non-HN patients, which highlights the severity of these injuries. They required ICU care more often and had a longer ICU stays. They also had a higher occurrence of IT and needed immediate surgical intervention, which emphasizes the importance of early and aggressive treatment. Our study highlights the need for a personalized treatment approach, adjusted to the clinical characteristics of patients with HN burn injuries.

Analysis of Outcomes of Subcutaneous Vascular Anomalies

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Introduction

Background: (AVMs) Arteriovenous malformations diagnosis and treatment remains challenging because of their variability in presentation and it's high recurrence rate. Specifically, rare sites and presentations makes it more difficult to manage these disorders. Usually a multidisciplinary team is needed for the management as per present recommendations and which includes a good diagnosis by a radiologist which may improve the management and outcomes .

Aim of the study

The purpose of this study is to discuss and review some arteriovenous malformations and their treatment modalities which are performed in our department.

Materials and methods

Records of all the patients who underwent treatment from January 2022 to December 2024 were included in the study and results were studied in terms of the patient's age at presentation , most commonly affected sex, commonly affected anatomical site, type and size of the lesion, and further what treatment was offered and their outcomes . The diagnosis of vascular anomalies was made based on clinical examination and characteristics on imaging. In view of the lack of adequate facilities required for cryotherapy, angiographic embolization in our institute patients underwent intralesional sclerotherapy , laser ablation or ligation of feeder vessels followed by excision with primary closure

Results

Results: A total of 64 subcutaneous arteriovenous malformations patients were studied. Out of 64 patients 43 were slow flow vascular malformations and 19 were high flow vascular malformations and rest 2 were lymphatic venous malformations. All AVM's were treated with sclerotherapy, surgical excision, or laser ablation method method . Out of 64 ,43 patients required multiple sittings of sclerotherapy 15 patients underwent excision followed sclerotherapy and 19 patients underwent ligation of feeder vessels and excision directly and 6 patients had recurrence and 2 patients underwent laser ablations and required minimum of 2 sittings without recurrence complications . Very limited data is available for their management of AVM's so this article discuss the various modalities of their treatment and their efficacy for the same.

Conclusions

Conclusion: Sclerotherapy followed by surgical excision has good outcomes both surgically and aesthetically than excision and ligation of feeder vessels alone in terms of recurrence and complications. We had good outcome in these vascular malformations as compared to sclerotherapy alone or other modalities which has been tried earlier with high failure rates.

Anesthesiologists' Perspectives on the Use of Multimodal Postoperative Analgesia

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Introduction

Multimodal analgesia is widely recognised around the world not only as an effective tool for managing post-operative pain, but also as a way to reduce opioid use. [1] Unfortunately, not all physicians incorporate this approach into their practice, and non-opioid medications are sometimes underused. [2]

Aim of the study

To assess the attitudes of anaesthesiologists in Lithuanian tertiary care hospitals towards multimodal analgesia - the use of systemic non-opioid analgesics, analgesic adjuvants, and regional analgesia for the relief of postoperative pain.

Materials and methods

An anonymous questionnaire survey with bioethical approval (No. 2025-BEC2-0216) was distributed to all anaesthesiologists working at the Hospital of LUHS Kaunas Clinics in February 2025. The doctors were invited to answer 18 questions, including demographics, items about their subjective opinions on the effectiveness and use of multimodal analgesia. Descriptive statistical analysis and chi-square ($\chi 2$) were used for data analysis. Results were considered statistically significant at $p<0.05$.

Results

The survey included a similar proportion of anaesthesiologists with over 20 years, 11–20 years, and less than 10 years of experience. Most respondents (70.2%) reported post-operative pain management challenges in less than 20% of patients. Although 85.1% recognised epidural analgesia as highly effective, 66% used it in less than 25% of patients. In contrast, peripheral nerve blocks were more frequently used by doctors working in urology and plastic surgery, with 75% applying them to over 76% of patients. Both paracetamol and NSAIDs were widely considered effective for reducing overall opioid requirements, with statistically significant results ($p < 0.001$). Most physicians reported prescribing these medications to 76–100% of their patients. Practitioners who believed that dexamethasone did not reduce opioid requirements were likely to hold the same view regarding magnesium sulphate, and vice versa ($p < 0.001$).

Finally, magnesium sulphate (70.2%), intravenous lidocaine (91.5%), and ketamine (59.6%) are administered to no more than 25% of patients.

Conclusions

The study showed that although most anaesthesiologists recognise the effectiveness of multimodal analgesia methods, such as epidural analgesia and peripheral nerve blocks, their use remains limited in clinical practice. While paracetamol and NSAIDs are widely prescribed to reduce opioid requirements, magnesium sulphate, intravenous lidocaine, and ketamine are used infrequently.

Comparative Analysis of Aesthetic and Safety Outcomes: Abdominoplasty Alone Versus Mommy Makeover

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Introduction

Aesthetic surgery, including abdominoplasty (AP), is increasingly sought after for enhancing physical appearance and restoring body confidence post-pregnancy or significant weight loss. AP focuses on improving the abdominal area by removing excess skin and fat and tightening the abdominal muscles. The Mommy Makeover (MM), combining AP with breast reshaping and liposuction, addresses broader body reshaping needs. Given the popularity of both procedures, this study explores the efficacy and safety of AP both as a standalone procedure and as part of the MM.

Aim of the study

To evaluate and compare the aesthetic outcomes, patient satisfaction, and safety of AP as an individual procedure versus as a component of the MM.

Materials and methods

We conducted a retrospective analysis of 92 female patients who underwent AP alone or as part of MM in 2022. Patients were divided into two groups: Group A (GA) (n=39) received only AP, and Group B (GB) (n=53) underwent MM. Both groups had diastasis recti abdominis correction. Pre- and post-operative satisfaction was measured using the 'BODY-Q' questionnaire, which included "Satisfaction with Abdomen Surgery" before (SABS) and after (SAAS), and "Appraisal of Body Contouring Scars" for AP (AAP). Statistical analysis used Mann-Whitney U and unpaired t-tests with a significance level set at 0.05.

Results

No significant differences were observed between the groups for both age and BMI ($p<0,05$). When comparing SABS, there was no significant difference in both G1 (Mdn=0) and G2 (Mdn=0). Regarding SAAS, a statistically significant difference was observed, with more patients in G1 (Mdn=93) being satisfied with their abdomen than in G2 (Mdn=74) ($U=736$, $p=0.0478$). Appraisal AAP revealed significantly more visible scars in G2 (Mdn=59) compared to G1 (Mdn=100) ($U=678.5$, $p<0.0001$). Additionally, more patients experienced complications in G2 (55.56%) compared to G1 (33.33%) ($\chi^2=4.499$, $p=0.0339$). The duration required to return to maximum physical exertion did not differ significantly between groups, with the majority in G1 (47.37%) requiring 3-4 months and in G2 (41.38%) 4-6 months, showing no statistical difference between groups.

Conclusions

AP alone yielded higher patient satisfaction and lesser visible scarring compared to when performed as part of a MM. Despite similar recovery times, the MM procedure was associated with a higher rate of complications, suggesting that AP alone might be the safer and more aesthetically pleasing option for patients primarily concerned with abdominal aesthetics.

None

Comparative Outcomes of In Situ Reconstruction Using Different Graft Materials in Vascular Graft Infections: A Retrospective Analysis

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Introduction

Vascular graft infections (VGEIs) are rare but severe complications in vascular surgery. One treatment option for VGEIs is graft removal followed by in situ reconstruction (ISR). However, the choice of reconstruction material is crucial, particularly in terms of infection prevention.

Aim of the study

This study aimed to compare the surgical and clinical outcomes of ISR using different graft materials in the treatment of VGEIs.

Materials and methods

A retrospective analysis was conducted on 1,011 patients who underwent vascular bypass procedures between January 2018 and December 2024. Among them, 50 patients (4.95%) required vascular surgery due to VGEIs and were included in the study. Various factors, including patient demographics, surgical details, and postoperative complications, were analyzed to comprehensively assess outcomes.

Results

The most common clinical manifestation of VGEIs was a purulent infection at the surgical site. ISR was performed using autologous veins in 25 patients (50%), xenografts in 14 patients (28%), and silver-coated synthetic grafts in 11 patients (22%). The median duration of the procedure was 322.5 minutes (IQR 155 minutes), with no statistically significant differences between the groups ($p = 0.30$). The overall in-hospital morbidity rate was 54%, with complications occurring in 14 patients (56%) in the autologous vein group, 7 patients (50%) in the xenograft group, and 6 patients (55%) in the silver-coated graft group ($p = 0.93$). The most common in-hospital complication was surgical site infection (10 patients; 20%), likely related to the preexisting VGEI. The in-hospital mortality rate was 28%, with deaths reported in 6 patients (24%) in the autologous vein group, 6 patients (43%) in the xenograft group, and 1 patient (9%) in the silver-coated graft group ($p = 0.15$).

Conclusions

ISR represents a viable treatment option for VGEIs. The most common clinical symptom of VGEIs is a purulent infection at the surgical site. Autologous veins are the most frequently used grafts for ISR. Early outcomes following ISR with different graft materials are comparable, demonstrating similar morbidity and mortality rates.

Comparison of the effectiveness, complications and quality of life of patients treated with classical methods, with the Bascom Cleft Lift and Limberg flaps in the treatment of pilonidal cysts

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Introduction

Pilonidal cyst disease is a chronic condition affecting haze sacrococcygeal region, , often leading to recurrent infection, abscess , chronicle inflammation , what impaired quality life. Surgical techniques have been developed to manage this condition. mThis study compares the effectiveness, complication rates, and impact on patients quality of life between classical methods the Bascom cleft Lift and Limberg flap technique.

Aim of the study

This study compares the effectiveness, complication rates, and impact on patients quality of life between classical methods the Bascom cleft Lift and Limberg flap technique.

Materials and methods

A retrospective analysis was conducted od 10 patient who underwent surgical treatment for pilonidal disease. Patient were categories into three group: 1. Five patient with recurrent disease after previous classical surgeries underwent Limberg flap reconstruction. 2. One patient with recurrence after multiple surgeries was treated with Bascom cleft lift technique. 3. Four patients underwent projary Bascom Cleft lift surgery for advanced pilonidal disease. Patient were followed for 6-12 moths , with key outcomes including recurrence rates, time recovery and postoperative complication.

Results

No recurrences were observed in any of the patients. Limberg flap was effective in recurrent cases, though one patient 20% developed postoperative complication , requiring an additional procedure Bascom Cleft Lift. Bascom Cleft Lift (both primary and salvage procedure) showed no complications or recurrences in follow-up. Patients treated witch Bascom Cleft Lift reported faster wound healing and earlier return do daily activities.

Conclusions

Bascom Cleft Lift and Limberg flap methods are superior to classical excision in terms of recurrence prevention. Bascom Cleft Lift appears to be the most effective technique , particularly in primary cases, offering the lowest complication rate and fasters recovery. Limberg flap remains an excellent options for complex recurrent cases, despite a slightly higher risk complication.

Copper Oxide Dressings Against Negative Pressure Wound Therapy for Diabetic Wound Care: A Randomized Trial

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Introduction

Negative Pressure Wound Therapy (NPWT) is widely regarded as the standard of care for managing large, deep wounds and cavities, as well as for promoting wound closure. Recently, copper oxide dressings (COD) have emerged as a valuable addition to clinical practice due to their antimicrobial properties. Research and clinical evidence have demonstrated their ability to accelerate wound healing through mechanisms such as stimulating autolytic debridement, enhancing granulation tissue formation, and supporting epithelialization.

Aim of the study

The study aims to prove the non-inferiority of COD in comparison to the standard of care of large and deep wounds, NPWT, in the areas of wound healing, convenience, and application time.

Materials and methods

We initiated a randomized controlled trial with sixty diabetic patients comparing the reduction of wound size during 3 months of treatment between COD management to NPWT, by using an artificial intelligence program (Tissue Analytics©, TA).

Results

Forty-six patients have finished the study, twenty-three patients in each treatment arm. The average wound area was 19.9 (± 4.36) cm^2 in the COD arm and 14.1 (± 2.32) cm^2 in the NPWT arm ($p=0.25$). Reduction of wound size assessed by TA© was 53.7% and 52.2% (pooled=0.866) after one month, 77.7% and 72.8% (pooled=0.533) after 2 months, and 89.5% and 89.7% (pooled=0.961) after three months, in the COD and NPWT arms, respectively. The percentage of wounds that closed during the study was 47.83% (11/23) and 34.78% (8/23) in the COD and NPWT arms, respectively ($p=0.369$). COD dressings were more convenient than the NPWT for both the patients ($p<0.001$) and the caregiver ($p=0.0034$). Applying the COD was faster than applying the NPWT ($p<0.001$). There is a cost reduction of ~85% with the use of COD compared to NPWT.

Conclusions

The results of this trial demonstrate that Copper Oxide Dressing (COD) therapy is statistically non-inferior to Negative Pressure Wound Therapy (NPWT) in terms of wound healing rates. Additionally, COD therapy offers significant advantages, including greater convenience, shorter application time, and lower costs. These findings suggest that COD therapy may be considered a first-line treatment option for managing wounds in diabetic patients, particularly when NPWT is indicated.

Effects of Protein Supplementation and Mediterranean Diet Adherence on Post-Metabolic Bariatric Surgery Outcomes

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Introduction

Metabolic bariatric surgery, while the preferred treatment for severe obesity and its comorbidities, can lead to nutritional deficiencies (calcium, iron, vitamins D and B12). Protein deficiency, common both pre- and post-surgery, can impair weight loss outcomes and metabolic improvements, while also increasing anemia risk.

Aim of the study

The aim of the study was to assess the impact of bariatric surgery followed by protein supplementation on selected laboratory parameters in obese patients, examine the relationship between total protein levels and the percentage of excess weight loss after surgery, as well as to evaluate the effectiveness of the Mediterranean diet in preventing malnutrition in post-bariatric surgery patients.

Materials and methods

Eighty adult bariatric surgery patients received post-operative protein supplementation (60-80g/day depending on body weight). Pre- and post-operative blood parameters (calcium, vitamins D and B12, iron, total protein) and body mass index were analyzed, and Mediterranean diet adherence was assessed via questionnaire.

Results

After bariatric surgery followed by protein supplementation, a significant increase was observed in the median blood concentration of total protein (5.9 vs. 7 g/dL, $p<0.001$), vitamin D (23.35 vs. 32.80 ng/ml, $p<0.001$), and iron (94.5 vs. 109 mg/dl, $p=0.002$) compared to pre-surgery values. After the operation, all patients had total protein blood concentrations within the normal range of 6–8 g/dL, and no relationship was found between total protein blood concentration after surgery and the percentage of excess weight loss following the procedure. However, the median percentage of excess weight loss in the group of 50 patients with total protein levels below the normal range was much lower than that of the other patients (34% vs. 47%, $p=0.46$). 32 patients adhered to the Mediterranean diet after the operation, while 48 did not. All 5 patients with iron blood concentrations below the normal range after surgery, including all 4 patients with anemia, did not adhere to the Mediterranean diet (proportion 0 vs. 0.104, $p=0.07$, and 0 vs. 0.08, $p=0.123$ for the diet and non-diet groups, respectively).

Conclusions

Metabolic bariatric surgery combined with protein supplementation significantly improves nutritional markers, including total protein, vitamin D, and iron levels. The results of the study suggest the importance of both pre- and post-operative protein supplementation and Mediterranean diet adherence for optimal bariatric surgery outcomes.

How does the surgical treatment of Carotid Artery Stenosis affect changes in the Cognitive Functions and Cerebral Blood Flow volume?

Authors

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Introduction

The evaluation of Internal Carotid artery (ICA) stenosis is based upon flow velocity changes, however new studies suggest that preoperative cerebral blood flow (CBF) volume – the sum of the flow volumes in internal carotid, external carotid and vertebral arteries, can predict postoperative CBF increase. Moreover, ICA stenosis might lead to cognitive function (CF) impairment, due to hypoperfusion or ischemic incidents.

Aim of the study

The aim of this study is to assess the correlation between the CBF changes and its influence on CF after surgical treatment of the symptomatic, >70% ICA stenosis.

Materials and methods

Study group consisted of 45 patients (16 female, 29 male), qualified for carotid endarterectomy due to symptomatic, >70% ICA stenosis. In all patients following tests were performed preoperatively and 2-3 days after the surgery: the Rey Auditory Verbal Learning Test (RAVLT) – sum of words memorized and repeated during 5 trials of 15 words; time of solving the Maze Test (MT) measured in seconds; the assessment of the CBF in Doppler Ultrasonography. Patients with preoperative CBF lower than reference values were called "no compensation" (NC), with CBF close to the reference values "mild compensation" (MC), and with CBF higher than reference values "significant compensation" (SC).

Results

CBF reference values: 898,5±119,1 ml/min – 65-69 years, 838,5±148,9 ml/min – 70-74 years, 805,1±99,3 ml/min – 75-79 years, 685,7±112,3 ml/min ≥80 years. Preoperatively there were 25 patients in NC group, 18 patients with MC, and 2 patients with SC. In the whole study group significant increase in CBF of 162,27 (p=0,00002), resulted in decrease of 38 seconds in MT (from 94,1 to 56,1; p=0,043470), and increase of 6,8 words in RAVLT (from 35,4 to 42,2; p=0,004391). In NC group the average increase in CBF was 201,35 ml/min (p=0,0000001), which correlated with significant changes in RAVLT of 9,3 (from 35,8 to 45,1; p=0,001035), and non-significant decrease of 33,5 (from 89,7 to 56,2; p=0,085856). In MC patients CBF increase of 129,95 ml/min (p=0,023609) was accompanied with non-significant increase in RAVLT of 4,3 (from 35,4 to 40,7; p=0,350646), and decrease in MT of 45,3 (from 102,9 to 57,6; p=0,220618). In SC group CBF increase of 22 ml/min, was accompanied by decrease in RAVLT of 1 word (from 31 to 30), and MT of 18(from 48 to 18).

Conclusions

Carotid artery stenosis treatment results both in CBF increase and improvement in CF. The benefits are more pronounced in patients with lower preoperative CBF values.

Improvement of Protein Synthesis and Child-Pugh Score After Splenic Artery Embolization in Patients with Clinically Significant Portal Hypertension

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Introduction

The level of albumin plays a significant role in maintaining the homeostasis of the body and is one of the principal indicators of the functional state of the liver. In patients with acquired chronic liver disease (ACLD), the level of albumin is significantly reduced, therefore improving the synthetic function of the liver is a clinically significant challenge.

Aim of the study

This study aims to evaluate the dynamics of hepatic protein-synthetic function restoration in patients with portal hypertension following secondary prevention of gastroesophageal bleeding through SAE.

Materials and methods

In a long-term comparative study (12 months), we evaluated the protein synthesis function of the liver in 27 patients (15 male, 12 female) with clinically significant portal hypertension (CSPH), who suffered one or more episodes of variceal bleeding from gastroesophageal veins and corresponded to classes A (11 persons) or B (16 persons) according to Child-Pugh score scale (average value – 7.37). Patients underwent endovascular intervention – partial splenic artery embolization (SAE). The dynamics of the average values of total protein, albumin, and fibrinogen indicators before (0m) SAE and in the postoperative observation period at 1, 3, 6, and 12 months (m).

Results

Before SAE (0m), mean total protein, albumin, and fibrinogen levels were 70.0 g/l, 37.3 g/l, and 2.0 g/l, respectively. At 1m, mean total protein slightly increased to 73.8 g/l, albumin decreased to 36.0 g/l, and fibrinogen rose by 50% (3.05 g/l), likely due to splenic infarctions. The albumin drop may be associated with postoperative inflammatory response or transient hemodynamic changes. By 3m, mean albumin increased (38.1 g/l), and fibrinogen decreased (2.4 g/l), while total protein remained stable (73.1 g/l). At 6m, mean values were 73.4 g/l (protein), 39.37 g/l (albumin), and 2.4 g/l (fibrinogen). By 12m, total protein rose to 74.5 g/l ($p<0.001$), albumin to 39.8 g/l ($p<0.001$), and fibrinogen remained 2.4 g/l ($p<0.05$). A trend towards albumin increase was accompanied by a decrease in the mean Child-Pugh score from 7.37 to 6.88.

Conclusions

After SAE in patients with ACLD and CSPH, a stable improvement in hepatic protein-synthetic function was observed over both short- (1–6 months) and long-term (12 months) periods. As a result, a tendency towards a decrease in the Child-Pugh score was noted. However, further studies are needed to assess the impact of concomitant therapies on long-term liver function outcomes.

Laparoscopic Sleeve Gastrectomy - Fewer Trocars, Better Outcomes

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Introduction

Laparoscopic sleeve gastrectomy, the most common bariatric procedure in Poland, is the optimum method of treatment for obesity, regarding long term results measured by % excess weight loss and remission of co-morbidities. The conventional surgical procedure demands five trocars to insert surgical tools. The novel technique includes use of only three trocars.

Aim of the study

The study aimed to compare outcomes between patients treated with conventional five-trocar laparoscopic sleeve gastrectomy and three-trocar laparoscopic sleeve gastrectomy.

Materials and methods

We analyzed the course of treatment in a group of 50 patients who had undergone a five-trocar sleeve gastrectomy and 50 patients who had undergone a three-trocar procedure within the time frame of twelve months (between 2022 and 2023), with 1-year follow-up. The main endpoints included surgery duration, early postoperative complications and length of hospital stay. The additional endpoints were % excess weight loss, postoperative incidence of gastroesophageal reflux disease and other late complications.

Results

No significant differences were observed between the two groups regarding age, weight, BMI, and sex distribution. Related health conditions were comparable between the two groups. The patients treated with the three-trocar technique had a shorter surgery duration and comparable length of hospital stay, lower rate of early postoperative complications. Additionally, the % excess weight loss was higher in the three-trocar group and the incidence of postoperative late complications was comparable between the two groups.

Conclusions

The three-trocar sleeve gastrectomy is a feasible, safe, and effective alternative to conventional five-trocar procedure, with shorter surgery duration, lower rate of early postoperative complications and higher % excess weight loss.

Non-selective Beta-blockers in the Secondary Prophylaxis of Variceal Bleedings in Portal Hypertension: a Non-invasive Doppler-based Method Evaluation of Their Impact

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Introduction

The use of non-selective beta-blockers (NSBB) is recommended by the Baveno consensus in all sessions as a secondary prophylaxis for bleeding from varicose veins (VV) of the esophagus and stomach. The selection of the dose is a task of high clinical importance, as inappropriate dosing can lead to another episode of bleeding from VV in patients with clinically significant portal hypertension (CSPH). Therefore, it is crucial to study the effect of NSBB on hemodynamic indicators.

Aim of the study

Portal pressure evaluation methods, such as HVPG, are complicated and limited to specialized centers, while surrogate methods remain unreliable. Therefore, developing a pathogenetically justified approach to portal pressure assessment and NSBB dose selection is an urgent task.

Materials and methods

In 15 consecutive patients with CSPH and at least one episode of VV bleeding, flow volume velocity through the splenic vein (FVV SV) was determined at baseline and after the administration of NSBB at a dose of 10 or 20 mg by Doppler ultrasonography. Simultaneously, the contribution of FVV SV to the total portal blood flow was evaluated. The average score on the Child-Pugh scale - 7.26 , and MELD - 8.18 .

Results

All patients exhibited an increased contribution of FVV through the splenic vein to the total portal blood flow, denoted as the splenoportal index (SPI) at 81.8 %, while the physiological SPI in healthy patients, according to literature data, is 28 %. FVV SV was 1.21 ± 0.69 l/min, and FVV through the portal vein stem (FVV PVS) was 1.48 ± 0.78 l/min. After the administration of NSBB (propranolol) at a dose of 10 mg, the FVV SV decreased to 1.02 ± 0.45 l/min (by 16 %), the FVV PVS decreased to 1.25 ± 0.16 l/min (15.5 %), but the SPI slightly decreased to 81.6 % (non-significant - NS). Following the administration of NSBB at a dose of 20 mg, FVV SV decreased to 0.97 ± 0.44 l/min (19.8 % from baseline), FVV PVS decreased to 1.24 ± 0.22 l/min (16.2 %), but SPI was at 78 % (NS).

Conclusions

In patients with CSPH and a history of bleeding episodes, there is a significant increase in SPI. Non-invasive methods allow measuring FVV and, therefore, pressure in the portal system without the use of HVPG. Despite the impact of NSBB on FVV SV and PVS, a single use of NSBB in doses of 10 - 20 mg does not have a significant effect on SPI, indicating limited prophylactic and anti-relapse efficacy in monotherapy. Such patients may benefit from considering alternative secondary prophylaxis methods such as TIPS or splenic artery embolization.

Optimizing Pediatric Acute Appendicitis Management with Machine Learning: A Pilot Study

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Introduction

Acute appendicitis (AA) is one of the most common abdominal emergencies in children, yet no specific biomarker exists for its diagnosis. Diagnosis and treatment decisions rely on clinical evaluation, laboratory tests, and ultrasonography. However, atypical clinical presentations can complicate prompt decision-making. Machine learning (ML), which utilizes large datasets to identify statistical patterns, holds potential for improving diagnostic accuracy and guiding treatment planning.

Aim of the study

To construct a prototype of an artificial intelligence model capable of diagnosing, predicting the management, length of hospitalization and severity of pediatric appendicitis.

Materials and methods

Data of 429 patients with diagnosis of appendicitis and/or abdominal pain was collected. Independent variables included the patient's characteristics, signs, symptoms, blood morphology (WBC, NEU, CRP, PDW, RDW, HCT, MCV, PV, PLT) and ultrasonography findings (diameter, surrounding tissue reaction, enlarged lymph nodes, fluid, coprostasis). Data underwent preprocessing to ensure its suitability for analysis.The preprocessed data was divided into a training, testing and validation set. We utilized the XGBoost algorithm for continuous outcome prediction and Random Forest Classifiers for binary classification tasks. Trained models were evaluated using suitable metrics: AUC ROC and F1-Score. Analysis considered predictive models for binary response variables (appendicitis/no appendicitis, complicated/ uncomplicated, laparotomy/laparoscopy, surgical/conservative management) and continuous response variables (length of stay).

Results

We created an online tool for research purposes only. Our model's ability to tell apart cases of AA from a different abdominal pain was 91%, distinguish simple from complex AA was at 75% and tell if a patient will need a surgery at 84%. Main predictors for diagnosis were: surrounding tissue reaction, diameter of appendix and abdominal defense.

Conclusions

Machine learning can enhance the diagnosis and management of pediatric appendicitis by providing accurate predictions and aiding clinical decision-making. Our model demonstrates high predictive accuracy and may assist surgeons in optimizing treatment approaches, including anticipating the need for laparotomy. Further studies with larger datasets are needed to validate its clinical utility.

Single-Port Appendectomy– a Minimally Invasive Algorithm for Children with Acute Appendicitis

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Introduction

The standard operating procedure for acute appendicitis (AA) depends on the technical and professional capabilities of a given pediatric surgery center. In Pediatric Surgery and Urology Clinical Ward at The Regional Specialized Children's Hospital in Olsztyn, single-port appendectomy (SA) was first performed in 2012. As experience was gained, their own treatment algorithm was implemented. The standard approach assumes that SA is the first-choice method. Whenever removal of the appendix is not possible using this technique, conversion to conventional laparoscopy (CL) or open appendectomy (OA) follows. The decision to convert to CL depends on the position of the appendix and the possibility of exteriorizing it through the umbilicus.

Aim of the study

The aim of the study was to present the method and treatment outcomes of SA comparing to CL and OA.

Materials and methods

The data of all patients with AA who were hospitalized in the Pediatric Surgery and Urology Clinical Ward at The Regional Specialized Children's Hospital in Olsztyn between 2012, and July 2014 were retrospectively analyzed. 1,568 appendectomies were performed, including 504 OA, 694 CL and 369 SA. In all methods, the surgery time, length of the hospital stay, and cosmetic outcome were compared.

Results

The surgery time for SA is significantly shorter than with other methods. The hospital stay after SA is comparable to CL and shorter than after OA, depending more on the severity of the disease than on the surgical method. The greatest advantage of SA is its excellent cosmetic outcome - a natural scar in the navel. Patients (and their parents) highly appreciate the absence of visible surgical scars. Currently, approximately 40% of all appendectomies performed in the center are using the SA method.

Conclusions

SA has the potential to become the standard approach in the surgical treatment algorithm for acute appendicitis due to its numerous advantages. A short hospital stay, reduced surgery time and excellent cosmetic outcomes may justify the selection of SA as the preferred surgical treatment.

Stapled Myocardial Repair: A Viable Alternative to Conventional Suturing in Combat Cardiac Trauma

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Introduction

Penetrating cardiac combat wounds account for 6-9% of casualties, with a high mortality rate of 35-84%, depending on response time and access to resources (Kassa et al., 2023; González-Hadad et al., 2021). For cardiac injuries, various sources widely describe methods of suturing wounds (Glaser et al., 2018). A few sources describe the practical use of the stapled heart suture, however its effectiveness in combat has not yet been sufficiently studied.

Aim of the study

Our research aims to investigate the effectiveness of the staple suture for emergency stabilization of a patient in combat conditions and compare it with classical suturing.

Materials and methods

The experiment involved modeling penetrating heart wounds in five pigs, followed by primary stapler suturing to achieve temporary hemostasis. Once hemostasis was restored, final classical suturing was applied. Morphologic studies analyzed the sutured heart wound sites.
Additionally, stapler suturing was used to treat penetrating combat heart wounds in two wounded patients.

Results

Morphological studies have demonstrated that the strength of the staple suture is equivalent to a classical heart suture, and it does not cause damage to cardiomyocytes. Both wounded patients with penetrating myocardial wounds were transferred to a forward surgical facility in stable condition, where they underwent classical suturing of penetrating heart wounds after the removal of staple sutures.

Conclusions

The use of a staple suture provides a significant time advantage while effectively closing myocardial defects. The mechanical properties of staple sutures are comparable to traditional suturing materials, ensuring durability equivalent to classic methods of heart wound repair. Moreover, staple suturing doesn't induce cardiomyocyte damage or critical myocardial ischemia at the application site.

Surgical Outcomes of Postintubation or Post-tracheostomy Tracheal Stenosis Including Tracheoesophageal Fistulas

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Introduction

Prolonged intubation resulting in pressure and necrosis from the endotracheal tube and cuff is a leading cause of tracheal stenosis. Tracheal resection with end-to-end anastomosis is the gold-standard treatment for this condition. The trachea-esophageal fistula (TEF), which is a pathological connection between the trachea and the esophagus, may co-occur with stenosis. It greatly affects patients' chances of positive outcomes. Many additional factors may contribute to inadequate wound healing and treatment failure. One of the most serious complications of this procedure is restenosis due to the inflammatory process at the anastomosis site and the subsequent development of fibrotic tissue. Few patients are deemed to be eligible for reresection; therefore, limited data exist concerning this topic.

Aim of the study

Identification of risk factors for short-term and long-term surgical treatment failure. material and methods.

Materials and methods

We reviewed patients with tracheal stenosis or tracheoesophageal fistula who underwent surgical segmental resection of the trachea. Patients with malignant and idiopathic stenosis were excluded. We divided the patients into three groups: group I included patients with TEF, group II patients who underwent additional resection of the cricoid cartilage, and group III patients without the TEF or resection of the cricoid cartilage.

Results

In the multivariate analysis, for short-term failures, risk factors were: patients from group I (P=0.01), age >70 (P=0.01), preoperative T-tube (P>0.001), and positive bacterial culture (P=0.05). For the long-term failures risk factors were: patients from group I (P=0.000), group II (P=0.013), age >60 (P=0.009), preoperative T-tube (P=0.000), and length of resection >2cm (P=0.039).
Short-term good results were obtained in 75% of patients from group I, 81% from group II, and 91% from group III. Good long-term results obtained in groups I, II, and III were 75%, 83%, and 94% of cases respectively.

Conclusions

Tracheal resection is a safe and effective treatment. The presence of TEF is a significant risk factor. Tracheal culture collection and subsequent antibiotic therapy are the procedures of choice in selected groups of patients. Complications after surgical treatment affect a small percentage of patients and are related to the length of the resected tracheal section, the presence of TEF, and the positive tracheal culture.

Funding: None

Urology Session

Session Coordinators:
Jakub Kalisz, Maria Konkol

Honorary Patronage:

A Case of Mistaken Identity: Prostate Cancer Masquerading as Bladder Cancer

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Background

Bladder cancer (BC) and prostate cancer (PCa) are common urological malignancies in men, that may also coexist. Studies have shown that incidental prostate cancer is found in approximately 20% of patients undergoing radical cystoprostatectomy for muscle-invasive bladder cancer (MIBC). Here, we present a case of a patient initially misdiagnosed with MIBC, later identified as prostate adenocarcinoma invading the bladder.

Case Report

A 61-year-old male was referred to the urology clinic for hematuria evaluation. Bladder ultrasound revealed a bladder tumor with mild right-sided hydronephrosis. Laboratory results showed normal creatinine concentrations and elevated prostate-specific antigen (PSA) concentration of 18 ng/mL. Transurethral resection of the bladder tumor (TURBT) was performed, removing a 4 cm mass located in the trigone and involving both ureteral orifices. The pathology report described an undifferentiated urothelial T2 bladder cancer. Metastatic screening with computed tomography (CT) revealed enlargement of paraaortic lymph nodes (cM1a). The patient was referred to an oncologist and started on gemcitabine-cisplatin (GC) chemotherapy. In the meantime, multiparametric magnetic resonance imaging (mpMRI) of the prostate revealed a PIRADS 5 lesion at the base with extraprostatic extension (EPE) from the left lobe. Transrectal ultrasound-guided biopsy (TRUS BTx) was performed after the fourth cycle of chemotherapy and identified a prostate adenocarcinoma with a Gleason Score (GS) of 7 (3+4).
Follow-up PSA test after the patient had received five cycles of GC showed a decrease to 10 ng/mL. At that time histopathological reassessment of TURBT tissue blocks was ordered and maintenance therapy with avelumab of four cycles was initiated. Moreover, the patient was started on androgen deprivation therapy (ADT) with leuprorelin. Reevaluation of TURBT tissue blocks revealed the absence of urothelial BC and instead confirmed a GS 9 (5+4) prostate adenocarcinoma.

Conclusions

This case highlights the need for thorough histopathological evaluation in atypical bladder tumors, particularly those located in the trigone with poor differentiation. Additional staining and distinction between urothelial carcinoma and adenocarcinoma are crucial for accurate diagnosis leading to optimal treatment.

A Case of Upper Tract Urothelial Cancer in a Patient with Prior Bladder Cancer.

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Background

Urothelial carcinoma (UC) is the second most common urological malignancy in developed countries. They can be localized in the lower and/or the upper urinary tract. Bladder cancer (BC) accounts for 90–95% of UCs while upper tract urothelial carcinomas (UTUC) account for only 5–10% of UCs. Treatment may consist of endoscopic surgery (only non-muscle invasive stages), classical surgery, immunotherapy and chemotherapy. In Poland those two diseases are responsible for about 6% of all cancer-related deaths.

Case Report

Sixty eight years old male with numerous comorbidities has undergone laparoscopic radical cystoprostatectomy (RC) with Bricker urinary diversion after failure of BCG and durvalumab therapy - during the treatment patient developed disseminated tuberculosis and was ruled out of randomized clinical trial for non-muscle invasive bladder cancer. Histopathological examination revealed high grade, bladder carcinoma in situ and low-grade prostate carcinoma. Three years later flexible ureterorenoscopy has revealed renal pelvis tumour, however biopsy collection was impossible due to technical reasons. Computed tomography (CT) performed shortly after has shown that pelvic lesion was most likely of malignant origin. Because of the patient's disapproval for radical nephroureterectomy, transcutaneous, endoscopic resection was performed. Histopathology showed high grade urothelial cancer invading subepithelial connective tissue. Only then informed consent for radical surgery was obtained and open nephroureterectomy performed. Specimen examination showed 3 high-grade urothelial cancer focuses - two in renal pelvis and one in ureter, two of which were muscle-invasive and one was infiltrating peripelvic fat. During last follow-up CT scan cancer recurrence in periaortic lymph nodes was shown and the patient was admitted to oncology.

Conclusions

This case shows the challenges in managing metachronous pan-urothelial disease in a patient with delayed treatment decisions. Two radical surgeries and endoscopic procedures didn’t stop disease from progressing. Unfortunately, medicine doesn’t have effective methods of predicting UTUC after RC, therefore most of these tumours are locally advanced and have poor prognosis. The recurrence in periaortic lymph nodes shows the aggressive nature of UC and the importance of timely radical surgery and follow-up CT scans.

Challenges of Bladder Cancer Diagnosis in Suspected Pyelonephritis: Insights from a Family Medicine Practice Case

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Background

Bladder cancer is a malignant tumor that develops from the cells of the bladder lining. The disease is diagnosed in men four times more often than in women, with the majority of cases occurring in individuals over the age of 60. The most common symptoms include hematuria, dysuria, frequent nocturnal urination, and lower abdominal or lumbar pain. Cancer is diagnosed through a general urine test (GUT), cystoscopy, ultrasound examination, or computer tomography (CT) if the disease has spread. Treatment options for bladder cancer include surgery, chemotherapy, or immunotherapy.

Case Report

A 71 year old man consulted a family physician due to a week long lumbar pain on the left side. The patient reported having a low-grade fever and taking ibuprofen, which provided relief.
Painful urination was not reported. Upon physical examination, a positive Jordan sign was noted on the left side. Laboratory blood tests revealed an elevated creatinine level (120 μmol/L) and a moderate increased C-reactive protein (CRP) level (17 mg/L). Urinalysis showed leukocytes in urine (29 leukocytes/μL) with no other significant abnormalities. A chest X-ray showed no acute significant abnormalities. No significant changes were observed in the renal ultrasound. Acute pyelonephritis was suspected and antibiotic therapy of ciprofloxacin (500 mg twice daily) was prescribed. One week into treatment the symptoms began to worsen, the patient presented to the emergency department with hematuria, urinary retention, and dysuria. Laboratory tests revealed mild hyperkalemia (5.1 mmol/L), CRP (0.8 mg/L), and leukocytosis (11.39 × 10/L) with neutrophilia (9.46 × 10/L). Suspecting prostate hyperplasia, a transurethral resection of the bladder (TURB) was performed. Several broad-based lesions, up to 2.5 cm in diameter, were found in the bladder trigum area and resected for biopsy. Histopathological examination confirmed the diagnosis of carcinoma vesicae urinariae (pT2N0M0).
Chemotherapy was started with cisplatin (70 mg/m² on day 1) and gemcitabine (1000 mg/m² on days 1 and 8), with treatment cycles repeated every three weeks.

Conclusions

The most common symptoms of bladder cancer are chronic (e.g. blood traces in urine sample). Therefore, the sudden onset of hematuria, dysuria, frequent nocturnal urination, or lower abdominal and lumbar pain may be misleading as other urological disorders, especially when the initial ultrasound examination does not reveal cancer-specific changes.

Concomitant Prostate Cancer and Bladder Cancer Treated with Robotic Surgery: Case Report

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Background

Concomitant prostate cancer and bladder cancer are rare conditions that present significant diagnostic and therapeutic challenges for clinicians. Their management requires a multidisciplinary approach and specialized expertise, particularly when it comes to surgical intervention. Traditionally, treatment has involved open surgeries, which carry substantial risks, including increased blood loss, prolonged hospital stays, higher morbidity, and extended recovery times. However, with the advancement of robotic-assisted surgery, the treatment of both prostate and bladder cancers was revolutionized, offering significant advantages such as reduced blood loss, shorter hospitalizations, and faster recovery, improving patient outcomes and quality of life.

Case Report

A 76-year-old male patient underwent magnetic resonance imaging of the prostate, which revealed a nodular lesion extending from the bladder wall to the base of the prostate. Bone scintigraphy was performed and showed no evidence of metastases, while a chest X-ray was unremarkable. Than the patient underwent a transurethral resection of the bladder tumor and a prostate mapping biopsy, which revealed a diagnosis of transitional cell carcinoma in situ and Gleason score 4+3 adenocarcinoma. A computed tomography scan showed multiple metastatic lesions in the liver, lymph nodes, and bones. Further evaluation with positron emission tomography revealed multiple metabollicaly active metaplastic lesions, suggesting metastatic transitional cell carcinoma due to sclerolythic lesions. The patient was initiated on a cycle of dd-MVAC chemotherapy, during which the metastatic lesions showed shrinkage. Thanks to the positive response to chemotherapy, a decision was made to proceed with robotic-assisted cystoprostatectomy and ureterocutaneostomy. The surgery was successful, and the patient was discharged three days postoperatively.

Conclusions

This case highlights the effective use of robotic-assisted surgery in the management of concomitant prostate and bladder cancer. Compared to open surgeries, robotic-assisted procedures offer significant advantages, including greater precision, reduced blood loss, shorter hospital stays, and faster recovery times. In this case, the patient was discharged three days postoperatively, emphasizing the minimally invasive nature of the procedure and its positive impact on recovery.

Does Squamous Cell Carcinoma Always Have a Good Prognosis?

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Background

Squamous cell carcinoma is the second most common type of skin cancer, arising from epidermal cells. It typically occurs in areas exposed to UV radiation, such as face, neck, and hands. It can also develop in the mucous membranes of the oral cavity or external genitalia. When detected early, sqamous cell carcinoma is usually fully treatable, and the prognosis is generally good. However, if diagnosed at a later stage, with deeper tissue involvement or metastases, the prognosis can be less favorable. The prognosis of sqamous cell carcinoma depends on factors such as tumor size, location, patient's overall health, and presence of coexisting conditions. Individuals with weakened immune system or aggressive subtypes of sqamous cell carcinoma are at higher risk of poor outcomes.

Case Report

A 50-year-old patient was admitted to hospital in emergency mode, with severe pain, purulent discharge from the scrotum and urinary retention. The patient had a history of hemipenectomy five years earlier due to a penile tumor (the patient had not acquired the histopathological examination result). Extrarenal kidney failure was diagnosed and a cystostomy was performed. A fragment of the perineal lesion was collected for histopathological examination and a diagnosis of squamous cell carcinoma was obtained. The patient was qualified for surgical removal of the remaining part of the penis. In the postoperative course, abnormal wound healing was observed, and broad-spectrum antibiotic therapy and negative pressure wound therapy (VAC) were introduced. After hospital discharge, the patient repeatedly returned due to recurrent abnormal wound healing. VAC therapy was applied along with wound debridement. An additional histopathological examination revealed presence of invasive cancer tissue and radiotherapy was initiated. After several months, the patient returned to the hospital with anuria. Local recurrence of the carcinoma was histopathologically confirmed. Due to acute renal failure hemodialysis was introduced and bilateral nephrostomy was performed. The patient was discharged home in a general condition satisfactory according to the state of disease.
However, due to his deteriorating general condition, non-healing wounds and cancer progression, the patient was deceased.

Conclusions

Accuracy and consistency in treatment – both from the medical team and the patient – are a key to a successful therapy. This case shows that oversights can close the path to full recovery.

Effective Use of BCG Therapy in a 97-Year-Old Patient with Bladder Carcinoma In Situ: A Case Report

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Background

Carcinoma in situ (CIS) of the bladder is a non-invasive, high-grade tumor of the bladder which has a high propensity to progress to muscle invasive bladder cancer. The standard treatment of CIS is intravesical Bacillus Calmette-Guérin (BCG) therapy which induces clinical and preventive remission. However, taking care of bladder cancer in the elderly especially nonagenarians is difficult because such patients are usually multimorbid and there is a concern about the complications that such patients may develop. This case report shows how BCG therapy can be used effectively and safely in a 97-year-old male patient with CIS of the bladder and thus support the use of this method in the elderly.

Case Report

A 97-year-old man with a history of coronary artery disease, arterial hypertension and paroxysmal atrial fibrillation presented with haematuria of several months' duration. On cystoscopy a papillary, 1 cm in diameter tumour arising from a diverticulum at the posterior bladder wall and arterial wall blushes, suggestive of CIS,wase seen. Transurethral resection of the bladder tumor (TURBT) was performed. Histopathological examination confirmed
high-grade urothelial carcinoma in situ (CK20+ in the upper 2/3 of the urothelial layer). After evaluation of the patient's condition, a 6-week course of intravesical BCG therapy was initiated. The subsequent cycles were carried out according to the 6+3+3 protocol. The tolerance was satisfactory, the patient reported only mild side effects and was able to comply with both phases of the therapy. At 3 years of cystoscopic follow-up, thep patient is recurrence-free
and urinary cytology werwas unremarkablee with visually normal appearing bladder mucosa.

Conclusions

This case report confirms that BCG therapy remains a safe and effective treatment for CIS of the bladder, even in patients of advanced age. The successful management of this nonagenarian patient with CIS supports the notion that chronological age alone should not be a contraindication for BCG therapy. With multidisciplinary collaboration, there is a possibility to perform full-scale treatment, regardlesss of age.

Endoscopic Combined Intrarenal Surgery Technique, or How to Increase the Effectiveness of Minimally Invasive Treatment of Nephrolithiasis: A Case Example

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Background

Although kidney stone removal is a common procedure it may sometimes prove challenging for medical professionals when considering nonstandard cases where simpler methods fail. Endoscopic combined intrarenal surgery (ECIRS) is a novel, effective and safe choice in many extraordinary situations.

Case Report

We present a case of a 63-year-old woman with staghorn calculus in the left kidney. Due to splenomegaly, the hybrid approach was chosen, combining mini percutaneous nephrolithotomy (miniPCNL) with retrograde intrarenal surgery (RIRS) – miniECIRS.

Conclusions

RIRS and PCNL have advantages and disadvantages, meaning each patient's clinical course and condition require a personalised approach. By combining both approaches ECIRS can in certain cases decrease the risk of complications as well as provide the most effective strategy for kidney stone removal. ECIRS is especially valuable when dealing with anatomical abnormalities (such as horseshoe kidney or ectopic kidney) or organomegaly (specifically hepatosplenomegaly) which would reduce the manoeuvrability in standard PCNL surgery.
Moreover, when handling larger or more complex stones the alternative, RIRS, is often unsuccessful. In cases that combine both difficulties, ECIRS proves most advantageous for the patients. ECIRS is a viable option for removing complex and large stones in patients with limited PCNL access. This case illustrates where ECIRS excels and how important it is for a surgeon to be versed in varied surgical techniques.

Fournier's Gangrene in a 37-Year-Old Male: A Clinical Case of Rapid Progression and Multidisciplinary Surgical Management

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Background

Fournier's gangrene is a urological emergency with a high mortality rate. It is a severe, polymicrobial soft tissue infection that affects the perianal, genital, and perineal regions. Although it predominantly occurs in men, women and children can also develop this form of necrotizing fasciitis.

Case Report

We present the case of a 37-year-old Caucasian male admitted to the Urology Department with painful swelling of the scrotum and perianal area. On admission, the patient was in moderate general condition, hemodynamically and respiratory stable. The day before hospitalization, he experienced a fever of 39°C, significant leukocytosis, and an elevated C-reactive protein (CRP) level. The patient had no history of chronic illness or recent trauma. Empirical broad-spectrum antibiotic therapy was initiated upon admission, and urine and blood cultures were collected. Due to progressive clinical deterioration, extensive necrotomy of the penile, scrotal, and perianal tissues, along with drainage of a perianal abscess, was performed on the following day. A CT scan of the abdomen was conducted due to a suspected perianal fistula. On the third day of hospitalization, a urologist, in cooperation with a general surgeon, performed a colostomy along with repeated necrotomy.

Conclusions

Fournier's gangrene is a life-threatening urological emergency that requires immediate diagnosis and aggressive treatment. This case highlights the importance of early detection and multidisciplinary management, including surgical debridement, broad-spectrum antibiotics, and close collaboration between specialists. Despite the patient's initially stable condition, the rapid progression of tissue necrosis necessitated multiple surgical interventions. This case underscores the critical role of prompt and effective treatment in improving patient outcomes and reducing the mortality associated with Fournier's Gangrene

How to Treat a Patient with Severe Cardiological Comorbidities and Neurogenic Bladder Who Was Diagnosed with Clinically Significant Prostate Cancer?

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Background

Prostate cancer became the most common cancer in males. The diagnostic pathway for the different groups of patients is precisely defined, however, the management of the specific cases may be driven by other medical findings.

Case Report

A 60-year old patient with no previous genitourinary complaints underwent a neurosurgical stabilization at the level of L5/S1. Because of acute urinary retention postoperatively, a Foley catheter and later cystostomy tube was placed. At this time, acute kidney injury occurred, with creatine up to 13 mg/dl that resolved spontaneously after urine diversion. DRE revealed enlarged prostatic adenoma - 122 ml in TRUS, while PSA level with Foley catheter in its place was 33 ng/ml. The patient was started with tamsulosin and dutasteride. After a month, the PSA level was re-checked and was 17.7 ng/ml, which raised suspicion of prostate cancer.
Therefore, mpMRI was performed and revealed a focal lesion with features of capsule microinvasion (PI-RADS 5). Patient was scheduled for prostate biopsy, but unexpectedly developed myocardial infarction. He was treated with coronary angioplasty and started with double antiplatelet therapy. This lead to the 3-month delay in the urological diagnostics and even longer as for the radical treatment. Then, the biopsy was performed, which revealed Gleason score 7 (3+4) prostatic acinar adenocarcinoma in one out of 12 cores. Further staging did not prove any metastatic lesions. Urodynamic test revealed minor detrusor insufficiency. Surgical risk was determined to be increased due to the EF 40%, carotid artery stenosis, and polypharmacy. After consultation with a cardiologist, robot assisted radical prostatectomy was performed. The procedure was uneventful, and the patient was discharged home in 2 days in a good general condition. In 7 days the patient was able to void spontaneously with no residual observed in TRUS. The pathologic examination revealed the Gleason score 4+5=9, grade group 5 prostate adenocarcinoma (pT3aNxR0). During the 3-month follow-up, the patient remains under close observation with uro-oncologist and urologist, because no adjuvant treatment was implemented as PSA level was found to be <0.006 ng/ml.

Conclusions

There is a great risk of poorer oncological outcomes, when prostate cancer treatment is given beyond 6 months delay. In case of this patient, multidisciplinary collaboration allowed to personalize his treatment without any compromise. Further follow-up will be driven by PSA measurements.

Renal Cell Carcinoma in Ectopic Kidney

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Background

An ectopic kidney is a rare congenital anomaly, and the occurrence of a tumor, particularly renal cell carcinoma, within it is even rarer, with only a few cases reported in the literature. Managing such cases is challenging due to atypical anatomy, complicating radiological evaluation, and surgical planning. This report highlights a rare case of clear cell carcinoma in a pelvic ectopic kidney.

Case Report

A 59-year-old patient was referred for further evaluation and treatment following the discovery of a kidney with a solid mass located in an atypical position. Detailed imaging using computed tomography revealed that the left kidney was situated in the pelvis and fused with the right kidney. A solid mass measuring 4.4×4.2×4.7cm with cystic inclusions was identified on the upper/anterior surface of the left kidney. After a multidisciplinary team discussion, it was decided to proceed with laparoscopic surgery, taking into account the atypical kidney position and unique vascular anatomy. During the surgery, no typical renal hilum was identified.
Instead, three renal arteries, two renal veins, and one ureter running ventrally to the kidney were observed. The upper pole of the ectopic kidney was found to be tightly fused with the lower pole of the right kidney, making dissection challenging. All structures were carefully dissected, clipped, and the kidney was successfully removed. Histopathological examination confirmed the diagnosis of clear cell renal carcinoma, staged as pT1a N0 R0 G3.

Conclusions

This case highlights the rarity and complexity of managing renal cell carcinoma in an ectopic kidney. Despite the challenges posed by an ectopic kidney, thorough radiological assessment enables successful laparoscopic surgery. Multidisciplinary planning and a tailored approach remain key to achieving optimal outcomes.

Renal Colic with an Unexpected Final Diagnosis in a Young Female Patient with Normal Findings in NCCT/USG – A Case Report

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Background

Renal colic is the most common urological condition as for the emergency medicine. It presents as abdominal pain that is caused by the ureteral obstruction of different origin, mainly urolithiasis. The main tool used in ER to confirm the diagnosis is non-contrast computed tomography (NCCT). The specificity and sensitivity of the imaging modality lead to its wide implementation in the primary diagnosis of renal colic.

Case Report

A 32-year old woman, with no comorbidities, presented to the ER with pain located at the left side of the lumbar region, referring to hypogastrium. For the past week she had been reporting variably intensified haematuria. She was unfeverish but mildly positive Goldflam sign on the left side was noted. Non-contrast computed tomography and laboratory tests were performed and revealed no abnormalities within urinary tracts but for signs of urinary infection in general urine test. Patient was sent home and referred to follow-up in the clinic. During follow-up, she reported no complaints, while US did not show any changes in the urinary tracts but repeated urinalysis revealed 5-10 RBC per high-power field, thus anti-inflammatory treatment was initiated. As this abnormalities persisted with consecutive analyses, cytology was performed that revealed no atypia. Thus, computed tomography with contrast was performed, which only then revealed tumor (5 cm in diameter) in the left kidney infiltrating pelvicalyceal system, with no nodal involvement, and normal other organs. The tumor was classified as cT1bN0M0 and laparoscopic radical left nephrectomy was performed. In pathological examination the tumor turned out to be biphasic papillary renal cell carcinoma G3, and staging was pT3aNxR0. Patient was qualified for adjuvant immunotherapy and treatment with pembrolizumab (17 cycles of 3 weeks therapy) was started. During follow-up in 6 and 12 months after the surgery, no signs of local recurrence were present.

Conclusions

A very common condition, initially appearing to be minor, was ultimately diagnosed as a serious case of RCC. Although the diagnosis in the emergency room was consistent with established guidelines, it did not resolve the patient's issue. This case highlights the crucial role of contrast-enhanced CT in diagnosing uncertain urological conditions.

Spontaneous Rupture of an Abscess in the Vicinity of the Kidney: A Case Report

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Background

Fluid collections in the retroperitoneal space, occurring particularly after kidney injuries, can present a significant diagnostic and therapeutic challenge. In our paper, we present the case of a 79-year-old patient who developed a complication in form of an infected fluid collection after a previous injury in the right kidney, which required surgical intervention.

Case Report

The patient was admitted to our ward on an emergency basis for a follow-up CT scan and possible drainage of the right retroperitoneal space. The patient's history included drainage of a hematoma in the right retroperitoneal space (PCN 12F) in July 2022. The CT scan revealed a large fluid collection near the right kidney, measuring 155x135 mm in the transverse plane, causing compression of the surrounding structures and organs. Antibiotic therapy with cefuroxime was initiated. Due to the use of anticoagulants, the drainage procedure was postponed. After discontinuation of rivaroxaban, 2 units of packed red blood cells were transfused to prepare for drainage of the retroperitoneal space. During hospitalization, spontaneous rupture of the infected fluid collection to the skin surface in the right flank area occurred, allowing for direct evacuation and insertion of a drain. Approximately 1000 ml of thick, purulent fluid was obtained, and microbiological examination revealed the presence of the microorganism Enterococcus faecalis. After the implementation of antibiotic therapy, the patient's clinical condition improved and the inflammatory parameters decreased. The patient was discharged after two days since the rupture of the abscess in good general condition, with an indwelling drain, with a recommendation for follow-up at the urological outpatient clinic and a follow-up CT scan in 6 weeks. The patient was advised to take Zinoxx 2x1 tablet for 5 days, Dicloduo 2x1 tablet as needed for pain, and Neoparin 40 mg 1x1 for 10 days, then return to using Mibrex under the supervision of the family doctor.

Conclusions

The presented case shows the importance of clinical vigilance and flexibility in making therapeutic decisions in the case of complicated fluid collections in the retroperitoneal space. Spontaneous rupture of infected contents through the skin can be an unusual mechanism of decompression and can present an alternative to surgical intervention, provided that the purulent contents are drained, appropriate antibacterial treatment is implemented, and clinical monitoring is performed.

Subcutaneous Penile Neoplasm - Atypical Presentation with Uncertain Histopathology

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Background

Penile epithelial neoplasms are relatively rare with an overall incidence of approximately 0.94 per 100000 males in Europe, the most common being squamous cell carcinomas (SCC), which account for 95% of all penile cancers. They are typically slow growing and manifest with skin changes and can appear on any portion of the penis. However, the most common sites are around the glans followed by the prepuce. The most common risk factors are smoking and HPV infections. Epithelial tumors can arise from different primary sites, typically from different sites in the pelvic area and metastasize to the penis, however this is more uncommon. Typically, diagnosis is based on clinical suspicion, characteristic appearance and confirmed with histopathological testing.

Case Report

A 40-year-old male presented with a painless, firm, small, movable tumor of the dorsal surface near the root of the penile shaft. The tumor was insidious in onset with no prior history of trauma or sexually transmitted diseases. On examination, the swelling was approximately 1×1 cm in size and present in the subcutaneous plane. No inguinal lymph node involvement was noted. The tumor was completely removed. Excised mass was sent for histopathological examination with a result of malignant epithelial penile cancer with no origin specified (CKAE1/AE3+, ki 67 20%). PET CT was performed to rule out possible primary lesion site and exclude metastasis. No abnormalities found. The most common penile neoplasms of epithelial origin are SCCs followed by basal cell carcinomas, which typically present with skin manifestations absent in this case, furthermore they were excluded based on negative immunohistochemical tests. This poses the possibility of a primary lesion at a different site with this as a metastatic lesion, however no sites of increased activity were detected on PET CT. Patient needs to be under routine clinical supervision to rule out other tumors or recurrence.

Conclusions

While SCCs represent an overwhelming majority of malignant penile lesions, further diagnostic evaluation should be undertaken. This is especially important when evaluating lesions that present atypically or with lesions in unusual locations. A thorough approach allows for definitive diagnosis and minimizes the chance of error. Routine self-examinations play a vital role in enabling early diagnosis, as timely detection is crucial for effective management.
Patients are encouraged to consult a doctor if they notice any changes to ensure prompt evaluation.

Triorchidism: A Rare Anomaly of the Genitourinary System - Case Report

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Background

Polyorchidism is a rare congenital anomaly characterized by the presence of more than two testicles. Triorchidism - the most common type of polyorchidism, has been described in about 200 cases in the literature. The accessory testicle is most often located on the left side and may differ in structure and reproductive potential. Although usually asymptomatic, polyorchidism may be associated with testicular torsion, malignancy, or infertility. Diagnosis is primarily made by ultrasonography, with MRI and CT used as complementary tools if necessary.

Case Report

I present the case of a 29-year-old man who reported reducible swelling in the right inguinal region. Clinical examination revealed a positive cough impulse and deep ring occlusion test, normal sized testicles and vas deferens bilaterally, and no significant inguinal lymphadenopathy. The patient underwent right inguinal hernioplasty, during which a small, undescended accessory testicle (1.0 × 1.5 × 1 cm) was identified in the hernial sac. The accessory testicle had its own epididymis but no spermatic cord, making orchidopexy not possible.
Therefore, orchidectomy with excision of the hernial sac was performed. The patient had an uneventful postoperative recovery.

Conclusions

Triorchidism is a rare but clinically significant condition that is often diagnosed incidentally. Correct identification and classification of accessory testicles is crucial for management, as their reproductive potential and risk of malignancy are variable. In cases where the accessory testis is undescended and has no reproductive function, orchidectomy remains the preferred approach to alleviate long-term complications. Further research is needed to establish standardized guidelines for the treatment of polyorchidism.

Unexpected Primary Tumor: A Rare Case of Metastatic Carcinoma

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Background

Penile cancer is a rare neoplasm, with an incidence of approximately 0.94 per 100 000 men in Europe, most commonly affecting them at 50–70 years of age. Key risk factors include lack of childhood circumcision, phimosis, chronic inflammation, poor penile hygiene, smoking, obesity, immunosuppression, and HPV infection. A five-year survival rate for patients with distant metastases is only 16%, thus a poor prognosis.

Case Report

A 76-year-old male was hospitalized due to worsening abdominal pain, anorexia, shortness of breath and intermittent cough for two weeks, with a history of obesity, smoking, alcohol use, and unstable housing. Blood tests showed an elevated of CRP 175 mg/l, with other parameters remained unchanged. A chest X-ray revealed multiple small bilateral foci, raising suspicion of metastases. Due to unexplained abdominal pain, a surgical consult was done, followed by an upper abdominal ultrasound, which suggested the presence of free air. In suspicion for acute abdomen pathology a subsequent abdominal and pelvic CT scan was performed, with findings of moderately dilated transverse colon by 7 cm, enlarged groin lymph nodes, and multiple solid bilateral formations in the lower lung segments. Empiric i.v. antibiotics of Amoxicillin / Clavulanic acid and Metronidazole were initiated. FGDS, regarding dyspepsia, revealed esophageal candidiasis, which was treated with i.v. fluconazole 200 mg for 14 days. On the 7th day of treatment, CRP remained elevated at 157 mg/l despite given antibiotics, and Candida spp. was detected in stool sample. Antibacterial treatment was changed to i/v ciprofloxacin 400 mg.
A lung CT clarified bilateral solid masses to be metastases (up to 3 cm), with pleural effusion (7-23 mm). Biopsy of a pathological 33 mm lymph node confirmed poorly differentiated squamous cell carcinoma associated with HPV. On the 14th day, the patient developed unexpected bleeding from the penile area. Examination revealed a 2x2 cm exophytic, bleeding tumor with unlcear borders on the foreskin. Based on clinical and diagnostic findings, an exophytic foreskin tumor with lung and groin lymph node metastases was diagnosed. The patient was transferred to the National Cancer Institute for further diagnostics and treatment.

Conclusions

Though rare, penile cancer poses a significant risk in the presence of underlying risk factors. This case highlights the importance of early diagnosis, as advanced-stage carcinoma with metastases greatly increases mortality risk.