THE 70TH

SIMC

INTERNATIONAL MEDICAL CONGRESS OF SILESIA

Conference organized online and in Katowice

May 15th-17th 2024

ABSTRACTS' BOOK

Students' Scientific Association SUM

STUDENTS' SCIENTIFIC ASSOCIATION
OF
MEDICAL UNIVERSITY OF SILESIA

PTSS
Polskie Towarzystwo Studentów Stomatologii
Zabrze

POLISH ASSOCIATION OF DENTAL STUDENTS
BRANCH ZABRZE

SAMORZĄD DOKTORANTÓW
Śląskiego Uniwersytetu Medycznego w Katowicach

DOCTORAL STUDENTS' GOVERNMENT
OF
MEDICAL UNIVERSITY OF SILESIA

ISBN 978-83-950834-7-1

Publikacja dofinansowana ze środków budżetu państwa w ramach programu Ministra Edukacji i Nauki pod nazwą „International Medical Congress of Silesia SIMC 2023 i 2023" nr projektu DNK/SP/546174/2022 kwota dofinansowania 189 929,00 zł całkowita wartość projektu 211 266,00 zł.

Cover design: Stanisław Anczyk

HONORARY AUSPICES OF

Ministry of Health
Republic of Poland

Izabela Leszczyna

Ministerstwo Zdrowia

DOFINANSOWANO ZE ŚRODKÓW BUDŻETU PAŃSTWA

"DOSKONAŁA NAUKA – WSPARCIE KONFERENCJI NAUKOWYCH"
International Medical Congress of Silesia
SIMC 2023 i 2024

Dofinansowanie: 189 929,00 zł
Całkowita wartość: 211 266,00 zł

SCIENTIFIC AUSPICES:


ŚLĄSKA IZBA APTEKARSKA


Med Coach
szkolenia dla wymagających


Asocjacja Interwencji Sercowo-Naczyniowych
AISN
Polskiego Towarzystwa Kardiologicznego


Polskie Towarzystwo
Fizjoterapii


enedu.pl


POLSKIE TOWARZYSTWO KARDIO - TORAKOCHIRURGÓW
Polish Society of Cardiac- and Thoracic Surgeons
PTKT
2002


Krajowa Izba
Fizjoterapeutów


Klub Młodych Nefrologów
PTN


PSI
Polskie Stowarzyszenie
Implantologiczne


PIEBM
Polski Instytut
Evidence Based Medicine


POLSKIE TOWARZYSTWO DYSFUNKCJI NARZĄDU ZUCIA
2000


PTIB


Polskie Towarzystwo
Radioterapii Onkologicznej


POLSKIE TOWARZYSTWO
ZDROWIA
PUBLICZNEGO


POLSKIE TOWARZYSTWO DIETETYKI
Since 1986


Med Store

Polskie Towarzystwo Psychiatryczne


18
89
SOCIETAS CHIRURGORUM POLONORUM


SOCIATAS MEDICINAE INTERNAE POLONA
TIP
MCMVI

SPONSORS:


KANGOOMED


Compendium
medicine


więcej niż LEK


M.IKRO
by corpus mind

ORGANIZING COMMITTEE

President:
Maria Stec

Students' Scientific Association:
Michał Macnar
Kornelia Korzan
Aleksandra Nasiek
Vasyl Behun
Paweł Kurzelowski
Radosław Dutczak
Wiktoria Śliwka
Mateusz Róg
Stanisław Kulejewski
Julia Herbuś
Natalia Wróbel
Nikola Śmietana

Polish Association of Dental Students:
Emilia Sasak
Julia Pejas
Joanna Wąsowicz
Iwona Wąsacz
Karolina Matyja
Jakub Fiegler Rudol
Zuzanna Jeziorska
Julia Maślanka

Doctoral Students' Government:
Aleksandra Mroskowiak
Joanna Smolarczyk
Mikołaj Górka
Aleksandra Gładyś
Magdalena Dębiec
Marianna Łoskot

Dear Students,

I have a great pleasure to invite you to the International Medical Congress of Silesia 2024 - “SIMC 2024” organized by the Medical University of Silesia. This annual event has become our long- standing tradition and a continuation of the International and Interfaculty Conference of Students of Medical Universities, organized by the Student Scientific Society of our University since 2006. The aim of the Conference is to initiate and to promote the scientific development of students as well as to facilitate exchange of experience and create a forum for scientific discussion. It is also an unique opportunity for young scientists to present their achievements in front of international audience. I am proud that our Silesian region can host this splendid event. The popularity and prestige of the conference is evidenced by the fact that this edition received as many as 300 abstracts; 27 sessions and workshops will be held. It is worth mentioning that, as of this year, SIMC is funded by the Ministry of Education under the 'Excellent Science' program. I would like to express my appreciation to the Organizing Committee. It is thanks to your hard work and creativity that this event is held at highest standards, when it comes not only to presented papers and discussions but also the professional organization. I am convinced that the scientific program and the accompanying events will meet the expectations of attendees. I am very happy that so many of you have found time and energy to take part in our event. Finally, I wish all participants many scientific achievements and persistence in pursuit of chosen life and professional goals. I hope this could be a prelude of your scientific careers during exciting period of medical studies. I wish you all a fruitful and productive time during the SIMC 2024 Conference!

Rector
Of The Medical University of Silesia
Tomasz Szczepański, MD, PhD, Professor of Medicine

Dear Colleagues,
It is a great honor and pleasure to invite you to participate in a very special event which is an INTERNATIONAL MEDICAL CONGRESS of SILESIA (SIMC), organized by Student's Scientific Society of Medical University of Silesia. Last year we had a great time together, so this year I do hope to see you all again in May. We will have the opportunity to continue the good traditions of student scientific meetings. I strongly encourage you to support this conference actively. Medicine and science are, and always should be a passion. The SIMC conference is a great opportunity to exchange your scientific experience and compete in the scientific field. It does not really matter if you win as the success consists of going from failure to failure without loss of enthusiasm. I do believe that you will find the meeting enjoyable and fruitful as the organizers did spare no effort to make it so.
Sincerely,

The Head of Students' Scientific Association
of the Medical University of Silesia in Katowice
Michał Holecki, MD, PhD, Professor of Medicine

Dear Participants!

70 years ago, in December, in Zabrze, the First Conference organized by Students' Scientific Society of the Medical University of Silesia was held. Throughout the years our Conference grew up worldwide in numbers of presented papers and was transferred to the grounds of University Campus in Katowice-Ligota. Nowadays it is one of the largest Students Conferences in Poland and Central Europe. As the Board of the Students' Scientific Society of the Medical University of Silesia we are deeply honored to organize the International Medical Congress of Silesia 2024 (SIMC 2024). This year almost 300 papers were submitted and arranged between 27 scientific sessions. All the participants have once again put their confidence in us and decided to share with others the results of many months of hard work. We are extremely proud of the growing popularity of sessions aimed at doctoral students. This was possible thanks to the continuing friendship and cooperation with the Doctoral Students' Self-Government. The purpose of the Conference, despite alterations both in its location as well as form, has remained unchanged since 1954. We work relentlessly through the year to make this event not only an occasion for new scientific experiences, but also a fascinating adventure and preparation for future educational challenges.

We would like to extend our sincere thanks to the Rector of the Medical University of Silesia in Katowice Prof. Tomasz Szczepański PhD, MD, Vice-Rector for Science and International Relations Prof. Katarzyna Mizia-Stec PhD, MD, Vice-Rector for Academic Affairs Prof. Jerzy Stojko PhD, MD, Curator of the Students' Scientific Society Prof. Michał Holecki , PhD, MD, Chancellor of SUM, Ireneusz Ryszkiel, PhD, MD and the administrative staff, for all assistance and support in overcoming organizational difficulties. We also thank Ministry of Science and Education for financial support. We express our gratitude to Prof. Michał Holecki, MD, PhD for giving an honorary lecture for the participants of our Conference. We sincerely thank the Members of the Scientific Committees of individual sessions. Every year, they devote a lot of time to share their knowledge and experience. We extend our gratitude to the Members of Doctoral Students' Self-Government who supported us and took responsibility for the organization of doctoral sessions. Our thanks

are due also to all the volunteers, who have done their best to make this remarkable event happen. Most of all, we would like to thank all the participants of this year's edition for your creative work, ambitions, and ingenuity in the conducted research. You are the very essence of the Congress! We wish you to endure discussions, exceptional lectures, and good luck during presentation!

The Board of Students' Scientific Association
of the Medical University of Silesia

Dear Participants and Colleagues,

On behalf of the Doctoral Students' Self-Government, we would like to express our thanks for the possibility of participation in the International Medical Congress of Silesia (SIMC) 2024, beside the Students' Scientific Association of the Medical University of Silesia. We believe profoundly that continuing agreement between students and PhD candidates paves the way for beneficial cooperation, based on exchanging views and experiences in order to develop friendship and, most important, mutual respect. We are convinced that the subjects and specific issues addressed during this Conference are found among issues currently facing us young researchers. Sessions that have been prepared for you will not only be an opportunity to present your research results but also to exchange opinions and provide an inspirational experience for every participant. We extend our sincere gratitude to the Rector of the Medical University of Silesia in Katowice Prof. Tomasz Szczepański, MD, PhD, the Director of the Doctoral School Prof. Agata Stanek, MD, PhD, the Chancellor of SUM, Ireneusz Ryszkiel, MD and all of the workshops' organizers and administrative staff for their help and support. We sincerely thank all of the members of the Scientific Committees for the time they devoted, valuable comments and exchange of experiences. In addition to the words of appreciation, we invite you to familiarize yourself with the subjects of papers presented at each session, in particular by the PhD candidates, who are always willing to share the knowledge they gained through continuous scientific research.

The Board of the Doctoral Students' Self Government
of the Medical University of Silesia in Katowice

International Medical Congress of Silesia SIMC 2024 programme

Wednesday, 15.05.2024

09:00 – 12:00 Scientific sessions
Session of systematic reviews and meta-analyses – Aula A3
Session of systematic reviews and meta-analyses II – Aula UCK A
Session of neurology and neurosurgery – Aula UCK B
Session of basic science, biotechnology and biomedical engineering – Aula 114 CDiSM
13:00 – 14:30 Opening Ceremony
14:30 – 16:30 Scientific sessions
Session of public health and health care – Aula A3
Session of oncology, nuclear medicine and radiotherapy – Aula UCK A
Session of dietetics and nutrition – Aula UCK B
Session of public health and health care II – Aula Szaflarski (110)
Session of dermatology and allergology – Aula 113 CDiSM
Session of physiotherapy – Aula 114 CDiSM

Thursday, 16.05.2024

09:00 – 12:00 Scientific sessions
Session of noninvasive cardiology – Aula A3
Session of experimental medicine – Aula UCK A
Session of dentistry – Aula UCK B
Session of surgery II – Aula 113 CDiSM
Session of surgery – Aula 114 CDiSM
12:00 – 15:00 Workshops
14:00 – 16:30 Scientific sessions
Session of invasive cardiology and cardiac surgery – Aula A3
Session of clinical medicine – Aula UCK A
Session of radiology – Aula UCK B
Session of neonatology and pediatrics – Aula 114 CDiSM

Friday, 17.05.2024

09:00 – 12:00 Scientific sessions
Session of internal medicine – Aula A3
Session of psychiatry and sexology – Aula UCK A
Session of anesthesiology, emergency medicine and intensive care – Aula UCK B
Session of pharmacy and clinical pharmacology – Aula 113 CDiSM
Session of gynecology and obstetrics – Aula 114 CDiSM
12:00 – 15:00 Workshops
18:00 – 20:00 Closing Ceremony

Controversies in prioritizing patient qualification for treatment in Intensive Care Units

Wiktor Wagner[1], Adam Iwanicki[1], Nikola Tomczak[1], Michał Kisiołek[1]

1. Department of Acute Medicine, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Łukasz Krzych

Background: Making the right decision about qualifying a patient for admission to the Intensive Care Unit (ICU) is difficult and cannot be made based on a single parameter or variable. Despite the existence of various guidelines, this process can raise serious doubts among doctors, both moral and medical, leading to possible errors during the process.

The aim: To assess which factors and clinical scenarios are easy and which are difficult or controversial to decide when qualifying patients for treatment in the ICU.

Materials and methods: Data were collected using an e-questionnaire containing brief case descriptions and clinical scenarios, which were then assessed by anesthesiologists (both residents and specialists). Doctors assessed the appropriateness of qualifying for ICU treatment in a given case on a 5-point Likert scale.

Results: A total of 153 responses were collected, including 121 specialists. The factor most frequently considered for admission to the ICU was the prospect of reversibility of organ failure (97.4%). The parameter least frequently taken into account in the context of qualification was BMI (30.7%). In only 4 of 26 clinical scenarios, respondents achieved high agreement (defined as >80% responses for or against qualification). Regarding disqualification of a patient from ICU treatment, the highest agreement among respondents concerned patients with fatal brain damage who would not be potential organ donors. The highest compliance in the context of qualifications concerned the admission of a patient with respiratory failure caused by asthma. In 8 out of 26 scenarios, more than 1/4 of respondents had no opinion or the opinions were ambiguous.

Conclusions: Our results show how complex is decision making during qualification for the ICU treatment. The choice is difficult even for an experienced doctor. Where appropriate, anesthesiologists should raise the issue of better standardization of admission policies more frequently, especially in ambiguous cases.

Keywords: Intensive Care Units, ICU admission, prioritisation, anaesthesiologist

Why do we decide to heal death? Futile therapy in critically ill patients from the perspective of anesthetists - questionnaire study

Michał Wilk[1], Małgorzata Toroń[1], Antoni Wołoszyn[1]

1. Department of Acute Medicine, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Łukasz Krzych

Background: Prevention of futile therapy in critically ill patients is regulated by the guidelines of the PTAiIT from 2014 ("the protocol"). With the current capabilities of replacing the function of vital organs with artificial techniques, it becomes crucial to explore ways to prevent this type of medical misunderstandings.

The aim: We aimed to explore the phenomenon of futile therapy from the perspective of Polish anesthetists. We sought to investigate how physicians perceive this occurrence and what factors may influence their opinions.

Materials and methods: In an anonymous survey conducted in the first quarter of 2024 via an online platform, responses were obtained from 113 persons who were specialists or were undergoing training in A&IT. For further analysis, a group of 51 respondents was selected who spent >33% of working time in an ICU with at least 6 stations and applied the protocol.

Results: The use of the protocol was declared by 72% of respondents, it was related to the type of hospital ($p<0.05$): protocol was most often practiced in university hospitals/research institutes (91%), then provincial/multi-specialty (76%), and city/county hospitals (60%). Among the procedures considered as futile therapy, respondents most often indicated: extracorporeal gas exchange techniques (100%), renal replacement therapy (100%), and CPR (96%). 49% of anesthetists did not use the Time Limited Trial, but they expressed the need to introduce it. When deciding to implement the protocol, the most frequently considered factors were: neurological damage (98%), and functional status before admission (86%). Among the variables that might contribute to futile therapy, the most frequently mentioned was fear of legal consequences (88%). The answers were statistically unrelated to both their medical profession and personal factors.

Conclusions: The controversies about futile therapy among their providers persist. There is a strong need for an update of the guidelines that would take into account the practical reflections of anesthetists.

Keywords: futile therapy, anesthetists, critically ill patients, time-limited trial

Ventilator-associated pneumonia in critically ill patients with SAH: single-centre experience

Jakub Rudzki[1], Mateusz N. Zachura[1], Sebastian Maślanka[1], Karolina Sztuba[1], Jolanta Mika[1]Katarzyna Marczyk[1]

1. Department of Acute Medicine, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: PhD Michał Pluta, prof. Łukasz J. Krzych

Background: The need for prolonged mechanical ventilation (MV) in patients with subarachnoid haemorrhage (SAH) increases the risk of developing ventilation-associated pneumonia (VAP).

The aim: To assess the prevalence of VAP and to determine its aetiological factors.

Materials and methods: The study group consisted of 58 critically ill patients treated between 01.2019 and 10.2021. Demographic and clinical data were collected, including the method of collecting material from the respiratory tract, and results of laboratory and microbiological tests.

Results: More than 97% of patients were intubated on the day of admission to the ICU. The median duration of MV was 8 days (IQR: 3–19). On admission, 47 microbiological samples from the respiratory tract (39 endotracheal aspirates, 8 bronchopulmonary lavage) were collected, 26 of which (55%) were physiological flora. In the following days, VAP was diagnosed in 9/47 patients (19%). The median time from admission to diagnosis was 3.5 days (IQR: 3–4.5). Multi-drug-resistant species were found in 3 patients (K. pneumoniae ESBL+). In-hospital mortality among patients with VAP was 62%. None of the patients with SAH and VAP was liberated from ventilator.

Conclusions: In patients with SAH, early-onset VAP is frequent, and its aetiology is unrelated with bacterial colonization found on ICU admission. Even in EO-VAP, multidrug-resistant (MDR) bacteria must be suspected, mostly causing hospital-acquired pneumonia. Prognosis of patients with SAH who develop VAP is poor.

Keywords: embolisation, intracranial aneurysm, subarachnoid haemorrhage, ventilator-associated pneumonia

Pain management in prehospital care using opioids – a continuing debate between healthcare professionals.

Agnieszka Jonczyk[1], Krzysztof Żerdziński[1], Julita Janiec[1], Daniel Kiełtyka[1]

1. Department of Acute Medicine, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Łukasz Krzych

Background: Various analgesics are used in the treatment of pain in hospitals. Only a few of them are applied in a prehospital setting. Opioids are characterized by high effectiveness, but also potential serious side effects.

The aim: We aimed to assess opinions of healthcare professionals on the effectiveness, safety and frequency of use of analgesics, including opioids in prehospital care.

Materials and methods: The analysis was based on the responses of 134 persons, 52 physicians and 84 paramedics or nurses, using an anonymous web-based questionnaire.

Results: Statistical differences in attitudes toward pain management were demonstrated: paramedics and nurses expressed greater satisfaction with the skills they acquired during their studies than doctors ($p<0.01$), but were less likely to participate in additional training (17.1% vs. 50% of doctors, $p<0.01$). In daily practice, there was a significant difference ($p<0.01$) in the frequency of use of fentanyl, where in the group of doctors 75% of respondents use this opioid drug very often, compared to the other group where the same answer was marked by 26.8%. Physicians were more likely to use multimodal therapy ($p<0.01$), while paramedics and nurses were less likely to observe respiratory distress after opioid medication. Both groups considered these drugs effective for pain relief in prehospital care.

Conclusions: The study underlines existing differences in attitudes of healthcare professionals regarding opioid use in prehospital care. Attention should be paid to raising the standards for teaching pain management, in particular with the use of opioids.

Keywords: Opioids drugs, prehospital care, pain management, safe drugs use

One scenario: each doctor, each verdict. Can anesthetists identify the futile therapy? Questionnaire study

Antoni Wołoszyn[1], Małgorzata Toroń[1], Michał Wilk[1]

1. Department of Acute Medicine, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: Prof. Dr. hab. n. med. Łukasz Krzych

Background: Futile therapy, characterized by interventions that offer little or no benefit to patients remains a persistent challenge. Despite established protocols by the Polish Society of Anaesthesiology and Intensive Therapy (PTAIT) in 2014 the topic of futile treatment continues not to be clear.

The aim: The study aimed to explore the perception of futile therapy from the perspective of Polish anesthesiologists. By investigating five clinical cases and conducting a survey, we sought to understand how anesthetists determine whether a case qualifies as futile therapy or not.

Materials and methods: In an anonymous survey conducted during the first quarter of 2024 via an online platform, we collected responses from 112 individuals, including specialists and trainees in Anesthesiology and Intensive Therapy (A&IT). Participants were presented with five real-life distinct and challenging clinical cases: 1. Elderly Patient with Prostate Cancer and Bone Metastases 2. Cachectic Female Patient with Advanced Ovarian Cancer 3. Patient with Out-of-Hospital Cardiac Arrest 4. Drug-User Male with HCV and HIV 5. Fractured Femoral Neck in an Independent Elderly Patient. Our objective was to explore participants' perceptions regarding whether these cases represented futile therapy, non-futile therapy, or uncertainty.

Results: The case number 2 (72% of answers) was a typical example of futile therapy for anesthesiologists. In the cases of patients number 1, 4, and 5, the responses indicated a deliberate nature of treatment (the percentage of respondents indicating the futility of treatment was 20.5%, 13.4%, and 22.3%, respectively). Case number 3 was the most troublesome as opinions were almost evenly divided (40% declared the treatment futile).

Conclusions: Each difficult case should be considered separately and becomes a topic for profound medical consultation. Time-limited-trial strategy constitutes an interesting alternative when the commencement of broad therapy is doubtful.

Keywords: futile therapy, time-limited trial, anesthetists , ICU

Risk factors for gastric mucosa erosion in the ICU patients with PEG, receiving prophylactic treatment.

Jan Osicki[1], Karolina Buś[1], Mikołaj Gołda[1], Karina Dzięcioł[1], Jan Herzyk[1]

1. Department of Anaesthesiology and Intensive Care, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med Piotr Czempik

Background: Pharmacologic prophylaxis for gastric ulcer is commonly prescribed in patients hospitalized in the intensive care unit (ICU). Percutaneous endoscopic gastrostomy (PEG) insertion is performed in patients who require long-term enteral nutrition and cannot be fed orally.

The aim: The aim of the study was to assess the current prevalence and risk factors for gastric mucosa erosion in the ICU patients receiving standard pharmacologic prophylaxis.

Materials and methods: All patients hospitalized from 01.2020 to 12.2023 in the local ICU who underwent PEG insertion were analysed. Clinical and endoscopic data were retrieved form the electronic medical records. Clinical data included all known risk factors for gastric mucosa damage.

Results: There were 154 patients with median age 63.5 (IQR 46–71) years, 48 (31.2%) presented gastric mucosa damage. The only risk factor that was significantly different between groups was history of ulcer ($p<0.01$) with odds ratio of 17.9 (95% confidence interval 2.2–815.2). There were no differences between groups for age ($p=0.62$), sex ($p=0.48$), ICU length of stay ($p=0.45$), body mass index ($p=0.12$), chronic kidney disease ($p=0.35$), acute kidney injury ($p=0.27$), continuous renal replacement therapy use ($p=0.44$), chronic liver disease ($p=0.65$), acute liver injury ($p=0.23$), diabetes ($p=0.19$), nicotine use ($p=0.67$), alcohol use ($p=0.57$), mechanical ventilation ($p=0.36$), sepsis ($p=0.65$), antiplatelet agent use ($p=1.00$), use of prophylactic doses of LMWH ($p=0.76$), NSAID use ($p=0.46$), enteral feeding ($p=0.79$), hemoglobin concentration ($p=0.98$), platelet count ($p=0.94$), international normalized ratio ($p=0.25$), activated partial thromboplastin time ($p=0.86$), fibrinogen concentration ($p=0.14$)

Conclusions: Majority of various classical risk factors for gastric ulceration do not predict disease detected endoscopically in patients undergoing PEG insertion who receive standard pharmacological prophylaxis. Patient with history of ulcer disease may benefit from increased doses of gastro-protective medications.

Keywords: PEG, ICU, erosion, IPP, ulcer

Urinalysis parameters in detection of culture-positive catheter-associated urinary tract infection in patients

Ksawery Adamiec[1], Szymon Graczyk[1], Natalia Księżarek[1], Anna Ciećkiewicz[1], Daria Grzegorczyk[1]

1. Department of Anaesthesiology and Intensive Care, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Dr hab. n. med. Piotr Czempik

Background: Catheter-associated urinary tract infection (CAUTI) is a common hospital-acquired infection in patients hospitalized in the intensive care unit (ICU). Diagnosis of CAUTI in these patients can be challenging due to non-specific symptoms or inability to communicate with the patient.

The aim: Catheter-associated urinary tract infection (CAUTI) is a common hospital-acquired infection in patients hospitalized in the intensive care unit (ICU). Diagnosis of CAUTI in these patients can be challenging due to non-specific symptoms or inability to communicate with the patient.

Materials and methods: Demographic, clinical, microbiologic, laboratory data of all patients who had urine taken simultaneously for culture and urinalysis were analyzed. Blood tests included the following: white blood cells, neutrophils, lymphocytes, C-reactive protein, procalcitonin, creatinine, blood urea nitrogen (BUN), urea, bilirubin. Data of urine culture-positive patients were compared with culture-negative patients. Wilcoxon rank sum test and Fischer exact test were used for continuous and categorical variables, respectively.

Results: There were 115 patients with median age 62 (interquartile range 50-71) years included in the study. Twenty nine (25.2%) patients had positive urine cultures: Candida (n=12), Acinetobacter (n=7), Klebsiella (n=4), Escherichia (n=2), Enterococcus (n=2), Proteus (n=1). Significant differences between patients with positive and negative urine cultures were found for sediment yeast ($p<0.01$), BUN ($p<0.01$) and urea ($p<0.01$). There was a borderline difference for urine leukocytes ($p=0.05$) and immunosuppressive therapy ($p=0.08$).

Conclusions: Majority of urinalysis parameters may not have predictive value for culture-positive CAUTI. The only urinalysis parameters that could be useful for its detection may be urine leukocytes and sediment yeast.

Keywords: catheter-associated urinary tract infection; intensive care unit; urinalysis; urine culture

Demographic and clinical characteristics of organ donors after fatal poisonings

Julia Lipina[1], Oskar Fogiel[1], Julia Goleń[1]

1. Department of Acute Medicine, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: Prof. dr hab. n. med. Łukasz Krzych

Background: A constant list of approximately 8,000 persons awaiting solid organ transplantation exists in Poland. Annually, around 700 potential donors are reported to POLTRANSPLANT, out of whom organs are retrieved from approximately 500 individuals. Poisoning is one of the important but rather insignificant causes of brain death, which enables potential organ retrieval.

The aim: We aimed to thoroughly examine the demographic and clinical profile of donors of organs and tissues following poisonings in Poland.

Materials and methods: Utilizing data collected in the POLTRANSPLANT database from January 2020 to April 2024, information on donors of transplants following poisonings was gathered. Exclusion criteria included a different direct cause of death than poisoning and lack of consent for organ retrieval.

Results: Data regarding 38 organ donors were analyzed (17 females, 21 males; aged 40 yrs). A mean time from hospital admission to death was 6 days. The most frequently encountered toxic substance was methanol, although poisonings with other substances such as synthetic stimulants, cocaine, benzodiazepines, opioids, as well as drugs from antipsychotic, antidepressant, and sedative groups were also identified. Organs were retrieved from 30 donors, with kidneys and ocular tissues being most commonly retrieved. Withdrawal from retrieval occurred in 8 individuals, primarily due to identified organ pathology.

Conclusions: Brain dead individuals whose cause of death is poisoning constitute a valuable group of patients for solid

Keywords: transplantat, poisoning, donor, organs

Design and Construction of a Robot Feeding a Patient with Paresis of the Upper Limbs

Agnieszka Adamczyk[1, 2]

1. Student's Scientific Group BioModel Department of Biomedical Engineering, Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology

2. Student's Scientific Group BioAddMed, Faculty of Mechanical Engineering, Wrocław University of Science and Technology

Work's tutor: prof. Krystian Kubica, prof. dr hab. inż. Jerzy Detyna

Background: As the human population continues to age, there is a growing need to develop new tools for assisting those who are dependent on caregivers. It is even more important to popularize these solutions and make them accessible to everyone who needs them.

The aim: To help caregivers in their work, I created a feeding robot as part of my master's thesis, titled "Design and Construction of a Robot Feeding a Patient with Paresis of the Upper Limbs." The project aimed to design and construct a competitive feeding robot.

Materials and methods: The robot was primarily created using additive manufacturing methods (3D printing) and is controlled by an Arduino Uno. As a result, the price of the final station should be competitive and the model itself would be easy to create at home and affordable to make.

Results: Within the project, a feeding station was created. The feeding station includes a robot that is controlled by four servomechanisms, a bowl, a spoon, a card reader, a temperature sensor, an RGB LED, a battery, control buttons, and a main switch. An innovative addition is the inclusion of a temperature sensor, enabling the control of the meal's temperature. Another innovative addition is a card reader that allows the patient's data to be stored on a special card. This data allows you to optimize the movements of the robot arms for a given patient. The station was tested on food products of various consistencies and it fulfilled its function.

Conclusions: The project demonstrated that creating a competitively priced station is entirely feasible and has great potential for the future. The tests have shown that the station fulfills its role and can be produced using readily available materials, making it an affordable option for those in need. However, to move the prototype out of the laboratory and commercialize it, some adjustments would need to be made to improve the robot and make it accessible to people with disabilities.

Keywords: Assistant Robots, Robotic Engineering, Medical Robots, Robot Controlling System, Feeding Robots

Human body in the dissection room - what do you think about it?

Martyna Rożek[1], Radosław Karaś[1], Michał Serafin[2], Gabriela Rembiecha[1], Jakub Michalski[1]

1. Department of Anatomy, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

2. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr. n med. Tomasz Lepich

Background: Andreas Vesalius (1514-1564), considered the founder of modern anatomy, introduced cadaver dissection as the primary method of human anatomy research. The study using cadavers remains the foundation of anatomy education at medical universities to this day. Students in the dissection room should demonstrate not only anatomical knowledge but also emotional maturity and proper respect for the donors.

The aim: To understand the awareness and opinions of medical students regarding the donation of bodies for scientific and educational purposes, as well as the teaching of anatomy at medical universities using human cadavers. Additionally, the study aimed to explore their personal experiences and feelings regarding the donation of their own or their close ones' bodies.

Materials and methods: The study utilized a proprietary single-choice questionnaire survey. The survey included 528 medical students from all over Poland, comprising 366 females and 162 males.

Results: Among the respondents, 35.4% consider posthumously donating their bodies for scientific and educational purposes. Those identifying as non-religious are more inclined to body donation than religious individuals ($p<0.001$). The main concern regarding donation is the lack of proper respect for the body by students. Over half of medical students (57.4%) witnessed acts of disrespect toward cadavers during anatomy classes. Most students believe that learning some information about body donors and meeting their families would increase students' respect for cadavers. 94% believe that human cadavers are indispensable for effective teaching of anatomy at medical universities.

Conclusions: Human cadavers are essential for effective teaching of anatomy at medical universities. Students are aware of the gravity of body donation, however, acts of disrespect toward cadavers are a common occurrence in the anatomy lab, which affects students' willingness to become donors.

Keywords: donation, cadavers, anatomy, education

The role of the c-KIT receptor in the regulation of autocrine growth of bladder cancer cell lines.

Patryk Obajtek[1], Grzegorz Kasparek[1], Sylwia Sanakiewicz[1]

1. Department of Medical Biochemistry, Faculty of Medicine, Jagiellonian University Collegium Medicum, Krakow, Poland

Work's tutor: dr. n. med. Małgorzata Lasota

Background: Activating mutations within genes encoding receptor tyrosine kinases can be a significant driver of bladder cancer progression. Therefore, kinases with kinase activity receptors appear to be an attractive therapeutic target, and tyrosine kinase inhibitors (such as dovitinib) are currently one of the most advanced examples of personalized medicine.

The aim: The aim of the study was to assess the impact of the selected tyrosine kinase inhibitor dovitinib on selected urinary bladder cancer cell lines.

Materials and methods: Using crystal violet staining and the MTS assay, cell proliferation was assessed; cell viability was assessed using flow cytometry (FACS) with annexin V and propidium iodide (PI). Additionally, a logistic model was fitted to the dose-response relationship of the inhibitor's effect, and half-maximal inhibitory concentration (IC50) values were determined. The effect of dovitinib on the migration of the studied cancer cells was also determined.

Results: Dovitinib exerted strong cytostatic and cytotoxic effects on individual urinary bladder cancer cell lines. This compound significantly and statistically inhibited the proliferation of all examined cell lines and primarily stimulated the apoptotic process within them. The effect was clearly dependent on the duration and concentration of the inhibitor. Its impact on the migration of urinary bladder cancer cells was also observed.

Conclusions: Dovitinib represents a promising therapeutic agent for potential targeted pharmacotherapy in bladder cancer.

Keywords: tyrosine kinase inhibitors, targeted therapy, supramolecular systems

Reliability of the heart rate variability for assessing the autonomic nervous system in healthy volunteers

Damian Pietroń[1], Mikołaj Najda[2]

1. Biomedical Engineering, Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology

2. , Faculty of Information and Communication Technology, Wrocław University of Science and Technology

Work's tutor: dr. Inż. Agnieszka Uryga

Background: Heart rate variability (HRV) is a measure of the variation in the time intervals between heartbeats, regulated by the autonomic nervous system (ANS). HRV can be assessed by nonlinear metrics, as well as in frequency and time domains. However, the comparability and repeatability of HRV metrics depending on ECG signal duration have not previously been assessed.

The aim: This study aims to investigate the impact of ECG signal duration on three different HRV metrics in healthy volunteers, as the minimal length of signal recording is a critical parameter for study design.

Materials and methods: 15 healthy volunteers with an average age of 23 Ī 1 years were included in the analysis. The study was approved by the bioethical committee of Wroclaw Medical University (permission no. KB-179/2023/N). ECG signals were recorded using a photoplethysmography (Finapres Nova, FMS Medical Systems) at rest during a 30-minute period. HRV parameters, including standard deviation of the sequential beats (SDNN), low-to-high frequency ratio (LF/HF), and sample entropy (SampEn), were estimated using Python with PyHRV and Neurokit2 libraries. Four different periods were analyzed: 3, 5, 10, and 30 minutes. This project is financed by a grant from the SONATA-18 National Science Center (UMO- 2022/47/D/ST7/00229).

Results: There were no significant differences in SDNN between time period (46Ī31, 46Ī33, 45Ī31, 46Ī31 [ms], respectively). Moreover, no meaningful difference was found for LF/HF ratio (2.5Ī1.7, 2.5Ī1.8, 2.6Ī1.2, 2.7Ī2.1, respectively), as well for SampEn (1.4Ī0.3, 1.4Ī0.3, 1.3Ī0.3, and 1.4Ī0.3, respectively). The intraclass correlation coefficient (ICC) was 0.912 for SDNN (indicating excellent reliability), 0.616 and 0.666 for LF/HF and SampEn (moderate reliability).

Conclusions: This study suggests that ECG signal duration does not influence on time-domain HRV metrics, but significantly impacts the reliability of frequency-domain and non-linear metrics of HRV. Further research is needed to explore the implications of these findings.

Keywords: Heart rate variability, Data analysis, Electrocardiogram, Arterial blood pressure

Joint symbolic analysis of blood flow velocity during controlled breathing in healthy volunteers

Monika Najdek[1], Mikołaj Najda[2]

1. , Fac. of Fundamental Problems of Technology, Wrocław University of Science and Technology

2. , Fac. of Information and Communication Technology, Wrocław University of Science and Technology

Work's tutor: dr inż. Agnieszka Uryga

Background: Baroreflex is an autonomic mechanism which maintains circulation to organs by keeping blood pressure steady. Baroreflex-mediated relationship between arterial blood pressure (ABP) and cerebral blood flow velocity (FV) is not fully understood. Joint Symbolic Analysis (JSA) could describe nonlinear interactions between ABP and FV.

The aim: To discover if JSA of ABP and FV time series detects cardiovascular autonomic activity caused by controlled breathing in healthy subjects.

Materials and methods: Ethical approval was granted by Bioethical Committee of Wroclaw Medical University (KB-179/2023/N). 24 healthy volunteers were breathing at rates of 6, 10 and 15 bpm. FV in the middle cerebral artery was measured with transcranial Doppler and ABP was recorded via photoplethysmography. Heart rate (HR) was calculated from ABP using Fourier transform. Time series of RR intervals and peak systolic velocity (PSV) were transformed into binary sequences. Relative frequency of symmetric (JSDsym) and diametric (JSDdiam) word types in distribution density matrix was calculated. This project is financed by a grant from the SONATA-18 National Science Center (UMO- 2022/47/D/ST7/00229).

Results: Decrease in breathing rate resulted in decrease of HR ($p<0.01$) from 80 [71-85] bpm for 15 bpm and 81 [72-88] bpm for 10 bpm to 72 [58-78] bpm for 6 bpm. Lower respiratory rate was also associated with reduced JSDsym ($p<0.01$), which fell from 0.15 [0.11-0.20] for 15 bpm and 0.16 [0.13-0.19] for 10 bpm to 0.12 [0.10-0.14] for 6 bpm, showing reduced non-baroreflex activity. There was also a statistically significant increase in JSDdiam values ($p<0.01$) from 0.06 [0.04-0.09] for 10 bpm to 0.10 [0.06-0.13] for 6 bpm, suggesting higher occurrence of baroreflex-driven patterns.

Conclusions: JSA of PSV and RR dynamics captures changes of baroreflex activity. The study should be repeated in a larger group to confirm observations.

Keywords: symbolic analysis, baroreflex, flow velocity

The impact of the TCF7L2 rs7903146 gene polymorphism on the carbohydrate metabolism

Aleksandra Wiśniewska[1]

1. Students Scientific Group "FARMAKON", Department of Biochemistry and Pharmacogenomics, Faculty of Pharmacy, Medical University of Warsaw

Work's tutor: dr hab. Małgorzata Wrzosek

Background: Transcription factor 7-like 2 (TCF7L2) participates in the regulation of the Wnt signalling pathway that influences various processes in the organism, including embryogenesis, as well as cancerogenesis, but remains mostly associated with pancreas function. The single nucleotide polymorphisms of TCF7L2 gene were proven to be widely associated with various diseases.

The aim: We aimed to assess the impact of TCF7L2 rs7903146(C/T) polymorphism on the prevalence and severity of carbohydrate metabolism dysfunction.

Materials and methods: We examined 441 patients (age 46.2 ± 13.9 years, BMI 28.3 ± 5.4 kg/m2). To assess the prevalence of TCF7L2 rs7903146(C/T) polymorphism we isolated the DNA from K3EDTA whole blood using a Blood Mini kit (A&A Biotechnology). The assessment of rs7903146(C/T) genotype was conducted with real time PCR and TaqMan assay on Viia 7 analyser (Applied Biosystems). The biochemical analyses included measurements of glucose, total cholesterol, high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C) and triglycerides. For statistical analysis, we performed ANOVA and Chi2 tests, with a level of significance $p<0.05$.

Results: The prevalence of rs7903146(C/T) genotypes were: CC 59.9%, CT 35.6% and TT 4.5%. The TT genotype frequency for the rs7903146 variant in the group of patients with type 2 diabetes mellitus (T2DM) was higher than in patients without T2DM. The individuals carrying the rs7903146 TT genotype had significantly higher concentrations of fasting glucose compared to the subjects with the C allele. In addition, TT genotype was associated with higher risk of obesity in studied patients. However, we did not find any association between the rs7903146(C/T) variant and lipid profile or hypertension.

Conclusions: The rs7903146(C/T) polymorphism was strongly associated with type 2 diabetes mellitus and obesity among studied patients. Additionally, TT genotype predisposed to significantly higher fasting glucose concentrations.

Keywords: TCF7L2, rs7903146, type 2 diabetes, carbohydrate metabolism dysfunction

Bioinformatic study of deleterious non-synonymous SNVs in the human SHH gene

Ipatova Anna[1], Kotsenko Ivan[1]

1. Department of Medical Biology, 1 Medical Faculty, Kharkiv National Medical University

Work's tutor: dr n. biol. Iurii Sadovnychenko

Background: The SHH gene encodes the sonic hedgehog signaling protein (Shh), which plays a pivotal role in human embryonic and postembryonic development, especially in the development of the central nervous and digestive systems, eyes, limbs, etc. Mutations in the SHH gene cause severe birth defects, including nonsyndromic holoprosencephaly, agenesis of the corpus callosum, and microphthalmia. Despite the fact that disease susceptibility in humans is frequently associated with single nucleotide variants (SNVs) and evolutionarily conserved genes frequently contain disease-associated SNVs, there was no systematic analysis of SNVs in the human SHH gene.

The aim: To evaluate in silico the functional implications of nsSNPs in the SHH gene.

Materials and methods: The list of SHH SNVs was retrieved from UniProt and ProtVar databases. Total number of deleterious nsSNVs in SHH gene was estimated using CADD tool. The potential effects of SNVs on the protein structure and functions were predicted by eight bioinformatic tools PredicSNP, PANTHER, PhD-SNP, PolyPhen-1, PolyPhen-2, SIFT, SNAP, and MAPP. Protein stability was evaluated using I-Mutant, MUpro, and iStable predictors.

Results: The potential number of deleterious SNVs in SHH gene reached 2775, but only 119 of them included into the bioinformatic bases. A minimum number of deleterious SNVs were detected by SNAP, while the largest one was found by PANTHER. In addition to the known pathogenic variants, 152 new deleterious nsSNVs were predicted. Most of the detected new deleterious nsSNVs decreased stability of the encoded protein that could affect its structure and functions.

Conclusions: Targeted sequencing and bioinformatic analysis of SNVs in the SHH gene would help diagnosis of SHH gene-related disorders.

Keywords: SHH, sonic hedgehog signaling protein, nsSNV, pathogenicity, bioinformatics

Morphological analysis of ganglia spinalia – current state of knowledge and own observations

Marek Misiak[1, 2]

1. , Medicine, Cardinal Stefan Wyszyński University in Warsaw

2. Department of Descriptive and Clinical Anatomy, Medicine, Medical University of Warsaw

Work's tutor: prof. dr hab. med. Bogdan Ciszek

Background: The spinal ganglion (ganglia spinalia, GS), contain the somata of primary sensory neurons. The structure of the GS is important for understanding the mechanisms of number of diseases (low-back pain and sciatica) and the variability of the distribution of regional anesthesia. GS are also highly sensitive to mechanical compression in radiculopathy. Neuromonitoring and neurostimulation technologies require appropriate electrode placement, depending on the ganglion structure. Some reports indicate the relatively frequent occurrence of biganglia in the lumbar nerves.

The aim: The aim of this study was to verify the structure of the GS in the L1-L5.

Materials and methods: The lumbar nerves L1-L5 were microanatomically dissected (Zeiss surgical microscope) using eight formalin (10%) fixed cadavers, Department of Descriptive and Clinical Anatomy, WUM. A total of 80 GSs from were analyzed morphologically.

Results: Bilateral dissection of GSs (L1–L5) discovered three types of structures: single ganglia, biganglia, and triganglia. Monoganglia are found most often at the levels of L1 and L5, while biganglia are found at L3, L4, or L5. Independent ganglion components are separated by distinct layers of connective tissue. In transitory morphology cases the division of ganglial components was partial. Due to the morphological diversity, it is also possible to distinguish GSs with different structure.

Conclusions: The presence of biganglia or triganglia might affect the quality of electrical stimulation of the ganglia. The connective tissue between the ganglia might influence the spread of impulses. Further research should clarify the distribution of dermatomal innervation of the ganglial components. A new classification for organizing the morphology of GS should be created.

Keywords: Dorsal root ganglion, Ganglia spinalia, Biganglia, Monoganglia, Triganglia

Assessment of psychological and metabolic parameters after the implementation of CGM in DM1

Anna Drynda[1]

1. Students' Scientific Group at the Department of Metabolic Diseases and Diabetology, Faculty of Medicine, Jagiellonian University Medical College, Kraków, Poland

Work's tutor: dr hab. n. med. inż. Bartłomiej Matejko, prof. dr hab. n. med. Maciej Małecki, prof. dr hab. n. med. Tomasz Klupa

Background: January 2023 marked a pivotal moment for type 1 diabetes (DM1) treatment in Poland, as the reimbursement of continuous glucose monitoring (CGM) was initiated for patients aged 26 and above. While CGM improves glycemic control, its impact on psychological wellbeing of patients with DM1 remains uncertain.

The aim: Assessment of changes in quality of life, fear of hypoglycemia, psychological parameters and glycemic control 3 month after the implementation of CGM system in patients with type 1 diabetes aged 26 and above.

Materials and methods: The study involved 57 patients with type 1 diabetes from five Polish diabetes centers. To be included in the study, each patient had to be at least 26 years old with a minimum of two years of diabetes history, and be treated with multiple insulin injections or a personal insulin pump. The exclusion criterion from the study was the use of CGM for more than two weeks prior to the study. Patients completed a set of validated and custom questionnaires (FSH-II, PSS10, DTSQs, WHO-5, sociodemographic survey), downloaded pump/glucometer data, and underwent HbA1c measurement. After 3 months of CGM use, patients repeated assessments.

Results: After 3 months of using CGM, patients reported higher treatment satisfaction measured by DTSQs (median 27.0 vs 30.0, $p=0.01$) and less frequently experienced unacceptably high glycemia (median 4.0 vs 3.0, $p<0.001$). Well-being assessment according to WHO-5 was also higher (mean 13.1 vs 14.3, $p=0.04$), and the level of diabetes burnout (median 3.0 vs 1.0, $p<0.001$) as well as fear of hypoglycemia (median 41.0 vs 30.5, $p=0.03$) significantly decreased. However, the average stress level measured by PSS-10 did not change ($p=0.94$). The percentage of HbA1c after three months of using the system was also significantly lower (7.3% vs 7.1%, $p=0.01$).

Conclusions: The use of CGM translates into improved quality of life, reduced fear of hypoglycemia and diabetes burnout, as well as a lower HbA1c percentage in DM1 patients diabetes above the age of 26.

Keywords: type 1 diabetes mellitus, continuous glucose monitoring, fear of hypoglycemia, diabetes burnout

Effect of cafeteria diet and intestinal transposition surgery on glucose metabolism in SPD rats

Kinga Piksa[1], Zuzanna Szewczyk[1], Magdalena Nowak[1], Maksymilian Szklarski[1]

1. Department of Physiology, Faculty of Medicine, Medical University of Silesia in Katowice

Work's tutor: dr hab. n. med. Tomasz Sawczyn, mgr Michał Górka

Background: Obesity has become a disease that has been declared an epidemic. Treatment of obesity and type 2 diabetes mellitus (T2DM) by changing eating habits, properly planned diets, and the implementation of physical activity often leads to weight loss and improvement of biochemical parameters, however, long-term maintenance of the benefits of this approach is extremely difficult. There is increasing evidence to support the notion that, irrespective of procedure, bariatric surgery is safe and effective in the treatment of obesity and related T2DM, but there are still unanswered questions about the exact mechanism.

The aim: Assessment of glucose metabolism after cafeteria diet and intestinal transposition.

Materials and methods: Male Sprague-Dawley rats aged 8 weeks were raised at the Center for Experimental Medicine of the Faculty of Medical Sciences in Katowice, Poland (n=24). Cages were maintained at 20-40°C, 50-70% relative humidity and 12/12 hour light/dark cycles. After 7 days of acclimatization, a specific feeding protocol was started for 12 weeks, i.e., until surgery was performed. 48 rats will be fed a control diet (CD). Rats undergoing surgery were starved for 12h. The rats were then randomly assigned to one of two groups: an ileal transposition group (IT group) and a sham surgery group (SHAM group). OGTT tests performed at 7 and 14 days before surgery, included taking a blood sample 30 minutes after loading with a 40% glucose solution at 1.5 g/kg body weight to measure hormone levels. The OGTT was started after placement of an oral-gastric probe. Glucose was determined by clipping the tail end after 0, 10, 20, 30, 60, 90 and 120 minutes using a glucometer.

Results: Analysis of the OGTT results showed that the blood glucose profiles of the rats differed significantly between time points, regardless of the type of surgery performed and the diet used. IT surgery improve glucose tolerance.

Conclusions: Ileal transposition rapidly improves glucose tolerance and improves insulin resistance in non-obese type 2 diabetic rats.

Keywords: cafeteria diet, type 2 diabetes mellitus, intestinal transposition surgery, glucose metabolism

Analysis of the anatomy of the radial nerve and the arcade of Frohse in the cubital fossa using human cadavers

Kamil Górecki[1], Radosław Karaś[1], Aleksandra Kępczyńska[1]

1. Department of Anatomy, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr. n med. Tomasz Lepich

Background: The radial nerve (RN) is a peripheral nerve that originates from the posterior cord of the brachial plexus and carries fibers from C5-Th1. At the level of the lateral epicondyle of the humerus, the radial nerve divides into the superficial branch of the radial nerve (SBRN) and the deep branch of the radial nerve (DBRN). Upon entering the arcade of Frohse (AF), the DBRN changes its name to the posterior interosseous nerve of antebrachii (PIN). The radial nerve contains motor, sensory, and proprioceptive fibers. The AF was first described in 1908 by Frohse and Frankel. It is the highest, proximal part of the supinator muscle, which can be either tendinous or membranous. A tendinous AF can serve as a site of compression on the extension of the DBRN - PIN.

The aim: Anatomical analysis of the division of the radial nerve into its terminal branches along with measurements of the nerve division distance from the AF and the diameters of the RN, DBRN, SBRN, as well as assessment of the nature and width of the AF.

Materials and methods: Eight upper limbs were dissected to expose the RN, DBRN, SBRN, and AF. Using a digital caliper, measured the distance of the RN division to the AF, the distance of the DBRN division to the AF, and the diameters of the RN, DBRN, and SBRN. Additionally, an assessment of the AF structure was performed.

Results: The average distance from the RN division to its terminal branches to the AF was 54.64 mm. The diameter of the RN, measured 10 mm proximal to the nerve division into its terminal branches, was 4.79 mm, the diameter of the DBRN was 4.09 mm, and the SBRN was 2.50 mm (measured 10 mm distally from the origin). The width of the AF averaged 8.60 mm. In half of the cases, the DBRN divided before entering the AF. Moreover, 5 tendinous and 3 membranous AF were identified.

Conclusions: The radial nerve and the AF in the cubital fossa exhibit significant anatomical variations. Understanding the anatomical relationships in the area of the pronator teres muscle is crucial in limiting surgical complications.

Keywords: radial nerve, arcade of Frohse, DBRN, cubital fossa, cadaver

The Relevance of Reperfusion Stroke Therapy for extravesicular miR-17-5p Expression in Acute Stroke

Aleksandra Tobiasz[1], Magdalena Nowak[1]

1. Department of Physiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Daria Gendosz de Carrillo

Background: Stroke is one of the major causes of death and disabilities in developed countries. Intravenous thrombolysis (rtPA) and/or mechanical thrombectomy (MT) are considered effective treatments for stroke, however, MT has been unsuccessful in up to 30% of patients. Identifying factors limiting the clinical benefit of MT can improve therapeutic strategies and better guide stroke reperfusion treatment.

The aim: This study aims to identify miRNAs as potential biomarkers for stroke diagnosis and prognosis.

Materials and methods: 72 patients (age 50-85) with first-ever symptomatic ischemic stroke were included into the study. They were divided into 4 groups: G0 - received aspirine (ASA), n=19; G1 - underwent rtPA, n=15; G2 - underwent MT, n= 11; G3 - received combined therapy of rtPA and MT, n=27. On the 1st and 10th day after the stroke onset total miRNA from serum exosomes were isolated from the patients' blood samples. The qRT-PCR was performed to measure the expression of miR-17-5p.

Results: Temporal analysis of miR-17-5p expression revealed that only in group G3, the level of miRNA was significantly changed, and it decreased between the 1st and 10th day. Then we compared the miR-17-5p expression fold-change between the groups, and we found that expression was significantly lower in group G3 compared to G1, but no statistically significant differences were noted for the remaining treatment groups. However, when we tested miR-17-5p for its' association with the functional outcome of the stroke patients on the 10th day, we found that the expression was significantly upregulated in patients with good functional outcome (mRS 0-2) compared to patients with poor functional outcome (mRS 3-6).

Conclusions: Using patients' miRNA profiles when selecting them for certain types of reperfusion treatment may help to reduce the risk of failure and improve the clinical effects. Extravesicular level of miR-17-5p can be linked with functional outcome, however, more research is needed to further explore this topic.

Keywords: stroke, reperfusion treatment, miRNA, miR-17-5p

Immunogold labelling as a prospective complementary method to immunohistochemistry of biopsy sections

Maciej Baron[1], Marcin Rojek[2], Michał Azierski[2], Łukasz Zniszczoł[1]

1. Department of Histology and Cell Pathology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

2. Department of Diagnostic Imaging, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Romuald Wojnicz, Piotr Lewandowski

Background: Among a few new techniques applied for biomarker searching, immunoelectron microscopy seems to be the most promising. Immunoelectron microscopy with Tokuyasu sucrose embedding and cryosectioning method followed by immunogold labelling is regarded as the most efficient sample preparation method with high sensitivity for intracellular distribution of proteins using colloidal gold particle markers. On the other hand, cryosectioning is regarded as difficult, time-consuming, expensive, and requires a high level of skill and is critically dependent on good primary antibodies.

The aim: Taking into consideration above mentioned, this study aimed to receive a repeatability of cryosectioning and immunolabelling for the study of endomyocardial biopsy specimens patients with myocardial pathology on ultrastructural level and their direct reference to immunohistochemistry of the cryostat sections

Materials and methods: We prospectively study 6 endomyocardial biopsy specimens taken from 6 patients with unexplained dilated cardiomyopathy using the Tokuyasu protocol. The samples of about 1x1mm3 in diameter were fixed in 4% formaldehyde for 1 hour. Respectively, the specimens were infused with 2.3M sucrose for 36 hours at 4°C (8 r.p.m.), mounted on pins, frozen in liquid nitrogen, and sectioned using a cryo-ultramicrotome UF/FC7 from Leica. Afterward, the semi-thin cryosections were immunolabelled with an anti-human monoclonal antibody against von Willebrand factor and protein conjugated with 15nm gold particles.

Results: The elevated expression of MHC class I and CD54 molecules has been detected in studied samples. Such overexpression is observed in inflammatory processes. Thus, presence of myocarditis has been proven

Conclusions: The application of Immunogold labelling might be a valuable innovation. However, to take full advantage of it in the future, there is a need for further studies.

Keywords: Biopsy, Immunohistochemistry, Immunogold, Electron Microscopy

Occurrence and molecular characteristic of C. perfringens strains isolated from patients with AAD

Aleksandra Polańska[1], Martyna Gąsiorek[1], Jakub Pierożak[1]

1. Department of Medical Microbiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. i n. o zdr. Monika Kabała, dr n. med. Małgorzata Aptekorz

Background: Clostridium perfringens is a Gram (+) anaerobic bacillus widespread in the environment. It is responsible for gas gangrene, necrotizing enterocolitis and food poisoning. The virulence of C. perfringens depends on the toxins produced by the bacterium. Alpha toxin (phospholipase C, lecithinase) is considered to be the main toxin responsible for toxemia and tissue damage during infection. A significant problem is the emergence of C. perfringens strains resistant to penicillin, the first-line drug against this bacterium.

The aim: Identifying C. perfringens strains and their toxin profile in stool samples of patients with antibiotic associated diarrhea caused by Clostridioides difficile.

Materials and methods: Stool samples of 61 patients developing AAD of C. difficile etiology were included in the study. 1 ml of each sample was subjected to thermal shock (10 minutes at the temperature of 80°C). After vortexing, the samples were inoculated on Columbia Agar with 5% sheep blood, then incubated for 24h in an anaerobic chamber (Whitley A35 Anaerobic Workstation, Don Whitley Scientific, UK). Aerobic control was performed as well. Characteristic colonies with a double zone of β-haemolysis were isolated, then reverse CAMP test was performed. After biochemical identification, strains were frozen at -70°C. Afterward the presence of toxin alpha - cpa, toxin beta - cbp, enterotoxin - cpe, iotatoxin - cpiA, epsilon toxin - etx genes was tested using multiplex PCR.

Results: C. perfringens strains were detected in 18 of 61 samples, representing 30% of the samples tested. Only toxin alpha was detected in all tested samples.

Conclusions: Although C. difficile remains the main etiological factor in nosocomial AAD, our study indicates that the presence of C. perfringens may also be significant. Interestingly, none of the strains we tested had the enterotoxin gene considered responsible for gastrointestinal symptoms. In the future, we plan to assess the drug susceptibility of the tested strains.

Keywords: antibiotic-associated diarrhea, Clostridium perfringens, Clostridioides difficile, toxin alpha

Ultrasonographic assessment of carotid intima-media thickness (cIMT) in students of SUM in Katowice.

Karolina Blady[1], Leon Smółka[1, 2], Małgorzata Gewald[1], Bartosz Pomianowski[2], Marcin Glaser[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

2. Department of Anatomy, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Tomasz Urbanek

Background: Atherosclerosis is a chronic, degenerative-inflammatory disease of the arterial vessels. Thickening of the common carotid arteries intima-media complex is considered an early stage of atherosclerosis and increases the risk of cardiovascular incidents. By assessing the intima-media complex thickness (cIMT) using Doppler ultrasonography, it is possible to effectively diagnose and monitor many atherosclerosis-based diseases.

The aim: The aim of the research was to assess the relationship between the thickness of the IM complex in the right and left carotid artery and the occurrence of atherosclerotic plaque in the medical student population of the Medical University of Silesia in Katowice, in relation to lifestyle or family medical history.

Materials and methods: The study encompasses so far a group of 54 individuals, both men and women who are medical students at the Medical University of Silesia, who were asked to fill out a questionnaire about their lifestyle, diseases, and family medical history. In addition, waist circumference, hip circumference, and blood pressure were measured. Subsequently, these individuals underwent Doppler ultrasonography to assess the thickness of the IM complex and the presence of atherosclerotic plaque in the ultrasound image.

Results: The differences in the thickness of the IM complex are strongly statistically significant ($p<0.05$) taking into account smoking. There is also a small positive correlation between cIMT and the frequency of drinking alcohol. Up until now no relationship between BMI and cIMT was found. The final results will be available after the study is concluded.

Conclusions: The results of this study confirm the validity of measuring the thickness of the IM complex by noninvasive methods, especially in individuals at risk of cardiovascular disease, including those with an unhealthy lifestyle.

Keywords: intima-media thickness, atherosclerosis, cardiovascular risk, carotid arteries ultrasound, lifestyle

The Characteristics and Treatment of Lower Limb Aneurysms

Michał Serafin[1], Julia Szostek[1], Magda Mąka[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Dorota Łyko, dr. n. med. Dariusz Stańczyk

Background: Peripheral aneurysms have been known for over 4000 years, but their exact incidence is challenging to determine due to their asymptomatic nature. Nonetheless, advancements in imaging techniques have increased the detectability of lower limb aneurysms, which is crucial due to its potential complications requiring emergency intervention

The aim: The primary objective of this study is to clinically characterize lower limb aneurysm and analyze the perioperative, short-term, and long-term outcomes of surgical treatment for LLA in the period 2018-2023

Materials and methods: We performed a retrospective analysis of 110 patients (95 men, 15 women) treated for LLA, at the Department of General Surgery, Vascular Surgery, Angiology and Phlebology, Medical University of Silesia. The median age of patients was 67.5 IQR 10 years. The study examined various factors such as patient demographics, surgical details, postoperative complications, and aneurysm characteristics to assess outcomes comprehensively

Results: True aneurysms accounted for 64.5% (n=71), while pseudoaneurysm accounted for 35.5% (n=39). Most common true aneurysm localization was the popliteal artery (n=54; 49.9%), while common femoral artery was the most common localization in pseudoaneurysm group (n=36; 92.3%) The largest aneurysm size in computed tomography angiography (CTA) was 36 IQR 20 mm. The most common treatment was aneurysmectomy (n=73; 66.4%) and was performed more often in the pseudoaneurysm group compared to the true aneurysm group (34; 87.2% vs 39; 54.9% ;p<0.001). Complications occurred in 16 (22.5%) patients with true aneurysm and in 9 (23.1%) with pseudoaneurysm (p=1). In-hospital mortality was 0%.

Conclusions: Most LLA are true aneurysms. True aneurysms are located in the popliteal artery, while pseudoaneurysm are located in the common femoral artery. Occurrence of adverse events should be considerate in patients treated surgically for LLA, therefore regular follow-up is needed. Nonetheless, overall postoperative mortality and morbidity is low.

Keywords: Lower limb aneurysm, True aneurysm, Pseudoaneurysm, Surgical treatment

Analysis of Factors Affecting Voice Rehabilitation in Patients with Voice Prostheses

Karolina Pasierb[1], Michał Żurek[1], Joanna Chmielewska-Walczak[1]

1. Otolaryngology, Head and Neck Surgery Clinic, University Clinical Centre of the Medical University of Warsaw, Faculty of Medicine, Medical University of Warsaw

Work's tutor: lek. Michał Żurek, dr n. med. mgr fil. pol. Joanna Chmielewska-Walczak

Background: The post-laryngectomy loss of voice poses a significant challenge for patients. Voice prostheses have enabled voice reconstruction in approximately 90% of patients after laryngectomy. However, the remaining subset of patients do not derive benefits from implanted voice prostheses.

The aim: The objective of the study was to identify the potential factors influencing the efficacy of voice rehabilitation in patients after laryngectomy.

Materials and methods: Analysis of medical records from the Department of Otolaryngology, Head and Neck Surgery was conducted, focusing on patients who underwent total laryngectomy with Proxov voice prosthesis insertion between January 2020 and July 2023. A cohort of 45 patients, characterized by ineffective tracheoesophageal voice rehabilitation or the loss of the ability to use prostheses, was selected. A control group comprised 40 patients who demonstrated favorable outcomes of voice rehabilitation. Demographic and clinical parameters of both cohorts were compared to identify potential determinants influencing the effectiveness of voice rehabilitation.

Results: Statistical analysis revealed neither age nor gender as determinants of the efficacy of voice rehabilitation (p= 0,294- 0,647). Comorbidities, including gastroesophageal reflux disease (GERD), diabetes mellitus, and pulmonary diseases, were not identified as risk factors for tracheoesophageal speech disorders. Pre- and postoperative radiation and radiochemotherapy did not emerge as risk factors (p= 0,056-0,825). Patients with tracheoesophageal speech disorders experience statistically significantly more often difficulties during prosthesis replacement compared to the control group (p=0,024).

Conclusions: Radiation therapy and GERD, perceived as risk factors, demonstrated no impact on voice rehabilitation. Special attention should be directed towards patients encountering complications and difficulties during voice prosthesis replacement, as this group exhibits an elevated risk of developing voice rehabilitation disorders.

Keywords: otolaryngology, voice prosthesis, total laryngectomy,

Can studying medicine compromise the lower limb venous outflow and increase the risk of venous thrombosis?

Monika Bonczek[1], Joanna Rak[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Tomasz Urbanek

Background: Venous thrombosis can be caused by a variety of factors. One of them are disturbances in venous outflow in lower extremities which can result from a patient's immobility or veins compression. This factors can also potentially concern medical students who are prone to prolonged sitting with improper leg placement while studying.

The aim: The aim of our study was to assess how sitting position during studying affects venous outflow in lower extremities.

Materials and methods: The study consisted of 2 stages. Initially, we used an anonymous online questionnaire addressed to medical students about sitting positions while studying. The survey contained 17 questions. Subsequently, Doppler ultrasound examination was performed on a healthy volunteers. The examination was intended to measure the venous outflow in the popliteal vein in the most frequently indicated by students positions.

Results: The questionnaire was answered by 108 students ranging in age from 19 to 32, 90 were women (83.3%) and 18 (16.7%) were men. Most of the respondents (71, 65.7%) admit that they study at least from 3 to 4 hours per day. Students indicate the desk as their preferred place of study (73, 67.6%). Most frequent sitting positions are: cross-legged (21, 19.4%), sitting on knees (19, 17.6%) and crossed legs (16, 14.8%). During the second phase of the study we documented that sitting on the knees position is leading the most significant drop in the minute volume flow in the lower leg vein system, however, also in other positions venous flow velocity abnormalities were observed.

Conclusions: Most students are used to sitting with improper leg placement during studying. This phenomenon has a negative impact on venous flow in lower limbs and potentially increases the risk of venous thrombosis, which also justify the educative efforts to ensure the proper, venous outflow promoting behaviors in the daily activities.

Keywords: sitting positions, venous thrombosis, medical students

Acute appendicitis - own experience of doctors at the University Clinical Hospital in Wrocław from 2023.

Oliwia Stefaniak[1], Jaśmina Nowak[1]

1. Student Scientific Club of General Surgery and Oncological Surgery, Faculty of Medicine, Medical University of Wroclaw

Work's tutor: dr n. med. Przemysław Dzierżek

Background: Acute appendicitis is one of the most common causes of emergency admissions to surgical wards in Poland and around the world. Despite this, diagnosis and treatment selection pose many clinical challenges for both young and experienced surgeons.

The aim: The aim of the study is to compare and interpret the medical histories of patients hospitalized at the Department of General Surgery of the University Clinical Hospital in Wrocław due to acute appendicitis. Particular attention was paid to the demographic aspect and the results of medical history and physical examinations.

Materials and methods: Data were used from 121 patients who were admitted to the University Clinical Hospital in Wrocław in 2023 due to acute appendicitis, which required surgical intervention. Retrospective data were used for interpretation, such as age, gender, results of history and physical examination, and length of hospitalization. Particular attention was paid to the dimensions and characteristic features of the inflamed appendix depending on the type of imaging examination performed. The values of typical inflammatory markers were also compared.

Results: Based on the collected data, it was found that the occurrence of a typical peritoneal symptom - Blumberg's sign - is not common to all patients undergoing appendectomy. It was observed that in the diagnosis process, CT of the abdominal cavity was most often performed, despite the fact that ultrasound is the first-line imaging test. Moreover, according to the results of the demographic analysis, men are more often hospitalized due to acute appendicitis than women.

Conclusions: The analysis confirms that acute appendicitis remains a significant clinical challenge. Data collected during the analysis of the disease histories confirm that acute appendicitis most often affects young men, which is consistent with data from other centers in Poland.. At the same time, differences in the occurrence and intensity of peritoneal sign their questionable value for the clinician in making the correct diagnosis.

Keywords: acute appendicitis, appendectomy, diagnostics imaging, retrospective study

Cationic nanoemulsion + Dexpanthenol versus Dexpanthenol + Hypromellose in the healing process following EBK

Natalia Kwaśniewska[1]

1. Department of Ophthalmology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Sebastian Sirek, dr n. med. Beata Bubała-Stachowicz

Background: Epi-Bowman Keratectomy is surface ablation technique for refractive surgery. Due to the corneal epithelium being removed, patients may experience some discomfort therefore, eye drops are used.

The aim: The aim of this study was to investigate the influence of eye drops containing either cationic nanoemulsion (CN) and dexpanthenol as two separate eye drops or dexpanthenol and hypromellose, which were administered as the combined product on early postoperative healing of corneal epithelium after Epi-Bowman Keratectomy (EBK).

Materials and methods: The study included 32 patients (n=63 eyes), 11 patients received CN, dexpanthenol (n=21) and 21 patients received dexpanthenol, hypromellose (n=42) as an adjuvant treatment after EBK. Adult patients seeking laser vision correction of myopia or myopic astigmatism without diseases or prior surgery were included. Uncorrected (UCVA) and corrected (BCVA) visual acuity and pachymetry thinnest were assessed before and one week after the procedure. In addition, corneal epithelization and subjective assessment of visual blur, and eye irritation were evaluated at one week postoperatively.

Results: The mean age for CN and dexpanthenol group was 29 years; for dexpanthenol and hypromellose group, it was 32 years. No statistically significant differences were found between the two groups in age, spherical equivalent, UCVA before the procedure. There was also no difference between groups in UCVA one week after the procedure.

Conclusions: Both the CN, dexpanthenol and dexpanthenol, hypromellose groups had similar postoperative UCVA. However, using only one product instead of two improves patient comfort and may increase adherence to treatment.

Keywords: Epi-Bowman Keratectomy, myopia, cationic nanoemulsion, dexpanthenol

The impact of the menstrual cycle phase on the chronic venous insufficiency symptoms in women aged 20-25 years

Ewa Góralczyk[1], Natalia Pabiś[1], Magdalena Sowier[1], Barbara Gurba[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. Tomasz Urbanek, Head of the Department– prof. Wacław Kuczmik

Background: Chronic venous disease is a complex of symptoms and signs resulting from prolonged dilatation of venous vessels and associated increase in venous pressure. Several risk factors related to the venous symptom occurrence have been identified, among them also the exposure to the steroid hormones or hormonal abnormalities.

The aim: To determine whether the phase of the menstrual cycle has an effect on severity and occurrence of symptoms of venous insufficiency reported by young women between ages of 20 and 25.

Materials and methods: We recruited 117 women aged between 20 and 25 who do not use hormonal contraception and have never been pregnant. In the first phase of our study we determined which of them were symptomatic. Those who qualified to the second phase were asked to observe those symptoms in relation to their menstrual phase and report changes in their severity. We used visual analogue scale to determine the severity of symptoms.

Results: Out of 117 women, 41 of them which translates to 35%, were recognized as symptomatic. They rated the severity of at least one objective or three subjective symptoms as 5 or more. 73 (62,4%) women reported feeling of heaviness in the lower limbs, and of those respondents, 46,4% stated it gets worse before their period.

Conclusions: In the young female population, symptoms of chronic venous insufficiency occur. The feeling of heaviness in the lower limbs is one of the symptoms which intensity depends on the phase of the menstrual cycle.

Keywords: chronic venous insufficiency, CEAP, menstrual cycle

What should doctors and medical students know about antithrombotic prophylaxis methods?

Dominik Sikora[1], Łukasz Papież[1], Jakub Kamiński[1], Bartłomiej Zabawa[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr n. med. Tomasz Urbanek

Background: Preventing venous thromboembolism (VTE) involves pharmacological and mechanical methods. Mechanical prophylaxis is used when pharmacological methods are contraindicated or alongside them to boost effectiveness. Guidelines now equate graduated compression stockings with active methods like intermittent pneumatic compression (IPC) and electrical muscle stimulation (EMS). However, research suggests that compression stockings are less effective in medical patients compared to surgical patients.

The aim: The aim of our study is to comparatively evaluate whether various mechanical prophylactic methods have comparable effects on venous blood flow.

Materials and methods: We conducted a study on a healthy volunteer comparing the following clinical scenarios while maintaining the same methodology: 1. Patient without compression. 2. Patient with Below-Knee Stockings. 3. Patient with thigh-length graduated compression stockings. 4. Patient with electrical muscle stimulation (EMS). 5. Patient with intermittent pneumatic compression (IPC). Using duplex doppler of femoral vein we evaluated how each of these conditions affects venous flow - we assessed peak flow velocity and minute volume flow (Fv1) in the femoral vein in the extremity with applied mechanical prophylaxis measure.

Results: Applied prophylaxis method: Maximal velocity (cm/s)/Fv1(L/min) 1. Patient without compression: 25,8/0,128 2. Below-Knee Stockings: 19 /0,141 3. Thigh-length graduated compression stockings: 19,65/0,140 4. EMS: 29,5/0,374 5. IPC: 23,67/0,277

Conclusions: Despite the fact that all presented methods belong to the mechanical VTE prophylaxis, significant differences related to their influence on the venous outflow can be found. The proper application of the active and passive mechanical prophylaxis tools should include the patient characteristics as well as the possible range of the mobilization and ambulation in the individual cases.

Keywords: Antithrombotic prophylaxis, Venous thromboembolism, Deep vein thrombosis,

Causes of death in patients who underwent elective abdominal aortic aneurysm surgery

Zofia Kalińska[1], Natalia Murowana[1], Jakub Gawron[1], Wojciech Molęda[1], Julia Czerniewska[1]Angelika Mońko[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Tomasz Urbanek

Background: Abdominal aortic aneurysm (AAA) affects patients with major risk factors i.e. hypertension, coronary artery disease (CAD), smoking, male sex, family history of AAA, age >65yo, peripheral artery disease. Mortality in ruptured aneurysms is high (70%) but significantly decreases with elective surgery and amounts to approx. 2.4% for stent graft and 4.8% for open surgery.

The aim: The study aimed to analyze the most common causes of death among patients undergoing elective procedures for AAAs, given the significant differences in mortality between ruptured aneurysms and those deemed suitable for elective surgery.

Materials and methods: The analysis involved 24 patients hospitalised in the Department of General and Vascular Surgery, Angiology and Phlebology at the Upper Silesian Medical Center in Katowice. Patients underwent elective surgery between 2013 and 2021, ten underwent open surgery, while 14 were implanted with a stent graft. Parameters such as BMI, age, concomitant diseases, prescribed medications, intra- and postoperative complications, substance use, and causes of death were analyzed.

Results: Hospitalised patients ranged in age from 58 to 88 years. The mean time from admission to death was 6 days. The most common concomitant conditions were: hypertension (100%), CAD (63%), atherosclerosis (63%), dyslipidemia (42%) and chronic kidney disease (38%). Additionally, 42% patients had symptomatic but not ruptured aortic aneurysm. The most prevalent complications in all patients were acute intestinal ischaemia and AKI. Retroperitoneal hematomas and haemorrhages, thrombosis, surgical wound and vascular prosthesis infections in the stent graft have also occurred. Twenty-seven percent of patients with CAD developed acute intestinal ischaemia, as did 40% of those with atherosclerosis. In almost all cases the cause of death was determined to be cardiorespiratory failure.

Conclusions: The main cause of death in all patients was of cardiovascular nature.

Keywords: aortic aneurysm, death, stent-graft

CRP-to-Albumin Ratio and Post-Pancreaticoduodenectomy Complications in Pancreatic Cancer Patients

Adam Madej[1], Paulina Kluszczyk[1], Aleksandra Tobiasz[1], Maciej Tenderenda[1]

1. Department of Gastrointestinal Surgery, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Beata Jabłońska

Background: Currently, numerous studies indicate a necessity for clear and reliable preoperative risk factors for predicting postoperative complications in patients undergoing pancreatectomy for pancreatic cancer (PC). The C-reactive protein to albumin ratio (CAR) is an inflammation-based prognostic score associated with a poor prognosis in patients with PC, but its association with a risk of postoperative complications in patients following pancreatectomy is unclear.

The aim: The aim of this study is to evaluate the significance of preoperative CAR in predicting postoperative complications in patients undergoing pancreaticoduodenectomy (PD) due to PC.

Materials and methods: A retrospective analysis of medical records of 38 patients (21 men, 17 women) undergoing PD for PC, in the Department of Digestive Tract Surgery, between November 2018 and December 2023, was performed. The median age of patients was 67 (41-79). We collected data about patients grouped by presence and absence of postoperative complications. Patients with present complications were also divided into two subgroups based on a CAR cutoff value determined using ROC analysis.

Results: Clinical symptoms were present in 24 (63.2%) patients, the most common was jaundice (n=18 (47.4%)). Pancreatic ductal adenocarcinoma (PDAC) (n=33 (86.8%)) was the most common type of PC. The most common histopathological grading was G2 (n=23 (60.5%)) followed by G1 (n=6 (15.7%)) and G3 (n=4 (10.5%)). The median CAR was 0.5 (0.12-30.36). Postoperative complications were observed in 12 (31.6%) patients. In-hospital mortality was 2.6% (n=1). Reoperations were performed in 5 (13.1%) patients. Statistically significant differences between the two CAR subgroups were not observed.

Conclusions: In our analysis, the In our analysis, the significant association between CAR and incidence of postoperative complications was not observed. Nevertheless, further studies on larger group are needed to verify these resultsbetween CAR and incidence of postoperative complications was not observed. Nevertheless, further studies on larger groups are needed to verify these results.

Keywords: C-Reactive Protein to albumin ratio, pancreatic cancer, pancreatic ductal adenocarcinoma, pancreaticoduodenectomy

The Impact of the COVID-19 Pandemic on the Quality Indicators of Lower Gastrointestinal Endoscopy

Patryk Mosiołek[1], Jakub Prosowski[1], Agata Tutkaj[1], Alicja Tomasiak[1], Krystian Rachwał[1]Andrzej Rak[1]

1. Department of Gastroenterology and Hepatology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Dr n. med. Piotr Wosiewicz, Dr n. med. Marcin Romańczyk

Background: Colonoscopy enables detection and prevention of colorectal cancer by removing lesions at an early stage. The quality of colonoscopic examinations is associated with risk of interval cancer. During SARS-CoV-2 pandemic, specific personal protective equipment was used, which could have an impact on the quality indicators of colonoscopies.

The aim: The aim of the study was to determine the impact of SARS-CoV-2 pandemic on the quality indicators of colonoscopy.

Materials and methods: A retrospective analysis was conducted on descriptions of diagnostic colonoscopies performed between January 2019 and December 2021 on 3371 patients. Evaluated parameters included cecal intubation rate (CIR), polyp detection rate (PDR), detection of at least one adenoma (ADR), detection of advanced adenoma (AADR), number of polyps per colonoscopy (PPC), number of adenomas per colonoscopy (APC), and the number of advanced adenomas per colonoscopy (AAPC), as well as the diagnosis of malignant colorectal tumors.

Results: The average age was 55.82 years (SD 16.26), and 53.2% of patients were female. CIR, ADR, and APC did not differ significantly during the pandemic compared to the period before its onset (98%vs.98.5%, p=0.254; 27.4%vs.28.1%, p=0.678; 0.76vs.0.69, p=0.074, respectively). AADR and AAPC during the pandemic were lower than before its onset (6.5%vs.8.4%, p=0.036, and 0.11 vs.0.14, p=0.023, respectively). The detection of malignant tumors after the start of the pandemic was higher than before (2.6%vs.1.3%, p<0,001), as well as PDR and PPC (50.7%vs.45.7%, p=0.007; 2vs.1.51, p<0.001).

Conclusions: CIR, ADR, and the number of adenomas per examination did not differ significantly between the period before the onset of the SARS-CoV-2 pandemic and after its onset. During the pandemic, there was a decrease in the number of detected advanced adenomas and advanced adenomas per examination, accompanied by an increase of the detection of malignant tumors, the percentage of examinations with detected polyps, and the number of detected polyps.

Keywords: Colonoscopy, SARS-CoV-2, quality indicators, adenomas, polyps, tumors

Vitamin D deficiency in liver cirrhosis – a forgotten piece of the puzzle?

Agnieszka Morawa[1], Karolina Osińska[1]

1. Department of Nephrology, Transplantation and Internal Medicine, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab.n.med. Joanna Musialik

Background: Decreased vitamin D (vitD) level in chronic liver disease, particularly cirrhosis, is well-documented. The first step of vitD activation is liver hydroxylation to the main circulating metabolite, 25-hydroxycholecalciferol (25(OH)D3). In the damaged organ this process does not occur properly, additionally poor diet and reduced activity lead to vitD low serum concentration.

The aim: The aim of the study was to evaluate 25(OH)D3 deficiency in cirrhotic patients compared to liver transplant recipients.

Materials and methods: 62 patients (F32/M30, mean age 53.7±10.3 years) with liver cirrhosis of various aetiology: alcoholic 48.4%, post-inflammatory 24.2%, autoimmune 11.3%, other 16.1% observed for LTx were included to study group (LC group). 29 patients after LTx (F11/M18, mean age 55.2±12.1 years) consisted of the control group (LTx). In the analysis, serum 25(OH)D3 levels were assessed, defining them as "suboptimal" (value in the range 20-30 ng/ml) and "reduced" (value <20 ng/ml).

Results: The reduced 25(OH)D3 levels were observed in 67.7% and 31% of cirrhotic and transplant patients (11.65±4.76 ng/ml vs 12.6±3.9 ng/ml resp. $p<0.01$). The suboptimal levels were found in 27.4% and 31% of cirrhotic and transplant patients (23.98±2.93 ng/ml vs 24±2.59 ng/ml resp.). In the LC group, the proper levels in only 4.9% of patients were found compared to 37.9% in LTx. A strong correlation between 25(OH)D3 levels and liver function parameters: albumin ($p<0.001$), bilirubin ($p<0.001$), and MELD index ($p<0.001$) was noted

Conclusions: The prevalence of vitD deficiency in cirrhotic patients underscores its clinical significance. Despite recognition in the literature, it remains overlooked in patients care. Close monitoring and effective vitD substitution should be integral to liver failure therapy taking into account that active vitD induces anti-inflammatory and anti-fibrogenic processes in the liver.

Keywords: vitamin D, reduced concentration levels, chronic liver disease, prevention

Allogeneic red blood cell utilization improvement program in non-bleeding hospital patients – a pre-post study

Julia Lipina[1]

1. Department of Anaesthesiology and Intensive Care, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Piotr Czempik

Background: Anemia is common among hospitalized patients. Patients with severe anemia may require allogeneic red blood cell (RBC) transfusion. Transfusion of RBC should follow strict indications in order to minimize risks and maximize benefits.

The aim: The aim of the study was to analyze the impact of a new standard operating procedure (SOP) on RBC transfusions in adult hospital patients.

Materials and methods: We compared 12-month time periods before and after introduction of a new SOP. The SOP was based on the most recent transfusion guidelines and was adjusted to local patient population. Generally RBC transfusion was appropriate when hemoglobin (Hb) concentration
was below 70 g L 1 and signs/symptoms of anemia were present. The SOP was introduced at the end of year 2022. Data on number of RBCs as well as Hb concentration pre- and post-transfusion was retrieved from electronic medical records.

Results: The number of RBC transfused decreased by 467 (32.4%) units, form 1440 to 973 RBCs in the following years. The percentage of RBC recipients decreased by 0.5%, from 1.2 to 0.7%. The year-to-year RBC transfusion incidence was reduced from 10.3 to 6.8 units per 1000 person-days. There was significant drop in pre-transfusion Hb concentration from 86 to 72 g L-1 . The post-transfusion Hb concentration went down from 90 to 86 g L-1 .

Conclusions: Hospital-adjusted evidence-based allogeneic RBC utilization improvement program has potential to significantly reduce all major transfusion metrics and improve appropriateness of RBC transfusions in non-bleeding hospital patients.

Keywords: anemia, RBC transfusion, transfusion policy, transfusion rate, transfusion incidence

Impact of a new allogeneic red blood cell utilization program on hospital-wide ordering pattern

Julia Lipina[1]

1. Department of Anaesthesiology and Intensive Care, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Piotr Czempik

Background: Anemia is common among hospitalized patients. Severe anemia may require red blood cell(RBC) transfusion when hemoglobin(Hb) concentration is below 70gL and symptoms of anemia are present.

The aim: The aim of the study was to analyze the impact of a new RBC transfusion policy on how RBC are ordered both during implantation phase and after full introduction of the policy in a large academic medical center.

Materials and methods: We retrospectively analyzed the native period(first semester of 2022), implementation phase(latter half of 2022) and period following the full introduction of the program(whole year 2023). We collected monthly data on RBC transfused due to anemia and Hb concentrations pre-post transfusions from the electronic health records.

Results: There was an initial decline from 156 RBC units transfused in January 2022 to 120 units transfused in July 2022, coinciding with the start of the implementation phase of the new policy. By the end of the implementation phase in December 2022, the utilization had been reduced to 80 RBC units. During the introduction phase the mean monthly RBC usage was at 112.3 units, contrasting with 127.7 units monthly in native period. The number of RBC transfused in January 2023 was 68 units and persisted at this level, with some exceptions, throughout 2023. During June 2023 there was uncanny increase in the use of RBC, with 159 units transfused in that month. Mean number of RBC units used was 83.0 in the first semester of 2023 dropping to 79.2 in the latter one. Simultaneously with the reduction of RBC use, there was decline in the median pre-transfusion Hb concentration from 73 gL-1 in January 2022 to 70 gL-1 in July 2022, followed by a further decrease to 67gL-1 in January 2023 and persisting at this level by December 2023.

Conclusions: Implementation of new policy saw simultaneous decrease in RBC utilization reaching a nadir after full introduction of the policy. The effect of the policy lasted throughout the following year suggesting effective implementation of the procedure.

Keywords: anemia, RBC transfusion, transfusion policy, policy complience, transfusion policy implementation

IgE-dependent...Alzheimer's disease?

Aleksandra Spyra[1], Natalia Tekiela[1]

1. Deparment of Internal Medicine and Geriatrics, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Andrzej Bożek, dr n. med. Robert Pawłowicz, lek. Martyna Miodońska

Background: Alzheimer's disease (AD) and atopic diseases are common health problems. There are many hypotheses regarding the pathogenesis of AD, but not all of them have been proven in research. Neuroinflammation is believed to play a crucial role in the neurodegeneration caused by AD. Systemic inflammation accompanying IgE-mediated allergies may influence the induction of neuroinflammation and, consequently, dementia.

The aim: The aim of the study was to prove the hypothesis that older patients with IgE-mediated allergies have a higher prevalence of Alzheimer's disease.

Materials and methods: This study was a retrospective, multicenter cohort observation. The inclusion criteria were: age >50 yr and confirmation of an IgE-mediated inhalant allergy. In total, 7129 people were examined, including 3566 women and 2558 men (mean 64.9 ± 6.9yr). Descriptive statistics were calculated using Statistica 13.1.

Results: The proportion of patients with confirmed Alzheimer's disease in the group of patients with diagnosed allergy compared to the group of those without allergy was as follows: 13.9% (168) vs. 8.2% (484) with $p=0.001$. There was a positive correlation between the presence of Alzheimer's disease and high serum total IgE, eosinophilia, and asthma or the presence of atopic polymorphic disease ($p<0.05$). The presence of sensitization to the tested inhalant allergens had no significant effect on the diagnosis of Alzheimer's disease.

Conclusions: IgE-dependent allergic diseases, in particular allergic asthma, and the presence of high serum IgE levels may favor the development of Alzheimer's disease. More detailed research is needed to investigate the mechanism behind this phenomenon.

Keywords: allergy, Alzheimer's disease, asthma, allergic rhinitis, IgE

Dupilumab - new biologic therapy efficacy for severe asthma

Julia Szlążek[1], Alicja Drelichowska[1], Katarzyna Sobczak[1], Weronika Wójtowicz[1]

1. Department of Pneumonology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr. n. med. dr. n. hum. Małgorzata Farnik

Background: Dupilumab, a recombinant human IgG4 monoclonal antibody, functions by inhibiting IL-4 and IL-13 signaling pathways. It is approved for the treatment of moderate and severe asthma, atopic dermatitis, and chronic rhinosinusitis with nasal polyps - conditions associated with the Th2-dependent response. Clinical trials demonstrated dupilumab efficacy, with doses of 200 mg in asthma and 300 mg in conditions involving co-occurring Th2-dependent inflammation by reducing exacerbations, systemic glucocorticoid usage, improving FEV1% and asthma control.

The aim: Single-centre real-life analysis of the efficacy of dupilumab biologic therapy in treatment of severe bronchial asthma and identification of eligible patients' characteristics.

Materials and methods: Initial response to dupilumab doses of 200 mg and 300 mg was analysed in patients at the Department of Pneumonology of SUM. Efficacy criteria were: improvements in quality of life (assessed by AQLQ) and asthma control (assessed by ACQ-7) by at least 0.5 points, reduction of exacerbations, and achieving a clinical response rated as at least 'good' based on GETE.

Results: 22 patients (7 men, 15 women), aged 30 to 79 years (mean 54.6Ī16.9) were enrolled in the study. At baseline, the mean AQLQ was 2.42 and mean ACQ-7 was 3.72. Majority of patients presented with multi-organ symptoms: 9 (40.91%) reported nasal polyps, 3 (23.08%) qualifying for 200 mg dose and 6 (66.67%) for 300 mg, 10 (45.45%) reported allergies, 6 (46.15%) qualifying for 200 mg and 4 (44.44%) for 300 mg dose. After 6 months of treatment the mean changes for the group were: AQLQ +2.65, ACQ -2.09. GETE scale after 6 months was classified as very good for 5 patients and good for 7 patients. All patients fulfilled the criteria defined as positive response to treatment. No hypereosinophilic syndrome symptoms were reported.

Conclusions: Analysis indicates that dupilumab therapy for severe asthma yields positive treatment effects irrespective of concomitant diseases, owing to its broad action profile.

Keywords: severe asthma, biological therapy, dupilumab, efficacy

Cardiovascular risk factors in patients two years after successful liver transplantation

Dominika Sarna[1], Barbara Romanowska[1]

1. Department of Nephrology, Transplantation and Internal Medicine, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Marcin Adamczak

Background: Liver transplantation (LTx) is the primary treatment for liver failure. Cardiovascular complications are common in these patients.

The aim: This retrospective study aimed to assess cardiovascular risk factors among patients after LTx.

Materials and methods: Cardiovascular risk factors were evaluated in 243 patients (mean age in the moment of LTx: 50.01 ± 11.7 years; 91 women, 152 men) two years after LTx. Viral hepatitis was the leading cause of liver failure in 40.3% of patients, followed by alcoholic liver disease in 24.7% and autoimmune diseases in 22.2%. 204 patients received tacrolimus, 22 cyclosporine A, and 17 everolimus.

Results: In the studied group of patients the frequency of hypertension was 80.6%, diabetes mellitus- 42.8%, hyperlipidemia- 45.6%, hypertriglyceridemia- 34.9%, chronic kidney disease- 30% and smoking- 18.1%. Patients treated with everolimus 88.24% were characterised by a higher prevalence of hyperlipidemia than those treated with tacrolimus 42.65%;(p=0.003; OR=6.89) and cyclosporine A 40.91% (p=0.01; OR=8.33). The frequency of hypertriglyceridemia was 82.35% in patients treated with everolimus, 31.81% with cyclosporine A, and 31.37% with tacrolimus (everolimus vs cyclosporine a p=0.01; OR=7.33; everolimus vs tacrolimus p=0.001; OR=6.93;). Besides the lipid panel, patients on different immunosuppressive drugs did not show any significant differences. The frequency of hypertension (p=0.02), diabetes mellitus type 2 (p=0.05), hypertriglyceridemia (p=0.03) and hyperlipidemia (p=0.003) and smoking (p=0.04) depend on the etiology of the liver disorder. These factors were most prevalent in patients with alcoholic liver disease, then those with viral hepatitis and least common in patients with autoimmune disease.

Conclusions: Cardiovascular risk factors are frequently present long-term after LTx. The etiology of liver failure and immunosuppressive therapy may impact their prevalence. Appropriate diagnosis and treatment may reduce cardiovascular complications in these patients.

Keywords: Cardiovascular Risk Factors, Liver Transplantation, Immunospressive Therapy, Liver Disorders

Anamnesis and Risk Factors in Early Diabetic Retinopathy Referral: A Retrospective Study

Filip Kowalik[1], Marta Wolszczak[1], Michał Nowakowski[1]

1. Department of Ophthalmology, Lens Students' Science Association, Faculty of Medicine, Medical University of Warsaw

Work's tutor: dr n. med. Iwona Świtka-Więcławska

Background: Diabetic retinopathy (DR) affects 30-40% of diabetic patients, ranking as the fifth leading cause of avoidable blindness globally. It often progresses asymptomatically until advanced stages. Risk factors include poor glycemic control, dyslipidemia, hypertension, and genetics. DR can be diagnosed with fundoscopy and optical coherence tomography (OCT), which enables to assess the macular edema.

The aim: This research aims to explore the relationship between medical history, risk factors, and the manifestation of diabetic retinopathy changes in OCT scans to expedite diagnosis of this clinical entity.

Materials and methods: This study involved patients from the Department of Ophthalmology at Infant Jesus Clinical Hospital in Warsaw. OCT scans of 75 diabetic patients were analyzed, and the frequency of ocular signs was assessed. Patients received scores ranging from 0 to 6 based on the presence of macular edema, microaneurysms, and exudates (0 indicating absence of all signs, and 6 indicating presence of all signs, with 1 point assigned for each sign present in one eye). Subsequently, patients were queried about their type of diabetes, disease duration, insulin therapy, and presence of comorbidities. Data was analyzed using the Mann-Whitney U and Pearson tests to evaluate correlations between ocular signs and medical history features.

Results: Statistically significant differences were found between genders (p-value = 0.017), with symptoms being more frequent in men. The correlation between patient age and symptom frequency was inverse (Pearson correlation: -0.305, p-value = 0.037). Men with lower limb ulcerations exhibited significantly more ocular symptoms than those without this condition (p-value = 0.013).

Conclusions: In addition to well-known risk factors for DR, we propose that younger diabetic patients and men with lower limb ulcerations may particularly benefit from timely eye examinations. Given the limited sample size, further research in this field is warranted.

Keywords: diabetes, diabetic retinopathy, risk factors, anamnesis, ulcerations

Screening of serum uric acid levels using test strips followed by a medical history questionnaire

Aleksander Urbaś[1], Paulina Wietrzycka[1], Agnieszka Partyka[1]

1. Department of Internal Medicine, Autoimmune and Metabolic Diseases, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: lek. Mateusz Szul, lek. Aleksandra Pilśniak, dr n. med. Agnieszka Jarosińska, prof. dr hab. n. med. Michał Holecki

Background: Uric acid (UA) is a well-known pathogenetic factor in the development of kidney and heart diseases and metabolic syndrome. UA level is influenced by many factors, such as diet, fluid and alcohol intake, various medications, gender, age, and body weight.

The aim: To investigate the impact of various factors described in the literature on UA levels.

Materials and methods: We performed UA concentration tests using test strips followed by a medical history questionnaire in a group of 195 patients. The questionnaire included patient's diet, fluid and alcohol intake, chronic diseases, medications taken and physical activity.

Results: The study group consisted of 56 males (28.7%) and 139 females (71.3%), of which 14 were taking medications lowering UA concentration. In male patients the mean UA level was significantly higher than in female patients (6.45mg/dl ± 1.7mg/dl vs 5.23 mg/dl ± 1.5mg/dl; $p<0.0001$). A weak correlation was found between UA levels and height (Pearson correlation coefficient [PCC]=0.16), body weight (PCC=0.12) and age (PCC=0.14). The impact of food intake on UA level was varied, only the group in which nut consumption was reported showed significant differences in the UA levels. Patients with coronary artery disease (CAD), heart failure (HF), and chronic kidney disease (CKD) had significantly higher UA levels compared to the group of patients without these diseases. Fluid and alcohol consumption had no influence on UA levels measured in our study group.

Conclusions: The higher UA concentrations shown in the study in men, patients with overweight/obesity, CAD, HF, CKD were consistent with data available in the literature. However, the observed lack of influence of certain factors (consumption of fluid and alcohol, consumption of meat, food intake before the test) is not clear in terms of interpretation. The study results may suggest that screening test are not adequate to asses the modifying effect diet has on UA.

Keywords: uric acid level, gout

Prediction model for the hospitalization length based on basic features using machine learning

Paweł Kurzelowski[1], Maciej Pluskiewicz[1], Monika Kalicka[1], Katarzyna Motyl[1], Przemysław Hołda[2]

1. Department of Internal Medicine, Autoimmune and Metabolic Diseases, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

2. , Systems Research Institute, Polish Academy of Sciences

Work's tutor: dr n. med. Agnieszka Jarosińska, lek. Aleksandra Pilśniak, prof. dr hab. n. med. Michał Holecki

Background: A model for predicting a patient's hospitalization length on admission based on basic measurements and medical history would be invaluable for working clinicians.

The aim: In this study, the authors assessed the feasibility of such a model.

Materials and methods: The data sample comprised 350 patients hospitalized at the Department of Internal Medicine in 2022. The analyzed features included: age, sex, BP, CBC, creatinine, smoking, atrial fibrillation, heart failure, hypertension, ischaemic heart disease, type 2 diabetes and chosen ICD-10 groups. Two approaches were compared. One is based on regression to predict the hospitalization period in days. The other is a binary classification task to verify if the hospitalization length is longer than five days. Two machine learning models were prepared using XGBoost. Both models were trained and evaluated using 10-fold stratified cross-validation. Metrics were calculated between the predicted and target variables. Each metric mean value was calculated across all folds, where σ denotes standard deviation. Threshold-based metrics in the classification model used a threshold of 0.5.

Results: The regression model measured: a mean absolute error of 2.826 (σ=0.2915), mean squared error of 14.915 (σ=4.6722), R2 of 0.036 (σ=0.1028), maximum error of 10.844 (σ=3.3499) and Pearson correlation coefficient of 0.289 (σ=0.0985). The classification model measured: an accuracy of 0.5988 (σ=0.0523), precision of 0.6072 (σ=0.0479), recall of 0.7684 (σ=0.1003) and AUROC of 0.6138 (σ=0.0656). The results show that the effectiveness of both models is unsatisfactory. They are only slightly better than a random estimate and not suitable for real-world use.

Conclusions: Despite the bioplausibility of the selected features, our findings indicate that they are insufficient on their own to prepare machine learning models that could reliably predict a patient's hospitalization period. Other factors that are unknown or cannot be routinely measured at admission, likely influence the final outcome.

Keywords: machine learning, prediction model, hospitalization length, medical history, XGBoost, basic features

Influence of infections on cerebrospinal fluid cytosis

Szczepan Wąsik[1]

1. Students Scientific Group of Laboratory Medicine, Faculty of Pharmacy, Medical University of Warsaw

Work's tutor: mgr Milena Małecka-Giełdowska

Background: Cerebrospinal Fluid (CSF) plays a very important role in developing nutrients for neural tissue. It is created by selective filtration of blood, which indicates changes in the concentration of plasma components between these two fluids. Moreover, blood cells shouldn't be able to cross a blood-brain barrier which protects the brain not only from potentially dangerous substances that are present in the blood but also from immune cells. However, a blood-brain barrier through various factors may not fulfill its function.

The aim: The aim to the study is an investigate whether infections on affect cell count in CSF.

Materials and methods: The results of 138 adult patients at the age of 48Ī9 were included in the retrospective study. CSF cytosis is determined by using the flow cytometry method, which relies on measuring the size with FSC (forward scattered channel) and cell granularity with SSC (side scatter channel). FSC and SSC trough-collect scattered light from a beam that passes through the cell.

Results: In the samples of 78 patients, pleocytosis was detected above 5x103ĶI, among the patients in the indicated group: 35 patients with cancer and tumor metastases, and 11 with viral infection of the CNS. In 10 patients, pleocytosis was the result of infection outside the CNS, 5 patients suffered from neurological diseases, and in 17 patients, pleocytosis was caused by bacterial infections of the CNS. A statistically significant difference in pleocytosis was observed for patients with bacterial infection (WBC-BF 198x103Ķl and cancer metastases (WBC-BF 88 x103Ķl) p<0.001).

Conclusions: The analyzed study showed that bacterial and viral infections lead to a significant increase in pleocytosis in the cerebrospinal fluid.

Keywords: Cerebrospinal fluid, cytosis, infection, flow cytometry method, blood brain barier

Hormonal and lipid profile in acne vulgaris patients

Weronika Szybiak-Skora[1], Michalina Gruszczyńska[1]

1. Student's Scientific Society, Endocrinology Section at the Department of Endocrinology, Metabolism and Internal Medicine, Poznan University od Medical Sciences, Poznan, Poland

Work's tutor: Prof. dr hab. n.med. Katarzyna Lacka

Background: Hormonal imbalance affects the skin condition and results in the presentation of acne vulgaris lesions. Metabolic disorders may influence the inflammatory processes and immune response underlying the pathogenesis of acne vulgaris.

The aim: The aim of aur study was to evaluate serum levels of prolactin, luteinizing hormone (LH), follicle-stimulating hormone (FSH), testosterone, high-density lipoprotein (HDL) and triglycerides (TG) in patients with acne vulgaris and compare them to controls.

Materials and methods: This study was conducted in the outpatient Department of Dermatology and Venereology of the Poznan University of Medical Sciences in Poland. 41 patients with acne vulgaris and 47 age- and body mass index (BMI)-matched controls were enrolled in the study. Serum levels of testosterone, prolactin, LH, FSH, TG, and HDL were evaluated in both group and compared using of the statistical methods. The study was conducted as part of SBN student research grants 502-05-12213550-05657

Results: The mean ± SD testosterone serum level in the study group was 0.45 ±1.03 ng/ml in females and 4.24 ±0.68 in males and in the control group 0.73 ±2.03 ng/ml and 5.3 ±1.3 ng/ml in females and males, respectively. The prolactin serum level was 16.73 ±8.02 ng/ml in the study group and in the control group 13.74 ±8.71 ng/ml ($p = 0.011$). The FSH level was 12.17 ±16.93 mIU/ml and 6.2 ±7.3 mIU/ml in the study and control groups, respectively ($p = 0.0001$), LH levels were 18.44 ±19.71 mIU/ml and 11.26 ±8 mIU/ml, respectively ($p = 0.2659$). The HDL serum level was 65.63 ±15.67 mg/dl in the study group and 61.53 ±15.89 mg/dl in the controls ($p = 0.219$), and TG levels were 175.29 ±82.15 mg/dl and 87.32 ±30.64 mg/dl, respectively ($p < 0.00001$).

Conclusions: Our study presents, that hormonal levels and lipid imbalance could be associated to acne vulgaris presentations. Evaluation of hormonal and lipid abnormalities could be crucial in treatment and could affect the course of acne.

Keywords: acne vulgaris, hormone profile, lipid profile

Exploring Gender and Age Disparities in Public Perception of Smoking's Influence on Skin Health: Survey Study

Viktorija Virbauskytė[1], Ieva Vanagaitė[1]

1. Department of Medicine, Faculty of Medicine, Vilnius University

Work's tutor: Justas Arasimavičius, MD

Background: Smoking remains a prevalent global concern. Therefore, understanding public awareness of smoking's impact on skin health is essential.

The aim: To assess public perceptions and knowledge about the potential impact of smoking on skin conditions.

Materials and methods: An anonymous online survey was conducted in Lithuania in 2024. Data was analysed using Microsoft Excel and IBM SPSS 26.0.

Results: The study included 217 participants, 66.4% women (n=144) and 33.6% men (n=73).The age group between 18 and 34 years made up 66.8%, while individuals aged 35 and older accounted for 33.2% of the participants. 50.2% reported current smoking, with the prevalence of smoking being significantly higher in men (p=0.001). However, women were more likely than men to perceive that smoking negatively affects skin condition, wound healing, skin diseases, promotes premature aging and increases the risk of skin cancer (p<0.001). They also showed greater interest in how smoking affects the skin (p<0.001). Women reported that awareness of the effects of smoking on skin conditions influences their consumption patterns (p=0.006) and were also more likely to consider quitting smoking (p=0.001). Exclusively women sought services from beauty professionals for skin changes potentially caused by smoking. Younger people were more likely to think there was a link between smoking and premature aging (p=0.025) and were also more likely to think smoking had a negative impact on wound healing (p=0.005). Older people were more inclined to indicate uncertainty regarding smoking's impact on skin diseases (p=0.005), but thought that smoking increases the risk of skin cancer (p=0.002). They were more likely to contact health (p=0.02) and beauty (p=0.039) professionals about skin changes that may be caused by smoking. Health professionals were more likely to inform older people about the effects of smoking on skin conditions (p<0.001).

Conclusions: There is an essential call for comprehensive education regarding the impacts of smoking on skin health.

Keywords: public perception, smoking, skin health

Exploring Gender and Age Differences in Public Awareness of Alcohol's Effects on Skin Health: A Survey Study

Ieva Vanagaitė[1], Viktorija Virbauskytė[1]

1. Department of Medicine, Faculty of Medicine, Vilnius University

Work's tutor: Justas Arasimavičius, MD

Background: Given the significant global impact of alcohol consumption, it becomes crucial to understand public awareness of its effects on skin health.

The aim: To assess public attitudes and knowledge about the potential impact of alcohol consumption on skin conditions.

Materials and methods: An anonymous online survey was conducted in Lithuania in 2024. Data was analyzed using Microsoft Excel and IBM SPSS 26.0.

Results: The survey included 63.2% female participants (n=127) and 36.8% male participants (n=74). The 18-34 age group accounted for 62.7% and the ≥35 age group accounted for 37.3%. 84.1% (n=169) of the respondents reported that they consume alcoholic drinks. Women were more likely than men to believe that alcohol consumption negatively affects skin condition ($p<0.001$), wound healing ($p<0.001$), skin diseases ($p<0.001$), promotes premature aging ($p<0.001$) and increases the risk of skin cancer ($p=0.033$). They were also more interested in the effects of alcohol on the skin ($p<0.001$). There was no statistically significant difference between genders in seeking medical attention for skin issues possibly caused by alcohol, but only women sought services from beauty professionals.
Older people were more likely to be informed by health professionals about the adverse effects of alcohol consumption on skin conditions ($p<0.001$). They were also more likely to contact health ($p=0.029$) and beauty ($p<0.001$) professionals about possible alcohol-induced skin changes. Younger respondents expressed that they would not contemplate ceasing alcohol consumption due to its potential adverse effects on the skin. Older people were more likely to report that they would consider stopping alcohol consumption but for other reasons ($p<0.001$).

Conclusions: Alcohol consumption can affect skin health, yet perceptions of its effects vary among individuals, influenced by factors such as gender and age. Understanding these variations is crucial for promoting healthier lifestyle choices.

Keywords: alcohol consumption, skin health, public awareness

Atopic dermatitis or maybe something more?

Anna Źlik[1], Magdalena Mróz-Dybowska[1], Szymon Mućka[1]

1. Deparment of Internal Medicine and Geriatrics, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: Prof. dr. hab. n. med. Andrzej Bożek, Dr. n. med. Robert Pawłowicz, Lek. Martyna Miodońska

Background: Patients with atopic dermatitis may be associated with other diseases. Frequency has an impact on the patient's overall health picture.

The aim: The aim of the study was to assess comorbidities in patients diagnosed with atopic dermatitis and psoriasis compared to healthy patients constituting the control group.

Materials and methods: Patients over 18 were recruited using medical databases in dermatology clinics and the dermatology hospital ward. Initially, 378 patients were selected by analyzing the ICD-10 codes L-20, L-20.8, and L20.9. Ultimately, 231 patients with atopic dermatitis were classified into the study group based on meeting the Hanifin and Rajka criteria. They included 104 women and 127 men with an age range of 18-62.

Results: In patients with AD, selected lifestyle diseases such as obesity and atherosclerosis occurred significantly less frequently than in patients without AD, including those with other dermatoses. Allergic asthma and type 2 diabetes occurred significantly more often than in different patients. The distribution of the most common cancers in the individual study groups did not differ statistically significantly. All of them were dominated by lung, colon, prostate and breast cancer .

Conclusions: In some AD patients, comorbidities are more present and often associated with depression, Hasimoto, and hyperlipidemia.

Keywords: allergology, atopic dermatitis, adults,multimorbidity

Can social media encourage young Polish adults to visit a dermatologist? – Original study

Zuzanna Pawlus[1], Aleksandra Spyra[1]

1. Department of Dermatology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: lek. Karina Polak

Background: Social media play an important role in contemporary world, influencing all areas of life, including dermatology, as people are often extracting medical knowledge from content-sharing means on the Internet.

The aim: The objective of this study was to evaluate if Polish adults aged 18-30 follow dermatological news in social media, which platforms and contents they find the most interesting and to assess if the social media content can encourage them to visit a healthcare professional.

Materials and methods: Online questionnaires were distributed from January to March 2024 among young adult people (18-30 years old) from Poland. Epidemiological data concerning sex, age, place of residence, education level were collected as well as data on users' social media habits concerning skincare and dermatology: requesting skin care advice in social media, preferred applications, websites and contents, opinion on influencers competencies etc. The questionnaire also investigated if social media content could encourage visiting a dermatologist.

Results: The survey revealed that 41.1% of respondents follow dermatology-related content on social media; 83.5% of the participants identified Instagram as a frequently accessed source of information. 22% of respondents reported seeking advice on skincare using online platforms, with the most interesting content identified as skincare and skin diseases, including acne or psoriasis. The main reason for visiting a specialist was the desire to improve the appearance of one's skin.

Conclusions: Over 40% of young Polish adults follow dermatology-related content on social media; the main areas of interest are skincare, acne and psoriasis, which remains consistent with the most common skin diseases epidemiology in this group of age in Poland. In nearly half of the respondents, social media encouraged them to visit a dermatologist, with 49.2% consistency of diagnosis made by a healthcare professional and social media user.

Keywords: dermatology, social media, skincare, dermatologist

Role of allergy in atopic dermatitis - variability in clinical phenotypes of among Polish pediatric patients

Joanna Zygadło[1], Karolina Dumycz MD[1], Mariusz Panczyk PhD[2], Wojciech Feleszko MD PhD[1]

1. Department of Pediatric Pneumonology and Allergy, Faculty of Medicine, Medical University of Warsaw

2. Department of Education and Research of Health Sciences, Faculty of Health Sciences, Medical University of Warsaw

Work's tutor: Wojciech Feleszko MD, PhD

Background: Atopic dermatitis (AD), a prevalent pediatric inflammatory disorder that exhibits significant variability in clinical manifestations and underlying immunological and genetic determinants. Detailed endophenotyping of AD is crucial to understand disease mechanisms and clinical associations with atopic comorbidities.

The aim: The focus of this investigation was to delineate the spectrum of sensitization profiles and comorbidities amongst pediatric cohorts exhibiting diverse AD phenotypes delineated by the age of AD onset and the children's ages.

Materials and methods: A total of 435 pediatric patients were included, following the completion of a survey by their caretakers. The study included an assessment of early-life environmental exposures, responses to food and airborne allergens, concurrent atopic conditions, and familial health history. The severity of AD was quantified utilizing the Patient-Oriented Eczema Measure (POEM). For statistical inferences, the Statistica platform (TIBCO Software Inc., USA) was employed.

Results: In the cohort with a mean age of 3.9 years, 67% manifested AD within the first half-year of life. Sensitization to allergens was observed in 90%, primarily to cow's milk, hen's egg, and birch pollen. Food sensitization predominated in the under-six demographic (30.92%), whereas older children had higher aeroallergen sensitization rates. The age of AD onset was significantly associated with the type of sensitization; post-2-year diagnoses were linked to aeroallergen sensitivity. Bimodal sensitization correlated with an augmented asthma incidence. Additionally, viral infections were more frequent among the sensitized group.

Conclusions: Our findings underscore the criticality of differentiating AD phenotypes to enhance comprehension of allergen sensitization, onset age of AD, and comorbidities, thereby informing strategies to mitigate allergic sensitization or expedite the identification of individuals at heightened risk for associated comorbid conditions, ultimately enhancing patient prognoses.

Keywords: atopic dermatitis, dermatology, allergy, sensitization

From Taboo to Trend: Aesthetic Medicine Preferences

Maria Bendykowska[1], Adrian Goss[1], Jan Pietruszka[1], Zofia Sorysz[1], Maria Szewczyk[1]

1. Student Scientific Association "Immunis", Faculty of Medicine, Collegium Medicum, Cardinal Stefan Wyszynski University, Warsaw, Poland

Work's tutor: Grażyna Gromadzka, Prof.; Ewelina Biało-Wójcicka, MD, PhD; Magdalena Pałdyna, MD;

Background: In the realm of modern healthcare, understanding the nuanced preferences and attitudes towards aesthetic medicine (AeM) treatments (AeMT) in different living environments is of paramount importance. The field of AeM is undergoing a notable shift in public perception, transitioning from a once-taboo topic to one that is increasingly discussed and accepted.

The aim: The aim of the study was to explain the variances in knowledge and experiences regarding AeMT among various communities.

Materials and methods: The study group consisted of 194 individuals (85.1% women, 14.9% men), with mean age of 33 years. Data was collected based on the self-composed questionnaire, consisting of questions divided into the following categories: metric questions, questions on opinions and experiences in AeMT, and general exploratory questions. Statistical analysis was conducted using Statistica 13.0 PL software.

Results: The use of AeMT was less common among people living in smaller towns and villages with populations up to 500,000 (group 1) compared to those in larger cities with populations over 500,000 (group 2) (26.6% vs 41.7%, $p<0.01$). Group 1 tended to use AeMT more often for a single instance than group 2 (29.7% vs. 16.0%), while group 2 used AeMT more frequently for more than 6 times compared to group 1 (52.0% vs 35.1%).
People from group 1 were less inclined than those from group 2 to consider using AeMT in the future (24% vs. 40%, respectively).
In group 1, the majority (37.8% vs. 12.0%) believed that the ideal age for using AeMT should be over 30 years (51.4% vs. 20.0% in group 2), whereas group 2 thought that the best age to use AeMT was under 30 years (80.0% vs. 48.6%).

Conclusions: The study delineates distinctions in terms of knowledge and experiences regarding AeMT among people living in metropolitan areas compared to those in villages and small towns. These disparities may be related to varying lifestyles, preferences, or incomes. Such insights may prove beneficial in tailoring to meet the evolving demands and preferences.

Keywords: aesthetic medicine preferences, beauty ideals, lifestyle factors in AeM

Can ChatGPT-3.5 pass the Polish specialization exam in dermatology? - a research investigation into AI.

Natalia Kamińska[1], Łukasz Czogalik[2], Marcin Rojek[2], Mikołaj Magiera[2]

1. Department of Medical Biophysics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

2. Department of Radiology and Nuclear Medicine, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: lek. Jakub Kufel

Background: In the 21st century's era of rapid technological advancement, ChatGPT-3.5, an artificial intelligence (AI) language model, is scrutinized for its application in dermatology. Using 118 questions from the National Specialist Examination (PES), we assess ChatGPT-3.5's performance, comparing it to human skills and addressing ethical implications.

The aim: Our primary objective is to evaluate ChatGPT-3.5's proficiency in responding to 118 dermatology questions from the PES. The study emphasizes ethical considerations and compares the model's knowledge and skills to those of human dermatologists.

Materials and methods: Utilizing the 2023 PES question database, questions were categorized by Bloom's taxonomy and thematic content. ChatGPT-3.5, version August 3, 2023, answered 118 questions in five sessions, allowing for a probabilistic evaluation. Statistical analyses, conducted using R Studio, assessed correctness, confidence, and difficulty.

Results: ChatGPT-3.5 achieved a 49.58% correct response rate, below the 60% passing threshold. No significant differences in difficulty or correlations between difficulty and certainty were observed. Varied performance across question types highlighted strengths and weaknesses.

Conclusions: Despite suboptimal results, ChatGPT-3.5's differential performance offers insights, suggesting future improvements. The study advocates ongoing research into AI integration in dermatology, envisioning a promising role for AI in assisting dermatologists. Ethical considerations are crucial for effective AI introduction, minimizing errors, and enhancing dermatological healthcare quality, fostering optimism for AI's evolving role in dermatology.

Keywords: dermatology; venereology; ChatGPT-3.5; artificial intelligence; medical education

Study of knowledge and perceptions on the use of phytotherapy

Aleksandra Lisak[1], Magdalena Kurpanik[1]

1. Department of Human Nutrition, Faculty of Health Sciences in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Beata Całyniuk

Background: For several years, phytotherapy has been an increasingly common topic in the medical community. It deals with the treatment of diseases with the help of herbs and plants, the effects of which are supported by scientific research. For future graduates, phytotherapy can be one of the paths used in their daily clinical practice.

The aim: The aim of this study was to assess the knowledge and examine the views of students at the Silesian Medical University in Katowice on phytotherapy and its future practical use among patients.

Materials and methods: To conduct the study, an author's online questionnaire was used, which contained 15 closed-ended questions of which one was multiple choice and seven open-ended questions. The pilot study involved 16 students of the Silesian Medical University from three majors: dietetics, pharmacy and medicine, including 12 women and 4 men. The results were collected between December 2023 and February 2024.

Results: The question regarding encountering herbs as medicinal agents was answered positively by 12 respondents. Then the question regarding the type of treatment that is phytotherapy, respondents equally indicated 7 votes each for conventional and unconventional treatment. When asked about the difference between phytotherapy and herbalism, as many as 10 students voted correctly, indicating a significant difference between the above terms.

Conclusions: In summary, due to the reasons for the equal percentage of answers to most questions, it can be assumed that the knowledge of phytotherapy carried out on the student group is at an average level. An important issue, therefore, would be to consider introducing an obligatory subject or developing the already existing ones with topics on the action of herbs, dosage and their interaction with food or drugs

Keywords: herbs, phytotherapy, student, SUM

Frequency and preferences of protein products consumption in the group of strength training people

Jakub Berdychowski[1]

1. Department of Human Nutrition, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Beata Całyniuk

Background: Protein is a macronutrient that people who train pay special attention to. It is necessary to build muscle mass or connective tissue structures. Increased protein intake of 1.4-2.0 g/kg of body weight compared to the general population is safe and has a positive effect on training adaptations and body protein synthesis.

The aim: The aim was to determine the preferences and frequency of consumption of protein products in the group of people training for strength training, as well as the impact of preferences on the frequency of consumption.

Materials and methods: The study was conducted using an online, proprietary questionnaire, the link to which was shared on groups of people training strength. The questionnaire consisted of 39 questions. The study involved 100 people (60 men and 40 women) and the median age was 22 years. The data was collected in February 2024 and participation was voluntary and anonymous.

Results: 43% of respondents declared that adequate protein intake is very important to them, and 45% do so. The most frequently chosen sources of protein were poultry (24% eat daily), protein supplement (24% eat daily), skyr yoghurt (17% eat daily) and milk (44% drink daily). The most liked products among those surveyed were eggs, poultry, skyr and milk. In people on meat-free diets, the main sources of protein were milk, dry legumes, and tofu. When comparing gender preferences, women are more likely to like cottage cheese, cottage cheese and protein drinks. Men, on the other hand, prefer meats such as beef, pork, poultry.

Conclusions: It is necessary to carry out research on a larger scale and to use more accurate methods of quantitative and qualitative assessment of the products consumed. People who train show a lot of interest in protein intake and actually consume products rich in it quite often. Associations between taste preferences and frequency of consumption were also observed. Choosing plant-based protein sources is invariably at a very low level and care should be taken to educate and promote such products.

Keywords: Protein, strength training, frequency, preferences

Patient after bariatric surgery in health and nutrional aspects

Przemysław Gwizdak[1]

1. Department of Cardiovascular Disease Prevention, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. o zdr. Justyna Nowak

Background: Bariatric surgery is treatment of obesity which is performed when a diet and pharmacological treatment do not help in weight reduction or obesity is a threat to health and life. The role the specialists, including a dietician, before and after bariatric surgery is education about health and nutritional changes and the risk of weight regain.

The aim: The aim of the study was assessment of health and nutritional aspects and the quality of life among patients after bariatric surgery.

Materials and methods: The study involved the 119 adult patients including the 106 (90%) women and 13 (10%) men after bariatric surgery in aged from 21-79 years,. The research tool was an anonymous questionnaire that was disseminated on Internet forums which associates the adult patients after bariatric surgery. The filling out of the questionnaire was agreeing to participate in the study. MS Excel and Statistica were used for statistical analysis. The study lasted from January 2024 to March 2024.

Results: Diet (95%), body appearance (97%), physical activity (87%), self-acceptance (89%), sleep (65%) and mental health (76%) and also glucose level (67%) and cholesterol level (63%), blood count (54%), blood pressure (66%) were improved after bariatric surgery. Over 30% of the respondents consumed a milk once a day (30%) and dairy products, e.g. kefir, buttermilk, yoghurt (36%) and several times a week - cheese (31%) and cottage cheese (37%) or poultry meat and eggs (45%). A whole grain bread was eaten a once a day - 28% but a several times a week a whole grain pasta, brown rice (34%) and coarse grain groats (25%). Fish (37%) and legumes (24%) were in dishes once a week. The vegetables (several times a day - 61%) were consumed more often than fruit (once a day - 58%).

Conclusions: Health and nutritional quality improved after bariatric surgery. Nutritional quality and their changes were similar to rational nutrition of people while maintaining normal body weight.

Keywords: Bariatric surgery, nutrition after bariatric surgery, eating habits, treatment of obesity

Dietary habits of High School Students in Tychy and the risk of orthorexia

Karolina Kozik[1]

1. Department of Human Nutrition, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Beata Całyniuk

Background: Orthorexia, an obsessive pursuit of consuming only healthy food, has become a subject of interest in the context of eating disorders. Among school-aged youth, the risk of orthorexia may be particularly significant due to the influence of dietary habits on physical and psychological development. Nevertheless, there is a limited amount of research regarding the relationship between dietary habits and the risk of orthorexia among students, especially in the local context.

The aim: The aim of the study was to examine the relationship between the dietary habits of students and the risk of orthorexia.

Materials and methods: The study was conducted using a proprietary, validated questionnaire using the ORTO-15 test in the form of contact during nutrition education at school. The study involved 571 people (338 women, 230 men) aged 14-19. The survey was conducted in February 2024.

Results: Every third person surveyed was at risk of developing orthorexia, more than half of whom were women. More than 70% of the subjects had a normal body weight. On the other hand, one in four people was underweight. Only 6.8% of the respondents were vegetarians, and more than half of them were at risk of orthorexia. Half of the respondents ate 4-5 meals a day. Only half of the respondents ate breakfast every day. Almost half of the respondents drank 1.5-2 liters of water a day, and one in five participants drank 1 liter. Almost half of the people who drank more than 3 liters of water a day were at risk of orthorexia. More than 80% of people who never consumed bars, gummies or candies were at risk of orthorexia. Similar results were obtained for cookies, cakes, doughnuts, pizza, kebabs, burgers and ice cream.

Conclusions: The dietary habits of adolescents partially met the recommendations for healthy eating. Individuals completely excluding processed products from their diet were more likely to be at risk of orthorexia. There is a need to increase awareness of eating disorders among adolescents.

Keywords: orthorexia, high school students, dietary habits, ORTO-15

Food choices of ice cream parlor and cafe customers

Antonina Szczech[1]

1. Department of Human Nutrition, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Beata Całyniuk

Background: Ice cream has been incredibly popular for years as a favourite sweet all over the world. They are the perfect basis for creating an unforgetable dessert, especially in combination with selected additions such as whipped cream, sprinkles or icing. It is the previously mentioned additivies that trigger the taste sensations, but also determine the energy value of the dessert.

The aim: The aim of the study was to assess the food choices of ice cream additives depending on gender and age among guests of an ice cream parlor and cafe.

Materials and methods: The study was conducted among guests of the Grycan ice cream parlor and cafe, located in one of the shopping mall in Silesia. The study was conducted in November-December 2023 among 132 clients, including 90 adults (62 women, 28 men) and 42 children (24 girls and 18 boys).

Results: The most frequently chosen addition among adults was whipped cream (85 times), and was especially popular among women (54). The most common choice among children was colorful sprinkles. It was chosen by 26 girls nd 7 boys. However in the adult group, the sprinkles that was chosen most often, especially in combination with whipped cream was nut-chocolate sprinkles (45 times). The third most popular addition were icing chosen in order from the most to the least chosen: chocolate (13), toffee (7), strawberry (5), raspberry (3), salted carmel (0).

Conclusions: The group that used the analyzed ice cream additives were women and girls. Men as well as boys chose ice cream without additives.

Keywords: ice cream, dessert, sweets

Survey on the intake of products as a source of protein by firefighters.

Julia Struska[1]

1. Dział Żywienia Człowieka, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr. n. med. Beata Całyniuk

Background: Protein is an important nutrient for people who are concerned about their physical activity; firefighters, whose work requires good physical fitness and strength, can be included in such a group. Protein is involved in post-exercise recovery and allows adaptation to exercise.

The aim: The aim of this study is to assess the frequency of consumption of protein-rich products in a group of professional firefighters.

Materials and methods: A web-based, self-administered questionnaire containing 16 closed questions to which a link was posted in a closed group of students of the Fire Academy was conducted in a group of professional firefighters. A total of 55 participants (49 men and 6 women) took part in the survey.

Results: The most frequently consumed product by firefighters was poultry meat. When asked about the consumption of pulses, respondents mostly answered that these products were occasionally found in their diet. The product that a large majority, 66.1%, declared that they do not consume is tofu.

Conclusions: The dietary sources of protein in the diets of the firefighters surveyed are mainly from the animal world. Increasing firefighters' knowledge of protein-rich products other than meat and dairy is important because it can enrich and diversify their diets.

Keywords: firefighter, protein, diet

Nutritional Facts and Myths

Wiktoria Ficoń[1], Katarzyna Ratuszny[1]

1. Department of Human Nutrition, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Beata Całyniuk

Background: Nutrition is an extremely important aspect of human life, and proper eating habits have an impact on health and well-being. Unfortunately, there is a lot of misinformation about nutrition circulating on the Internet and other media, which can lead to wrong dietary choices and negative health consequences.

The aim: The aim of this paper is to assess the knowledge of nutritional facts and myths in two age groups.

Materials and methods: Respondents' responses were collected via Google Forms available online. The data collected were classified into two age groups: 15-25 years (N=141) and 45-55 years (N=145). The questionnaire contained 13 questions with two answers each: true, false.

Results: People in the younger age group answered correctly to the nutritional myth "During pregnancy a glass of red wine is advisable" in a higher percentage by 18. 9% compared to the older group and people who answered incorrectly in this age group accounted for only 22. 2% compared to the older group in which people answered incorrectly as much as 41. 1%. With the fact "Dark bread is a better choice than light bread" in both groups the correct answer prevailed, 74. 8% in the younger group and 80. 9% in the older group. People in the younger age group answered correctly to the nutritional myth "You can't eat after 6 pm" in a higher percentage by 27. 4% compared to the older group. In the younger group, 77% of people answered correctly and in the older group only 49. 6%. People in the older age group answered correctly to the nutritional fact "Red wine supports heartbeat" in a higher percentage by 11. 2% in compared to the younger group. In the older group, 90 people answered correctly.

Conclusions: People in the younger age group had higher knowledge of nutritional facts and myths than people aged 45-55. You should pay attention to the source of information on nutrition and choose those that are based on sound scientific research. It is also important to follow a healthy and balanced diet adapted to the individual needs of the body.

Keywords: nutrition, myths, facts, health, diet, scientific research, nutritional education

Dietary Habits among Medical Students during Post-Covid-19: A Cross-sectional Study

Nnaemeka Emmanuel Mgbedo[1], Ekaterine Cherkezishvili[1]

1. Medicine, Medicine, University of Georgia, Tbilisi

Work's tutor: Ekaterine Cherkezishvili (MD, MPH)

Background: Studies have shown a link between eating habits and academic outcomes among undergraduate students.

The aim: This study aims to assess the eating habits among medical students at the University of Georgia after covid-19 pandemic.

Materials and methods: This cross-sectional study was conducted among medical students at the University of Georgia, which received 368 responses. The questionnaire was developed based on Healthy Eating Assessment (HEA). The survey was shared among undergraduate students through the university intranet in April 2023, after the World Health Organization (WHO) declared an end to COVID-19. The data was transferred from a Microsoft Excel sheet to Statistical Package for the Social Sciences (SPSS) version 26.0 software (SPSS Inc., Chicago, IL, USA) where it was analyzed.

Results: 64.9% of female students with a mean age of 20.8 (SD$\bar{I}$2.6) participated in this study. 38.6% were in the second year as almost all participants reported that they were in Georgia. 23.1% of students prefer to consume alcohol daily and 16.8% do not smoke cigarettes. 41.3% of students reported that they had been previously infected by Covid infection. 40.5% were completely vaccinated with Covid19 vaccination. 32.9% of students had high BMI while 7.6% were underweight. In the dietary assessment, 38% needed to improve their diet and 62% had a good evaluation.

Conclusions: Our results have shown that there should be more concern towards medical students regarding their eating habits. This research will serve as a baseline for targeted programs and advocate for increased support for medical students as further studies are recommended.

Keywords: Diet, Medical students, Health, Undergraduate

Emotional regulation and food choices in different phases of the menstrual cycle - a pilot study

Magdalena Kurpanik[1]

1. Department of Epidemiology, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Karolina Krupa-Kotara

Background: The menstrual cycle is a fundamental part of women's biological reality, accompanying them for most of their adult lives. The secretion of hormones that occurs during it plays an important role in regulating emotions and food preferences.

The aim: The aim of the study is to assess whether women in phase 2 of their cycle are characterized by worse moods and are more prone to overeating attacks.

Materials and methods: A self-administered questionnaire and two standardized questionnaires SREBQ, TFEQ-13 and Mood Rating Scale were used to conduct the study. The exclusion criteria were the declaration of lack of menstrual regularity and the use of cycle-disrupting drugs. Of a total of 85 women, 46 women aged 17-42 were included in the analyses. MS Excel 2019 and Statistica 13.3 were used for the analyses. Based on self-reporting of the length of their monthly cycle, women were classified into 2 phases of the monthly cycle. There were 31(67%) women in the follicular phase and 15(33%) in the luteal phase.

Results: Based on the Mood Rating Scale assessment, it was shown that the majority of women in phase 1 of the cycle were characterized by neutral 12(38%) and negative 10(32%) emotions similarly to those in phase 2. Among the most common reasons for stress among women, the following were declared: work 23(50%), school 26(56%) and excess responsibilities 24(52%) overall. The results were similar in both subgroups. In each phase, women declared that their appetite decreases under stress 26(56%) overall including 10(66%) in phase 2 of the cycle. Analysis of the SREBQ questionnaire showed that the majority of women overall showed average self-reported eating behavior 22(47%) which similarly varies according to the phase of the cycle. The most frequently declared behavior according to the TFEQ-13 was to impose small portions on oneself to have control over one's body weight 19(41%) overall with significantly more often in phase 1 of the cycle 15(48%).

Conclusions: The present study indicates that further research is warranted.

Keywords: menstrual cycle, emotional eating, nutrition, stress

Selected behaviors and food preferences of Glovo app users with consideration of seasonality of food products.

Piotr Badura[1]

1. Department of Human Nutrition, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Beata Całyniuk

Background: During the lockdown period accompanying the COVID-19 pandemic, applications that allow ordering various products and dishes "to the door" became very popular. Despite the lifting of restrictions, the popularity of this service continues to grow, and people are increasingly turning to this method.

The aim: The aim of the study was to characterize people using the GLOVO app in the city of Racibórz, as well as to assess people's propensity to choose seasonal dishes over items available all year round.

Materials and methods: To match customers to specific social groups, information on 200 individual orders was recorded. Deliveries were made over two consecutive weeks, from Thursday to Sunday. Information such as age, height, body type, delivery point, floor, payment method, and distance from the order pick-up point was collected.

Results: Men accounted for 59.5% of GLOVO app users. The most frequent age group among customers was those aged 20-30, who accounted for 34.5% of all orders. In terms of body type, the largest group (68.5%) were characterized by an ectomorphic physique. The most common delivery point was residential blocks (83%), with the first floor (23%) and the third floor (20.5%) being the most popular. Orders from McDonald's restaurants accounted for 39.7% of all orders on Thursday and Friday of the first week, and 23.3% on Saturday and Sunday. After the introduction of Burger Drwal in the second week on Thursday and Friday, orders from McDonald's accounted for 62.5% of the total, and 75.5% on Saturday and Sunday.

Conclusions: The majority of those ordering were men. The most frequent customers were people aged 20-30 residing in multi-family housing estates. The introduction of new items in chain restaurants increased the number of orders.

Keywords: GLOVO, delivery, convenience, food

Changes in eating habits supporting the body weight reduction process in a group of people after discontinuin

Julia Szaniawska[1], Julia Rybacka[1]

1. Department of Metabolic Diseases Prevention, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: Dr Justyna Nowak

Background: Diabetes is a metabolic disease characterized by hyperglycemia caused by disorders in the functioning or secretion of insulin. Pharmacological treatment should be supported by lifestyle changes, including: increasing physical activity and changing the diet, which will ultimately lead to the optimization of blood glucose levels and the reduction or optimization of body weight. GLP-1 analogues are another group of drugs used to normalize glycemia. People using therapy using them experience weight loss, which is particularly beneficial in this group of patients.

The aim: Changes in eating habits supporting the body weight reduction process in a group of people after discontinuing the use of GLP-1 analogues.

Materials and methods: The study was conducted on social media based on a validated, original research questionnaire after obtaining consent to conduct the study. The final study group consisted of 297 people aged 26-83.

Results: The average difference in body weight in the study group, comparing the values before and during therapy with drugs from the GLP-1 analogues group, was 14.3 kg. 71.4% of people declared that their appetite decreased during the treatment, while after the end of the therapy, 35% of the respondents increased their appetite. After completing therapy with GLP-1 analogues, as many as 81.1% of people declared daily consumption of vegetables. The frequency of daily consumption of sugar and sweets decreased to 20.5% of respondents, sweetened drinks decreased to 1.3% of respondents, and none of the respondents declared daily consumption of fast food products.

Conclusions: In the group of people using GLP-1 analogues, positive changes in eating behavior in terms of proper nutrition were found, which favors weight loss in this group of people.

KEYWORDS

Keywords: GLP – 1, diabetes, diet, eating habits

The impact of social media on people with anorexia nervosa and bulimia nervosa

Kaja Żylak[1]

1. Student Scientific Circle Affiliated with the Department of Metabolic Disease Prevention, Faculty of Public Health in Bytom, Medical University of Silesia, Bytom

Work's tutor: dr Justyna Nowak

Background: Mass media's sway on societal values and public opinion is evident. It often promotes restrictive diets and intense exercise, fueling widespread body dissatisfaction, especially among youth, and fostering eating disorders. Those battling these disorders openly share their recovery journey on social media, detailing their daily diet plans, even during hospitalization. This content inadvertently exposes healthy individuals to predisposing factors for eating disorders, while perpetuating a cycle of self-doubt for those actively struggling.

The aim: The aim of this study is to investigate the impact of social media on the treatment course of individuals struggling with anorexia nervosa and bulimia nervosa.

Materials and methods: A 110 women diagnosed with eating disorder (mean age: 17.24; mean BMI: 19.01) participated in this study (72 with anorexia nervosa and 38 with bulimia nervosa). Data was collected over a three-month period using Google Forms.

Results: 82% of respondents actively follow accounts on social media platforms that document their progress in eating disorder treatment. 62% of respondents said they had been exposed to such content prior to the onset of their illness. However, only 30% felt that this contact had been useful. Most admitted that they compared themselves to the people portrayed online, which led to increased pressure. As a result, 27% of respondents experienced binge eating, 38% vomiting, 71% compulsive exercise and 75% dietary restrictions after consuming such content. In addition, almost 30% of respondents admitted to having participated in similar online activities themselves.

Conclusions: 1. Social media accounts that post about eating disorder treatment may inadvertently exacerbate the problems of people with anorexia nervosa and bulimia nervosa. 2. Media-sensitive content has the potential to reinforce symptomatic behaviors such as restrictive eating, purging, excessive exercise, and binge eating by perpetuating harmful comparisons and undermining self-esteem.

Keywords: Eating disorders, anorexia nervosa, bulimia nervosa, virtual reality

Creatine and body composition of people engaging in physical activity

Maciej Mazurewicz[1]

1. Department of Human Nutrition, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Beata Całyniuk

Background: Creatine, known for its influence on muscle energy metabolism, has gained popularity among athletes and physically active people. Research suggests it may improve physical performance and muscle recovery. There are also reports of a beneficial effect on cognitive functions and body composition parameters.

The aim: The aim of the study was to assess the effect of creatine supplementation on human body weight and composition.

Materials and methods: The research group consisted of 4 people (two women, two men), 3 of whom consumed creatine every day, and one (woman) constituted the control group. Participants engaged in moderate-intensity physical activity 3-4 times a week. For the results to be reliable, participants had to eat a balanced diet with a set energy value. An intake of approximately 1,900 calories per day was established for women and 2,700 calories for men. The recommended daily protein intake was approximately 86 grams for women and 109 grams for men. The time between the first and second body composition measurement using the Tanita 980 analyzer was 14 days, and between the second and third - 20 days.

Results: In men, an increase in muscle mass, an increase in total body water content, an increase in body weight were observed, and no significant changes in the value of intracellular water were observed. The above changes were not observed in the woman taking creatine.

Conclusions: The effect of creatine on body composition was reflected in the results only in men; in the case of women using creatine, the effect was negligible.

Keywords: creatine, physical activity, body composition

A disorder or an expression of a child's autonomy? Neophobia and its relation to prefferences and diet

Beata Nowak[1]

1. Department of Human Nutrition, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Karolina Krupa-Kotara

Background: Food neophobia, or fear of new foods, affects many children in early childhood, peaking between the ages of 1 and 2. It is well known that food neophobia is a natural process resulting from evolution, while the factors affecting its exacerbation are not precisely known. The development of food neophobia may be influenced by food preferences, feeding patterns, as well as the environment surrounding the child.

The aim: The study aimed to assess the prevalence of food neophobia in a group of children between the ages of 1 and 6, and to link it to food preferences and feeding patterns. In addition, the study attempted to answer the question of whether neophobic behavior is a sign of a disorder or an expression of the child's autonomy.

Materials and methods: The study used the author's questionnaire and the validated MCH-FS (Montreal Children's Hospital Feeding Scale) and FNS (Food Neophobia Scale) questionnaires. The collected data was collected using Microsoft 365 Excel, and statistical analysis was performed using Statistica 13.0 StatSoft Poland.

Results: The study analyzed the behavior of 345 children between the ages of 1 and 6. The median age of the children studied was 4 years. The risk of food neophobia was observed in 59.1% of the subjects, with children with possible risk being older (Me=4, 3-5) compared to those without risk (Me=3, 2-5).

Conclusions: The results of the study challenged the hypothesis that the turn of the 1st and 2nd year of life, is a period of increased food neophobia. Neophobia was linked to the child's diet. Food preferences play a secondary role since it is largely the parents who influence the child's behavior. in the study group, behaviors suggestive of a disorder prevail, rather than an expression of children's autonomy.

Keywords: food neophobia, feeding difficulties, child feeding patterns, children, parents

Nutrition knowledge in older adults diagnosed with type 2 diabetes

Klaudia Salamon[1], Emilia Górska[1]

1. Department of Internal Medicine and Internal Nursing, Chair of Preventive Nursing, Faculty of Health Sciences, Medical University of Lublin, Student's Scientific Association, Uniwersytet Medyczny w Lublinie

Work's tutor: dr n. med. Iwona Jastrzębska

Background: Diabetes affects more than 440 mln people worldwide, of which one-third are people older than 65 years. It is expected that there will be 578 million people with diabetes in the world in 2030, rising to 700 million in 2045. In Poland it is 2.7 million (9.4%). Type 2 diabetes accounts for about 90% of all diabetes cases. Dietary modification is considered a key component of successful treatment.

The aim: To assess the level of nutritional knowledge of elderly people with type 2 diabetes.

Materials and methods: A diagnostic survey method in the form of a self-administered questionnaire was used to collect the data for the research. The survey was designed using Google Forms. The questionnaire included metrics, diagnosed entity, duration, medications, knowledge of selected food groups and their health effects. Respondents' knowledge was assessed using an academic scale. A score of less than 60% was considered inadequate. Main inclusion criteria were age >55 and diagnosed type 2 diabetes for ≥5 years. A sample of 112 respondents was randomly selected. 72 % of respondents were diagnosed with more than one disease.

Results: In summary, the average test result was 38%, meaning that knowledge is insufficient. The questions on general dietary recommendations had a higher percentage of correct answers (44.3%). In contrast, there was a lower percentage of correct answers (31.7%) to questions about eating habits to control blood sugar, body weight and health problems related to insufficient intake of fruit, vegetables and fibre. Better results were obtained by those living in urban areas, female sex, younger age and higher education.

Conclusions: Respondents diagnosed with TD2 showed significant lack of knowledge about nutrition in this disease disorder. Place of living, gender, age and education level were found to be the main determinants of nutrition knowledge. Lack of sufficient knowledge about nutrition in TD2 can result in a deterioration of the quality of life and health status of with type 2 diabetes patients.

Keywords: nutrition; diabetes type 2; glycemic control; insulin resistance; nutritional knowledge

Eating habits and eating mistakes of dietetics students

Matylda Kosiorz[1, 2], Wiktoria Komisarz[1], Zofia Zdeb[1]

1. Department of Internal Diseases Propaedeutics and Emergency Medicine, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

2. , Medical University of Silesia, Katowice

Work's tutor: Sylwia Dzięgielewska-Gęsiak, MD, PhD

Background: Human nutrition depends on many factors. Among the most important are demographic, social, psychological, economic, and lifestyle factors. In the case of dietetics students, it can also be assumed that the knowledge they acquire during their studies will have a significant impact on their daily dietary choices.

The aim: This study aimed to investigate the dietary behavior of first- and second-year Medical University of Silesia dietetics students and to identify mistakes in their nutrition.

Materials and methods: A self-administered questionnaire containing closed single-choice questions was used for the study. The questionnaire consisted of two parts, the first part included questions on dietary behavior and the second part contained questions on the frequency of consumption of products. Respondents who agreed to be included in the study completed the questionnaire anonymously on paper during class.

Results: Dietetics students declared paying attention to calories: always N=26 (22.6%) and often N=36 (31.3%). Frequent consumption of energy drinks was reported in the study group, 8.7% of the students declared they consume energy drinks once a day (N=10), while 21.7% consumed them several times a week (N=25). The majority of students declared consuming fish only a few times a month N=55 (47.8%). It was observed that 23.5% (N= 27) of respondents reported often worrying about food in the last 3 months, N=28 (24,3%) declared that they sometimes worry about food more than 3 hours a day and N=36 (31,3%) students reported that they often agree that eating only healthy food enhance their value.

Conclusions: Considering first- and second-year undergraduate students, the difference in eating patterns is insignificant. The most frequently observed error is the frequent consumption of energy drinks in both groups and the lower-than-recommended consumption of fish. It is also important to note the prevalence of food worry, which may indicate the risk of orthorexia in this group.

Keywords: dietetic students, eating habits, nutrition

Dietary management in irritable bowel syndrome

Agnieszka Zdeb[1], Tomasz Kania[1], Martyna Bednarczyk[1]

1. Department of Hematology and Cancer Prevention, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n.med. Martyna Bednarczyk

Background: High intensity of stress, improper diet, stimulants and environmental pollution predispose to many diseases, including irritable bowel syndrome, which is the most common reason for visits to doctor's offices. The variety of symptoms and unknown pathogenesis pose challenges for doctors and nutritionists.

The aim: The aim of the study was to examine eating behavior in people diagnosed with irritable bowel syndrome. Assumed that histamine intolerance was most common in people with IBS-D.

Materials and methods: The research material consisted of a group of 110 people, 42 women and 68 men aged 18 to over 55. The research method used in the work is the diagnostic survey method, and the research technique was the author's questionnaire.

Results: In the context of irritable bowel syndrome, the only method of diagnosis was the Rome IV Criteria with the dominant type of diarrhea (81%). The most troublesome symptoms mentioned by the respondents were: abdominal pain (50%), diarrhea (19%) and constipation (11%), which intensified several times a week (64%). Referring to the results in the context of histamine intolerance, 93% of people have been tested in this direction, and the only confirmatory test was the diamine oxidase level from venous blood. Each person used a low-histamine diet as a form of therapy, which was rated as good (40%) and average (40%), with no clear side effects (73%). The dietician (100%) exercised control over the low-histamine diet.

Conclusions: For the vast majority of study participants, the distinction between irritable bowel syndrome as a separate disease entity and irritable bowel syndrome coexisting with histamine intolerance was made, and the test for this purpose was the diamine oxidase enzyme test from venous blood. Among the applied nutritional interventions, the Low Fodmap diet gave the best results. The hypothesis that histamine intolerance is most common in patients with IBS-D was confirmed, and the most frequently used diagnostic method to diagnose irritable bowel syndrome was the Rome IV Criteria.

Keywords: irritable bowel syndrome, histamine intolerance, Low Fodmap diet, probiotics, supplementation

The impact of eating habits and feeding during the ski season of instructors, on health and body function

Zofia Zdeb[1], Matylda Kosiorz[1], Wiktoria Komisarz[1]

1. Department of Internal Diseases Propaedeutics and Emergency Medicine, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: Sylwia Dzięgielewska-Gęsiak, MD, PhD

Background: Alpine skiing has become one of the most popular winter sports for several years. Statistics showed that 29% of Poles declare they can ski. For this reason, the Association of Ski Instructors and Trainers of the Polish Ski Association (SITN PZN), in an effort to meet the needs of skiing fans, trains more and more instructors. Very often it contributes to a destrucitve life-style and thus weakens the body and may lead to malnutrition or dehydration. These effects are not felt immediately, but may contribute to deterioration of health in the long term.

The aim: The aim of this study was to analyse the effects of dietary habits and nutrition during the winter season of alpine ski instructors, on health and body function.

Materials and methods: A survey was conducted among 50 actively training instructors, after the end of the season. Responses were benchmarked on the basis of the collected responses, which were related to diet in the off-season as well as during the season.

Results: The results of the survey suggest that the majority of respondents declare that they have very well or well formed eating habits (31% - very well, 65.5% - well), while the answers given concerning eating behaviour during the season show how the nature of the work influences the abandonment of formed attitudes. Furthermore, in a comparative analysis of the intake of fluids during the season as well as in the off-season, the majority of respondents (41.4%) only consumed 1-1.5l during the season, where in the off-season this answer was selected by only 27.6% of respondents.

Conclusions: Taking into account the answers provided by Ski instructors regarding off-season nutrition they have properly formed eating habits. Nevertheless, due to the rush and very little time during breaks at work, well developed eating habits are reduced in winter, especially in terms of hydration. Debatable is it wheather this is the fault of the system or the negligence of the instructors – individual problem?

Keywords: dietary habits, feeding, ski instructor, body function, sports dietetics

A survey of protective effect of melatonin against trifluoperazine-induced genotoxicity in blood lymphocytes

Sahar Behzad[1], Ehsan Zamani[2], Mehdi Evazalipour[1], Masoumeh Rabiee[1]

1. , Medical University of Silesia, Katowice

2. , Pharmacy, Guilan university of medical sciences

Work's tutor: Ehsan Zamani, PharmD, PhD Mehdi Evazalipour PhD

Background: Trifluoperazine is a commonly prescribed antipsychotic for schizophrenia management, but its use has been associated with genotoxicity and oxidative damage, attributed to apoptosis induction and inhibition of DNA repair. In contrast, melatonin, an endogenous hormone with potent antioxidant properties, presents a promising avenue for reducing such adverse effects. This study sets out to investigate the protective role of melatonin against trifluoperazine-induced oxidative genotoxicity.

The aim: The primary objective of this study is to assess the efficacy of melatonin as an antioxidant agent in alleviating oxidative-induced genotoxicity induced by trifluoperazine in human lymphocytes.

Materials and methods: Human lymphocyte samples obtained from a healthy male volunteer were divided into experimental groups, including negative controls, cisplatin controls, trifluoperazine-treated groups at concentrations of 50 µM and 100 µM, and a trifluoperazine-melatonin group at 100 µM. Genotoxicity was evaluated using the micronucleus assay, while lipid peroxidation and glutathione oxidation levels were measured to assess oxidative damage.

Results: Trifluoperazine-exposed groups demonstrated significant increases in micronuclei, glutathione oxidation, and lipid peroxidation compared to negative controls ($P<0.01$). Notably, treatment with melatonin led to a significant reduction in micronuclei, glutathione oxidation, and lipid peroxidation levels in the trifluoperazine-exposed groups ($P<0.05$).

Conclusions: Trifluoperazine induces genotoxicity through oxidative stress mechanisms, while melatonin exhibits an antioxidant effect, mitigating such damage. Co-administration of melatonin with antipsychotics like trifluoperazine holds promise in reducing oxidative-induced genotoxicity, suggesting a potential adjunctive therapeutic approach to reduce adverse effects associated with long-term antipsychotic use in schizophrenia management.

Keywords: Genotoxicity/ Melatonin / Micronucleus /Oxidative stress / Trifluoperazine

Effects of cannabidiol (CBD) on hepatic lipid precursors of inflammation in a rat model of obesity.

Mateusz Zwierz[1], Piotr Franciszek Kurzyna[1]

1. Department of Physiology, Faculty of Medicine with the Division of Dentistry and Division of Medical Education In English, Medical Univeristy of Bialystok, Bialystok, Poland

Work's tutor: PhD Ewa Harasim-Symbor, PhD Karolina Konstantynowicz-Nowicka

Background: HFD often leads to obesity and causes inflammation in the liver, mainly due to excessive activation of the AA cascade. All the pathological processes in the liver are caused by the progressive steatosis of the liver that occurs with the development of inflammation. Thus, it is crucial to find a therapeutic agent that has anti-inflammatory and antioxidant properties. According to the literature, cannabidiol (CBD), which is the active ingredient in Cannabis sativa L., appears to have such effects.

The aim: This study was aimed to determine whether the administration of CBD in rats with early-stage hepatitis induced by a HFD can inhibit the progression of hepatitis to a state of irreversible fibrosis.

Materials and methods: The present study was conducted on male Wistar rats. Animals were divided into four experimental groups with ten individuals per group. The groups differed in chow composition and cannabidiol administration. To analyze the content of selected liver lipid fractions we performed GLC. Moreover, we calculated the n-3 PUFA pathway and n-6 PUFA pathway activities in the above lipid fractions. We used the Western blot technique to measure the expression of proteins, i.e. COX-1 and COX-2. To assess the levels of cytokines and chemokines we performed the Bio-Plex immunoassay.

Results: In our study, we observed that CBD treatment caused an increase in the activity of n-3 PUFA pathway and a decrease in the activity of n-6 pathway in selected lipid fractions, which was correlated with a decrease in AA content. Furthermore, our findings reveal that treatment with CBD significantly alters the expression of the enzymes that play a role in the metabolism of AA and reduces levels of pro-inflammatory cytokines.

Conclusions: Based on our observations, CBD effectively reduces lipid precursors of inflammation in the liver tissue in a rat model of steatosis induced by HFD. In this way, it protects against the progression of simple steatotic lesions to more advanced changes such as fatty liver hepatitis or irreversible fibrosis.

Keywords: liver, inflammation, cannabidiol, arachidonic acid, high-fat diet, early-stage hepatitis

Small-molecule LDN-0060609 PERK inhibitor in primary open-angle glaucoma treatment

Wiktoria Lisińska[1], Wioletta Rozpędek-Kamińska[1], Grzegorz Galita[1], Natalia Siwecka[1], Ireneusz Majsterek[1]

1. Department of Clinical Chemistry and Biochemistry, Faculty of Medicine, Medical University of Lodz, 90-419 Lodz, Poland

Work's tutor: Wioletta Rozpędek-Kamińska, Ireneusz Majsterek

Background: Glaucoma, 'silent thief of sight', characterized by a progressive neurodegeneration of the optic nerve, is proved to be implicated by dysregulation of UPR pathways within trabecular meshwork cells. The three key transducers of the UPR signaling route are: IRE1, ATF 6 and PERK, which is the first to be active among the three branches. Under normal conditions, BiP keeps all three UPR receptors inactive, whereas ER stress promotes dissociation of the GRP78 proteins from the UPR effectors, resulting in direct activation of the aforementioned transducers. PERK's downstream target, eukaryotic initiation factor 2α (eIF2α), is phosphorylated during ER stress, leading to increased translation of specific proteins such as ATF4.This protein promotes the expression of pro-apoptotic proteins, including CHOP, which is linked to increased expression of pro-apoptotic genes and apoptosis via the activation and mitochondrial translocation of Bax, which elevated level found in the optic nerve axons of absolute glaucoma.

The aim: To assess the effectiveness of small-molecule PERK inhibitor LDN-0060609 in cellular model of glaucoma.

Materials and methods: Our research was conducted on a glaucoma model of human trabecular meshwork (HTM) cells. HTM cells were treated with thapsigargin (Th), as an ER stress inducer. The activity of LDN-0060609 PERK inhibitor was determined by measuring the level of p-eIF2α by Western blot technique.The cytotoxicity of the investigated PERK inhibitor was measured via the XTT colorimetric assay, lactate dehydrogenase assay and cell survival assay.

Results: Obtained results demonstrated that LDN-0060609 PERK inhibitor significantly reduced ER stress-dependent phosphorylation of the eIF2α and increased the HTM cells viability.

Conclusions: LDN-0060609 may provide an innovative, ground-breaking treatment strategy against primary open-angle glaucoma
.

Keywords: glaucoma, PERK inhibitor, UPR signalling, ophthalmology, therapies

The impact of hydrochlorothiazide and UV radiation on redox homeostasis of epidermal melanocytes

Martyna Binko[1], Marta Karkoszka[1]

1. Department of Pharmaceutical Chemistry, Faculty of Pharmaceutical Sciences in Sosnowiec, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. farm. Jakub Rok

Background: Hydrochlorothiazide (HCT) is the firts-line treatment drug for hypertension both in United States and Europe. One of the top 10 causes of death and disease worldwide among patients undergoing pharmacotherapy are adverse drug reactions (ADRs). Clinical manifestation of ADRs are usually connected with skin side effects. The usage of drugs with photosensitizing properties and simultaneous UVA-exposure lead to developing phototoxicity which symptoms resemble sunburn – blistering, itching, and burning. Recently, a significant increase in the number of cases of drug-induced phototoxicity associated with the use of HCT is observed.

The aim: The aim of the study was to assess the phototoxic potential of hydrochlorothiazide with particular reference to its effects on intracellular redox homeostasis.

Materials and methods: The experimental model was epidermal melanocytes of the HEMn-LP cell line. WST-1 colometric assay was performed to assess the numer of metabolically active cells. Intracellular redox homeostasis was assessed by evaluating levels of reactive oxygen species using the H2DCFDA probe, and by imaging cytometer NucleoCounter® NC-3000TM by assessing mitochondrial potential and levels of reduced thiols.

Results: The obtained data indicate that HCT reduces the proliferative potential of melanocytes, and simultaneous exposure of cells for drug and UVA radiation significantly enhance the observed effect in dose-dependent manner. The obtained data showed that exposure of melanocytes to HCT and UVA results in an approx. 100% increase in ROS level relative to the unirradiated sample. Moreover, it was observed that HCT and UVA cause a 50% increase in the percentage of cells with depolarised mitochondrial membranes and a 25% increase in the percentage of cells with oxidised thiols.

Conclusions: Based on the results, it can be concluded that HCT is a phototoxic drug towards melanocytes and causes disruption of intracellular redox homeostasis.

Keywords: hydrochlorothiazide, phototoxicity, redox homeostasis, melanocytes

Betulin derivatives – the assessment of potentialanticanceractivity in a cellularmodel

Dominika Poborca[1], Zuzanna Rzepka[1]

1. Department of Pharmaceutical Chemistry, Faculty of Pharmaceutical Sciences in Sosnowiec, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. farm. Dorota Wrześniok

Background: The most common cancer among women is breast cancer, which is one of the most common causes of death in this population. The most commonly diagnosed subtype of this cancer is luminal breast cancer. Another cancer, the morbidity of which in recent years has increased significantly, is melanoma. There are several types of melanoma depending on its histological, genetic, epidemiological and clinical characteristics. Among the methods of cancer treatment there are four that can be distinguished: surgical treatment, radiotherapy, immunotherapy or chemotherapy. Some naturally occurring compounds, such as betulin, have anti-cancer properties that may have potential therapeutic applications. Betulin is a pentacyclic triterpene compound, but due to poor solubility in water, its potential for use is limited.

The aim: The experimental part of this work was the assessment of the potential antitumor activity of a new betulin derivative – EB171 – in a cellular model.

Materials and methods: The study used amelanotic and melanotic melanoma cell lines (C-32 and COLO 829), luminal breast cancer (MCF-7), triple negative breast cancer (MDA-MB-231), and HDF (human normal fibroblasts). Cell lines were incubated with EB171, at concentrations of 200 μM, 100 μM, 50 μM, 20 μM, 10 μM and 5 μM for 72 hours and then their survival was assessed using the WST-1 assay.

Results: The test compound EB171 is cytotoxic towards all lines tested over the concentration range tested. The most sensitive cells are MCF-7 and COLO 829 cells. For MDA-MB-231 and C32 cell cultures, a statistically significant decrease in viability was observed for EB171 solutions at 50 μM or higher. No significant cytotoxic effect was demonstrated against normal human fibroblasts.

Conclusions: The significant reduction in cancer cell survival and the limited impact on normal fibroblast survival after incubation with the studied derivative suggest that further studies are warranted in order to optimize the chemical structure of betulin.

Keywords: betulin, cytotoxicity, melanoma, cell culture, breast cancer

The influence form of nicotine intake on nicotine absorption expressed by cotinine level in urine.

Michał Kurnik[1], Weronika Grzyb[1], Natalia Kaczmarczyk[1]

1. Department of Internal Medicine and Clinical Pharmacology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Grzegorz Machnik

Background: Tobacco heaters are one of the most popular nicotine form besides traditional cigarettes and e-cigarettes. Heaters are characterized by lower level of tarry substances than those in traditional cigarettes while the level of nicotine is similar.

The aim: Our study aims to evaluate whether the inhaled form of nicotine, i.e. traditional cigarettes and tobacco heaters is important for its digestibility.

Materials and methods: To study have qualified six traditional cigarettes smokers and five users of tobacco heaters have been qualified into this study. The participants completed a questionnaire regarding their well-being as well as the brand and quantity of cigarettes or tobacco heater inserts smoked. Based on this data, a daily doses of nicotine intake were calculated. Then, a morning-collected urine sample was tested for cotinine content. High-performance liquid chromatography (HPLC) technique was used to examine the samples. The samples were introduced into HPLC and subjected to measurements at a wavelength of 255nm. The areas under the peaks corresponding to cotinine and those for internal standards (IS) were collected, then the cotinin-to-IS ratio was calculated and compared with the amount of nicotine declared by a given participant.

Results: In both groups the IS-to-cotinine ratio decreases along with the increasing amount of the consumed nicotine. Although the results in both groups are similar, the difference for higher levels of nicotine is more visible in the traditional cigarettes group. The IS-to-cotinine ratio is maintained at a high level in the compared groups below the value of 5 mg of nicotine.

Conclusions: The results suggest greater nicotine absorption for traditional cigarettes. The spike of the difference observed above 5 mg of cotinine may results from more frequent usage of nicotine rather than the dosage alone. Nevertheless the small size of the studied groups needs to be also taken into consideration. Therefore, the survey ought to be conducted further, on bigger research sample.

Keywords: HPLC, COTININE, NICOTINE METABOLISM, TOBACCO HEATER, CIGARETTE

Immunogenicity of monoclonal antibodies - a real threat for developability of monoclonal antibodies?

Igor Jaszczyszyn[1, 2], Weronika Bielska[3, 2]

1. , Medical University of Warsaw

2. , NaturalAntibody, Szczecin, Poland

3. , Medical University of Łódź

Work's tutor: Konrad Krawczyk, Paweł Dudzic

Background: Monoclonal antibodies (mAbs) represent the most substantial category of biological therapeutics, with over 100 molecules receiving approval. The market for mAbs is on a swift upward trajectory, anticipated to hit around $300 billion by 2025. One of the key developability feature of mAbs is immunogenicity, which will always remain for some of mAbs, even after humanisation process. Nevertheless, the complete molecular mechanism and predisposing factors of immunogenicity have not been vastly studied yet.

The aim: We wanted to find and define prognostic factors of higher immunogenicity (defined as the percentage of ADA (anti-drug antibodies) formation based on treated patient population and metadata associated with it), to later improve both clinical and computational prediction models.

Materials and methods: In our study we collected data from treated patients and metadata associated with it for all of available mAbs. Immunogenicity, route of administration (RA) and underlying conditions which were hypothesised to have the highest impact on immunogenicity development, were only available for 525 mAbs of the 954 developed worldwide.

Results: Average ADA formation stratified by the disease and RA: Cancer (IV)=11,46, (SC)=16,57; Autoimmune (IV)=10,57, (SC)=7,54; Allergic (IV)=5, (SC)=8,23. However, some antibodies e.g. suciraslimab, which was tested in clinical trials both for NHLs and SLE showed ADA formation equal to 0% for NHLs and 36.36% for SLE. This proves that state of the immune system can play a vital role in the ADA formation.

Conclusions: We hypothesised that ADA formation can be associated with the reactivity of the immune systems because mAbs can act as CD4+ helper T cell epitopes. That is why we tried to connect the ADA formation with immune system over-activation (such as allergies, autoimmune diseases) as well as states with immune system deficiencies (cancer, infections). Our data do not support this hypothesis, that is why we still need to perform further analysis to fully understand immunogenicity of mAbs.

Keywords: monoclonal antibodies, immunogenicity, drugs developability, biological therapeutics

Assessment of treatment methods for femoral neck fractures at the Department of Orthopaedics of SUM Katowice.

Bartosz Pomianowski[1, 2], Leon Smółka[1, 2], Miłosz Strugała[1], Radosław Karaś[2], Karolina Blady[3]

1. Department of Orthopaedics and Traumatology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

2. Department of Anatomy, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

3. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia in Katowice

Work's tutor: lek. med. Agnieszka Woźniak

Background: Femoral neck fractures, affecting primarily the elderly and causing significant hospitalizations globally, necessitate effective therapeutic interventions. With up to 2 million cases annually, strategies like surgery and mobilization aim to mitigate complications. As populations age, optimizing treatment modalities becomes crucial to enhance patient outcomes and alleviate the strain on healthcare systems.

The aim: The aim of this study was to conduct an epidemiological analysis of patients at the Department of Orthopedics and Traumatology of the Locomotor System of the Upper Silesian Medical Centre named after Prof. Leszek Giec in Katowice - Ochojec, who suffered from femoral neck fractures, and then to create a patient profile. Consequently, this may positively affect the quality of subsequent hospitalizations in individuals with the same disease entity.

Materials and methods: Data from over 150 cases from 2021-2023 were divided according to the Pauwels and Garden classifications, average age of men and women, time from injury to surgery, side of the fracture, methods of treating fractures, and type of fracture (high-/low-energy). The results were analyzed and compared with the available literature.

Results: It was observed that the frequency of fractures increases with age, occurs more often in women, more often results from low-energy trauma, and type three occurs more frequently in both the Pauwels and Garden classifications.

Conclusions: The study found a positive correlation between gender and age and the degree in the Pauwels classification, as well as between age and the degree in the Garden scale. It was also considered significant that the youngest age group included patients treated using the method of internal stabilization, which is consistent with the analyzed literature. Understanding the epidemiology of femoral neck fractures can contribute to better adjustment of therapeutic strategies, thereby increasing the efficiency of treatment and improving the clinical outcomes of patients.

Keywords: femoral neck fracture, low-energy, Pauwels, Garden, osteoporosis.

Assessment of pediatric patients with arthrogryposis using the PODCI Scale

Gabriela Kwoka[1], Barbara Kowalska[1], Justyna Wawrzeczko[1]

1. Department of Physiotheraphy, Faculty of Health Sciences, Jagiellonian University Medical College

Work's tutor: dr Alicja Fąfara

Background: Arthrogryposis Multiplex Congenita is a rare congenital disorder, with its full clinical picture evident immediately after birth. Symptoms of arthrogryposis are apparent even in fetal life (fetal akinesia is visible), while after birth, the child exhibits, among other things, symmetric muscle contractures, joint stiffness, and bone-joint deformities

The aim: The aim of the study was to perform a functional assessment of pediatric patients with arthrogryposis using the Polish-validated Pediatric Outcome Data Collection Instrument (PODCI), completed by parents. The use of this tool allowed for describing patients in terms of gross motor function, fine motor function, self-care, and quality of life

Materials and methods: The study included 50 pediatric patients treated for arthrogryposis at the University Children's Hospital in Krakow. A standardized and Polish-validated version of the Pediatric Outcome Data Collection Instrument was used for functional assessment and quality of life evaluation, intended to be completed by parents. Depending on the child's age, a scale designed for the age range of 2-10 years old or 11-18 years old was utilized

Results: Fifty-two children with arthrogryposis, aged 3 to 18 years, were examined in terms of 5 aspects: Upper Extremity, Transfer & Basic Mobility, Sport & Physical Functioning, Pain & Comfort Scale, Happiness Scale. Based on this, the Global Functioning index was calculated. A linear relationship at a moderate level was found between the pain and global functioning. Regarding the impact of the upper extremity, transfer and sport domains on happiness, correlations were found at the levels of 0.32, 0.13, and 0.28 respectively

Conclusions: Of all domains, pain has the greatest impact on Global Functioning. The Sport and Transfer domains don't significantly affect the sense of happiness – this is explained by the primary compensations that children develop. The domain that correlates most strongly with happiness is Upper Extremity; therefore, hand therapy should be given high priority

Keywords: Pediatrics, Arthrogryposis, Happiness, Quality of Life, Upper Extremity, Orthopaedics

The influence of hamstring muscle stiffness on the control of pelvic position in a group of children from the Silesian agglomeration

Krzysztof Świątek[1], Agata Drzazga[1], Ilona Domagalska[1], Roksana Cieślik[1]

1. Department of Rehabilitation, Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. o kult. fiz. Bartosz Wnuk, mgr Wojciech Kroczek, mgr Edyta Kroczek

Background: The appropriate length and tension of the hamstring muscles determine the proper function and biomechanics of the knee and hip joints as well as the lumbo-pelvic rhythm. The flexibility of these muscles varies individually and depends on many factors, including on gender, physical activity or lifestyle.

The aim: The aim of the study was to determine the influence of hamstring muscle stiffness on the control of pelvic position in a group of children from the Silesian agglomeration depending on gender.

Materials and methods: A retrospective study as part of the foot examination program for children and adolescents of the National Health Fund was conducted on a group of 294 people, including 137 women and 157 men. The average age of women was 9.9±2.69 and of men 9.61±3.0. The patients came from the Silesian agglomeration. Tests were carried out to assess pelvic control, complement angle for the right and left lower limb and a toes-to-the-floor test. Calculations were made using the Statistica StatSoft S.A. program for the assumed significance level of $\alpha = 0.05$. The normality of the distribution of variables was examined using the Shapiro-Wilk test. In order to verify the hypothesis regarding differences between women and men, the parametric Student's t-test for independent variables and the non-parametric Mann-Whitney U test were used.

Results: The analysis of the results indicates that women have a better pelvic angle than men, women obtained better results in the toes-to-floor test compared to men, and in the group of women better stretching of the hamstring muscle can be observed in both the right and left lower limb.

Conclusions: Less stiffness in women's hamstring muscles may ensures better control of the pelvic position.

Keywords: hamstring muscle stiffness, pelvic position control, complement angle, children of the Silesian agglomeration

Abstract Assessment of Sagittal Spinal Curvatures under Isometric Tension Depending on Gender in Children

Justyna Żurek[1], Michał Nowak[1], Oskar Stana[1], Paweł Rekus[1], Alicja Bortel[1]Emilia Borkowska[1]

1. Department of Rehabilitation, Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr. n. o. kult. fiz. Bartosz Wnuk

Background: The Matthias test (mMt) is a clinical test that examines the endurance of the postural muscles of the trunk and back, which determines the ability to maintain proper posture.

The aim: The study assessed the value of lordosis and kyphosis during a relaxed position and while performing the Matthias test (mMt).

Materials and methods: A total of 71 subjects (37 females and 34 males) participated in the retrospective study as part of the National Health Fund's Child and Adolescent Foot Study Program. Using a light-optical scanning method based on VRS video stereography, kyphosis and lordosis were assessed in the free position and in the Matthias (mMt) test. The Clarke's angle of the participants' feet was also measured. Calculations were performed using the Statistica software by StatSoft S.A for an assumed significance level of α=0.05. The Shapiro-Wilk test was used to examine the normality of the variable distribution. To verify the hypothesis regarding differences between females and males, the parametric t-Student test for independent variables and the non-parametric Mann-Whitney U test were used.

Results: There is no statistically significant correlation between gender in the observation of the kyphosis angle (p=0.225) and lordosis (p=0.427) in a relaxed position. There is no statistically significant dependence between gender in the observation of the kyphosis angle (p=0.295) and lordosis (p=0.149) during the Matthias test. The values obtained for females and males in the analysis of Clarke's angle of the right foot (p=0.8000) and left foot (p=0.325) do not differ from each other.

Conclusions: The statistical study showed no significant differences between males and females when analyzing the kyphosis and lordosis angles in a relaxed position, and the kyphosis and lordosis angles according to Matthias. This indicates a similar endurance of postural muscles.

Keywords: Matthias test (mMt), Lordosis, Kyphosis, Posture, VRS video stereography, t-Student test

Assessment of Flatfoot Prevalence by Gender in a Cohort of Children from the Silesian Agglomeration

Monika Pizun[1], Marianna Strojna[1], Kornelia Korzan[1], Anna Cabaj[1], Aleksandra Danecka[1]

1. Department of Rehabilitation, Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Dr n. o kult. fiz. Bartosz Wnuk, mgr. Wojciech Kroczek, mgr. Edyta Kroczek

Background: Flatfoot is a common issue among children that may have implications for the development of other postural defects due to changes in body biomechanics. Understanding gender differences can aid in the selection of more effective therapeutic strategies or preventive measures.

The aim: The aim of the study was to assess gender differences in the prevalence of flatfoot among children from the Silesian agglomeration.

Materials and methods: A retrospective study was conducted as part of a pilot program for the examination of children and adolescents' feet by the National Health Fund on a group of 196 children from the Silesian agglomeration. The average age of females was 9.8±2.7 years (number of individuals: 92), and males 9.7±3.0 years (number of individuals: 104). Additionally, the percentage of genu valgum (27.7% in females, 26.9% in males), hindfoot valgus (58% in females, 56.4% in males), and transverse flatfoot (37.7% in females, 43.5% in males) were considered among the subjects. The Statistica software by StatSoft S.A was used for data analysis. The established significance level was $\alpha=0.05$. The normality of variable distribution was tested using the Shapiro-Wilk test. Hypothesis verification regarding gender differences was conducted using the independent t-test and the Mann-Whitney U test.

Results: Statistical analysis did not reveal significant gender differences in the prevalence of flatfoot among the children of the Silesian agglomeration. Both females and males exhibited similar Clark's angle values for the left ($p=0.435$) and right foot ($p=0.681$). The calculated median value indicates that both females and males typically have a normal foot arch. Furthermore, considering other parameters such as genu valgum, hindfoot valgus, and transverse flatfoot, no significant gender differences were observed.

Conclusions: In the group of children from the Silesian agglomeration, the occurrence of flatfoot is not correlated with gender.

Keywords: flatfoot, children, Silesian Agglomeration, pilot program.

Reaction time – is it a skill that can be trained?

Ewa Filiczak[1], Julia Fick[1]

1. , Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. nauk o zdrowiu Andrzej Knapik

Background: Reaction time is an important aspect of human functioning, which largely affects security. Many sports based on this element, often decides about winning or losing. However, it isn't known whether reaction time is a constant feature of individuals or whether it changes during the training process.

The aim: The aim of the study was determining whether table tennis training improves reaction time and whether the variables such as age, gender, playing experience, length and frequency of training units vary the reaction speed player.

Materials and methods: During the study 100 people were tested: 34 women and 66 men aged 6 to 75 years. All subjects were divided into two groups: study group (n=50: 13 women, 37 men) and control group (n=50: 21 women, 29 men). The study group consisted of people practicing table tennis amateur level, control group - nontraining this sport. Among tennis players data were collected regarding years of training, number of training sessions per week and duration. The research method involved performing two quick reaction measurements: "Ditrich stick grip" - simple reaction and cross-line apparatus - speed choice reaction.

Results: After comparing the results of both groups, it was noticed that in the Ditrich baton grip test the control group achieved better results in both hand. Research also shows that women who didn't train picked up the baton faster with the right hand than women practicing table tennis, among men they turned out to be better also untrained in both hand. They have been observed also the relationships between players' age, playing experience, training length and their reaction time selection on the cross-brace.

Conclusions: The study showed that athletes training at a level amateur table tennis players don't need above-average reaction times at this level training. Individual predispositions and characteristics of the player are more important. Additionally, you can conclude that the control group isn't overstimulated by the amount of training, which may effect on their results.

Keywords: table tennis, Ditrich baton grip test, cross - line apparatus, speed choice reaction

Quality of Life after total knee replacement surgery.

Jakub Rudzki[1, 2], Łukasz Dylewicz[1, 2], Kacper Solarz[1], Jakub Bętkowski[1]

1. Department of Orthopaedics, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

2. , Medical University of Silesia, Katowice

Work's tutor: lek. Marcin Kostuj

Background: Osteoarthritis is the most common form of arthritis being primarily responsible for the cartilage degeneration within the joints affecting around 500 million people all over the world. Numerous scientific data indicates the surgical treatment of knee osteoarthritis by TKA has an objectively good outcome with positive prognosis and sustained clinical results in over 95% of the patients after 10 years after the procedure.

The aim: This study aims to assess QoL, functional status, and associated factors before and after TKR, consequently, measuring the clinical effectiveness or outcome of the TKR in order to improve current clinical practice and to draw more attention to the issues described above.

Materials and methods: The study consists of a group of patients over 18 years of age who underwent primary knee replacement surgery, between 10.2022 and 03.2023, at the St Barbara Regional Specialist Hospital No. 5 - Trauma Centre, Sosnowiec. Patient selection was performed by retrospective analysis of medical records of hospitalised patients. The Oxford Knee Score (OKS) scale was used to assess the patient's condition. The study was conducted using Computer-Assisted Telephone Interviewing (CATI). The final element of the telephone interview was the presentation of the OKS scale to the patient to determine complaints in the pre-operative period and also six (6-12) months after surgery.

Results: Our investigation revealed a notable improvement in the lives of patients who underwent TKR surgery. The most significant improvement was observed in pain perception, including nighttime pain.

Conclusions: This study validates the effectiveness and low likelihood of side effects associated with Total Knee Arthroplasty (TKA). Following successful TKA procedures, we observed a substantial improvement in the quality of life for patients across various dimensions, as assessed by the Oxford Knee Score (OKS). Notably, a positive outcome was noted in 100% of our patients.

Keywords: Osteoarthritis, orthopedics, total knee replacement, quality of life

Quality of Life after Total Hip Arthroplasty.

Kacper Solarz[1], Jakub Rudzki[1], Łukasz Dylewicz[1], Jakub Bętkowski[1]

1. Department of Orthopaedics, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: lek. Marcin Kostuj

Background: Total Hip Arthroplasty (THA) is a surgical procedure that has revolutionised the treatment of hip joint diseases, such as osteoarthritis (OA), avascular necrosis, and hip fractures, offering significant relief from pain and improved mobility for millions of individuals worldwide. Between 2000 and 2019, the estimated annual volume of THA increased by 177%, reflecting the growing importance of this procedure in healthcare.

The aim: The aim of this study was to compare patients' quality of life (QoL) before and after the Hip arthroplasty using the Oxford Hip Score (OHS) which is a patient-reported outcome measure (PROM).

Materials and methods: This was a retrospective single – centre study. A total of 100 patients over the age of 18 who had undergone THA at the Clinical Department of Orthopedic Trauma, Oncologic, and Reconstructive Surgery at Provincial Specialist Hospital No. 5 named after St. Barbara in Sosnowiec participated in the study. The final component of the telephone interview involved presenting the Oxford Hip Score (OHS) to the patient to assess symptoms in the preoperative period and in the last 4 weeks at the time of the interview.

Results: The objective of this study was to demonstrate the influence of Total Hip Replacement on individuals' lives. Our findings revealed a mean improvement of 25.36 points in OHS. (SD 7.89, $p < 0.01$).

Conclusions: This study validates the effectiveness and low likelihood of occurrence of side effects of THA (Total Hip Arthroplasty). We observed that after a successful surgical treatment (THA), the quality of life of patients improved significantly in various aspects of life according to Oxford Hip Score (OHS). In this study we noticed a positive outcome in 100% of our patients.

Keywords: Orthopedics, THA, OKS, quality of life

Back pain and physical activity level in physiotherapy students

Ewelina Roszkowska[1]

1. Department of Kinesitherapy and Special Methods, Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. i n. o zdr. Magdalena Dąbrowska-Galas, dr n. o zdr. Magdalena Rutkowska

Background: Back pain is a very common disorder even among young people. Physiotherapy students are particularly vulnerable to back pain due to the overloads and their posture during classes or activities of daily living.

The aim: The aim of the study was to assess physical activity level of students of the Medical University of Silesia and subjective assessment of the occurrence of back pain.

Materials and methods: The study included 54 physiotherapy students of the Medical University of Silesia. Students completed a questionnaire made in Google forms. The following instruments: author's survey, Global Physical Activity Questionnaire (GPAQ) and Visual Analogue Scale. The Shapiro-Wilk test, Spearman's rank correlation and Kruskal-Wallis test was used to statistical analysis. A significance value of $p<0.05$ was considered statistically significant.

Results: 54 students (100%) experienced back pain at least once in their lifetime. 11,1% (N=6) of respondents feel back pain every day and 18,5% (N=10) feel it several times a week. Standing and sitting turned out to be the most likely positions to cause pain. The average severity of back pain was 4.1 on a scale of 0-10. 11,1% (N=6) respondents do not meet the recommendations for physical activity of WHO. The average MET-min/week for leisure-time physical activity was 1823.81Ī2426.92 among women and 2870Ī2849.13 among men. There was no significant correlation between free-time physical activity (MET-min/week) and the degree of pain severity (p=0.190591). There was no significant correlation between time spent in a sitting position during the day and spine pain (p=0.662). No difference was observed among the frequency of back pain and physical activity level during free time (p=0.771). The average severity of back pain was 4.1 on a scale of 0-10 in both women and men

Conclusions: The level of physical activity among physiotherapy students is satisfactory. Time spent in a sitting position or physical activity in free time does not affect the severity of pain.

Keywords: physiotherapy students, back pain, physical activity

The intensity of fatigue in Parkinson's disease patients and selected factors influencing its level

Julia Gawron[1], Martin Helisz[1]

1. Department of Physiotherapy, Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. nauk o zdrowiu Andrzej Knapik

Background: Parkinson's disease is a neurodegenerative disorder. Motor symptoms include tremors, muscle stiffness, slowed movement, gait and postural reflex impairment, as well as non-motor symptoms, including fatigue. The aim of the study was to examine the severity of fatigue in Parkinson's disease patients and to identify selected factors influencing its level. We aimed to gain insight into the scope and depth of fatigue experienced by Parkinson's disease patients and to explore potential factors associated with its severity.

The aim: Determination of fatigue intensity in individuals with Parkinson's disease and selected factors influencing its level.

Materials and methods: Forty-four individuals were examined: 18 females (40.9%) and 26 males (59.1%) aged 35-83 years. The selection for the study was purposive – individuals with diagnosed Parkinson's disease. The research tool was a questionnaire. Data regarding gender, age, duration of the disease – from diagnosis, disease severity according to the Hoehn-Yahr scale (H&Y) were collected. Participants were asked to self-assess their functional status on a scale from 1-5 (1-disabled, requires full care; 5 – fully functional). The level of fatigue was determined using The Fatigue Severity Scale (FSS) – from 9 to 63 points, while the level of depression was assessed using the Beck Depression Scale.

Results: Median FSS: 44 points. Comparison of gender showed no differences in fatigue ($p>0.05$). No correlation was found between age ($r=0.220$), duration of the disease ($r=0.067$), functional status ($r=0.241$), and fatigue. The disease severity did not differentiate FSS: $p>0.05$, nor did the severity of depression: $p>0.05$.

Conclusions: The participants exhibited a fairly high level of fatigue. Gender, age, duration of the disease, disease severity, and severity of depression were not related to its intensity. The significance of fatigue warrants further research.

Keywords: fatigue, Parkinson's disease, functional status, depression

Evaluation of differences in angular values of spinal curvatures in children group of Silesian agglomeration

Marianna Strojna[1], Monika Pizun[1], Kornelia Korzan[1]

1. Department of Rehabilitation, Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. o kult. fiz. Bartosz Wnuk, mgr Wojciech Kroczek, mgr Edyta Kroczek

Background: Childhood is a key period of intensive growth and development of the spine, and its normal structure and function are important for overall health and quality of life. In the context of the Silesian agglomeration, characterized by unique environmental and social factors the study of gender differences in spinal curvature becomes an important scientific and practical issue.

The aim: The purpose of this study was to evaluate gender differences in angular values of thoracic kyphosis and lumbar lordosis in a group of children of the Silesian agglomeration.

Materials and methods: A retrospective study within the framework of the pilot program for the examination of the feet of children and adolescents of the National Health Fund was conducted in a group of 416 children from the Silesian agglomeration. 396 subjects, 196 females (average age 12 years) and 200 males (average age 10 years), were finally qualified for the study. Among the subjects. Statistica StartSoft S.A. program was used to analyze the data. The assumed level of significance was $\alpha=0.05$. The normality of the distribution of the variables was tested using the Shapiro-Wilk test. Hypothesis verification, to compare two independent variables, was performed using the non-parametric Mann-Whitney U test.

Results: Statistical analysis showed that in the group of children of the Silesian agglomeration, there was no significant statistical relationship between the gender of the respondents and the angle of thoracic kyphosis ($p=0.97$) and angle of lumbar lordosis free position ($p=0.68$). The Adams test was performed in the standing and sitting positions. The values obtained for men and women did not differ. The angle of measurement of trunk rotation (ATR) is the same in the studied groups. There was no significant statistical relationship between gender and ATR.

Conclusions: In a group of children of the Silesian agglomeration, gender does not determine the values of angular curvatures of the spine.

Keywords: physiotherapy, pediatric, postural defects, pilot program

Clinical and Laboratory Prognostic Factors in Patients with Mantle Cell Lymphoma - a single center analysis

Jakub Kamiński[1], Sabina Kadłubek[1]

1. Department of Hematology and Bone Marrow Transplantation, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Karolina Chromik

Background: Mantle cell lymphoma (MCL) is a rare subtype of aggressive B-cell lymphoma with an uncertain prognosis. Despite recent therapeutic advances, it remains a disease with a high tendency to relapse, usually diagnosed at an advanced clinical stage. Autologous hematopoietic stem cell transplantation (AHSCT) is the standard of care for young patients with good overall health who have responded well to first-line therapy.

The aim: The purpose of this analysis is to determine the association between selected laboratory and clinical parameters and survival of MCL patients undergoing AHSCT.

Materials and methods: A group of 103 MCL patients treated at the Department of Hematology and Bone Marrow Transplantation, SPSK-M, Katowice, who underwent AHSCT between 2007 and 2021 were retrospectively analyzed.

Results: Nine potential risk factors were analyzed. The analysis showed a statistically significant correlation between 3-year overall survival (OS) and serum lactate dehydrogenase (LDH) activity at the time of diagnosis ($p<0.05$) and the rate of recovery of the white blood cell system, expressed as the day after AHSCT when the white blood cell count exceeded 1,000 per microliter ($p<0.05$). In addition, the analysis showed that patients' 3-year OS correlated with MIPI score ($p<0.05$) and disease remission status before AHSCT ($p<0.05$). Other parameters such as age at diagnosis, gender, ECOG score, Ann Arbor disease stage and platelet regeneration rate after AHSCT were found to be statistically insignificant for patients' 3-year OS.

Conclusions: The results confirm that MIPI at diagnosis, remission status before AHSCT, serum LDH activity at diagnosis and the rate of regeneration of the white blood cell system can be significant prognostic factors in MCL patients undergoing AHSCT.

Keywords: mantle cell lymphoma, prognostic factors, autologous haematopoietic stem cell transplantation

How reliable and safe are AI generated information for Laryngeal Cancer? A comparative analysis of LLMs

Anitta Sisily Joseph[1], Paulina Kacała[1], Katie Vaughan-Lane[1], Deborah Onolememen.[1]

1. ENT Scientific Club, Department of Otolaryngology and Laryngological Oncology, Medicine, Collegium Medicum, Nicolaus Copernicus University in Torun.

Work's tutor: lek. Magdalena Ostrowska, dr hab. Maciej Wróbel, prof. UMK

Background: The internet has become a vast resource for health information, but sifting through it can be challenging. Artificial Intelligence (AI) is emerging as a potential tool to help users navigate this complex landscape and people are increasingly turning to it to gain more knowledge in regards to health information. However, there's worry about the accuracy of online health information, especially for serious illnesses like cancer.

The aim: Laryngeal cancer is a major public health concern, and reliable information is crucial for patients, which is why this study will assess how well three large language models (LLMs) can provide patients with information about the disease.

Materials and methods: We assessed three LLMs (ChatGPT 3.5, ChatGPT 4.0, and Bard) by creating a questionnaire with a total of 36 questions regarding laryngeal cancer. The questionnaire was sectioned into 5 categories, diagnosis, treatment, novelties, controversies, and source of information. The AI generated replies were then evaluated by ENT specialists, junior physicians, and non-medical individuals. Each evaluator assessed responses against safety scores and Global Quality Score (GQS), with model types concealed and question order randomised.

Results: Our analysis revealed ChatGPT 3.5 was the most dependable source of information among the three LLMs. It achieved the highest scores for both safety (average: 2.70) and GQS (average: 3.95). In comparison, ChatGPT 4.0 and Bard received lower ratings in both safety and accuracy. Inter-rater reliability was consistent, with less than 3% discrepancy. However, a small portion of the information generated was deemed less safe, particularly within the novelty section. Interestingly, the length of the response seemed to influence the ratings of non-medical reviewers, with longer responses receiving slightly higher marks.

Conclusions: LLMs could be a valuable tool for patients looking to learn more about laryngeal cancer. ChatGPT 3.5 demonstrated the ability to provide the most reliable and safe information.

Keywords: Artificial Intelligence, ChatGPT, Bard, Laryngeal Cancer, Oncology, Patient Education

Who is the typical colon cancer patient?

Aleksandra Korus[1], Zofia Graca[1], Dariusz Kucias[1], Maria Żak[1]

1. Department of Oncological Surgery, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Michał Nycz

Background: Colon cancer is one of the most prevalent neoplasms in Polish population, ranking third after the lung and breast in women and fourth after prostate gland, lung and skin in men. The most popular surgical intervention is hemicolectomy, Hartmann's procedure or, most commonly, anterior resection - depending on the localisation of the tumour.

The aim: The purpose of the study is to present the profile and characteristics of a typical patient operated on for colon cancer.

Materials and methods: We analysed the basic clinical data of 84 patients operated on for colon cancer. We included patients whose diagnoses were made in the years from 2017 to 2019. Collected data included age, BMI, grading, staging, Astler-Coller classification and the following blood count tests: haemoglobin, white blood count, neutrophils and platelets.

Results: The mean age for the patients at the time of diagnosis was 66Ī0.56 years. Mean BMI in women was calculated at 27.39Ī3.79. More women (n=10) were obese than men (n=7). Overweight men were more common than overweight women (n=19 vs n=16). 4 patients in total (2 men and 2 women) were underweight.
Most (30.23%) cancers were grade III, with the most prevalent staging at T3 (n=47, 54.65%) N0 (n=20, 54.65%), M0 (n=74, 86.04%). The most common Astler-Coller classification was C1 (n=26) followed by B2 (n=25).
54.76% of patients suffered from anaemia (mean haemoglobin was 12.15Ī1.98 g/dl). Leukocytosis was present in 20 patients (23.23%) and leukopenia was diagnosed in 2 patients (2.32%, both female).
Neutrocytosis was observed in 18 patients. None of the patients suffered from neutropenia. Mean platelet count was 316,19Ī129.74(x1000/Ķl)
In some patients, data concerning localisation of the tumor was also available (n=41).

Conclusions: A population most often operated on for colon cancer were women. Most prevalent age was 66 years old, typically overweight with slight anemia. Blood count test results were inconclusive, with the exception of leukocytes, which were elevated in almost one fourth of patients.

Keywords: surgery, colon cancer

Evaluation of multiple models prediciting the result of hybrid imaging in primary hyperparathyroidism

Anna Drynda[1], Karolina Kucharczyk[1]

1. Students' Scientific Group at the Department of Endocrinology, Faculty of Medicine, Jagiellonian University Medical College, Kraków, Poland

Work's tutor: dr n. med. Małgorzata Trofimiuk-Müldner

Background: Given that about 85% of primary hyperparathyroidism (PHP) cases stem from a single parathyroid adenoma, the preferred treatment is parathyroidectomy, preceded by pre-operative imaging. Ultrasound and [99mTc]sestamibi scanning are utilized for adenoma localization, with the latter exhibiting higher sensitivity. However, in some cases, the radiotracer uptake in adenoma tissue is insufficient, leading to negative imaging results.

The aim: To evaluate predictive strategies for radiotracer accumulation in pre-operative 99mTc-sestamibi scintigraphy (99mTc-MIBI SPECT-CT) among primary hyperparathyroidism (PHP) patients to identify individuals with high probability of negative result, with the aim of developing clinical decision-making tools.

Materials and methods: Development and evaluation of logistic regression (LR), classification trees utilizing the classification and regression trees (CART) algorithm, random forest (RF), and boosted trees employing XGBoost (XGB) predictive models. All models were constructed using retrospective clinical data, comprising biochemical parameters, ultrasound measurements, and PHP complcations, obtained from 499 patients diagnosed with primary hyperparathyroidism (PHP) who underwent 99mTc-MIBI SPECT-CT imaging between at the University Hospital in Cracow, Poland.

Results: Patients with positive imaging showed higher concentrations of parathormone (PTH) and calcium (Ca), and lower serum phosphate (Pi) levels. The strongest predictors included serum PTH concentration, maximal lesion diameter, Ca, vitamin D, and Pi levels. Logistic Regression (LR) demonstrated the best out-of-sample performance in terms of specificity (81.3%) and accuracy (69.3%), with a sensitivity of 55.7%. In contrast, Random Forest (RF) exhibited higher sensitivity (62.7%) but slightly lower specificity (74.2%) and accuracy (68.6%).

Conclusions: LR and RF models effectively identify patients at high risk of negative hybrid imaging in PHP, aiding the development of software for the clinical setting.

Keywords: primary hyperparathyroidsm, SPECT-CT, hybrid imaging, parathyroidectomy, machine learning

SLiM CRAB Criteria as Risk Factors for Neuropathy in Bortezomib Therapy - Retrospective Analysis

Daniel Habraszka[1]

1. Department of Hematology and Bone Marrow Transplantation, Faculty of Medical Sciences, Medical University of Silesia

Work's tutor: dr. n. med. Karolina Chromik

Background: Patients with multiple myeloma (MM) who are eligible for autologous haematopoietic cell transplantation are often treated with regimens based on bortezomib (Bor), a proteasome inhibitor with a high risk (30-50%) of causing peripheral neuropathy (PN). SLiM CRAB are signs of organ damage caused by MM and are assessed before treatment.

The aim: The study aimed to assess whether SLiM CRAB criteria are potential risk factors for developing PN in patients receiving Bor as first-line treatment for MM.

Materials and methods: A retrospective analysis of patients treated at the Department of Haematology and Bone Marrow Transplantation in Katowice in 2020 was performed. A total of 59 (36M, 23F) patients were included in the study. Age at diagnosis ranged from 36 to 70 years, with a median age of 63 years. Patients received the following first-line treatment regimens: VTD n=42, VCD n=11, CyBorD n=2, VD n=4. The correlation between each of the SLiM CRAB criteria and the development of PN at any time during the treatment period was evaluated. Criterion M was not evaluated because it requires whole-body MRI, which is not routinely performed. Data analysis was performed using Statistica.

Results: PN eventually developed in 23 (39%) patients (16M, 7F). There was no association between the occurrence of PN at any time during treatment and the presence of criterion S defined as ≥60% plasma cells in the bone marrow (p=0.7), criterion Li defined as free light chain ratio (FLCratio) ≥ 100 (p=0. 4), criterion C - serum calcium concentration >2.75 mmol/l (p=0.5), criterion R - serum creatinine concentration >177 µmol/l (p=0.5), criterion A - hemoglobin less than 10 g/dL or 2 g/dL less than normal (p=0.3) or criterion B - presence of osteolytic bone lesions on radiography (p=0.6).

Conclusions: SliM-CRAB criteria were not statistically significant for the development of peripheral neuropathy in MM treated with Bor.

Keywords: bortezomib, neuropathy, multiple myeloma

Is there a difference between right- and left-sided colon cancers?

Michał Serafin[1], Julia Szostek[1], Magda Mąka[1]

1. Department of Gastrointestinal Surgery, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Dr hab. n. med Beata Jabłońska

Background: This study focuses on the need for a comprehensive understanding of colorectal cancer (CRC), which constitutes 15% of all cancers globally. Recent studies suggest dividing CRC into three groups for clinical management: right colon cancer (RCC), left colon cancer (LCC), and rectal cancer, supported by embryological, histological, and molecular differences.

The aim: The aim of the study is to compare clinicopathological characteristics and surgical outcome of RCC and LCC in 2018-2023.

Materials and methods: A retrospective analysis of 189 patients (103 men, 86 women) undergoing surgery for colon cancer in the Department of Gastrointestinal Surgery between January 2018 and December 2023. The median age of patients was 69 (36-92, IQR 11) years. Data about patients' general characteristics, surgical characteristics, pathological characteristics and long-term outcome were collected.

Results: RCC was observed in 91 (48.15%) , while LCC in 98 (51.85%) patients. Patients with RCC were older than patients with LCC (70 (36-92, IQR 11) vs 68 (38-84, IQR 12.5); p=0.02). Anemia was more often reported in RCC compared to the LCC group (20 (21.74%) vs 6 (6.19%); p=0.002). Mucinous tumors were more often reported in RCC compared to the LCC patients (9 (9.89%) vs 1 (1.02%); p=0.008. The American Joint Committee on Cancer stage was similar between both groups (stage I reported in 33 (36.26%) RCC and in 33 (33.67%) LCC; p=0.25). Complications occurred in 16 (17.58%) RCC patients and 15 (15.31%) LCC patients (p=0.72). In-hospital mortality was 2.20% in the RCC and 2.02% in the LCC group (p=1). Overall one-year survival was 91.57% in RCC and 93.99% in LCC group (p=0.79)

Conclusions: Patients with RCC are older. Anemia is more often the symptom of RCC. Histologically, RCC are more often mucinous tumors than LCC. Nonetheless, the one-year overall survival is similar between both groups.

Keywords: colon cancer, right colon cancer, left colon cancer, surgical treatment

The influence of selected stimulators on leukemic cells from children with acute leukemia

Anna Kozub[1], Rafał Szarek[1], Mikołaj Szczęsny[1]

1. Department of Microbiology and Immunology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. i n. o zdr. Łukasz Sędek, prof. dr hab. n. med. Zenon Czuba

Background: One of the methods of cell activation assessment is measuring the concentrations of secreted proteins upon stimulation with various substances. The experiments on the usage of various cytokines and mitogens in medical diagnostics have developed recently, resulting in new advances and wider cognition of the pathophysiology of the illnesses, including cancer cells.

The aim: The influence of phytohemagglutinin (PHA), phorbol 12-myristate 13-acetate together with ionophore A23187 (PMA+I) and lipopolysaccharide (LPS) on production of cytokines by leukemic blasts of myeloid-, B- and T-cell lymphoid origin was evaluated in the current study.

Materials and methods: The study was conducted on live, non-frozen cultures of leukemic blasts isolated from bone marrow samples of children with recently diagnosed acute myeloid leukemia (AML), B-cell precursor acute lymphoblastic leukemia (BCP-ALL) and T-cell acute lymphoblastic leukemia (T-ALL). Isolated cells were stimulated for 24h in culture with PHA, PMA+I and LPS. The cytokine levels were measured in the culture media with the use of Bio-Plex instrument.

Results: The highest concentrations of GM-CSF and G-CSF were measured in AML cultures after every stimulation. Furthermore, IP-10 (CXCL10) exhibited selective stimulation only by PHA and PMA+I, but not by LPS in all cultures. IL-8 and MIP-1β were significantly induced by all stimulators in BCP-ALL samples. Increased levels of TNF-α were observed in T-ALL samples after stimulation by PMA+I and LPS, but not by PHA. Moreover, IL-4 levels were elevated in AML cultures after stimulation by LPS. No significant changes were observed in IL-6, IL-1β, FGF, VEGF and PDGF levels.

Conclusions: These results exhibit differential patterns of cytokine production depending on the type of stimulator used and cell lineage. This may reflect the involvement of different cellular pathways leading to cell activation. Further investigations on broader study group are necessary to determine the possible mechanisms of action of the studied stimulators.

Keywords: Leukemia, cytokines, mitogens, immunology, children

Assessment of genetic predisposition in patients with neuroendocrine pancreatic tumors

Maciej Bulwa[1]

1. Department of Nuclear Medicine and Endocrine Oncology, Maria Skłodowska-Curie National Research Institute of Oncology, Gliwice Branch

Work's tutor: prof. dr hab. n. med. Barbara Jarząb

Background: Pancreatic neuroendocrine tumours are rare diseases of unknown etiology. However, it is known that they can develop due to a genetic predisposition, for example, as components of neoplasm syndromes, such as multiple endocrine neoplasia syndrome MEN1 or von Hippel-Lindau syndrome (VHL).

The aim: The aim of the study is to analyse how often patients with pancreatic neuroendocrine tumours treated at the National Institute of Oncology, Branch in Gliwice show a genetic predisposition to MEN1 and VHL syndromes and whether this predisposition affects the course of the disease.

Materials and methods: The study included 134 patients who presented with a diagnosis, or suspicion, of pancreatic neuroendocrine tumour between 1994 and 2023. In order to select this group of patients, the records of 200 patients treated at the National Institute of Oncology, Branch in Gliwice, were retrospectively reviewed.

Results: Genetic tests were performed in 114 of them, including MEN1 mutation in 14 cases and VHL mutation in 5 cases.
During my presentation, I will present the types of mutations in both genes and an analysis of the severity of the disease.

Conclusions: The performed analysis clearly indicates that when diagnosing pancreatic neuroendocrine tumours, the possibility of an existing genetic predisposition is insufficiently taken into account. However, according to American Society of Clinical Oncology recommendations, genetic testing for an existing predisposition should always be performed if this predisposition covers 10% of cases or more.

Keywords: pancreatic neuroendocrine tumors, MEN1 syndrome, VHL syndrome

Differentiated thyroid cancer in pregnancy. A retrospective analysis of newly diagnosed patients

Maciej Bulwa[1]

1. Department of Nuclear Medicine and Endocrine Oncology, Maria Skłodowska-Curie National Research Institute of Oncology, Gliwice Branch

Work's tutor: dr hab. n. med. Jolanta Krajewska

Background: Does pregnancy influence the prognosis in cases of well-differentiated thyroid cancer in pregnant women?
So far, mainly retrospective analyses have been performed, which did not show significant differences in overall survival (OS) and progression-free survival (PFS) between the group of patients diagnosed during pregnancy and the group of patients who were not pregnant at the time of diagnosis.

The aim: The aim of this study is to analyse the dynamics of malignant thyroid nodules observed in pregnant women.

Materials and methods: The retrospective analysis included 75 women with an average age of 30.9+4.8 years with thyroid nodules detected during pregnancy, which raise oncological alert.

All patients underwent fine needle aspiration biopsy (FNAB) of suspicious lesions. The FNAB results were analysed according to the Bethesda system for grading thyroid cytology. Patients with a FNAB result of Bethesda V (suspected malignancy) or Bethesda VI (malignant lesion) were qualified for ultrasound observation.
This observation included follow-up ultrasound examination of the neck performed every 2–3 months until surgery. The average follow-up time from diagnosis to surgery or the last follow-up visit was 10.0 months (range, 1.0 to 39.0 months)

Results: Papillary thyroid cancer was diagnosed in 53 patients, while the remaining 22 patients were suspected of having papillary thyroid cancer (Bethesda V). Only 2 patients underwent surgery during pregnancy, while in the case of 65 patients (86.7%) the surgery took place after delivery. The complete results will be presented at the conference.

Conclusions: The watchful waiting strategy is a safe approach for patients diagnosed with papillary thyroid cancer or suspected papillary thyroid cancer during pregnancy.
However, it is important to monitor patients carefully in order to select the optimal moment to perform the surgery.

Keywords: thyroid cancer, pregnancy, thyroid nodules, ultrasonography

Epidemiological and Histopathological Insights into Brain Tumors from Advanced Biopsy Techniques

Igor Andjelić[1], Maciej Laskowski[1], Małgorzata Gola[1]

1. Student Scientific Society, Department of Neurosurgery, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Lek. Piotr Paździora

Background: Brain tumors are complex neoplasms derived from various cell types within the central nervous system and present a significant diagnostic and therapeutic challenge. The World Health Organization (WHO) Classification of Tumors of the Central Nervous System, which has evolved significantly since its first publication in 1979, serves as the cornerstone for categorizing these tumors. This classification system integrates histopathological and molecular characteristics to refine diagnostic accuracy, guide therapeutic decisions, and improve prognostic assessments.

The aim: The primary objective is to scrutinize the histological outcomes of brain biopsies and to dissect the epidemiological aspects such as age distribution, gender, and tumor topography, providing a deeper understanding of tumor histotypes prevalent in a diverse cohort.

Materials and methods: A retrospective cohort study was performed, analyzing 112 patients who underwent brain biopsies, employing the WHO brain tumor classification. The study evaluated the success of diagnostic yields and correlations with clinical outcomes, emphasizing the histopathological and molecular diagnostics.

Results: The patient cohort had an even gender distribution and an average age of 58 years. Most affected brain regions were the deep hemisphere, frontal, and temporal lobes. Common diagnoses included glioblastoma and diffuse large B-cell lymphoma. The study highlighted a high success rate of diagnostic biopsies with minimal complications.

Conclusions: The research aligns with global epidemiological data, enhancing the existing knowledge base on brain tumors' histopathology and epidemiology.

Keywords: Brain Tumors, Neuro-oncology, Epidemiology, Histopathology, WHO,

Elemental analysis of laryngeal cancer tissue using synchrotron beam light. Preliminary report

Antoni Wołoszyn[1], Małgorzata Toroń[1]

1. Department of Laryngology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Dr n. med. Jarosław Paluch

Background: This study investigates the fluctuations in the oxidation state of iron in laryngeal cancer tissue, aiming to correlate them with shifts in chemical composition. Utilizing scanning transmission X-ray microscopy (STXM) and X-ray absorption spectroscopy (XAS), we focus on a detailed examination of areas within cancer cells. Diverse sample preparation methods deepen our understanding of iron ions in tumor biology, potentially contributing to diagnostic progress. Preliminary results from the PEEM (Photoemission Electron Microscopy)/XAS beamline reveal significant differences in iron patterns, highlighting the potential of these techniques.

The aim: The premise of the study was to detect the presence of iron in cancer cells at various oxidation levels (Fe2+, Fe3+), utilizing synchrotron radiation absorption. Methodological objective: develop modifications to sample preparation, applied in classical transmission microscopy, to meet the requirements of this microscopy station and synchrotron spectroscopy.

Materials and methods: We compared the detection of elements in 8 samples of pathological tissue and 4 samples of healthy tissue. The first step involved identifying ions (O2, N2, P, S, Fe) in tumor tissue using XAS spectroscopy, expanding on previous molecular studies of human brain tissues and organ tumors. The second stage focused on individually detecting iron ions in laryngeal cancer tissue using transmission techniques (STXM).

Results: The presence of iron ions in both samples, using XAS and STXM methods, was not stated.

Conclusions: The absence of characteristic iron secondary emissions appears to be a crucial preliminary step in identifying new oncological markers. The potential mechanism of tumor proliferation may be supported by the process of non-oxidative glycolysis. Considering the biochemical Warburg effect, we can perceive analogies leading to our observations.

Keywords: synchrotron beam light, laryngeal cancer, STXM, XAS, iron ions

Association between endometriosis and cocaine- and amphetamine-regulated transcript (CART).

Kaja Tyszkiewicz[1]

1. Department of Histology and Embryology, Medicine, Medical University of Warsaw

Work's tutor: dr hab. Izabela Janiuk

Background: Endometriosis is a chronic inflammatory disease. It is characterized by the presence of endometrial-like tissue outside the uterus, commonly found in the pelvic cavity. This condition can cause significant pain, infertility, and other complications. Cocaine- and amphetamine-regulated transcript (CART) is an eponymous peptide encoded by the CART gene. It is widely distributed in the central nervous system and peripheral tissues, where it exerts diverse pharmacological actions. CART has been implicated in various physiological processes, including appetite regulation, energy homeostasis, stress response, and addiction.

The aim: The pilot study aimed to evaluate the level of cocaine- and amphetamine-regulated transcript (CART) in the blood serum in women with and without endometriosis, as well as to assess its possible correlation with the disease.

Materials and methods: We measured the concentration of CART using an ELISA kit. Our pilot study included five patients with endometriosis and three women without endometriosis (with dermoid or serous cyst), who served as the control group. Statistical analysis, including mean, standard deviation calculations, and Mann Whitney (Wilcoxon) test was performed to compare CART levels between the two groups.

Results: The mean concentration of CART in the control group was 224.5 ng/ml (SD=127.4), while in the endometriosis group, it was 61.4 ng/ml (SD=34.0). Statistical analysis revealed a significant negative correlation between CART levels in patients serum and the presence of endometriosis (p= 0.006787).

Conclusions: In conclusion, this pilot study provides preliminary evidence of a potential negative correlation between CART levels in serum and the presence of endometriosis, which imply that lower CART concentrations may be associated with the development or progression of endometriosis. Further research with larger sample sizes and additional investigations into the molecular mechanisms involved are warranted to validate and expand upon these initial findings.

Keywords: endometriosis, CART

Endometriosis: path to diagnosis, symptoms, impact on quality of life

Gabriela Bronkowska[1], Julia Surowaniec[1], Ewa Wystalska[1]

1. Department of Gynaecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Dr n. med. Tomasz Wikarek

Background: Endometriosis is a disease associated with a chronic inflammatory process that affects pelvic organs by improperly located endometrial tissue. The pathogenesis of this syndrome is unsettled which provides diagnostic issues.

The aim: The study evaluated the symptoms and diagnostic process of endometriosis.

Materials and methods: The retrospective study surveyed 148 women aged 21-49 online about their endometriosis diagnosis experience from February 2024 to March 2024 via social media groups and internet forums. The survey included a self-report questionnaire with questions based on the guidelines of the Polish Society of Gynecology and Obstetrics. The statistical analysis was conducted using Microsoft Excel.

Results: The study included a group of 148 women with a mean age of 31,88 ± 6,22 diagnosed with endometriosis. The vast majority of responders experienced symptoms of endometriosis: dysmenorrhea 84,56% (126/148), infertility 35,13% (51/148), dyspareunia 55,40% (82/148), chronic pelvic pain 65,54% (97/148), menstrual disorder 32,40% (48/148). Only the diagnostic process consisted of patient examination such as ultrasound examination 95,95% (142/148), laparoscopy 36,49% (54/148), magnetic resonance imaging 31,08% (46/148), and laboratory parameters measurement 43,92% (65/148). Despite the availability of advanced diagnostic methods, our study found that the average diagnostic process lasted 4 years and 4 months. It was shown that 85.13% (126/148) of participants required more than one specialist consultation in our study.

Conclusions: Based on the results, endometriosis is sometimes misdiagnosed but advanced diagnostic methods potentially can speed up the diagnostic process. There is an increasing awareness of endometriosis. When left undiagnosed, it can negatively impact their health and well-being. It is important to manage endometriosis as soon as possible to prevent infertility, and persistent pain, and improve the patient's quality of life.

Keywords: endometriosis, quality of life, diagnostics, symptoms

Usefulness of BMI and BAI in Assessing Glucose and Insulin Profile among PCOS

Jakub Borszcz[1]

1. Department of Metabolic Diseases Prevention, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. o zdr. Nowak Justyna

Background: Polycystic ovary syndrome (PCOS) is a common endocrine, reproductive and metabolic disorder that affects around 10% of reproductive-aged women. It causes many changes in human homeostasis mainly by changing hormone secretion. This way patients with PCOS have a higher risk of hyperinsulinemia, type 2 diabetes mellitus, infertility and cardiovascular disease.

The aim: The aim of the study is to assess the usefulness of simple indices such as BMI and BAI in evaluating abnormalities in glucose and insulin profile among PCOS women.

Materials and methods: The study involved 101 women with PCOS in age 18-39. Diagnosis of PCOS was based on the Rotterdam criteria from 2003. Then Body Mass Index (BMI) and Body Adiposity Index (BAI) were defined by previously weighting and measuring the height and hip circumference of the patients. The BMI classification used to group patients was 18,5-24,9 kg/m2 for normal weight and ≥25,0 kg/m2 for excess weight. Accordingly, for BAI it was 21-33% and >33%.

Results: The median values of fasting insulin (96.9 vs. 48.1 pmol/L), fasting glucose (5.3 vs. 4.7 mmol/L), glucose levels after 60 minutes in the glucose tolerance test (9.0 vs. 5.8 mmol/L), HOMA-IR index (3.4 vs. 1.2), and METS-IR (46.9 vs. 26.1) were significantly higher ($P<0.05$) among the group with excess weight compared to the group with normal weight based on the BMI index. The median values of fasting insulin (102.6 vs. 50.9 pmol/L), fasting glucose (5.3 vs. 4.7 mmol/L), glucose levels after 60 minutes in the glucose tolerance test (9.0 vs. 7.3 mmol/L), HOMA-IR index (4.0 vs. 1.6), and METS-IR (47.6 vs. 27.4) were significantly higher ($P<0.05$) among the group with excess weight compared to the group with normal weight based on the BAI index.

Conclusions: Both BMI and BAI indices are useful in predicting abnormalities in glucose and insulin profiles among women with PCOS.

Keywords: PCOS, BMI, BAI, glucose profile, insulin profile

Quality of life of women with endometriosis.

Klaudia Tukajska-Pluta[1]

1. Department of Gynaecology and Obstetrics, Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: lic.

Background: Endometriosis is a gynecological condition that often affects young women, and its symptoms negatively impact various aspects of patients' lives. Due to its nonspecific symptoms, diagnosing endometriosis can be challenging. Therapy mainly relies on medication and surgical interventions, but also includes physiotherapy, appropriate diet, supplementation, and herbal medicine. Psychological support plays a significant role when needed.

The aim: The aim of this study is to investigate the quality of life of women with endometriosis and to draw attention to the medical and social problem of endometriosis represents.

Materials and methods: A diagnostic survey method was used for this study, with the research technique being a questionnaire, and the research tool being a survey questionnaire.

Results: The study group consisted of 285 women aged 18-57 years. The research results indicate that the quality of life of women with endometriosis is reduced. Over three-quarters of the surveyed women complain of pain, especially during the peri-menstrual period, but also chronic lower abdominal pain, dyspareunia, intestinal problems, and breast pain. Only 1% of women experience the disease asymptomatically. The research showed that endometriosis negatively affects intimate relationships, sexuality, as well as personal and professional life. Moreover, over half of the affected women experienced difficulties in conceiving. Almost three-quarters of the surveyed women believe that endometriosis funding in Poland is insufficient.

Conclusions: The obtained research results show that endometriosis significantly lowers the quality of life of women, mainly through pain symptoms, the impact on psychological functioning, sexuality, and issues with conceiving and maintaining pregnancy. Supporting patients in coping with the symptoms of the disease, providing effective medical care, and psychological support may contribute to improving the quality of life of these women. Improving funding for endometriosis in Poland is also necessary.

Keywords: endometriosis, infertility, quality of life

Effects of dietary habits on abdominal obesity and body fat content in women with PCOS.

Joanna Kaźmierczak[1], Iga Szymańska[1], Karolina Piskorowska[1], Marta Kowalska[1], Klaudia Hachuła[1]Marcin Ciekalski[1]

1. Department of Gynaecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Tomasz Wikarek

Background: Polycystic ovary syndrome (PCOS) is associated with metabolic disturbances, including abdominal obesity and altered body fat content, influenced by dietary habits. Understanding these effects is crucial for managing PCOS-related complications.

The aim: The study aimed to investigate the effects of dietary habits on abdominal obesity and body fat content in women with PCOS compared with women without PCOS.

Materials and methods: In a single center retrospective study involving 2-year observation (2022-2023) we recruited 236 patients who were 25,3 ī 5,1 years old. They were divided into two groups - a study group diagnosed with PCOS (183) and a control group without a diagnosis of PCOS (53). Anthropometric measurements, laboratory tests, and dietary assessments were conducted. A questionnaire for dietary views (KomPAN, Committee for the Science of Human Nutrition, Polish Academy of Sciences) was used to examine indexes of dietary quality and nutritional knowledge. Statistical analysis was performed using Statistica 13.0. A p-value <0.05 was considered significant.

Results: The majority of women in the study group had the A phenotype of PCOS (55,2%). Correlations between lipid profiles and anthropometric indices revealed significant associations. HDL negatively correlated with insulin, waist-hip ratio (WHR), and body fat percentage (PBF). Triglycerides positively correlated with BMI and WHR, and negatively with Healthy Diet Index (HDI). WHR negatively correlated with Dietary Quality Index (DQI). SHBG showed a negative correlation with WHR and BMI.

Conclusions: Dietary habits significantly influence abdominal obesity and body fat content in women with PCOS. Understanding these relationships can aid in developing tailored dietary interventions to manage PCOS-related metabolic complications effectively.

Keywords: Polycystic Ovary Syndrome, abdominal obesity, nutrition assessment, Body Mass Index, Waist-Hip Ratio

Factors influencing the risk of cervical lacerations during vaginal delivery

Patrycja Zębalska[1], Monika Chlipała[1]

1. Department of Gynaecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Tomasz Wikarek MD, PhD

Background: Childbirth is a complex process in which cervical lacerations during natural delivery poses a significant risk to the mothers health. Cervical lacerations are also known causes of postpartum hemorrhage. Understanding the factors influencing cervical laceration is crucial to minimizing maternal morbidity and improving obstetric care.

The aim: To identify primary determinants contributing to cervical lacerations during spontaneous vaginal delivery.

Materials and methods: In a single center retrospective study involving 2-year observation (2022-2023) we recruited 136 women in the age range 16-42, who gave birth in the Department of Gynecology, Obstetrics and Gynecological Oncology, University Clinical Center of the Medical University of Silesia. The study group included 63 patients with cervical lacerations during vaginal delivery and the control group consisted of 71 patients without cervix's laceration. Patients were selected to the control group randomly, every twentieth patient, chronologically, from all 1475 patients with natural vaginal delivery excluding multiple pregnancies and stillbirths. The database was analyzed in Statistica software.

Results: Cervical laceration during natural childbirth occurred in 63 patients (4.3%). Cervical laceration was significantly more often in patients induced with oxytocin compared to non-induced patients (49.2% vs 31%, p=0.031). We did not observe a significant difference in the incidence of cervical ruptures in primiparous vs. multiparous women (69.8% vs. 59.2%, p=0.197). Other factors, like the birth weight, the use of pre-induction, water immersion, birth position, and the duration of the second stage of labor had no significant impact on the incidence of cervical ruptures.

Conclusions: Induction of labor with oxytocin significantly increases the risk of cervical laceration during natural childbirth.

Keywords: cervical lacerations, childbirth, oxytocin induction, vaginal delivery

VBAC. Women's knowledge of alternative methods of terminating pregnancy in their reproductive years.

Katarzyna Milewska-Plis[1], Ewelina Knapczyk[1], Weronika Curyło[1], Sara Hassan[1]

1. Department of Gynaecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Dr n.med. Tomasz Wikarek

Background: VBAC, which stands for vaginal birth after caesarean, poses a challenge to modern obstetrics, both for staff and for women giving birth.

The aim: Assessment of the level of knowledge among women of reproductive age regarding VBAC. Examination of women's awareness of alternative ways to conclude subsequent pregnancies. Examination of the prevalence of VBAC among respondents.

Materials and methods: The study was conducted as an online survey questionnaire. A total of 816 women aged 18-49 participated. The questionnaire consisted of 38 original questions based on the recommendations of the Polish Society of Gynecologists and Obstetricians (31 single-choice closed questions, 3 multiple-choice closed questions, and 4 open-ended questions). The results were subjected to statistical analysis using the IBM SPSS Statistics program.

Results: In terms of age, the largest representation was among women aged 25-34 years (51%). The majority of respondents were women with tertiary education (67%), predominantly living in rural areas (29%). Most respondents reported having been pregnant at some time (68%), with 57% reporting that their first pregnancy had ended by caesarean section. 18% of respondents had attempted TOLAC, of which 11% were successful (VBAC). The majority of respondents knew what VBAC was (62%). Meanwhile, 63% of respondents expressed a willingness to attempt vaginal birth after caesarean section (TOLAC).

Conclusions: Women of reproductive age demonstrate an adequate level of knowledge regarding VBAC and alternative ways to conclude subsequent pregnancies. Given the persistently high rate of caesarean sections, it is advisable to promote and popularize the option of vaginal birth after caesarean among women planning future pregnancies. Women should be educated about the benefits of VBAC for both themselves and their child.

Keywords: VBAC, TOLAC, vaginal birth after c-section, caesarean section, knowledge

The relationship between postpartum women's quality of life and quality of sexual life

Marta Urbaniak[1], Julia Sindera[1], Natalia Węglorz[1]

1. Department of Physiotherapy, Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. i n. o zdr. Magdalena Dąbrowska-Galas, dr n. o. zdr. Magdalena Rutkowska

Background: The childbirth process presents a unique challenge for every woman. Examining this relationship can contribute to a better understanding of women's needs during this period.

The aim: The aim of the study was to assess correlation between women's quality of life (Qol) and quality of sexual life.

Materials and methods: The study included 74 postpartum women aged 18 to 55 years. The study was based on a questionnaire comprising: an author's questionnaire, the FSFI questionnaire, and the WHOQoL questionnaire. The questionnaire was distributed via a website. The Shapiro-Wilk test was used to assess the normality of distribution. Spearman's rank correlation was used to evaluate correlations, and the Mann-Whitney U test was used to assess differences between groups of women with and without sexual dysfunction regarding quality of life. A significance value of $p<0.05$ was considered statistically significant.

Results: The average age of the participants was 30.9 ± 5.83 years. Among the 30%, the total FSFI score indicated sexual dysfunction, while among the 42%, no such dysfunctions were observed. The mean FSFI score was 25.81 ± 8.01. Assessment of quality of life revealed that the lowest QoL was observed in the social domain (10.74), while the highest was noticed in the environmental domain (28.76). A statistically significant positive correlation was found between sexual quality of life (FSFI total score) and quality of life in the social domain ($p<0.001$, $R=0.67$), the environmental domain ($p=0.038$, $R=0.244$), and overall QoL ($p=0.001$, $R=0.37$).

Conclusions: Better sexual quality of life contributes to better overall quality of life, as well as in the social and environmental domains. Women with sexual dysfunction experience lower quality of life compared to women without dysfunction.

Keywords: sexual life, childbirth, questionnaire

Knowledge about cervical cancer and preventive screening amongst women

Julia Mzyk[1], Oliwia Sipiora[1], Olga Nowacka[1]

1. Department of Gynaecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Tomasz Wikarek

Background: Cervical cancer remains a significant global concern in gynecologic oncology, ranking 14th among all cancers and 4th most common cancer among women worldwide. Interventions for cervical cancer primarily focus on primary and secondary prevention.

The aim: Assessing women's knowledge about cervical cancer, its prevention and about Human Papillomavirus (HPV).

Materials and methods: The study was executed using a web-based survey which consisted of 3 parts: socioeconomic data, gynecological interview and 14 original questions about cervical cancer and HPV. The number of 119 surveys were obtained.

Results: The knowledge about cervical cancer and its prevention is not high enough. Most of the correspondents (96,6%) know that cervical cancer is HPV-associated. However, only half of the women surveyed (48,7%) know that HPV infection can lead to vaginal cancer, and even less correspondents know about the association between HPV infection and anal cancer (46,2%), vulvar cancer (41,2%), penile cancer (37%), recurrent laryngeal papillomatosis (26,1%), genital warts (22,7%) and cancers of head and neck (16,8%).

There is a correlation between frequency of routine gynecological exams and knowledge about cervical cancer ($p<0.05$). 22,7% correspondents have never had a pap smear screening or don't remember when was the last time they had one. 58% of women surveyed don't want to be vaccinated against HPV.
Women who were vaccinated or plan to do so in the future, have a higher level of knowledge about HPV and cancers associated ($p<0.05$).

Most commonly mentioned sources of knowledge were: web, TV and social media (82,4%), gynecologists (67.2%).

Conclusions: There is a need to educate people on the topic of HPV and cancers associated with the infection. Popularization of regular pap smear exams and vaccinations should be conducted by mass media and gynecologists.

Keywords: HPV, cervical cancer, prevention, vaccination

Impact of Fertility Knowledge on Contraceptive Choices Among Women: A Comprehensive Study

Łukasz Karoń[1], Karolina Karoń[1], Anna Zygmunt[1], Patrycja Dębiec[1]

1. Department of Gynaecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr. n. med. Tomasz Wikarek

Background: In the present day, women have access to a variety of contraceptive options, each accompanied by distinct benefits and potential side effects. It is crucial to consider these factors when selecting a contraceptive method.

The aim: This study evaluated how the awareness of fertility, infertility causes, and treatments impacts contraceptive use decisions. By quantifying knowledge levels and identifying educational gaps, the research offered crucial data to enhance decision-making in reproductive health.

Materials and methods: A structured online questionnaire was used to evaluate contraceptive practices, medication use, reproductive history, and fertility awareness among 1,986 women, encompassing both nulliparous and parous individuals. Data collection using an online survey was conducted from December 27, 2023 to April 9, 2024. Data were analyzed using statistics program to ensure accurate results.

Results: Among the respondents, 29% reported not using any contraception method, while 25.13% relied solely on condoms. Treatment for infertility was reported by 9.92% of the participants. Knowledge of the age at which a woman's fertility begins to decline was noted by 49.4% of respondents, and 90.4% were aware of the survival time of sperm in fertile mucus. Awareness of female infertility factors was present in 22.56%, and 95.4% supported the use of available infertility treatments.

Conclusions: The study indicates a generally high level of fertility awareness, yet highlights the necessity of targeted educational initiatives, particularly among young women, regarding contraception, infertility causes, and treatment options. Gynecologists, identified as primary sources of this knowledge alongside digital platforms like websites and social media, should enhance their roles in disseminating crucial health information.

Keywords: fertility, contraception, infertility, reproduction, knowledge

Analysis of histopathological results of the endometrium in breast cancer patients treated with tamoxifen

Małgorzata Toroń[1], Antoni Wołoszyn[1], Mikołaj Zieliński[2]

1. Student Association at the Cathedral and Clinic of Female Diseases and Oncological Gynecology, Warsaw University of Medicine, Faculty of Medical Sciences, Katowice, Medical University of Silesia, Katowice

2. Student Association at the Cathedral and Clinic of Female Diseases and Oncological Gynecology Warsaw University of Medicine, Faculty of Medicine, Medical University of Warsaw

Work's tutor: dr n. med. Anna Kociszewska

Background: Tamoxifen, used as adjuvant hormonal therapy in breast cancer patients, inhibits estrogen receptors in breast tissue. However, it exhibits agonistic effects in the endometrium, which can lead to unfavorable proliferative changes.

The aim: The study aimed to compare histopathological findings in the endometrium of breast cancer patients undergoing tamoxifen therapy. Two groups were compared: asymptomatic women referred for surgery due to abnormal endometrial ultrasound findings and patients with abnormal uterine bleeding.

Materials and methods: The study included 102 patients hospitalized between 2013 and 2024. All patients had a history of breast cancer and were treated with tamoxifen. The study group was divided into two subgroups:
Group I: 52 patients (51%) with abnormal endometrial ultrasound findings.
Group II: 50 women (49%) with abnormal uterine bleeding (e.g., postmenopausal bleeding or heavy, irregular menstrual bleeding).
Statistical analysis was performed using the Chi-square test.

Results: Endometrial polyps occurred in 21 women (40%) in Group I and 16 women (32%) in Group II. Complex atypical hyperplasia was observed in 8 patients (15%) in Group I and 7 patients (14%) in Group II. Endometrial carcinoma was diagnosed in 3 women (6%) in Group I and 4 women (8%) in Group II. Simple hyperplasia without atypia was found in 1 patient (2%) in Group I and 3 patients (6%) in Group II.

Conclusions: There were no statistically significant differences in the occurrence of endometrial cancer or atypical endometrial hyperplasia between the two study groups. Endometrial polyps were the most common histopathological finding in both Group I and Group II. Notably, proliferative endometrium was more frequently observed in symptomatic women (Group II) ($p<0.05$).

Keywords: proliferative endometrium, tamoxifen therapy, breast cancer, endometrial polyps

Metabolic disorders among underweight women with functional amenorrhea.

Iga Szymańska[1], Julia Bieńkowska[1], Olga Zawistowska[1], Aleksandra Kania[1], Dominika Orzechowska[1]

1. Department of Gynaecological Endocrinology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Dr n. med. Karolina Kowalczyk

Background: Metabolic disorders are common among patients with functional amenorrhea, particularly among those who are underweight. Understanding the metabolic profile of such individuals is crucial for devising effective interventions.

The aim: The aim of the study was to investigate the metabolic profile of underweight women with functional amenorrhea and compare it to a control group, with a focus on various parameters including BMI, cholesterol levels, thyroid function, and prolactin levels. Subgroup analysis based on BMI levels was also conducted further to understand the metabolic differences within the study population.

Materials and methods: We conducted a comparative study involving 329 women, categorizing them according to BMI and the presence of functional amenorrhea. Various metabolic parameters cholesterol levels (CHO), HDL and LDL cholesterol, triglycerides (TG), prolactin (PRL), thyroid-stimulating hormone (TSH), cortisol, glucose and insulin were measured.

Results: Our study group included 166 women with FHA and 163 women without FHA. The results showed differences between women with and without FHA in values of total cholesterol, LDL, prolactin, cortisol and the presence of insulin resistance. There were differences in HDL cholesterol levels and the presence of insulin resistance according to BMI.

Conclusions: Underweight women with functional amenorrhea display distinct metabolic profiles characterized by lower HDL cholesterol levels, and higher triglyceride levels compared to controls. These findings underscore the importance of tailored interventions targeting metabolic health in this population to mitigate the risk of long-term complications. Further research is warranted to elucidate the underlying mechanisms and optimize therapeutic strategies.

Keywords: amenorrhea, Body Mass Index, cholesterol, triglycerides

Impact of pelvic organ prolapse (POP) on sexual function depending on women's lifestyle

Laura Więcko[1], Katarzyna Trela[1], Liwia Olczyk[1]

1. Department of Gynaecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr. n. med. Tomasz Wikarek

Background: Pelvic organ prolapse (POP) is an important public health issue that influences millions of women's lives. Most specific symptom is a feeling of vaginal bulging. Other symptoms include pain, urinary, bowel and sexual disorders.

The aim: The purpose of the study is to demonstrate the impact of pelvic organ prolapse (POP) on women's sexual function and the relationship between lifestyle factors and pelvic floor dysfunction symptoms (PFD).

Materials and methods: The study was conducted via survey. The responses were collected between January and April of 2024. Two hundred five adult Polish women had to respond to 61 questions of which fourteen were based on The Changes in Sexual Functioning Questionnaire (CSFQ).

Results: Participants were females, aged between 20 and 78 years (mean age of 34.40 ĩ11.69). 12% of respondents were diagnosed with POP and 70% have symptoms of PFD. 60% of women with POP/PFD gave birth, 72% of them had natural childbirth (59% gave birth twice). Only 21% of females with POP/PFD are not physically active. The research showed that 40% of women who have POP/PFD do or did strength training. The average of the CSFQ for women who have POP is 40,9 points. According to the CSFQ this score is below the cut-off point (41.0), which indicates sexual dysfunction. Importantly, only 25% of women were treated because of POP.

Conclusions: The most significant risk factor associated with POP is the amount of natural childbirth. Women with POP, as well as those with symptoms of PFD are characterized by decreased sexual satisfaction compared to other females in the study. A substantial number of women with symptoms indicative of POP are not diagnosed by a specialist. Furthermore, women struggling with this problem do not receive adequate treatment, which severely reduces their quality of life.

Keywords: Pelvic organ prolapse, POP, sexual function, CSFQ, symptoms of pelvic floor dysfunction, PFD

ASSESSMENT OF MITRAL VALVE REGURGITATION IN PATIENTS WITH SEVERE AORTIC STENOSIS QUALIFIED FOR TAVI

Alicja Pawlus[1], Kacper Kolebacz[1], Marta Jędrzejowska[1]

1. Department of Cardiology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Witold Streb, prof. dr hab. n. med. Beata Średniawa

Background: Aortic stenosis (AS) is a common valve disease. The incidence of AS increases with age and reaches 45% of patients around 80 years of age. The screening test for AS is echocardiography. The treatment of AS is surgical or transcatether aortic valve replacement (TAVI). A common coincidence associated with AS is mitral regurgitation (MR).

The aim: The aim of the study was to determine the frequency, type and determinants of MR in AS in patients qualified for TAVI.

Materials and methods: The study included 54 consecutive patients with severe AS qualified for TAVI hospitalized in the 1st Department of Cardiology SCCS Zabrze from November 2023 to February 2024.

Results: In the study population, the mean area of AV was 0.66Ī0.18 cm2. The mean AV gradient was 43.7Ī12.3 mmHg. MRI was observed in 40 (74.1%) patients. Mild MR occurred in 24 patients (60.0%), moderate MR- in 14 patients (35.0%) and severe MR- in 2 patients (5.0%). Mean and severe MR were significantly more common in women than in men (46.2% vs. 14.3%, p=0.034). According to the Carpentier classification, type IIIa was the predominant type, which occurred in 22 patients (55.0%). 18 patients had type III b (45.0%).

Conclusions: MR is a common valvular disease co-occurring in patients with severe AS. The dominant mechanism of MR is type IIIa. In patients with severe AS the frequency of MR was similar for women and men, but women had significantly more advanced MR than men.

Keywords: aortic stenosis, TAVI, mitral regurgitation.

Characteristics of a patient with atrial fibrillation - are VKAs still in the game?

Michał Ogórek[1], Natalia Murowana[1], Wojciech Molęda[1], Kaja Noworzyń[1]

1. 1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: lek. Bartosz Gruchlik, dr hab. n. med. Iwona Wożniak-Skowerska, prof. dr hab. n. med. Katarzyna Mizia-Stec

Background: Atrial fibrillation (AF) is one of the most common cardiac arrhythmias worldwide, posing a significant health challenge. It's impact on a patient's quality of life is profound, elevating the risk of severe cardiovascular complications, including stroke and heart failure. According to the Global Burden of Disease, AF affected approximately 46.3 million individuals globally in 2016. For less wealthy patients, a chance for access to more modern treatment options will come with the introduction of generic versions of expensive NOAC medications following the expiration of patent rights in the near future.

The aim: The aim of this study is to provide a comprehensive characterization of patients diagnosed with atrial fibrillation.

Materials and methods: We studied 101 patients diagnosed with atrial fibrillation, admitted to the 1st Department of Cardiology at the Górnośląskie Centrum Medyczne in Katowice during 2023. We focused mainly on assessing the appropriateness of anticoagulant therapy (considering dosage) and determining the frequency of ablation. Additionally, an analysis of metrics and clinical parameters was conducted.

Results: Among all 101 patients 5 individuals (4.9%) were undergoing treatment with VKAs, among whom 3 (60%) were treated incorrectly. The majority were instead prescribed NOACs (80%), oral anticoagulants (OACs) combined with antiplatelet agents (5.9%), antiplatelet therapy alone (2%), or were left untreated (12.9%). Of the subset receiving treatment (88 individuals), 62 (70%) received treatment aligned with their health condition. Ablation procedures were performed in 65% of patients, either prior to admission or during their hospital stay.

Conclusions: New generation anticoagulants (NOACs) have almost completely replaced old-generation drugs (VKA). In 70% of cases anticoagulant treatment was aligned with patients health condition, which shows that despite everything physicians should allocate greater attention to adjusting the suitable dosage of medication based on the patient's health condition.

Keywords: atrial fibrillation, anticoagulant treatment, NAOC, VKA, ablation

CT-derived myocardial extracellular volume (ECV) fraction – redundant by-product or a novel promising marker?

Jakub Nowak[1], Maksym Sikora[1], Michał Drabik[1], Maria Kurek[1]

1. , Jagiellonian University Medical College

Work's tutor: prof. dr hab. n. med. Andrzej Surdacki

Background: Myocardial ECV expansion, largely assessed by magnetic resonance (MR), is mostly associated with myocardial fibrosis, an unwanted endpoint of various heart diseases. Recently, contrast-enhanced computed tomography (CT) was proposed as an alternative to MR to quantify ECV, but data on the clinical relevance of CT-derived ECV fraction (ECVF) are limited.

The aim: To search for clinical and echocardiographic (ECHO) correlates of ECVF derived from routine CT scans.

Materials and methods: We retrospectively derived ECVF from archived cardiac CT scans performed in 103 patients (53 women, 50 men; mean age: 66±13 years) during a diagnostic work-up. From recorded ECHO images, we calculated indices of left ventricular (LV) structure and function, including systolic (S') and diastolic (E' and A') mitral annular velocities.

Results: Mean ECVF was 25.2±8.8% and followed normal distribution. There were no significant relations between ECVF and clinical or ECHO parameters. LV function was comparable according to median ECVF (24.7%): S':10.4±4.1 vs 9.6±8.0 cm/s, p=0.6; E': 9.2±3.4 vs 9.5±3.1 cm/s, p=0.7; E'/A': 1.0±0.6 vs 1.2±0.9, p=0.3; E/E' ratio: 9.0±4.8 vs 9.4±5.8, p=0.7 for ECVF above and below the median, respectively. However, S' and E' were positively correlated in 52 subjects with an over-median ECVF (r= 0.46, p=0.001), in contrast to their 51 counterparts with a below-median ECVF (r=0.15, p=0.3).

Conclusions: ECV expansion might be associated with a marked interdependence of E' and S' – markers of early diastolic and systolic LV performance. As E' is a rough surrogate index of LV active relaxation, these findings could reflect a contribution of LV fibrosis to early LV diastolic dysfunction, known to coincide with discrete LV long-axis systolic dysfunction which may in turn further impair early diastolic function via depressed elastic restoring forces. The expanding use of CT-derived ECVF could improve insight into LV mechanics. If ECVF might also have an added prognostic value beyond ECHO indices, requires prospective studies.

Keywords: cardiology, fibrosis, diastolic dysfunction, computed tomography

The expression level of miR-10b increased in patients with unstable angina compared to CCS

Dan-ae Kim[1]

1. 1st Department of Cardiology, Faculty of Medicine, Medical University of Warsaw

Work's tutor: Dr n. med. Michał Kowara, Prof. dr hab. n. med. Agnieszka Cudnoch- Jędrzejewska

Background: Acute and chronic coronary syndrome are the leading causes of morbidity and mortality worldwide. Chronic coronary syndrome refers to patients with stable atherosclerotic plaques in coronary arteries, whereas acute coronary syndrome refers to patients with unstable plaque, characterized by thin fibrous caps, robust local inflammation, and increased probability of rupture.

The aim: The study aims to compare the expression of a microRNA regulating KLF4, one of the important endothelial factors preventing atherogenesis between patients with stable and unstable coronary plaque.

Materials and methods: A number of 12 patients with chronic coronary syndrome(stable plaque), 10 patients with unstable angina (unstable plaque), and 10 healthy volunteers were enrolled in the study. Volunteers presented no diagnosed disease and were younger than the two other study groups. The relative expression levels of a microRNA – hsa-miR-10b-5p in plasma samples of these patients were measured using the qRT-PCR technique.

Results: The results have shown that the expression level of hsa-miR-10b-5p was significantly higher in patients with unstable angina compared to patients with chronic coronary syndrome(data presented as median value and interquartile range [IQR]) – 0.096 [0.065-0.177] vs 0.042 [0.024-0.057], respectively, p = 0.003. Surprisingly, a significant difference was also found between chronic coronary syndrome patients and healthy volunteers – 0.042 [0.024-0.057] vs 0.085 [0.057-0.124], respectively, p = 0.01.

Conclusions: The study has revealed increased expression of hsa-miR-10b-5p, a KLF4 down-regulator in patients presenting with acute coronary syndrome, i.e. with unstable atherosclerotic plaque. This finding might indicate a possible role of this particle in the process of plaque destabilization. However, increased levels of hsa-miR-10b-5p in healthy individuals might reflect the role of KLF4 regulation also in physiological processes in healthy individuals, especially in younger age

Keywords: Unstable angina, MicroRNA, Chronic coronary syndrome, Vulnerable plaques, Stable plaques

Assessment of obstructive sleep apnea in patients with pulmonary arterial hypertension.

Julia Dołęga[1], Aleksandra Owczarska[1], Jakub Pierożak[1], Michał Pasiut[1], Aleksandra Polańska[1]

1. 1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Prof. dr hab. Katarzyna Mizia-Stec

Background: Obstructive sleep apnoea (OSA) is associated with temporal hypoxemia that may lead to pulmonary arterial hypertension (PAH). It has been observed that patients with PAH often report symptoms such as chronic fatigue, daytime sleepiness and numerous night awakenings.

The aim: Analysis of the prevalence of OSA and relevant parameters among patients diagnosed with PAH.

Materials and methods: Polygraph assessments were performed on a cohort of 20 patients, with the majority demographic consisting of 15 womens. The group was divided into two sections: AHI<5 (30%) and AHI>=5 (70%). The measurement was made at night during the patients' sleep and lasted an average of 7 hours. During the sleep, the monitoring device measured parameters, such as saturation, snoring, heart rate (HR), apnoea index (AI), hypopnea index (HI), apnoea-hypopnea index (AHI). Moreover, the results of laboratory tests and transthoracic echocardiography measurements, the results of a 6-minute walk test and clinical status were analyzed.

Results: Among the gathered 20 patients, 11 (55%) of them were observed with OSA in which 1 (5%) patient had severe (AHI > 30), 4 (20%) patients had moderate (AHI 15-30), 6 (30%) patients had mild (AHI 5-15). Amidst the group of patients with OSA was observed increased PDW (p=0,004) and the shortening of APTT (p=0.005) and PT (p=0.034) times. Patients also had significant elevated blood sodium levels (p=0.017) and increased thickness of the interventricular septum (p=0.004) in relation to the group of patients without sleep apnea.

Conclusions: OSA is observed in 55% of PAH patients and it presents a somewhat different character compared to the general population. Elevated PDW levels and shortened APTT and PT times in this group may act as predisposing factors for thromboembolic events and progress of PAH. Further studies are necessary to confirm our observations.

Keywords: obstructive sleep apnoea, pulmonary arterial hypertension, thromboembolic events, polygraphy

Supraventricular Arrhythmias in patients with acute ischemic stroke and RIND episodes

Agnieszka Partyka[1], Marianna Ciastoń[1], Ana Baranovska[1]

1. 1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Krzysztof Szydło, prof. SUM

Background: Ischemic stroke is the second cause of death and first cause of disability in adults. In 2022 in Poland around 73900 cases were noted. 89% of them were first episodes of stroke. Supraventricular arrhythmias: atrial fibrillation(AF) is a known risk factor of ischemic stroke and ESVEA (Excessive Supraventricular Ectopic Activity) is regarded as a prodrome of AF.

The aim: Analysis of the presence of different forms of supraventricular arrhythmias in pts with different brain ischemic episodes.

Materials and methods: The study group consisted of 577pts (53%M, age 70.9Ī12.3 NIHSS 6Ī5.6, CHADSVASC 5Ī1.7) hospitalized in the Department of Neurology in GCM from 2018 to 2021. Analysis of occurrence of arrhythmias (AF, ESVEA) based on a 1-day Holter recording in the first week after acute ischemic episodes was performed.

Results: The study cohort included 3 groups: 75pts with TACI (43M, 57%), 428 with non-TACI (231M, 54%) and 74 with RIND (31M, 42%). The study groups did not differ in age and CHADSVASC; NIHSS was the highest in the TACI group (10.2 vs 5.8 vs 2.3 $p<0.001$, respectively). Females were more frequent in the RIND group than TACI and non-TACI (32, 43% vs 197, 46% vs 43, 58%; $p=0.01$, respectively). AF (entire recording or episodes) was found in 56pts (9.7%). Statistically significant differences in AF were observed between TACI vs non-TACI and TACI vs RIND groups (14, 19% vs 40, 9% vs 2, 3%; $p<0.05$). Arrhythmic events (AF and/or ESVEA) were observed in 238pts (41%) and the occurrence was significantly lower in the RIND group than TACI and non-TACI (34, 45% vs 184, 43% vs 20, 27%).

Conclusions: Holter recording allowed diagnosis of AF in 9.7%pts in the first week after stroke. There was no notable distinction in the frequency of supraventricular arrhythmias in various locations of stroke. Arrhythmias were detected significantly less frequently in pts with RIND. In terms of gender predominance among brain ischemic episodes, the majority of pts in TACI and non-TACI were males, in contrast to RIND, where 58% were females.

Keywords: acute ischemic stroke, atrial fibrillation

Age as a predictor of immediate and long-term changes in vetricular function in marathon finishers

Marcin Schulz[1], Julia Cieśla[1], Julia Skrobisz[1], Michał Janik[1], Michał Krawiec[1]Paweł Wojciechowski[1]

1. 2nd Department of Cardiology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: prof. Andrzej Tomasik, MD, PhD; prof. Tomasz Kukulski, MD, PhD; prof. Celina Wojciechowska, MD, PhD

Background: Aging is often accompanied by a decline in physical capacity, but regular exercise can attenuate some of these effects. The available data on the function of heart muscle in amateur runners depending on age is limited.

The aim: Through advanced echocardiography, we aim to discern any age-related differences in ventricular function immediately post-race and during follow-up.

Materials and methods: 105 participants of Silesia Marathon (1 October 2023) were enrolled. Two-dimensional echocardiography have been performed at baseline, post-race and at 10 – 14 day follow-up. The runners, aged 22 – 70 years, were divided by median value of 42 years into younger and older groups. Left ventricle ejection fraction (LVEF), left ventricle global strain (LV GLS), right ventricle global strain (RV GLS) and tricuspid annular plane systolic excursion (TAPSE) were measured.

Results: A statistically significant difference was observed in older group for LVEF at 3 time points: 57.6Ī4.8% at baseline, 54.8Ī4.2% post-race, and 56.6Ī4.7% at follow-up ($p<0,05$). LVEF values in the younger group did not differ statistically ($p>0,05$). Similarly, in the elderly group RV GLS differences between values: 22.3Ī3.3% at baseline, 19.6Ī3.6% post-race and 20.5Ī3.6% at follow-up as well as TAPSE values: 24.3Ī3.8 mm at baseline, 20.2Ī7.2 mm post-race and 21.1Ī6.9 mm at follow-up were statistically significant ($p<0,05$). RV GLS and TAPSE values did not differ at 3 time points in younger group ($p>0,05$). In both groups, no statistically significant difference was observed in LV GLS values at baseline, post-race and at follow-up ($p>0,05$).

Conclusions: In contrast to younger athletes, the older age in amateur marathon finishers is associated with transient deterioration in left and right ventricle function. This might explain the reduced physical capacity in elderly population. Further research might help to understand the slower recovery of right ventricular function and longer physical recovery of older amateur athletes.

Keywords: echocardiography, ventricular function, amateur runners

Arrhythmogenic right ventricular cardiomyopathy - patients' pathways to diagnosis

Karolina Figiel[1], Justyna Semkowicz[1], Paulina Repa[1], Marianna Ciastoń[1], Marek Chwałek[1]

1. 1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Katarzyna Mizia-Stec

Background: Arrhythmogenic right ventricular cardiomyopathy (ARVC) is a genetically disease characterized by fibrofatty replacement of the myocardium which leads to potentially life-threatening arrhythmias.

The aim: To analyze the course of the diagnostic process in patients with ARVC.

Materials and methods: We conducted a retrospective analysis of 26 patients (19 M) with a clinical diagnosis of ARVC who were hospitalized between 2003 and 2022. Patients were divided into two subgroups based on age at the time of ARVC diagnosis: 10 patients aged 10-39 years (Y subgroup) and 16 patients aged over 40 years (O subgroup). Analysis involved symptoms, results of ambulatory examination, type of hospital admission and patients' family history.

Results: Mean age at the time of ARVC diagnosis was 46.7 Ī 17.2 years. Following symptoms were most common reasons of hospitalization: ventricular arrhythmia in ambulatory ECG / Holter monitoring (96.2%), ventricular tachycardia in ambulatory ECG / Holter monitoring (69.2%), exercise intolerance (60%), palpitation (43.3%), syncope (30%), and atrial fibrillation (23.1%). The diagnosis was stated in 65.4% of patients in elective and in 34.6% of patients in urgent hospitalizations. Two (7.7%) patients had a cardiac family history: first-degree relatives had sudden cardiac death at age 38, myocardial infarctions at age 36.
The comparison of the age-divided subgroups revealed significant differences in terms of the following symptoms: palpitation (Y vs O: 80% vs 25%, $p<0.05$) and exercise intolerance (Y vs O: 30% vs 81.3%, $p<0.05$).

Conclusions: The diagnosis of ARVC is made late by which the disease is already in an advanced, symptomatic stage, probably making it difficult to treat. In patients with ventricular arrhythmias, it is important to keep this disease unit in mind during the diagnostic process.

Keywords: ARVC, ventricular arrhythmia, palpitation, exercise intolerance

NT-proBNP level as a marker of heart failure in patients with pulmonary arterial hypertension

Wiktoria Laskowska[1], Aarushi Chourasia[1], Martyna Chraścina[1], Marcel Pilarek[1], Magda Pryczkowska[1]

1. 1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Katarzyna Mizia-Stec

Background: N-terminal pro B-type natriuretic peptide (NT-proBNP) is a marker for diagnosis and risk stratification in heart failure (HF). There are several factors that may influence NT-proBNP level and reduce its diagnostic value especially in the specific forms of HF.

The aim: The aim of the study was to assess the influence of common clinical factors on NT-proBNP level among patients with pulmonary arterial hypertension (PAH) and symptoms of HF.

Materials and methods: The study is a retrospective, tertiary single center analysis of 60 consecutive patients (mean age: 60.3 ± 17 years; M/F: 31/29) with PAH and symptoms of HF. Patients were analysed during the hospitalisations when PAH was first diagnosed. Clinical symptoms, comorbidities and laboratory tests were analysed.

Results: Mean serum NT-proBNP concentration in the studied group was 2502.3 ± 3336.3 pg/ml (median level: 1473 pg/ml). The comparison of patients with NT-proBNP level below (n=30) vs above median value (n=30) revealed differences: older age, more frequent males, higher creatinine concentration in subjects with higher NT-proBNP levels. NT-proBNP concentration correlated with typical symptoms of heart failure, duration of hospitalization ($r=0.49$, $p<0.001$), kidney function ($r=-0.49$, $p<0.001$) and additionally with haemoglobin level ($r=-0.35$, $p=0.006$) and HDL levels ($r=-0.27$, $p=0.037$). Anaemia was associated with inadequately high NT-proBNP concentration - mean level among anaemic patients was 4395.7 pg/ml vs non-anaemic 1753.7 pg/ml ($p=0.006$). On the other hand, patients with higher HDL levels were characterised by lower concentration of this marker (2153.8 vs 2828.3 pg/ml; $p=0.037$).

Conclusions: NT-proBNP serum level corresponds with HF symptoms in PAH patients, however, it should be noted that its level is not only linked to the clinical stage of HF and PAP - its assessment should be combined with evaluation of blood morphology, lipid profile and especially kidney function.

Keywords: NT-proBNP, pulmonary arterial hypertension, heart failure

Are there any factors influencing successful electrical cardioversion in patients with atrial fibrillation ?

Monika Bonczek[1], Joanna Rak[1], Julia Gryl[1], Anna Barańska[1], Emilia Grabarczyk[1]Franciszek Rej[1]

1. 1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Katarzyna Mizia- Stec

Background: Atrial fibrillation (AF) is the most common arrhythmia in clinical practice. Electrical cardioversion (ECV) is a simple method for sinus rhythm conversion. The effectiveness of ECV is high, but in some cases, the arrhythmia does not terminate, which can depend on accompanying AF risk factors.

The aim: The aim of our study was to assess influence of AF risk factors and applied energy on the effectiveness of ECV.

Materials and methods: A single centre retrospective study of 311 (mean age: 68Ī9.5 years; 59.2% M) patients who underwent ECV due to AF in the years 2019-2022 was performed. Risk factors of AF including obesity (BMI>30kg/m2), arterial hypertension, diabetes, hypertriglyceridemia, significant valvular diseases and current smoking were analysed. The effectiveness of the applied ECV energies was also assessed.

Results: ECV was successful in 283 (91%) and unsuccessful in 28 (9%) patients. Obesity was found in 44% of patients with successful ECV and in 68.2% of patients with unsuccessful ECV (p=0.046). There were no significant differences between patients with successful and unsuccessful ECV as regards to the other AF risk factors: arterial hypertension (79.5% vs 75%), diabetes (24.7% vs 25%), hypertriglyceridemia (15.9 vs 25.9%), significant valvular heart disease (39.9% vs 32.1%), smoking (27.6 vs 35.7%).The return of sinus rhythm was observed most frequently using the energy of 150J (45.8%) or 200J (31.1%), however in 17.5% cases only the energy higher than 200J was efficient.

With the subgroup with unsuccessful ECV in 61.9% of patients an attempt to use energy above 200J was made and in 14.3% cases the maximum used energy was 150J.

Conclusions: ECV is an efficient method in the sinus rhythm conversion in patients with AF. Among different AF risk factors the obesity is significant factor decreasing the effectiveness of ECV. Obtaining a BMI <30kg/m2 before planned ECV may have a positive influence on results. If ECV is not effective using lower energies, attempts to use higher energies should be made.

Keywords: atrial fibrillation, atrial fibrillation risk factors, electrical cardioversion

Do we treat well? Assessing the effects of Mono- and Polytherapy in PAH Treatment.

Oskar Woźniak[1], Małgorzata Toroń[1], Antoni Wołoszyn[1]

1. 1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Katarzyna Mizia- Stec

Background: Pulmonary arterial hypertension (PAH) is a chronic and progressive disease leading to right heart failure and death. Current therapeutic approaches encompass early polytherapy in this group.

The aim: The study aimed to assess the effectiveness of PAH treatment by comparing regimens between patients who died, receiving polytherapy versus monotherapy, aiming to identify treatment disparities and factors associated with improved outcomes.

Materials and methods: This retrospective tertiary single-centre study analyzing the last registered medical records before the death of patients diagnosed and treated due to PAH between 2011 and 2024.
Data regarding the last patients' clinical status and the last treatment strategies were collected, including the classification of medications into: monotherapy vs polytherapy.

Results: Among the whole population of PAH patients (n= 79) there were 39 (49%) subjects (mean age: 58Ī16.1 years; 10.2%M) who died in the observation period: 12 patients treated by monotherapy (group M; mean age: 59.5Ī 16.1 years; NYHA score II/III/IV: 1/9/2; the death: between 2012-2016) and 22 patients treated by politherapy (group P; mean age: 57.8 Ī 15.7 years; NYHA score II/III/IV: 1/10/11; the deaths between 2013-2022) during the last registered hospitalization / out-patient visit.
There was no significant difference between duration of monotherapy and polytherapy treatment (group M: 30.7 Ī 24.4 vs. group P: 28.7 Ī 23.9 months).

Conclusions: Regardless of the current recommendation of specific polytherapy in PAH up to 30.8% patients were treated for long time using the monotherapy. Taking into regard the fact that monotherapy is dedicated for less symptomatic PAH patients the lack of differences in survival duration and other variables between PAH patients treated by polytherapy and monotherapy before the death is an indirect evidence that switch into polytherapy should be performed.

Keywords: PAH, Monotherapy, Polytherapy

Temporal left ventricular ejection fraction variations predict survival in patients with heart failure

Radosław Szczerba[1], Wiktoria Żelazna[1], Jakub Sokołowski[1], Natalia Wyroba[1], Zuzanna Wydrych[1]

1. 1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Maciej Wybraniec

Background: Heart failure (HF) leads to impaired quality of life and increased mortality, while left ventricular ejection fraction (LVEF) is the key predictor of mortality in HF patients.

The aim: We aimed to assess the predictors of mortality in large cohort of patients with cardiovascular disorders with a focus on HF with improved EF (HFimpEF).

Materials and methods: The study covered 31920 adult patients (median age 71 (63; 78), 37.7% females) with different cardiovascular disorders consistent with primary International Classification of Diseases (ICD-10) diagnosis of I20, I21, I10, I11, I34, I35, I40, I45 and I50, and at least two measurements of LVEF separated by ≥1 month. The data on comorbidities and echocardiographic parameters was acquired from the database of Academic Repository of Clinical Cases of Medical University of Silesia. HFimpEF was defined as maximal increase of LVEF by ≥10% in relation to baseline value. The primary endpoint was all-cause mortality confirmed by data from national healthcare provider.

Results: The median follow-up time was 5 (4; 7) years and LVEF was measured median 2 (2; 4) times. HF was diagnosed in 12152 patients (38.1%). HFimpEF was confirmed in 16.4% of patients. Mortality was far greater in HF than non-HF patients (11.4% vs. 3.6%,P<0.001) and greater in patients without improvement of EF than HFimpEF (11.9% vs. 7.3%,P<0.001). The Cox proportional hazards model in HF patients revealed that mortality was inversely associated with HFimpEF (OR 0.71,95%CI:0.62-0.81,P<0.0001), mean LVEF across all measurements (P<0.0001), ischemic etiology (P<0.0001), glomerular filtration rate (P<0.0001) and positively with CHA2DS2-VASc score (P<0.0001). Kaplan-Meier survival curves showed significantly better survival in patients with ≥10% increase of LVEF in comparison to stable and decreased LVEF (respectively log-rank p=0.014 and p<0.001).

Conclusions: HFimpEF represents a newly recognized subtype of HF, which corresponds with improved long-term survival.

Keywords: Heart failure with improved EF, HFimpEF, Left ventricular ejection fraction, LVEF, Mortality

Correlation analysis of biomarkers and MRI changes in children with suspected myocarditis

Zofia Biegun[1], Katarzyna Tkocz[1], Michał Kapałka[1]

1. Department of Congenital Heart Defects and Pediatric Cardiology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr hab.n.med. Roland Fiszer, dr n.med. Michał Gałeczka

Background: Myocarditis in children remains a rare disease, characterized by a spectrum of symptoms ranging from mild to severe, life-threatening conditions that can result in long-term complications, including chronic heart failure.

The aim: The aim of this study was to assess the correlation between MRI findings and laboratory test results in children presenting with symptoms suggestive of myocarditis.

Materials and methods: A prospective analysis was conducted on 43 consecutive patients suspected of myocarditis who were admitted to the department between 2017 and 2024. Each patient underwent both MRI and laboratory testing to confirm the diagnosis and assess the extent of inflammation. Blood samples were collected to measure cardiac biomarkers, including CRP, troponin T, CK-MB, and NT-proBNP. The study group comprised 5 girls and 38 boys, with a mean age of 16 years (range 4.5-17.5).

Results: Before admission, 76.7% of patients exhibited symptoms indicative of viral infection. Upon admission, electrocardiography revealed ST segment changes in 53.5% of patients. Transthoracic echocardiography demonstrated reduced ejection fraction (<55%) in 25.6% of patients. Elevated levels of troponin were observed in 86.1% of patients, CK-MB in 72.1%, NT-proBNP in 74.4%, and CRP in 76.7%. MRI confirmed myocardial inflammation in 72.1% of patients, with myocardial edema present in 51.2%, myocardial fibrosis in 76.7%, and late gadolinium enhancement in 55.8% of cases. Statistical analysis revealed a negative correlation between troponin level and left ventricular ejection fraction (LVEF) ($p=0.002$), as well as between CK-MB level and LVEF ($p=0.002$). However, no significant correlation was found between NT-proBNP level and LVEF ($p=0.094$). Troponin level correlated with inflammatory changes in the myocardium ($p=0.001$) and myocardial edema ($p=0.005$).

Conclusions: Elevated levels of troponin and CK-MB are associated with reduced EF, thus impaired myocardial contractility. Troponin level correlates with inflammatory changes in the myocardium.

Keywords: Myocarditis, MRI, biomarkers, children

MVP - more than just a ventricular arrhythmia. Impact on the occurrence of AF and thromboembolic events.

Jakub Sulima[1], Matylda Forszpaniak[1], Aleksandra Kępczyńska[1], Kamil Górecki[1], Przemysław Prokop[1]

1. 1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Prof. dr hab. n. med. Katarzyna Mizia-Stec

Background: Mitral valve leaflet prolapse (MVP) is one of the most prevalent valve anomalies. MVP is associated with the increased risk of sudden cardiac death, but it may also influence risk of atrial fibrillation (AF) and thromboembolic complications.

The aim: To assess prevalence of AF and thromboembolic events among patients (pts) with MVP and to characterise predisposing factors for these events.

Materials and methods: The study is a subanalysis of the MITPROL AR-PL Registry- a multi-center prospective study of MVP pts. Consecutive pts with MVP diagnosed by transthoracic echocardiography (TTE) were enrolled into the analysis. Enrollment period lasted for 6 months followed by another 6-month follow-up. On admission, pts underwent TTE,12-lead ECG, and 24-hour Holter ECG. The history of thromboembolic incidents was verified. Follow-up included 12-lead ECG and 24-hour Holter ECG; occurrence of thromboembolic events was reexamined.

Results: A total of 33 MVP pts were admitted (F/M: 11/22; age: 18-81 yrs, mean age: 53.2 Ī 17.7 yrs). AF was detected in 9 (27.3%) pts: 8 (88.9%) on admission (87.5% males), 1 (AF de novo, 11.1%) during follow-up. To date, 22 pts have been reexamined. Previous thromboembolic events were registered in 4 (12.1%) pts (TIA: 1/3%, male, 68 yrs; ischaemic stroke: 2/6.1%, male, 42yrs; male, 67yrs; DVT: 1/3%, male, 47yrs) and at the follow-up: in 1 (3%) pts (ischemic stroke; female, 81yrs). AF was found in 2 out of 5 pts with thromboembolic events. At the follow up the deaths were recorded in 2 (6.1%) pts (male, 65yrs; male, 71yrs).

Conclusions: AF is registered in about a quarter of pts with MVP. Thromboembolic events in this population seem to be related to AF, male sex and general cardiovascular risk. Regardless of the limited number of patients and short period of observation the deaths were recorded. Our finding suggests a non-benign character of MVP disease. There is a need for further studies to prove our observations.

Keywords: mitral valve prolapse, atrial fibrillation, thromboembolic events, stroke

Complications and interventions in patients with a subcutaneous implantable cardioverter-defibrillator

Agnieszka Radziewicz[1], Patrycja Pabis[1], Michał Krawiec[1], Emilia Kupczyk[1]

1. Department of Cardiology and Electrotherapy, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Beata Średniawa, dr hab. n. med. Ewa Jędrzejczyk-Patej

Background: The subcutaneous cardioverter defibrillator (S-ICD) is a relatively new technology aiming to overcome lead-related complications observed in patients with transvenous ICD but is associated with some complications and interventions.

The aim: To assess complications and device interventions in patients with subcutaneous cardioverter-defibrillator.

Materials and methods: The study population consisted of 86 consecutive patients (median age: 35, 68.6% male, 61.6% in primary prevention of SCD) with S-ICD implanted between October 2015 and September 2023 in a tertiary cardiology center in Poland. All patients were observed prospectively in a single-center S-ICD registry. All patients met the criteria for ICD implantation, with the current ESC guidelines.

Results: Seven (8.1%) device-related complications were observed during a median follow-up of 539 days. Superficial wound infections were observed in 4 patients (4.7%), but systemic infection requiring removal of the S-ICD was observed in 1 (1.2%). One patient needed lead revision due to the risk of device externalization and lead fracture. In one subject, the device's battery was suddenly exhausted.

Up to 6 months after implantation, 10 patients (11.6%) had appropriate S-ICD shocks due to ventricular tachycardia/ventricular fibrillation (VT/VF), 4 patients (4.7%) experienced inappropriate shocks: all of them were caused by atrial fibrillation (AF) with a rapid ventricular response. During long-term follow-up, 7 subjects had inappropriate device therapies: 2 due to sinus tachycardia, 1 due to AF, and 4 due to T-wave oversensing. One patient had an electrical storm, and 7 subjects had appropriate shocks.

Conclusions: Device-related complications occur in 8% of patients with S-ICD. Inappropriate S-ICD shocks are observed in almost 13% of subjects during a median follow-up of 2.5 years. The most common cases of inappropriate therapies of S-ICD are T-wave oversensing and atrial fibrillation with a rapid ventricular response.

Keywords: ICD, S-ICD, complications, interventions, ventricular arrhythmia

Efficacy and safety of vascular closure device in patients submitted to coronary angiography femoral approach

Konrad Turczynowski[1], Kamil Turczynowski[1], Maciej Kokoszka[1], Mikołaj Guzikowski[1], Sabina Kowalczyk[1]Michalina Chodór[1]

1. 1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Maciej Wybraniec

Background: Radial access is the preferred approach for coronary angiography (CA), but femoral artery is used due to spasm or radial artery tortuosity. Vascular closure devices enable rapid closure of femoral artery after CA and PCI, avoiding prolonged compression.

The aim: Evaluate vascular complications with vascular closure vs. pressure dressing in femoral CA.

Materials and methods: 120 patients (median age 72.5, 60% men) underwent femoral CA. 6 French-vascular closure device use was discretionary. Study group (67 patients) vs. control (53) matched for age and sex. Primary endpoint: hematoma, pseudoaneurysm, bleeding, fistula, dissection, or limb ischemia.

Results: Complications in 12 patients (10%): 4 pseudoaneurysms (28.6%), 2 hematomas (21.4%), 4 bleedings (28.6%), 2 dissections (14.3%). 9 in-hospital deaths (7.5%). Surgical intervention in 4 (33.3%). Unsuccessful device deployment in 2 (3%). Similar complication rates: study (n=8, 11.9%) vs. control (n=4, 7.6%; RR 1.58; 95% CI 0.50-4.97, P=0.43). Deaths: 3 (4.5%) vs. 6 (11.3%) (p=0.158). Comparable demographics. Vascular closure group had more AF on anticoagulation (31.8% vs. 13.5%, p=0.02). Patients with complications had higher AF prevalence (41.7% vs. 21.7%, P=0.04), peripheral artery disease (p=0.016), and contrast volume (171Ī84 ml vs. 121Ī61.8, p=0.05). Logistic regression: contrast volume predicted complications (OR 1.011 per 1 ml, 95% CI: 1.001-1.020, p=0.028).

Conclusions: Based on this small exploratory study, the use of vascular closure device in case of femoral approach does not reduce the rate of vascular complications. Radial approach should be the preferred option of vascular access site.

Keywords: Coronary angiography, Vascular closure systems, Femoral approach, Vascular complications,

Impact of diabetes on clinical characteristics and short term results in NSTEMI myocardial infraction patients

Maria Wysocka[1]

1. , 1st Cardiological SSC UMP

Work's tutor: dr. n. med. Skorupski Wojciech

Background: The global surge in diabetes mellitus (DM) is amplifying the burden of cardiovascular disease, which stands as the primary cause of death for diabetes patients. Despite improvement in the management of patients with non-ST elevation myocardial infarction (NSTEMI), diabetes is still associated with increased mortality and morbidity among patients. Diabetic patients undergoing coronary interventions face a greater risk of complications and a worse prognosis.

The aim: We aimed to assess the impact of diabetes on clinical characteristics and short term results in NSTEMI patients.

Materials and methods: 811 patients with diagnosis of NSTEMI between January 2017 and December 2018 from multi-center registry managed by our Clinic were included. The whole group consisted of 250 (31%) diabetic patients and 561 (69 %) patients without diabetes.

Results: The groups did not differ in the prevalence of heart failure (51% vs 44%; p=0,061), COPD (5% vs 6%; p=0,668), atrial fibrillation (14% vs 14%; p=0,960), neoplastic disease (2% vs 2%; p=0,142). History of previous stroke or TIA (13% vs 6%; p=0,000538), peripheral arteries disease (15% vs 9%; p=0,147) and chronic kidney disease (33% vs 23%; p=0,00266) and previous PCI procedures (25% vs 18%; p=0,0377) were observed more frequently in patients with diabetes. For location of coronary occlusion, the difference was statistically relevant only for LAD (12% vs 7%; p=0,0150). Results for others were as following LM (0% vs 0%; p=0,234), LCX (13% vs 10%; p=0,187), RCA (13% vs 10%; p=0,196). Total occlusion of infract related coronary artery (p=0,132) or peri-procedural stroke (p=0,621) did not differ between the groups. Mortality during the hospitalization varied (RR=1,90; CI+95%=3,10; CI-95%=1,164 p=0,0101).

Conclusions: Patients with NSTEMI and diabetes present stroke, peripheral arteries disease and chronic kidney disease more often than patients with NSTEMI and without diabetes. The major result is that diabetes increases mortality related to emergency PCI in patients with NSTEMI.

Keywords: NSTEMI, diabetes, coronary intervention,

Rhythm disturbances related to cardiac myxoma and its surgical removal

Michał Piotrowski[1], Jakub Batko[1]

1. CAROL—Cardiothoracic Anatomy Research Operative Lab, Department of Cardiovascular Surgery and Transplantology, Institute of Cardiology, Faculty of medicine, Jagiellonian University Medical College

Work's tutor: Grzegorz Grudzień MD, PhD, Krzysztof Bartuś MD, PhD, Professor

Background: Myxoma is most common primary cardiac tumor. Its removal is relatively safe intervention with perioperative mortality similar to other cardiothoracic interventions. One of the more common complications is development of arrythmia, however, other clinically significant complications can be defined

The aim: The aim of this study was to analyze ECG changes observed and its association with tumor localization and size within large cohort of patients with cardiac myxoma.

Materials and methods: Data from 166 patients (aged 56.7±12.6 years, 68.1% female) after surgical removal of cardiac myxoma was retrospectively analyzed. Patients' preoperative and postoperative ECG and details about myxoma size and localization were collected and further analyzed. The statistical analyses was conducted to investigate whether localization of cardiac myxoma impacts preoperative and postoperative ECG changes.

Results: The preoperative ECG showed abnormalities in 62 (38.3%) cases including: atrial fibrillation (AF) (n=22, 13.3%), ischemic changes (n=18, 10.8%), ventricular hypertrophy (n=12, 7.2%), right (n=8, 4.8%) and left (n=3, 1.8%) bundle branch block. In 13 cases, new pathological changes in ECG were observed postoperatively, including atrial fibrillation (3, 1.8%), ischemic changes (2, 1.2%), LBBB (2, 1.2%), RBBB (0.6%), other changes (5, 3%). In 4 cases, preoperative ECG changes reversed, including 1 RBBB and 3 AF cases. Cardiac myxoma bigger diameter was correlated with AF increased postoperative prevalence ($p<0.05$).

Conclusions: Cardiac myxoma surgery can be both treatment and cause of various arrythmias-with the AF being the most common pre- and postoperative one. Cardiac myxoma diameter is a prognostic factor in terms of AF postoperative prevalence.

Keywords: cardiac myxoma, cardiothoracic surgery, arrythmia

Contemporary management of patients with discharge of implantable cardioverter-defibrillators

Mateusz Drabczyk[1], Zofia Kampka[1], Magdalena Pająk[1], Olga Drapacz[1]

1. 1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Maciej Wybraniec

Background: Implantable cardioverter-defibrillators (ICDs) are vital for preventing sudden cardiac death (SCD) but are associated with certain complications. Understanding the underlying causes of ICD discharges is essential for effective management.

The aim: This aim of the study was to investigate the characteristics of patients admitted following ICD discharge, focusing on myocardial ischemia as a potential exacerbating factor.

Materials and methods: This retrospective, single-center study included 81 patients, who were categorized based on coronary angiography, percutaneous angioplasty, presence of significant stenosis, recurrent ventricular tachycardia (VT) and catheter ablation. Clinical variables, including demographic data, echocardiographic parameters and pharmacotherapy were analyzed. The primary clinical endpoint was the recurrence of VT during hospital observation.

Results: Among 81 patients, predominantly male (86.42%), with a mean age of 63.6 years, 55 (67.9%) had coronary artery disease (CAD) as the primary etiology for ICD implantation. Coronary angiography was performed in 34 patients (42%) and showed significant stenosis (>50%) in 18 (41.8%) patients. Recurrent VT occurred in 60 subjects (74.1%), while ventricular catheter ablation was performed in 36 patients (44%). Significant associations were found between clinical variables and outcomes, such as diabetes (p=0.028) and hyperlipidemia (p=0.022) with coronary angiography, while renal function (p=0.002), intensive insulin therapy (p=0.013) and left ventricular hypertrophy (LVH) (p=0.006) with recurrent VT. Moreover, CAD patients underwent catheter ablation more frequently (p=0.001) than those with dilated cardiomyopathy

Conclusions: The study suggests a potential role of myocardial ischemia in exacerbating ventricular arrhythmias in ICD patients, highlighting the importance of coronary evaluation. Various clinical factors, including renal function, glycemic control, inflammation and LVH influence arrhythmia recurrence and treatment outcomes.

Keywords: ICD, ventricular tachycardia, coronary angiography, catheter ablation

Acute pulmonary embolism – are we strong enough?

Łukasz Papież[1], Dominik Sikora[1], Kinga Majka[1], Wiktoria Donocik[1], Jakub Ligęzka[1]Aleksandra Spirkowicz[1]

1. 1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Prof. dr hab. Katarzyna Mizia-Stec

Background: Acute pulmonary embolism is a phenomenon of high mortality and morbidity. Pulmonary embolism response team (PERT) is dedicated to the multidisplinary treatment of APE patients with the highest cardiovascular risk.

The aim: The aim of this study was to characterise a role of the silesian PERT in the treatment of APE patients in the tertiary specialized cardiology centre.

Materials and methods: This is one center retrospective study analysing in-hospital course of the consecutive patients with APE hospitalized in the Upper Silesian Medical Center in Katowice during the period 2020-01.2024. High and intermediate-high APE risk patients were analysed as regards to the form of therapy (heparin, thrombolysis, surgical intervention), it's efficacy and complications.

Results: 222 patients with APE were involved into analysis. Among the whole APE group there were 106 subjects with high (n= 43) and intermediate-high risk (n=63) consulted by PERT in order to optimize therapy (heparin vs thrombolysis vs invasive treatment). Invasive therapy was performed in 19 patients; in 8 patients with subsequent transcathether thrombolysis. All subjects presented strict contraindications for systemic thrombolysis. In-hospital mortality was 21%. The remaining patients were treated with systemic thrombolysis (20) with simultaneous heparin infusion or heparin infusion only (67). The frequency of relative contraindications for thrombolysis were 20% among the systemic thrombolysis + heparin subgroup and 31.3% among the heparin subgroup.

Comparing the systemic trombolysis + heparin vs heparin subgroups revealed lower average age (57.4 vs 66.6), lower percentage of anaemia (15 vs 20.9%), higher inter-hospital transfer (26.3 vs 16.4%), longer mean hospitalization time (6.0 vs 5.3 days) and lower in hospital mortality (0 vs 9%).

Conclusions: Regardless of potent availability of invasive treatment the use of this therapy is limited in APE patients with high and intermediate-high risk. It seems that heparin is overused with suboptimal results.

Keywords: Pulmonary embolism; Pulmonary embolism response team

Percutaneous LAAO with the Watchman FLX device in patients with AF and with contraindications for OAC

Marta Chamera[1], Anna Kaźmierska[1]

1. Department of Invasive Cardiology and Elektrocardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Wojciech Wańha

Background: Left atrial appendage occlusion (LAAO) is an alternative and indicated prevention for patients with atrial fibrillation (AF), who are at high thromboembolic risk (CHA2DS2-VASc ≥3) and not suitable for chronic oral anticoagulation (OAC).

The aim: The aim of this study was to evaluate 1-year clinical outcomes of transcatheter LAAO using the Watchman FLX device in patients with AF and with contraindications for oral anticoagulation.

Materials and methods: This registry included consecutive patients with AF who underwent percutaneous LAAO using the Watchman FLX device between July 2019 and April 2023. The primary endpoint was ischemic stroke. Key secondary endpoints included the rate of major bleeding (defined as any bleeding requiring hospitalization, and/or causing a decrease of hemoglobin level > 2g/dL, and/or requiring blood transfusion that was not hemorrhagic stroke) and death.

Results: The study population consisted of 138 patients, mean age was 75.3±8.2 years and 60.9% were male. The mean CHA2DS2-VASc score was 4.2±1.3, and the mean HAS-BLED score was 3.1±0.8. Prior ischemic stroke was present in 30 (21.7%) patients, and clinically relevant bleeding in 106 (76.8%) patients. Mean left ventricular ejection fraction was 49.0±10.5% and the mean Watchman FLX device size was 25.1±5.2mm. The implantation was successful in all of the patients. Primary endpoint occurred in 3 (2.2%) patients. While, the rate of major bleeding during follow up was observed in 8 (5.8%) patients and the rate of death was observed in 5 (3.6%) patients.

Conclusions: Data from current registry suggest that LAAO with the Watchman FLX device is an effective and relatively safe procedure for patients with AF and contraindications for oral anticoagulation, reducing the incidence of stroke and bleeding complications at 1-year follow-up.

Keywords: left atrial appendage occlusion, Watchman FLX, atrial fibrillation, contraindications for OAC

Left atrial appendage occlusion using predictive simulation technology and AI – single center experience

Miłosz Kasprzyk[1], Gabriela Bronkowska[1], Przemysław Ciszewski[1], Szymon Domagała[1], Witold Kądziołka[1]Izabella Michalska[1]

1. 1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Katarzyna Mizia-Stec, dr n. med. Tomasz Bochenek, lek. Bartosz Gruchlik

Background: Left atrial appendage occlusion (LAAO) is a procedure that has been found to be an effective substitute for oral anticoagulant therapy in preventing stroke in patients with atrial fibrillation for patients who are diagnosed with AF but cannot tolerate anticoagulation therapy because of high bleeding risk.

The aim: Aim of the study was to analyze the clinical course of LAAO using predictive simulation with AI-based anatomical measurements of the CT scans/FEOPS/.

Materials and methods: Out od group of 65 with mean age 76,5 Ī 7,66 patients who underwent LAAO procedure between May 2018 and October 2023 at the 1st Chair and Clinic of Cardiology, Medical University of Silesia in Katowice we analyzed group of 18/65 (27,69%) who were additionally analyzed with advanced FEOPS technology. Computed tomography scans are utilized in the LAAO procedure to improve device size prediction, enlarge LAA orifice measurements and reduce fluoroscopy time through 3D modeling and artificial intelligence technology (FEOPS).

Results: The study included 65 patients diagnosed with atrial fibrillation 62/65 (95,4%) and 3/65 (4,6%) with atrial flutter. LAAO procedure was performed in all patients and 29.2% of the procedures used predictive simulation based on AI-powered anatomical measurements from CT scans. Minor complications occured in 5/65 (7,69%) of the patients. In follow-up was observed 2 out of 65 cases (3,07%) had heart infarction, bleeding incident in 1/65 (1,5%), pericardial effusion 3/65 (4,6%), and 4/65 (6,15%) had fatal incidents.

Conclusions: Left atrial appendage occlusion has been proven to be an effective and safe treatment for patients with atrial fibrillation and atrial flutter.

Keywords: left atrial appendage occlusion, LAA, thromboembolic events, atrial fibrillation

Myocardial injury after complex percutaneous treatment of calcified coronary lesions

Kamila Florek[1], Weronika Bihl[1], Krzysztof Kraik[1], Łukasz Paździerz[1], Oskar Ratajczyk[1]Igor Zasoński[1]

1. Students' Scientific Group of Invasive Cardiology, Institute of Heart Diseases, Faculty of Medicine, Wroclaw Medical University

Work's tutor: dr hab. Piotr Kübler

Background: Rotational atherectomy (RA) and orbital atherectomy (OA) are complex percutaneous coronary interventions (PCI) used for the treatment of severely calcified coronary artery lesions. However, they are associated with a high risk of complications, including myocardial injury.

The aim: This study aimed to compare RA and OA, focusing on myocardial injury reflected by the level of troponins and consequent periprocedural myocardial infarction (PMI).

Materials and methods: We analyzed data of 20 consecutive patients with chronic coronary syndrome (10- RA, 10- OA). High-sensitivity troponin (hsT) levels were measured 8 and 24 hours post-procedure. Myocardial injury and PMI were defined according to the 4th universal definition of myocardial infarction.

Results: The mean age was 70.15Ī3.60 years (OA vs. RA; 71.10Ī3.07 vs. 69.20Ī3.99). Males constituted 40% in the OA and 70% in the RA subgroup. There were no significant differences in clinical characteristics. Procedural characteristics showed that OA was associated with increased total run time (236Ī75 vs 94Ī72; p<0.001) and higher number of burr passages (8Ī2 vs 5Ī3; p=0.005). All procedures were successful, however myocardial injury was diagnosed in all patients after both techniques with trend towards higher hsT after OA (hsT OA vs RA; 880 (199;3787) vs 620 (333; 1960); p=0.07). PMI was numerically higher in the OA group, without statistical significance (50% vs 20%; p=0.16). Patients with PMI more often were present with higher CCS (III vs II; 83% vs 14%; p=0.003) and more frequently had left main coronary artery modified (100% vs 28%; p=0.04). In addition, dissections were more common among this group (100% vs 24%; p=0.01).

Conclusions: RA and OA are equally effective in modifying calcified lesions, however with a higher risk of PMI than in routine PCI. Myocardial injury was observed in both study groups, but its clinical role is to be determined in long follow-up. Further research on a larger patient cohort is necessary to compare outcomes in RA and OA patients.

Keywords: orbital atherectomy, rotational atherectomy, myocardial injury

Stenting of native coarctation of aorta in adult population - comparison of covered and bare metal stents

Michał Kapałka[1], Artur Łapaj[1], Maksymilian Dobosz[1]

1. Department of Congenital Heart Defects and Pediatric Cardiology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: lek. Filip Tyc, dr hab. n. med. Roland Fiszer

Background: Coarctation of the aorta (CoA) stands as one of the most prevalent congenital cardiovascular defects in the pediatric population. While some patients may remain asymptomatic, it can often go undiagnosed until adulthood. Percutaneous stenting emerges as the preferred treatment modality for CoA in adulthood, with covered stents offering additional safety benefits, particularly in high-risk cases.

The aim: Evaluation of short and mid term effects of native CoA stenting with covered and bare metal stents in adult patients.

Materials and methods: Between 2011 and 2023, a total of 63 adult patients underwent interventional treatment for CoA, among whom 37 patients (median age 34 years, range 18-60, 11 females) received stenting for native CoA of the aorta: bare metal stent in 27 patients (73%) and covered stent in 10 patients (27%). Procedural, hospitalization, and median 11.4 years (0.9-12.9) follow-up data were collected from inpatient and outpatient settings.

Results: Successful stent deployment was achieved in all procedures, with 8 patients (21.6%) undergoing acute procedures as life-saving measures. No procedural or early complications were observed. Peak-to-peak gradient dropped from 41 mmHg (IQR 21.7-56.3) to 9 mmHg (IQR 0.5-15.5) and CoA diameter increased from 6.9 mm (IQR 3.2-7) to 14.6 mm (IQR 12-17). Residual gradient exceeding 20 mmHg was noted in 6 patients (16.2%). The decrease in gradient was significantly greater in the group of patients with covered stents (41.2 vs. 26.9 mmHg; p=0.014). Overall, 13 patients (35%) required reinterventions, with only 1 out of 10 patients (10%) with covered stents requiring reintervention, compared to 12 out of 27 patients (44.4%) with bare metal stents (p=0.065). Reinterventions included subsequent stenting for recoarctation in 2 patients and balloon angioplasty in 11 patients.

Conclusions: Stenting for CoA in adult patients proves to be a safe and effective procedure. Reinterventions, including planned redilatations, remain common, especially in patients with bare metal stents.

Keywords: Coarctation of the aorta, covered stents, bare metal stents, adults

Evaluation of peripheral blood smears in patients with sepsis in comparison with biochemical parameters.

Karolina Nowak[1], Magda Molenda[1], Adam Szeleszczuk[1], Wiktoria Świergiel[1], Katarzyna Popko[2]

1. Department of Laboratory Diagnostics and Clinical Immunology of Developmental Age, Faculty of Pharmacy, Medical University of Warsaw

2. Department of Laboratory Diagnostics and Clinical Immunology of Developmental Age, Medical University of Warwas

Work's tutor: dr n. med. Katarzyna Popko

Background: Sepsis is an excessive systemic inflammation caused by the presence of a pathogen in the peripheral blood. As it develops, it gets out of the body's control leading to the occurrence of cytokine storm and sometimes eventually to death due to multi-organ failure. Procalcitonin (PCT) facilitates efficient diagnostics, enabling quick initiation of targeted treatment. PCT is produced by monocytes in response to bacterial infection and is considered its early marker.

The aim: The aim of the study was to determine the correlation between concentration of procalcitonin in pediatric patients and changes in neutrophils' morphology.

Materials and methods: The study included 36 patients–18 boys and 18 girls aged 0-14. Patients enrolled to the study had the concentration of procalcitonin above 0,5ng/ml in the last 3 days. Blood smears for microscopic evaluation were made from the blood remaining after the automated complete blood count (CBC). If, due to leukopenia, it was not possible to count 100 nucleated cells in the smear, all nucleated cells were counted.

Results: 4 patients had less than 100 cells in the smear. Neutrophils with morphology altered due to inflammation were found in 77,8% of smears. They were characterized by the presence of vacuoles and toxic granules. Only in 21,9% of patients percentage of normal neutrophils was higher than the ones with toxic traits. In 60% of patients with PCT>10ng/ml, neutrophils with toxic granules constituted more than 50% of all leukocytes. Procalcitonin concentration did not appear to be related to the number of leukocytes measured in CBC of these patients.

Conclusions: Presence of morphologically altered neutrophils and bacterial infection are related. However, the direct correlation between neutrophils' morphology and procalcitonin concentration remains ambiguous and most likely depends on many different factors that should be further analyzed.

Keywords: sepsis, blood smear, neutrophils' morphology, procalcitonin, pediatrics

Assessment of the acceptance of the CDED diet by children with Crohn's disease and their parents

Magdalena Mida[1], Urszula Majda[1]

1. Department of Paediatrics, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Katarzyna Bąk-Drabik

Background: The treatment option for inducing remission in Crohn's disease children is nutritional therapy based on exclusive enteral nutrition (EEN) or partial enteral nutrition (PEN) together with the Crohn's Disease Exclusion Diet (CDED). The CDED diet eliminates potentially harmful products that negatively affect the microbiome and intestinal barrier tightness.

The aim: The aim of the study was to evaluate the acceptance of the CDED diet by children and their parents.

Materials and methods: The data were collected using an original questionnaire created specifically for the purpose of the study and approved by the Ethics Committee. The data were collected between April 2022 and April 2024. The study included 40 children with Crohn's disease aged 7-18 and 54 parents.

Results: Most patients accepted the diet (65%), although some patients (42,5%) needed more time. Crohn's children were forced to give up going to restaurants (57,5%) and going to school trips (35%). Children also experienced reluctance from their peers (15%). Only 22,5% of CD patients strictly adhered to the CDED diet. Half of the adults said that products are more expensive and need more preparation time than the previous diet. 61,1% of parents have consulted a dietitian about their children's diet, and the vast majority (66,7%) use particular apps. 57,4% of parents admitted they gave up going to restaurants because of their child's diet.

Conclusions: Most children and their parents accept the CDED diet well, although more than half of them need more time. Patients benefit from the support of dieticians and special applications. One of the biggest problems for parents is the lack of control over what the child eats outside the home and giving up going to restaurants. Children also experience rejection from their peers and ridicule, which points to the need for greater social education.

Keywords: Crohn's disease, the Crohn's Disease Exclusion Diet, children, parents

Exercise-related hypoglycemia in children with type 1 diabetes mellitus (T1DM).

Anna Matusik[1], Jakub Mękal[1]

1. Department of Children's Diabetology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Dr n med. Eliza Skała-Zamorowska, Prof. dr hab. n med. Przemysława Jarosz-Chobot

Background: Exercise plays a crucial role in the management of type 1 diabetes mellitus (T1DM). When performed regularly and sensibly, it offers numerous benefits for patients, such as increased insulin sensitivity, reduced risk of cardiovascular diseases, and improved quality of life. For children and adolescents, the recommended amount of exercise is 60 minutes of moderate to vigorous physical activity (PA) per day. Unfortunately, implementing the recommendations can be difficult and encounters problems. One of the main obstacles that often discourages or even scares children with T1DM from exercising is hypoglycemia. Hypoglycaemia is a serious condition that requires careful management before, during, and after exercise. This includes appropriate modification of insulin therapy, consuming balanced meals and close monitoring of blood glucose levels.

The aim: The aim of our study was to estimate the incidence of exercise-related hypoglycemia and to identify methods to reduce the risk of exercise-related hypoglycemia in children with T1DM. Our primary goal is to help patients with type 1 diabetes implement personalized strategies for dealing with exercise-related hypoglycemia based on the latest International Society for Pediatric and Adolescent Diabetes guidelines.

Materials and methods: The study group included 30 patients with T1DM from the Diabetes Outpatient Clinic of John Paul II Upper Silesian Child Health Centre in Katowice. The data collection tool is a survey based on the ISPAD 2022 guidelines.

Results: Results are in progress. Patients with diabetes experience exercise-induced hypoglycemia. The experience of hypoglycemia is the reason for total or partial absence from physical education.

Conclusions: The results of our study can support implementation of personalized strategies for dealing with exercise-related hypoglycemia based on the International Society for Pediatric and Adolescent Diabetes guidelines.

Keywords: hypoglycaemia, children, exercise, diabetes

The occurrence of diabetic ketoacidosis at the time of fresh diagnosis of diabetes between 2019 - 2023.

Anna Nowak[1], Dominika Posid[1], Gabriela Gawlas[1], Anna Bielawska[1]

1. Department of Children's Diabetology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Sebastian Seget

Background: Diabetic ketoacidosis (DKA) is an acute condition resulting from insulin deficiency. It may be associated with numerous complications, including death. Throughout the quarantine period caused by the COVID-19 pandemic, there was a significant increase in the frequency in the diabetic ketoacidosis occurrence amongst pediatric patients newly diagnosed with diabetes. This was most likely due to limited access to essential medical care.

The aim: The aim of the study was to investigate the frequency of diabetic ketoacidosis (DKA) occurrence at the time of fresh diagnosis of diabetes between 2019 and 2023.

Materials and methods: A retrospective analysis of the medical histories of children newly diagnosed with type 1 diabetes (T1D), hospitalized at The Department of Children's Diabetology and Pediatrics of The Upper Silesian Children's Health Center in Katowice, admitted between 2019-2023, was conducted. The diagnosis of DKA was based on the criteria of the International Society for Pediatric and Adolescent Diabetes (ISPAD).

Results: A significantly higher percentage of DKA was observed in 2020 compared to the previous year (40,31% vs. 28,96%) as well as a higher percentage of severe DKA (10,99% vs. 8,73%) compared to 2019. The higher percentage of DKA persisted also in 2021 (45.18% for DKA, 9.64% for severe DKA) and in 2022 (40% for DKA, 12,63% for severe DKA). In 2023, a decrease in the percentage of DKA compared to the previous years (specifically, 2020, 2021, 2022) was noted, with the percentage of DKA equal to 31%. At the same time, an escalation of the percentage of severe DKA, amounting to 17.03%, was observed.

Conclusions: After the end of the Covid-19 quarantine (in 2022), there was a reduction in the incidence of DKA occurrence at the time of fresh diabetes diagnosis. However, the frequency of the severe course of DKA increased. Enhanced awareness of diabetes is important in society, including among healthcare workers.

Keywords: Type 1 Diabetes, DKA

Retrospective analysis of risk factors and clinical course of alimentary tract polyps in children.

Aleksandra Kątnik[1], Iga Szymańska[1], Iza Kaniut[1], Klaudia Szala[1], Martyna Nowak[1]Zuzanna Symela[1]

1. Department of Paediatrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Sabina Więcek

Background: Polyps are defined as protuberances into the lumen above the surrounding alimentary tract mucosa. They may occur sporadically or as part of other syndromes (e.g. FAP). Gastrointestinal polyps are often asymptomatic but may be a cause of bleeding, abdominal pain and anemia.

The aim: The study aimed to analyze risk factors and clinical picture of gastrointestinal polyps in hospitalized children.

Materials and methods: The analysis included 57 patients (61 cases of polyps) hospitalized in the Department of Pediatrics of the Medical University of Silesia in Katowice, between 2014 and 2023 due to gastrointestinal polyps. The analysis included a description of the clinical picture (symptoms, results of laboratory tests), and endoscopic examination with histopathological evaluations. The study group consisted of 26 girls and 31 boys, who were 10.38 Ī 4.94 years old. Statistical analysis was performed using Statistica 13.0 software. A p-value <0.05 was considered significant.

Results: Polyps in the upper gastrointestinal tract appeared in 21 patients, were most frequently present in the stomach, their morphology type was largely inflammatory, the main symptom was abdominal pain and they were most common in the adolescent age group. Polyps in the lower gastrointestinal tract appeared in 38 patients, were most frequent in rectum, mostly hyperplastic and inflammatory, the main symptoms were bleeding and anemia, they were equally numerous in all age groups. Abdominal pain and mucus in stool were associated with bigger polyps. Polyps in the lower gastrointestinal tract were associated with lower Hb levels and high CRP levels.

Conclusions: The polyps should be considered in the differential diagnosis of gastrointestinal bleeding and abdominal pain in the pediatric population.

Keywords: pediatrics, gastroenterology, polyp, endoscopy, hyperplastic, colorectal

The use of programmable shunts in the treatment of hydrocephalus in pediatric patients

Natalia Wyroba[1], Natalia Kardas[1], Magdalena Iwan[1], Wiktoria Pniok[1]

1. Department of Paediatric Neurosurgery, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Ryszard Sordyl

Background: Hydrocephalus (HCP) is one of the most common conditions among children that requires neurosurgical intervention and lifelong monitoring. The causes include post-hemorrhagic hydrocephalus in premature infants, congenital stenosis of the aqueduct, myelomeningocele and brain tumors. The gold standard treatment for hydrocephalus is the implantation of a ventriculoperitoneal shunt. Programmable shunts can noninvasively manage over-drainage complications.

The aim: This study aims to analyze the use of programmable shunts in the treatment of HCP in pediatric patients, with particular emphasis on indications and treatment outcomes.

Materials and methods: A retrospective analysis of patients who underwent implantation of programmable shunts in the Department of Pediatric Neurosurgery in Katowice between 2013 and 2023.

Results: The study population consisted of 66 patients (29 girls and 37 boys; age: 2 mo.-17 yrs.). The analysis revealed that 27 patients have programmable shunt placement as 'de novo' procedure (40,9%). The indications for the neurosurgical intervention were over-drainage (28,8%) or significantly enlarged ventricular system of the brain (34,9%). Revision was performed in 25 cases in the field of shunt replacement (37,9%) whereas 42,4% of patients required shunt reprogramming.

Conclusions: The programmable shunt placement is a valuable method for treating hydrocephalus in children especially in cases of over-drainage. However, in the majority of patients with a programmable shunt, subsequent adjustments are not necessary and initial settings are usually sufficient.

Keywords: hydrocephalus, HCP, programmable shunt valve, pediatric neurosurgery

Pediatric Chronic Kidney Disease in the Era of COVID-19 and Migration

Paulina Tomecka[1], Joanna Jacuńska[1], Łukasz Biesiadecki[1]

1. Department of Paediatric Nephrology, Faculty of Medicine, Wroclaw Medical University

Work's tutor: prof. dr. hab. n. med. Kinga Musiał

Background: The undetectable progression of chronic kidney disease (CKD) during its initial phases hinders early identification, particularly in social and healthcare circumstances such as the pandemic or migratory processes. Pediatric CKD primarily stems from congenital kidney and urinary tract anomalies (CAKUT) and requires early diagnosis to mitigate CKD advancement and postpone complications.

The aim: Assessment of the clinical data of children diagnosed with CKD at the Department of Pediatric Nephrology, Wrocław Medical University, in the years 2014-2023.

Materials and methods: Clinical data from 175 pediatric CKD patients included etiology, CKD stage at diagnosis, and anemia occurrence, analyzed in regard to the patients' age (<2 years, 2-10 years, >10 years). Comparative analysis spanned two 5-year periods: 2014-2018 and 2019-2023.

Results: In 2014-2018, 39% more children were diagnosed with CKD compared to 2019-2023, the most significant difference observed in the 2-10-year age group (72%). CAKUT were the leading cause of CKD across all age groups, most impactful in patients <2 years old. The share of genetic diseases rose in 2019-2023 vs. 2014-2018, whereas prevalence of unknown CKD causes increased with age in both time frames, reaching 22-24% in patients >10 years old. Among children <2 years old, only 13-23% had advanced CKD and anemia at diagnosis. The participation of CKD stages 3-5 at diagnosis increased with the patients' age, reaching a zenith in those >10 years old. Such aggravation was also present when the two time periods were compared, with 45% (2014-2018) and 75% (2019-2023) diagnosed with advanced CKD, and anemia occurrence at diagnosis rising from 33% to 64%.

Conclusions: Advanced diagnostic tools ensure the identification of genetic diseases as a significant cause of CKD in children. Pandemic and migratory challenges may impede timely admissions to pediatric nephrology departments, leading to delayed CKD diagnoses. This situation gives rise to a higher rate of CKD cases with unknown causes.

Keywords: chronic kidney disease, anemia

Surgical treatment of spinal lipomas in pediatric patients

Patryk Stabrawa[1], Aleksander Tuteja[1]

1. Department of Paediatric Neurosurgery, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Ryszard Sordyl

Background: Spina bifida is a pathological condition in which there is incomplete closure of the spinal cord during embryogenesis. There are two main types of resulting spinal cord malformations: occult and open spinal dysraphism. Spinal cord lipomas belong to occult spinal dysraphism. The most recent classification of spinal lipomas is Morota scale.

The aim: The aim of the study was to analyze indications for the surgical correction of spinal lipomas as well as the clinical outcomes and complications of the treatment.

Materials and methods: A retrospective analysis of children treated for spinal lipomas in the Department of Pediatric Neurosurgery in Katowice between 2012 and 2022.

Results: Study population consisted of 51 patients (32 girls and 19 boys), average age at admission: 3 years and 11 months. The most frequent presenting symptoms included: birthmarks (n=33, 64,7%), paraparesis (n=13, 25,5%), neurogenic bladder (n=10, 19,6%), hypoaesthesia (n=5, 9,8%), syringomyelia (n=5, 9,8%), progressive scoliosis (n=4, 7,8%), defecation disorders (n=3, 5,9%). 9 patients (17,6%) were asymptomatic. In all cases lumbar spine MRI was performed. All patients were diagnosed with spinal lipomas, including Morota type 1 in 25 cases (49%), type 2 in 14 cases (27,5%), type 3 in 5 cases (9,8%) and type 4 in 7 cases (13,7%). Surgery involved untethering of the spinal cord (n=5, 9,8%) or untethering and removal of the lipoma (n=46, 90,2%). After the procedure symptoms worsened in 1 case (2%), improved also in 1 case (2%), while in 49 patients the clinical status have not changed (96%).

Conclusions: Surgical treatment of spinal lipomas in pediatric patients can be performed in symptomatic patients to prevent further progression or as a prophylactic management before any neurological symptoms occur. Treatment options include spinal untethering and/or lipoma resection. In our patients surgical management of spinal lipomas turned out to be a safe and effective procedure.

Keywords: Pediatric neurosurgery, spina bifida, spinal lipomas, Morota scale

Characteristics of pediatric patients with hepatic steatosis – single center study.

Marta Chrapek[1], Weronika Grzyb[1], Michał Kurnik[1], Paulina Łasińska[1], Klaudia Hachuła[1]

1. Department of Paediatrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Dr hab. n. med. Sabina Więcek

Background: Hepatic steatosis occurs when excess fat accumulates in the hepatocytes. It is a chronic disease that leads to fibrosis of the liver, which consequently may become cirrhosis and hepatocellular carcinoma and be an indication for a liver transplant.

The aim: Our study aims to evaluate the clinical picture of patients with hepatic steatosis hospitalized at the Department of Pediatrics and the Paediatric Gastroenterology Outpatient Clinic, Medical University of Silesia in Katowice.

Materials and methods: We retrospectively analyzed an anonymous database of 100 patients with hepatic steatosis. We looked at clinical presentation, which included nutrition status, co-morbidities, lab results (markers of liver damage, cholestasis; lipid and carbohydrate metabolism parameters) and imaging tests. Statistical analysis of the results was performed.

Results: 100 patients, of which 28% were girls and 72% boys, were diagnosed at the age of 4 to 18 years. The BMI value was from 18,9 to 46. 15% had correct weight, 34% were overweight and 51% had obesity based on BMI. 34/100 children joined the body composition analysis and on average 43,29% of their fat mass was localized on the trunk. The range of total cholesterol was from 71 to 315 mg/dl the average level was 175,45. 30% of patients had higher levels than 190. 6 have hepatomegaly, and 7 have hypothyroidism. 42% of patients have positive markers of liver damage and 19% of them had increased GGT levels. 57 patients had elastography with an average result of 3,97 kPa moreover 4 of them started liver fibrosis on F2 stadium. Each of the examined patients had excluded HCV infection, Wilson disease and celiac disease.

Conclusions: Special attention should be paid to the group with correct body weight and with coexisting (or not) lipid metabolism disorders. However, 85% of our research group are patients with above-normal body weight, which indicates that it's the primary risk factor. Due to the rising obesity rates in children, we must pay attention to the complications of hepatic steatosis.

Keywords: USG, HEPATIC STEATOSIS, NAFLD, PEDIATRIC POPULATION

Mucopolysaccharidosis (MPS) – fast-track diagnosis and treatment consequences

Julia Szlążek[1], Anna Szot[1]

1. Department of Pediatric Neurology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr. hab. n. med. Justyna Paprocka

Background: Mucopolysaccharidoses (MPS) are rare inherited lysosomal storage disorders caused by enzyme absence or deficiency needed to break down glycosaminoglycans leading to accumulation with enzyme-specific type of MPS. Multi-organ symptoms include skeletal, cardiac, ophthalmological, neurological and other systems. Patients are asymptomatic at birth, the age of onset and disease progression varies in forms of MPS. Treatment includes enzyme replacement therapy (ERT) with recommended hematopoietic stem cell transplantation (HSCT) before 2 years of age.

The aim: Single-centre real-life retrospective analysis of diagnosis and treatment of mucopolysaccharidosis type 1 and type 2.

Materials and methods: The chosen target group was patients at the Department of Child Neurology at SUM diagnosed with MPS1 and 2, treated with α-L-iduronidase replacement therapy between 2009 and 2024. The analysed parameters were clinical signs, age, anthropometric measurements, morphological and biochemical blood indicators, as well as imaging findings.

Results: 6 patients (2 male, 4 female), aged 2 to 16 (mean 7.00Ī5.51) were enrolled in the study. 5 were diagnosed with MPS1 and 1 with MPS2. The mean age at diagnosis was 1.83Ī1.17. Currently, 5 of the 6 patients have undergone HSCT, with 1 of the patients being the 2nd diagnosed in the family. At baseline, 3 patients (50%) had correct mental and motor development. 4 (66.67%) showed osteoarticular, ophthalmological and abdominal symptoms, 5 (83.33%) cardiac symptoms with mitral regurgitation being most prevalent.

Conclusions: Early diagnosis of MPS and intervention are crucial, with treatments like ERT and HSCT offering promising outcomes when initiated early. The study underscores the importance of clinical vigilance, with 6 patients exhibiting varied clinical phenotypes and ages at diagnosis. The majority underwent HSCT, highlighting its significance in altering disease progression. Collaborative efforts are essential to improve diagnostic precision and therapy for MPS patients.

Keywords: mucopolysaccharidosis type I, Mucopolysaccharidosis type 2, enzyme replacement therapy

Clinical picture of patients diagnosed with Gilbert's syndrome- single centre study. Is Gilbert's syndrome onl

Weronika Roesler[1], Klaudia Sobik[1], Dawid Wolak[1], Monika Kalicka[1], Natalia Leszczyńska[1]

1. Department of Paediatrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Sabina Więcek

Background: Gilbert syndrome is characterized by mild, chronic, genetic unconjugated hyperbilirubinemia unrelated to any liver disease affecting 3-12% of the population. In recent years a number of risks (drug interactions, gallstones, haemolytic disease) and benefits (lower cardiovascular risk, cancer) occurring in patients with Gilbert syndrome have been demonstrated.

The aim: The aim of the study was to assess the clinical characterization of the population of pediatric patients diagnosed with Gilbert's syndrome in the Department of Pediatrics, Medical University of Silesia.

Materials and methods: Retrospective analysis concerned 83 pediatric patients who were presented with Gilbert's syndrome diagnosis. Certain information was gathered including: the age of a patient during the diagnostic process, clinical symptoms, medical history (including neonatal jaundice), laboratory test results (parameters of liver dysfunction and cholestasis), result of UGT1A1 gene mutation and results of imaging tests, family history of liver/bile duct diseases as well as Gilbert's syndrome among relatives.

Results: In the study 52 patients (63 %) were boys and 31 (36 %) were girls. Analyses of the collected medical data of patients showed that the average age at diagnosis was 13,5 years. The clinical picture was dominated by: jaundice, increased bilirubin in random tests, chronic abdominal pain. Blood tests revealed elevated total bilirubin with predominance of the unconjugated fraction. No patient had elevated liver damage/failure or cholestasis parameters. Ultrasound examination showed hepato- and splenomegaly in 11 patients. Concomitant gallstones occurred in 8 patients. 6 patients were cared for by a psychiatric clinic.

Conclusions: Gilbert's syndrome is a mild, unconjugated hyperbilirubinemia that usually causes no symptoms. However, It is important to remember that other diseases may more often coexist with this syndrome like hemolytic anemia and/or gallstones. Moreover, the occurrence of drug sensitivity is more frequent than in the population.

Keywords: gilbert syndrome, jaundice, hyperbilirubinemia, UGT1A1 gene mutation,

Time-trend patterns in baroreflex sensitivity and intracranial pressure after traumatic brain injury

Weronika Domczewska[1], Mikołaj Najda[2]

1. Department of Computer Science and Systems Engineering, Faculty of Information and Communication Technology, Wrocław University of Science and Technology

2. , Faculty of Information and Communication Technology, Wrocław University of Science and Technology

Work's tutor: dr. inż. Agnieszka Uryga

Background: Traumatic brain injury (TBI) may lead to significant changes in baroreflex sensitivity (BRS), driven by increases in intracranial pressure (ICP). There was a need to investigate whether there is a relationship between the temporary pattern of ICP and BRS time series and outcome in patients after TBI.

The aim: The research aims to develop an algorithm for automatic time-trends pattern recognition for selected neuromonitoring parameters: BRS and ICP in a dedicated time window and to propose the mathematical model for each signal pattern.

Materials and methods: Signal recordings from 20 TBI patients from the CENTER-TBI high-resolution sub-study were analysed retrospectively in this pilot study. Outcome was assessed using Glasgow Outcome Scale Extended. BRS was calculated using the cross-correlation method. The complexity of signals was estimated using Sample entropy. Time-series data was analysed during the first 7 days after ictus. The algorithm was prepared with Python and included the pre-processing part as well as model preparation. This study was supported by the National Science Center (UMO-2022/47/D/ST7/00229). We acknowledge the CENTER-TBI High-Resolution ICU (HR ICU) Sub-Study Participants and Investigators

Results: Mean BRS was 8.9 ± 10.2 ms/mm Hg, and ICP was 12.1 ± 8.8 mm Hg. Entropy of BRS was lower in patients with poor vs good outcome (0.4 ± 0.4 vs 0.8 ± 0.5, p=0.023). For BRS and ICP time-series the best fit was the second-degree polynomial (70% and 85% of cases, respectively). Moreover, BRS time-series had a logarithmic function as the best fit for 15% of cases, and all of those patients had poor outcome.

Conclusions: There is an association between temporal patterns of BRS, ICP and prognosis after TBI. Patients with poor outcome had low complexity of ICP time-series and present different dynamic of BRS in the first days after trauma. Further study are needed to confirm those observations.

Keywords: traumatic brain injury, baroreflex sensitivity, intracranial pressure, time-series analysis

Machine-Learning Approach to Mortality Prediction After Brain Injury Using Volatility of Neurosignals

Ignacy Berent[1], Mikołaj Najda[2]

1. Department of Biomedical Engineering, Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology

2. , Faculty of Information and Communication Technology, Wrocław University of Science and Technology

Work's tutor: Agnieszka Uryga, PhD Eng.

Background: Disorders in brain autoregulation and the autonomic nervous system, which manifest as disturbances in neuromonitoring metrics, are significant factors contributing to patient mortality following brain trauma.

The aim: Our research aims to identify key parameters governing brain autoregulation and the autonomic nervous system using Machine Learning (ML) alghorithms supported with eXplainable Artificial Inteligence tools. The detection of disturbances in these parameters may facilitate the prediction of patient survival.

Materials and methods: A cohort of 43 post-traumatic patients (mean age of 38 ± 16 years), admitted to Wrocław University Hospital (KB-133/2023), was analyzed. The study involved the utilization of the Autoregressive Conditional Heteroskedasticity (ARCH) model to predict parameter volatility based on 3-day biosignal recordings. Among these recordings several signals were included like arterial blood pressure (ABP), and intracranial pressure (ICP). Additionally, various metadata such as the Rotterdam and Marschall scale, as well as hypotension, were considered. In total, 32 parameters were used to train the eXtreme Gradient Boosting (XGBoost) model, with stratified k-Fold cross-validation. Furthermore, SHapley Additive exPlanations (SHAP) were utilized to interpret the model's decisions. This study received support from the National Science Center under grant number UMO-2022/47/D/ST7/00229.

Results: Based on the SHAP analysis, we identified multi-organ failure (MOF), ABP, pupil anisocoria, white blood count (WBC), and pulse amplitude of ICP as the most predictive parameters for survival. The model demonstrated an accuracy of 0.76 ± 0.11 and an area under the curve (AUC) of 0.86 ± 0.17.

Conclusions: A machine learning approach reveals the predictive significance of both neuromonitoring parameters and biochemical metrics in mortality prediction. Further research involving a larger patient cohort and comparison with other ML models is necessary to validate our findings.

Keywords: Traumatic Brain Injury, Biosignal Analysis, Machnie Learning, Explainable Artificial Intelligence

The role of selected neurodegeneration, inflammatory and signaling parameters in the pathogenesis of MS

Piotr Polechoński[1], Gabriela Mamak[1], Natalia Trędota[1], Sylwia Boczek[1], Patryk Walocha[1]Kacper Mąkosa[1]

1. Department of Neurology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: lek. Natalia Morawiec

Background: Multiple sclerosis (MS) is a chronic autoimmune disease of the central nervous system characterized by neuroinflammation and neurodegeneration.

The aim: Our study aimed to assess the levels of selected neurodegeneration, inflammatory and signaling parameters in the cerebrospinal fluid (CF) of patients diagnosed with relapsing-remitting multiple sclerosis (RRMS) diagnosed de novo.

Materials and methods: Sixty-two patients diagnosed de novo with RRMS and twenty-six healthy individuals were enrolled in the study. We have analyzed relationships between selected molecules levels depending on the gender, presence of MRI lesions or comorbidities

Results: We have found increased levels of GFAP and NF-H in the RRMS group. The concentration of Tau protein and MIF was higher in the control group. The number of T2 lesions in MRI decreased with the increasing levels of BDNF and FGF-21. No correlations were found for active Gd+ lesions. The concentration of GDNF, Tau protein, BDNF, S100B, and NF-H was higher in male patients. The levels of NRGN were significantly higher in women. In the RRMS group, positive correlations were found between the levels of IL-1, TNF-alfa, IL-17A and NCAM 1, IL-17A, IL-12 and Tau protein, as well as IL-17A and BDNF. A negative correlation was found only between IL-17 and NRGN.

Conclusions: Our study highlights the role of selected factors in the development of neuroinflammation at the early stage of MS. Understanding the relationship between these molecules and the pathomechanism of the disease may be crucial in planning the most appropriate immunomodulatory therapy.

Keywords: multiple sclerosis, neuroinflammation, neurodegeneration, neuroimmunology, RRMS

Clinical Differences in Multiple Sclerosis Patients Based on Age of Onset

Piotr Oleksy[1], Aleksandra Tobiasz[1], Zuzanna Szatkowska[1], Magdalena Reclik[1], Justyna Talaska[1]Ewa Góralczyk[1]

1. Department of Neurology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Michalina Rzepka, MD

Background: Multiple sclerosis (MS) is a chronic disease of the central nervous system. It can begin at any age, but usually affects individuals aged 20 to 40. The age of onset of MS can have an impact on both the course of the disease and the approach to treatment. Aim: This study aims to compare the differences in treatment and disease severity between different age groups of MS patients.

The aim: This study aims to compare the differences in treatment and disease severity between different age groups of MS patients.

Materials and methods: We conducted a retrospective analysis of 444 patients (302 women, 141 men) diagnosed with MS and hospitalized in the Department of Neurology, UCK in Katowice, between April 2018 and July 2023. Data were collected on the types of MS, EDSS score, disease duration, disease modifying treatment (DMT), and comorbidities.

Results: The patients were divided into three age groups based on the onset of the disease: 18–31 years (N=209; 47%); 31–49 years (N=205; 46%); over 49 years (N=29; 7%). Relapsing-remitting MS (RRMS) was the most common type of MS in all groups (91%; 82%; 52%, respectively). However, primary progressive MS (PPMS) was the most common in oldest group in comparison to the youngest (31% vs. 1.4%) ($p<0.001$). The mean disease duration was significantly shorter in the oldest (7.6±4.6 years) group compared to the youngest (11.5Ī7.9) and middle (10.8Ī6.6) groups ($p<0.05$). The mean EDSS score was the lowest in the youngest group compared to the middle and the oldest group (2.5Ī1.8 vs. 3.3Ī1.8 vs. 4.3Ī1.7; $p<0.001$). We found that patients in the youngest age group were significantly more likely to change their DMTs ($p<0.001$). The oldest group of MS patients had the highest number of comorbidities ($p<0.001$).

Conclusions: Patients diagnosed with MS after the age of 49 more frequent have PPMS with a shorter disease duration, lower activity, and higher disability according to EDSS. In contrast, younger MS patients mainly have RRMS and often experience more frequent changes in DMT.

Keywords: multiple sclerosis, EDSS, age of MS onset, MS treatment

Suspected Optic Neuritis at the Ophthalmological Emergency Department

Antoni Sieńko[1], Małgorzata Łabuś[1], Tomasz Maciejczyk[1]

1. Department of Ophthalmology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Sebastian Sirek

Background: Optic neuritis is accompanied by swelling and damage to the myelin sheaths that protect the optic nerve. The symptoms are non-specific and include: unilateral inflammation of the optic nerve, pain with eye movements, visual acuity impairment, color vision defects, visual field defects, rapid progression of symptoms and, importantly, in most cases a normal image of the optic disc in the examination of the eye's fundus. The etiology of optic neuritis includes a wide spectrum of autoimmune, infectious and systemic factors. Optic neuritis most often affects young people between 20 and 45 years of age. It occurs twice as often in women than in men; This disease is more common in Caucasians living in a temperate climate.

The aim: Our purpose was to assess the effectiveness of the early stages of the optic neuritis diagnosis process, giving a closer look at the most common and most important signs and symptoms occurring while facing this entity in the emergency room conditions.

Materials and methods: In the period from January to June 2022, a retrospective analysis of 71 information cards of the Admission Room of the Prof. K. Gibiński University Clinical Centre of Medical University of Silesia in Katowice for suspected optic neuritis was carried out. Women were reported more often (43 people) compared to men (28 people). The median age was 34, of which 37 for women and 34 for men. There were 48 first-time patients, 22 repeat patients.

Results: The presence of one of the typical symptoms of optic neuritis, pain with eye movements, was demonstrated by 5 people (3 men and 2 women). Color vision defects occurred in 18 patients (12 women and 6 men). 11 patients were referred for further hospitalization, of which 3 were diagnosed with optic neuritis using imaging and electrophysiological tests.

Conclusions: Suspected optic neuritis requires an extensive analysis of the clinical condition and a number of diagnostic tests in order to apply appropriate treatment, giving a chance to maintain useful visual function.

Keywords: Optic Neuritis, VEP, Optic Nerve, Ophthalmological Emergency, Multpile Sclerosis, MR

Alternating Hemiplegia of Childhood - A Single Center Study

Malwina Brzozowska[1], Aleksandra Tobiasz[1], Agata Jaunich[1]

1. Students' Scientific Society, Department of Pediatric Neurology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Prof. dr hab. n. med. Justyna Paprocka, dr n. med. Jacek Pilch

Background: Alternating hemiplegia of childhood (AHC) is a rare neurodevelopmental disorder with various courses and clinical presentations. The prevalence of AHC is estimated at 1 in 1 000 000 children. Mutations in the ATP1A3 gene have been implicated in the disease pathology. AHC is characterized by recurrent paroxysmal episodes of hemiplegia which alternate sides and occur only while awake. The onset of symptoms is observed in the first 18 months of life. Patients suffering from AHC present neurodevelopmental delay. As of this day, treatment is yet to be discovered.

The aim: The aim of the study is to analyze the course of the disease and genetic mutations in patients with AHC.

Materials and methods: We conducted a retrospective analysis of 7 patients (2 male, 5 female) diagnosed with AHC and hospitalized at Pediatric Neurology Department, Medical University of Silesia in Katowice. We collected data on family history, gestation and delivery period, psychomotor development, laboratory and diagnostic studies (brain MRI, EEG, genetic mutations).

Results: All of the patients received the diagnosis of AHC within the age range of 2 to 12 years. The onset of the disease occurred between 6 weeks and 15 months. Hypotonia was observed in six children within the neonatal period. Psychomotor development was delayed in six of the children, with one exhibiting normal development. Four children were diagnosed with epilepsy (four of them were temporarily treated with antiseizure medications) before the diagnosis of AHC. In five patients a pathogenic or likely pathogenic variant was found in ATP1A3 gene.

Conclusions: The process of diagnosing AHC can be difficult due to the vast variety of symptoms, usually non-specific, and similarity to other diseases, especially epilepsy. Genetic testing plays a crucial role in making the diagnosis.

Keywords: alternating hemiplegia of childhood, genetic mutations, ATP1A3 gene

Analysis of Brain Injury Parameters and CSF Interleukins in De Novo RRMS Patients Versus Controls

Urszula Majda[1], Natalia Trędota[1], Gabriela Mamak[1], Sylwia Boczek[1], Dominika Brzęk[1]Patryk Walocha[1]

1. Department of Neurology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Bożena Adamczyk, lek. Natalia Morawiec

Background: Multiple sclerosis (MS) is a chronic autoimmune disorder affecting the central nervous system (CNS). Due to the different phenotypes of the disease and non-specific symptoms of MS, there is a great need for a validated panel of biomarkers to facilitate the diagnosis, predict disease progression, and evaluate treatment outcomes.

The aim: The aim of the study was to compare the levels of selected brain injury parameters in the cerebrospinal fluid (CSF) of patients diagnosed de novo with relapsing-remitting multiple sclerosis (RRMS) compared to the control group.

Materials and methods: We determined the levels of the parameters of brain injury (NF-H, GPAF, S100B, and UCHL1) and the selected cytokines in the cerebrospinal fluid (CSF) in 101 patients diagnosed de novo with RRMS and 75 healthy controls. All determinations were made using the Bio-Plex method.

Results: We found higher levels of NF-H and GFAP in the relapsing-remitting multiple sclerosis (RRMS) group compared to the controls. The concentrations of both molecules were significantly increased in patients with Gd+ lesions on brain MRI. The level of S100B did not differ significantly between the groups. UCHL1 concentrations were higher in the control group. We found some correlations between the selected cytokines, the levels of the parameters of brain injury, and the time from the first symptoms to the diagnosis of MS.

Conclusions: The role of the above molecules in MS is promising. However, further research is warranted to define their precise functions.

Keywords: multiple sclerosis, NF-H, GFAP, S100B, UCHL1

Association Between MRI Findings and Cognitive Changes Following Deep Brain Stimulation in Parkinson's Disease

Karolina Szałata[1], Patryk Romaniuk[1, 2], Magdalena Karolak[1]

1. Department of Neurology, Faculty of Health Sciences, Medical University of Warsaw

2. , Faculty of Medicine, Collegium Medicum, Cardinal Stefan Wyszynski University

Work's tutor: dr n. med. Stanisław Szlufik

Background: Deep brain stimulation (DBS) of the subthalamic nucleus (STN) is a therapeutic intervention for advanced Parkinson's disease (PD). It can effectively manage motor symptoms, leading to improvement in functioning and quality of life. However, there is a risk of postoperative complications including cognitive decline.

The aim: This study aimed to investigate the relationship between MRI parameters and cognitive changes following DBS implantation assessed through neuropsychological testing.

Materials and methods: Thirty-eight PD patients undergoing DBS surgery with pre-operative brain MRI and both pre- and post-operative neuropsychological testing were included. Selected parameters were measured manually on the MRI. Improvement or decline in neuropsychological test scores after DBS implantation was evaluated. Spearman's correlation was utilized to analyze the relationship between MRI parameters and test scores. Potentially relevant findings ($p<0.05$) were controlled for clinical and demographic data using logistic regression.

Results: Statistical analysis revealed notable associations between neuropsychological test results and specific MRI parameters, primarily cortical gyri, lateral ventricles, and the lentiform nuclei. After Bonferroni adjustment ($p<0.0014$), a significant relationship was found between the length of the right lentiform nucleus and Tower of London (TOL) test scores, which remained statistically significant in logistic regression analysis ($p=0.034$). Among demographic and clinical parameters, clinical assessments were mainly associated with changes in the Wechsler Adult Intelligence Scale (WAIS-R).

Conclusions: The length of the right lentiform nucleus may serve as promising marker of cognitive decline in specific domains following DBS surgery. The observed correlations between changes in neuropsychological test scores and cortical gyri width suggest the potential utility of considering cortical folding patterns in predicting post-DBS cognitive changes.

Keywords: Deep Brain Stimulation, Parkinson's disease, MRI, Brain Atrophy, neuropsychological test

The Co-Occurrence Of Autoimmune Diseases And Multiple Sclerosis: A Retrospective Study.

Olga Falger[1], Jakub Milczarek[1], Magdalena Iwan[1], Weronika Wójtowicz[1], Natalia Wyroba[1]Zuzanna Wydrych[1]

1. Department of Neurology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: lek. Michalina Rzepka

Background: Multiple sclerosis (MS) is an autoimmune disease of the central nervous system. Importantly, it is known that autoimmune diseases are more likely to develop in patients with a pre-existing autoimmune condition.

The aim: The aim of this study was to determine the prevalence of coexisting autoimmune diseases among patients diagnosed with MS.

Materials and methods: This retrospective analysis covers patients diagnosed with MS, who were admitted to the Department of Neurology at the University Clinical Centre in Katowice between 2018 and 2023. The data collected includes the form of MS, disease duration, disease-modifying treatment and co-existing autoimmune disease.

Results: A total of 531 MS patients were included in the study, comprising 383 females and 148 males. 85.5% of MS patients had relapsing-remitting form of MS (RRMS). In all, 10.8% individuals presented with another autoimmune disease, while 1.1% had more than one. The most commonly reported conditions were hypothyroidism (4.2%), Hashimoto's disease (2.7%), hyperthyroidism (1.2%), and type 1 diabetes (1.1%). The mean age of patients with additional autoimmune disorder was slightly higher than in the group without those (45.3±11.3 vs. 42.3±12.1 years, p=0.04). Additionally, MS patients with autoimmune disease had a longer duration of MS, with an average of 11.2±7 years compared to 9.4±7.3 years for those without autoimmune disease (p=0.018). The EDSS score was higher in patients with coexisting autoimmune disease than those without (3.2±1.6 vs. 2.94±1.9, p=0.027). Among patients with MS and another autoimmune disease, the RRMS form was significantly more frequent compared to the group without another autoimmune disease (p=0.024).

Conclusions: People with MS often have other autoimmune conditions, the most frequent of which are thyroid disorders. Patients who have both MS and another autoimmune disease tend to have RRMS, have a longer disease duration, and higher disability according to EDSS.

Keywords: Multiple sclerosis, autoimmune diseases

Assessing Diagnostic Accuracy and Safety in Navigated vs. Frame-Based Stereotactic Brain Biopsies

Małgorzata Gola[1], Maciej Laskowski[1], Agnieszka Koperczak[1]

1. Department of Neurosurgery1, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: lek. Piotr Paździora

Background: Stereotactic brain biopsies are crucial for diagnosing brain lesions, guiding effective treatment strategies. Traditional frame-based methods and newer navigated approaches represent the main techniques employed, utilizing advanced imaging for precision. Despite their effectiveness, each method's comparative efficacy and safety in clinical practice remain subjects of ongoing research. This study aims to address these comparisons by evaluating both techniques in a real-world setting.

The aim: The primary objective of this study was to compare the efficacy and safety of navigated versus frame-based stereotactic brain biopsies in diagnosing brain lesions. The study aimed to determine if one method shows superior accuracy, lower complication rates, and better overall outcomes, thereby guiding treatment decisions effectively.

Materials and methods: This retrospective cohort study analyzed data from 112 patients who underwent brain biopsies at an academic medical center. Navigated and frame-based stereotactic techniques were employed based on the nature and location of brain lesions. The study variables included age, sex, primary disease symptoms, risk factors, biopsy success, type of biopsy, surgical complications.

Results: The most common symptoms leading to biopsy were muscle weakness, cognitive issues, and aphasia. The analysis revealed no significant difference in the accuracy of biopsy types, with both methods achieving around 81% diagnostic accuracy. Complications were rare, with a slight, non-significant difference in complication rates between the two methods. Most patients had a hospital stay of about 5 days, with few rehospitalizations.

Conclusions: Navigated and frame-based stereotactic biopsies are effective and safe for diagnosing brain lesions, showing high levels of accuracy and low complication rates. There was no significant difference between the two methods in terms of outcome measures, suggesting that the choice of technique can be tailored to specific clinical scenarios based on neurosurgeon preference.

Keywords: stereotactic biopsy, navigated biopsy, neurosurgery, brain biopsy

Advancing Spinal Surgery Outcomes through MEP and D-wave Electrophysiological Monitoring

Maciej Laskowski[1]

1. Department of Neurosurgery1, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Bartłomiej Błaszczyk

Background: Spinal cord surgeries, due to the high density of nerve fibers in a small area, require precise and cautious approaches. The study delves into the roles and limitations of various monitoring techniques such as Sensory Evoked Potentials (SSEP) and Motor Evoked Potentials (MEP), highlighting their significance in assessing spinal cord functionality and guiding surgical strategies.

The aim: The primary objective of this study is to evaluate the efficacy of intraoperative electrophysiological monitoring in spinal cord surgeries, focusing on the use of MEP and D-wave recordings to prevent limb paralysis post-surgery.

Materials and methods: This study conducts a retrospective analysis of 40 patients with spinal cord tumor. It compares the use of MEP and D-wave monitoring techniques to assess their impact on surgical outcomes.

Results: In this study, no significant difference in treatment outcomes was observed between patients monitored with motor evoked potentials (MEP) alone and those with additional D-wave recording during spinal cord tumor surgeries. D-wave monitoring offers real-time, nearly continuous recording advantages and provides early warning signs, unlike mMEP, which only indicates changes after they occur. The presence of MEP during surgeries has been shown to prevent worsening of postoperative limb paresis, although D-wave is considered the gold standard due to its prognostic value in such surgeries.

Conclusions: The study concludes that the combined use of MEP and D-wave monitoring in spinal cord surgeries enhances the safety and effectiveness of the procedures, offering a more comprehensive view of spinal cord functionality and allowing for timely modifications in surgical strategy to prevent irreversible neurological deficits.

Keywords: Spinal Surgery, MEP, D-wave

Closure of a patent foramen ovale in the prevention of cryptogenic stroke

Natalia Kardas[1], Julia Woźniak[1], Magdalena Mąka[1]

1. Department of Neurology, Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Prof. dr hab. n. med. i n. o zdr. Anetta Lasek- Bal

Background: Almost half of patients experiencing cryptogenic stroke have a patent foramen ovale (PFO) in the interatrial septum. Although this issue remains a significant risk factor for stroke, procedural closure of the PFO for prevention remains a debatable subject. The crucial aspect is patient selection using imaging tests, clinical assessment, and thrombophilia tests to determine which patients are most likely to benefit from the procedure.

The aim: Analysis of the profile of patients qualified for PFO closure as stroke prevention.

Materials and methods: A retrospective review of patient's medical records qualifying for the PFO closure procedure was conducted as part of NeuroHeartTeam consultations. A total of 189 patient cases (127 females and 62 males, with a mean age at qualification of 44.35 years) were considered, of which 95 were qualified (mean age 45.24 years). Various demographic, clinical, neuroimaging, and echocardiographic factors were analyzed to identify those most frequently influencing patient qualification for PFO closure.

Results: The analysis revealed that qualified patients experienced more strokes (median=1 +- 0.74, $p<0.001$), were more frequently hospitalized due to stroke/TIA (80%, $p<0.001$) or had changes in the central nervous system without a stroke/TIA (12.63%, $p<0.001$).In the group qualified for the procedure, the proportion of women to men was higher (54.74% vs 45.26%). Other factors such as presence of migraine, hypertension, thrombophilia diagnosis, and the presence and size of spontaneous blood leak through PFO also influenced the decision.

Conclusions: Key parameters influencing the decision to close the PFO were the number of previous strokes/TIAs, hospitalizations due to stroke/TIA and changes in the central nervous system without a stroke/TIA.

Keywords: patent foramen ovale, PFO, qualification for procedure, stroke, prevention

Gender differences in clinical presentation and course of Parkinson's disease

Karolina Klubikowska[1], Zofia Zdort[1], Krzysztof Karbowiak[1], Natalia Nawrat[1], Aleksandra Ochocka[1]Marlena Tarsa[1]

1. Department of Neurology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr. hab. n. med. Joanna Siuda

Background: Parkinson's disease is a challenge for both patients and clinicians, with evidence that the symptoms and course of the disease can differ by gender. We analyze data collected at the Prof. K. Gibinski University Clinical Center in Katowice, to understand this variation and its clinical implications.

The aim: This study aims to assess gender disparities in Parkinson's disease regarding the time of symptom manifestation, symptom occurrence, severity and therapy used.

Materials and methods: The study was conducted on a group of 294 patients of the Prof. K. Gibinski University Clinical Center through interviews from 2018 to 2023. Information was collected on the age of symptomatic onset, disease severity (based on the MDS UPDRS Part III scores in the off state), initial symptom presentation, the doses of levodopa and other drugs used to treat the disease, and the modern therapies used, such as the DBS system, apomorphine and levodopa/carbidopa intestinal gel.

Results: Analysis revealed slight differences in mean age of symptom onset between genders (58.35 years for women, 55.85 years for men) but lacked statistical significance ($p = 0.055$). Similar differences were also observed in the percentage of patients presenting tremor as the first symptom (63.48% of women vs. 52.51% of men, $p = 0.089$). Moreover, there were no significant gender differences in the doses of levodopa and other Parkinson's disease medications used ($p > 0.05$). However, significant differences were observed in the percentage of patients treated with the DBS-STN (3.48% of women vs. 10.61% of men, $p = 0.024$), but there were no notable differences in the percentage of patients treated with apomorphine and levodopa/carbidopa intestinal gel by gender ($p > 0.05$).

Conclusions: Our study confirms the existence of differences in the clinical presentation and course of Parkinson's disease according to patient gender. Understanding these differences may lead to better personalization of therapy and improved care for patients with the disease.

Keywords: Parkinson's disease, gender

Emotional health and weight-related aspects among women

Odeta Aliukonytė[1]

1. , Faculty of Medicine, Vilnius University

Work's tutor: prof. dr. Sigita Lesinskienė, Clinic of Psychiatry, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania and MD Kamilė Pociūtė, Clinic of Psychiatry, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Karoliniškės Polyclinic, Vilnius, Lithuania

Background: Medical students face emotional challenges, with a need for more research on how emotional well-being, self-harm, BMI, and weight management are interconnected.

The aim: This research aimed to investigate well-being and self-harm in female medical students, specifically focusing on the link between BMI and weight regulation.

Materials and methods: An anonymous online survey collected data from medical students at two universities, including information on BMI, weight regulation, self-harm, and well-being using the WHO questionnaire, with data analysis conducted in Excel and R Commander, and statistical significance set at $p < 0.05$.

Results: Out of 228 surveyed women, the average BMI was 21.49, and the average WHO Well-being Questionnaire score was 55. The women were divided into three groups according to BMI. BMI 18.5-24.9 was found in 187 (82.0%) women, BMI < 18.5 in 18 (7.9%) women and BMI ≥ 25.0 in 23 (10.1%) women. The mean of the well-being scores was 56.07 for women with a BMI of 18.5 - 25.0, 50.43 for those with a BMI ≥ 25.0 and 55.11 for those with a BMI < 18.5. 54.7% of women regulated their body weight with a median well-being score of 52, while 45.2% did not regulate weight, with a median well-being score of 60 (p-value = 0.01962). The median of Well-being Questionnaire score was 60 for those who never self harmed, 50 for past self-harmers, and 40 for current self-harmers (p-value = 0.000189). Among weight regulators, 18% self-harmed, compared to 5.3% among non-regulators (p-value = 0.0003467).

Conclusions: No significant difference between BMI groups and self – harm or well – being scores was found. Women who had ever intentionally regulated their body weight had lower well – being scores and were more likely to self harm.

Keywords: Self - harms; Weight; Weight regulation; BMI; Well-being; Medical students

The need for spiritual support for women treated for endometriosis

Katarzyna Błaszczak[1], Angelika Doroszewska[1], Natalia Nawrocka[1], Elżbieta Jankowska[1], Sebastian Błaszczuk[1]Zuzanna Jędrzejczyk[1]

1. Student Scientific Association of Obstetrics Development at Department of Coordinated Maternity Care (Studenckie Koło Naukowe Rozwoju Położnictwa przy Zakładzie Koordynowanej Opieki Położniczej), Faculty of Health Sciences, Medical Univeristy of Lublin

Work's tutor: Dr n. o zdr. Magdalena Korżyńska- Piętas2 prof. UM , Dr n. o zdr. Magdalena Brodowicz- Król3

Background: Over the last five years, endometriosis has been the most common diagnosis in women suffering from pelvic pain. The incidence of endometriosis is estimated at approximately 7-15%.
In the group of infertile women or women with pain syndrome, it reaches up to 50%. It is most often observed in women during their reproductive years. The role and importance of spiritual care and support is gradually increasing. Spirituality is an inseparable part of the lives of people with illness, their loved ones and every person.

The aim: The aim of the study is to show the need for spiritual support in women undergoing treatment for endometriosis.

Materials and methods: The study was conducted between February and March 2022. Some of the patients, 40 in number, were examined at the 1st Department of Gynecologic Oncology of the Independent Public Clinical Hospital No. 1 in Lublin. 60 questionnaires were completed by women struggling with endometriosis electronically in Poland, courtesy of the administrators of forums for women with endometriosis. A total of 100 women of various ages were surveyed. A survey questionnaire consisting of a metric and an author's section was used to conduct the study. The author's part included questions about endometriosis, the duration of treatment for endometriosis, the symptoms associated with endometriosis that were present. Subsequent questions dealt with the respondent's mental condition, assessment of her health and lifestyle, and membership in some spiritual or religious community. A further section dealt with questions regarding the need for spiritual support.

Results: It was shown that the respondents most often received spiritual support from their partner, husband and loved ones. They declared that spiritual support provided by loved ones lifted their spirits. The subjects rather rarely used pastoral counseling provided by priests, spiritual directors.

Conclusions: The spirituality dimension is a real need for the patient.

Keywords: Endometriosis, women's health, need for spiritual support

Student emotional intelligence vs. Staff acting as medical coordinator- pilot study

Karolina Dworowy[1], Emilia Jabłońska[1]

1. Department of Health Economics and Health Management, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n.med. Anna Rogalska

Background: Emotional intelligence is an important topic due to the impact of individual employee behaviours on healthcare quality.

The aim: The aim of the study was to measure and compare emotional intelligence among medical coordinator students vs. medical coordinator employees.

Materials and methods: To conduct the survey, a questionnaire was sent to the respondents in web form on the Google Forms platform. Surveys were sent directly to students of the 1st and 2nd year of medical coordinator and persons performing this function of coordinator who are members of the National Association of Oncological Care Coordinators in the period January - March 2024. The study used the emotional intelligence questionnaire, where, with the help of quantified points, the results on emotional intelligence were obtained on a 5-degree scale: a) remarkably high; b) high; c) average; d) low;) incredibly low. Calc was used to analyse the results.

Results: The questionnaire was sent to all students of the first and second year of the medical coordinator course – completed questionnaires were obtained from 21/32 students. A total of 40 women took part in the study, of whom 19 are coordinators, 13 are first-year students and 8 are second-year students. After the analysis, it was shown that the emotional intelligence of people acting as coordinators in a medical institution is at an elevated level. And among students, emotional intelligence is mediocre.

Conclusions: The research shows that emotional intelligence among students of the medical coordinator program is at a lower level than among those who act as coordinators in medical entities. To raise the level of emotional intelligence of students in the medical coordinator field, it would be worth organizing additional classes on interpersonal communication.

Keywords: mental health, medical coordinators

Side effects caused by stimulants used to treat attention-deficit/hyperactivity disorder

Odeta Aliukonytė[1]

1. , Faculty of Medicine, Vilnius University

Work's tutor: MD Kamilė Pociūtė, Clinic of Psychiatry, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Karoliniškės Polyclinic, Vilnius, Lithuania

Background: Stimulant medications effectively alleviate attention-deficit/hyperactivity disorder (ADHD) symptoms but pose risks of side effects. Understanding and mitigating these side effects is essential to ensure the safe and effective management of ADHD symptoms.

The aim: The aim of this study was to determine which side-effects are most associated with the use of stimulants as reported by adults with ADHD.

Materials and methods: An online survey of adults with ADHD was conducted anonymously in March-April 2024. Participants reported age, ADHD diagnosis, medications, and medication side effects. Statistical analysis was performed using Microsoft Excel and R Commander, considering results significant at $p < 0.05$.

Results: Out of 115 respondents, 101 were included, and 14 excluded for lacking ADHD diagnosis. Mean age was 29 Ī 7.75. Gender distribution: 37 males (36, 6 %), 63 females (62, 4 %), other (1%). 93 (92%) reported ever using stimulants, males 34 (36, 6 %), females 58 (62, 4 %). Side effect prevalence varied: 28 (30, 1 %) reported one, 19 (20, 4 %) two, 17 (18, 3 %) three, and 17 (18, 3 %) more than three. 12 (12, 9 %) reported none. Side effects included: headaches 24 (25, 8 %), males 3 (8, 8 %), females 21 (36, 2 %), p = 0.003887; decreased appetite 24 (25, 8 %), males 9 (26, 4 %), females 15 (25, 9 %), p = 0.9488; increased anxiety 22 (23, 7%), males 5 (14, 7 %), females 17 (29, 3 %), p = 0.1129; insomnia 16 (18, 3 %), males 4 (11, 8 %), females 12 (20, 7 %), p = 0.2756; increased pulse rate 15 (16, 1 %), males 3 (8, 8 %), females 12 (20, 7 %), p = 0.137; dry mouth/ thirst 11 (11, 8 %), males 1 (2, 9 %), females 10 (17, 2 %), p = 0.04129; increased blood pressure 7 (7, 5 %), males 5 (14, 7 %), females 2 (3, 4 %), p = 0.09634.

Conclusions: The study revealed a high prevalence of stimulant medication use among respondents with ADHD. The most common side-effects were headache, decreased appetite and increased anxiety. Statistically significant gender differences were observed for headache and dry mouth/thirst.

Keywords: Attention Deficit Hyperactivity Disorder, ADHD, Adults, stimulants, Stimulants, Side effects.

The impact of the number of medical malpractice lawsuits on the choice of specialization by medical students.

Karolina Kruczaj[1, 2], Ewa Krawczyk[1, 2], Martyna Leśniak[1], Szymon Florek[1]

1. Department of Psychiatry, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

2. , Medical University of Silesia, Katowice

Work's tutor: Magdalenia Piegza MD

Background: In recent years, both in Europe and the United States, the problem of declining interest among students and young doctors in "high-risk" specialties has become increasingly noticeable, which has a significant impact on the quality of health care offered to patients in a given country. The increasing number of malpractice lawsuits filed against doctors is also worrying.

The aim: The purpose of this study is to examine the impact of the risk of committing a medical error on the choice of professional specializations and knowledge about medical errors by medical students and to assess the student's preparation for their future profession in terms of medical law and stress-coping techniques.

Materials and methods: An anonymous survey was conducted on a group of Polish medical students. Students' knowledge about medical errors and the impact of the risk of receiving a lawsuit on the choice of future professional specialization were assessed. Moreover, respondents were asked to subjectively evaluate the level of preparation during studies to cope with medical errors and stress.

Results: The research results allowed for the identification of several problems in the education of future doctors and their awareness of high-risk specializations and medical errors. Students are significantly less likely to choose high-risk specializations. More than half of respondents assess their knowledge of dealing with stress and medical errors as insufficient. The vast majority of respondents indicate the need to expand the scope of knowledge provided to them on this subject.

Conclusions: According to the authors, assessing the impact of malpractice risk on the choice of specialty requires further research, since the collected data don't allow for a sufficiently in-depth analysis.

Keywords: medical students, medical malpractice, medical specjalziations, coping with stress, medical law

Relationship between schizophrenia symptoms severity and insight using FBS and "My thoughts and feelings"

Wojciech Chojna[1], Dorota Piłat[1], Martyna Laskowska[1], Sylwia Rusinek[1], Mikołaj Bezeg[1]

1. Department of Psychiatric Rehabilitation, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Krzysztof Krysta, prof. SUM

Background: Schizophrenia is complex, with symptoms and insight levels varying. Tools like the Frankfurt Scale and "My thoughts and feelings" questionnaire measure symptom severity and insight, as emphasized in previous literature, aiding clinical assessment and therapy planning.

The aim: Exploring the Relationship Between Schizophrenia Symptom Severity and Insight based on the Frankfurt Scale and the "My thoughts and feelings" Questionnaire

Materials and methods: The study analyzed demographic data and scores from the FBS and Insight questionnaire in Excel. The sample was divided into four groups based on FBS scores and calculated the average Insight score for each group.

Results: The study found the following average Insight scores across FBS-defined subgroups: Mild symptoms: 9.67, Moderate symptoms: 8.25, Severe symptoms: 8.22, Very severe symptoms: 9.29 The correlation analysis revealed a weak and non-significant correlation between FBS scores and Insight scores ($r = -0.017$, $p = 0.925$). The demographic analysis showed a prevalence of male patients (n=20), with the most common age group being 36-45 (n=11). Most participants resided in large cities (n=16), with the highest educational attainment being a Bachelor's/Master's degree (n=12), and the majority were single (n=21). The study group displayed diverse demographic characteristics with a significant male predominance and a concentration in urban environments. This demographic distribution may influence the generalizability of the findings and provides a context for interpreting the varied experiences and perceptions of illness within the group.

Conclusions: This study underscores the complexity of schizophrenia, where symptom severity does not straightforwardly correlate with insight into the illness. It highlights the importance of using a range of assessment tools to fully capture the multifaceted nature of patient experiences. Future studies should explore these relationships further to refine the tools used for assessments and to tailor intervention strategies effectively.

Keywords: Schizophrenia, Insight, Symptom, Severity, FBS, Demography

Interlinking Stress and Depression: A Clinical Insight with Beck and DASS-42 Scales

Natalia Wyroba[1], Anna Zielazek[1], Weronika Wójtowicz[1], Zuzanna Wydrych[1], Natalia Wojdacz[1]Patryk Omylak[1]

1. Department of Psychiatric Rehabilitation, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Krzysztof Krysta, prof. SUM

Background: This research investigates the complex relationships between stress and depressive disorders in an outpatient clinic environment. By evaluating various symptoms and distinguishing between stress, anxiety, and depression, the study seeks to unravel the interplay among these mental health states in a cohort of 30 adults.

The aim: The aim is to deepen our comprehension of the connections between self-reported emotional states and clinical diagnoses, illuminating the intertwined nature of depression and stress.

Materials and methods: 30 Participants underwent assessments with the BDI and DASS-42, providing insights into depression, stress, and anxiety levels. The study focuses on the relationship between these self-reported measures and clinical diagnoses, aiming for a deeper understanding of the psychosomatic aspects of depression.

Results: Findings indicated a strong correlation between high stress levels and severe depression. Participants with severe depression reported more physical and emotional symptoms, including dry mouth and breathing difficulties, suggesting significant psychosomatic interactions. The study also revealed the impact of depression on daily activities and emotional responses to stress, with severe depression associated with greater functional impairments and heightened emotional reactivity.

Conclusions: The study highlights the interconnectedness of stress and depression, advocating for holistic mental health assessments. The use of BDI and DASS-42 scales is affirmed as effective for understanding the multifaceted nature of depression and stress, offering crucial insights for comprehensive mental health care.

Keywords: Depression, Stress, Anxiety, Beck&DAAS-42 Scales

Do pollen and its type affect the number of interventions in the psychiatric emergency room?

Magdalena Stencel[1], Błażej Pilarski[1]

1. Department of Psychiatry, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Robert Pudlo, prof. SUM, dr n. med. Magdalena Piegza, lek. Szymon Florek

Background: Studies from many areas of the world show an association between pollen and the mental state of the general population. In our study, we analysed the correlations of the number of psychiatric emergency room interventions with pollen type.

The aim: Determining the correlation between the intensity of pollen from different plant species and the number of interventions in a psychiatric emergency room.

Materials and methods: Using the OBAS pollen calendar and the information system of the K. Czuma Psychiatry Center in Katowice Szopienice, analyses were conducted on the correlation between the average number of interventions over consecutive ten-day periods and the estimated pollen intensity of specific plants. All statistical analyses were performed using Statistica 13.3 software at a significance level of $\alpha < 0.05$.

Results: The number of emergency interventions among individuals diagnosed with schizophrenia and delusional disorders (F20-F29) correlates moderately negatively with hazel and alder pollen. The pollen level of these plants correlated moderately positively with the number of interventions among individuals with intellectual disabilities, developmental disorders, and behavior and emotional disorders (F70-F98). The number of interventions among individuals with diagnosed behavioral syndromes (F50-F59) correlates moderately positively with the intensity of sorrel pollen. The obtained results indicate a moderately positive correlation between the number of individuals aged 30-34 years and the intensity of plantain pollen, and a moderately negative correlation between hazel pollen intensity and the number of interventions among individuals aged 35-39 years.

Conclusions: Exposure to plant pollen appears to influence the mental state of individuals with psychiatric disorders. Strongest correlations were seen in patients aged 30-39. Surprisingly, higher pollen levels correlate with fewer interventions among those with schizophrenia. Further research on pollen's impact on mental health is needed.

Keywords: psychic health, pollen, allergy, emergency room, schizophrenia

Development of addiction to psychoactive substances and nicotine with patients suffering from schizophrenia

Michał Wadoń[1]

1. Department of Psychiatric Rehabilitation, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Krzysztof Krysta

Background: Symptoms of schizophrenia are related to dysregulation of the CNS dopaminergic systems. Negative symptoms, including emotions and mood, result from reduced activity in the mesocortical system, positive symptoms from increased activity of the mesolimbic system. Disturbances in the reward system play an important role in the pathogenesis of addiction development. Stimulants such as nicotine or narcotics stimulate the presynaptic parts of its neurons to secrete dopamine, which translates into a feeling of pleasure and is associated with the development of addictions.

The aim: The aim of the study was to demonstrate the relationship between the degree of development of nicotine and drug addictions and the severity of symptoms related to emotions and mood with the patients suffering from schizophrenia.

Materials and methods: The study included patients diagnosed with schizophrenia. The study was conducted from October 2023 to May 2024 in the closed ward of CZPiLU in Gliwice. During the study, the Frankfurter-Befindlichkeits-Skala was used to assess the appearance and severity of symptoms related to well-being. The analysis of the development of addictions was made by the Fagerström Test for Nicotine Dependence, the DUDIT scale assessing the degree of drug addiction.

Results: Based on statistical analysis, a significant relationship was noticed between the substance addiction and the presence or absence of symptoms related to well-being. Moreover, a correlation ($p<0.05$) was observed between the degree of addiction to nicotine and drugs and the severity of symptoms related to emotions and mood. All patients included in the study were addicted to nicotine, at least to a mild degree.

Conclusions: The presence of symptoms of schizophrenia related to emotions and mood and the degree of their advancement translates into the severity of nicotine or drug addiction. Patients suffering from schizophrenia require psychological and psychiatric care and diagnosis for addictions, as well as appropriate prevention against their development.

Keywords: schizophrenia, addiction, psychoactive substances, nicotine, reward system, dopamine

Study of abuse within relationship or marriage - preliminary results

Aleksandra Kępczyńska[1], Radosław Karaś[1]

1. Department of Gynaecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Prof. dr hab. n. med. Krzysztof Nowosielski

Background: The definition of rape is any forced sex, including vaginal, oral and anal penetration. Many people consider rape to be an act committed by a stranger and involving vaginal intercourse, but in most cases sexual abuse is committed by someone known to the victim.

The aim: To investigate the prevalence of marital rape and sexual abuse within relationship.

Materials and methods: The online survey consists of 38 questions filled out anonymously. The questionnaire was distributed on social media including Facebook and Instagram. 250 individuals took part in this study, 84.4% of which were females, 14% - males, 1.2% - transsexual, and 0.4% - non-binary. Respondents were asked about past experiences of sexual abuse in relationships, what they would do if such situation happens and those who had experienced it were additionally asked what steps they had taken. All respondents were given one definition of rape and answered whether they had ever been in such a situation.

Results: Among the 250 individuals 32% (n=80) reported experiencing abuse within a relationship. The most prevalent forms of abuse included ignoring disagreement or boundaries (67.5%, n=54), exploiting emotion for sexual activities (62.5%, n=50), forced oral sex (47.5%, n=38). Other notable forms were forced vaginal (46.3%, n=37), anal 21.3% (n=17) penetration, forcible touching (45%, n=36), and taking advantage of a partner's state of insobriety (33.8%, n=27). Only 2.5% (n=2) of respondents reported it to law enforcement. When respondents were presented with a definition of 'rape', only 40% (n=32) of those who experienced abuse identified their experience as such. Overall, 38 individuals in the surveyed group acknowledged experiencing rape.

Conclusions: The preliminary results highlight the inadequacy of official law enforcement statistics and the limitations of the current definition of rape in Polish law with regard to marital rape and abuse. Further research with a larger and more diverse group of respondents is needed to better understand this problem.

Keywords: sexual abuse, marital rape, relationship, forced sex

Analysis of Suicide Attempts in Poland from 2013 to 2023

Stanisław Kulejewski[1], Tomasz Maciejczyk[1]

1. Department of Epidemiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. o z. Kamil Barański

Background: According to the World Health Organization, suicide is the fourth cause of death among people aged between 15 and 29. In Poland, there were 59779 deaths from suicide between 2013 and 2023.

The aim: The aim of the study was to analyze the number of suicides and the number of suicide attempts expressed as mortality and incidence rate by age category.

Materials and methods: The data from the National Police Information System (KSIP) form collected by the National Police Headquarters was used for the analysis. The defined group ages were 0-24, 25-84 (with an interval of 5 years), and >85. For each age category, mortality was expressed as the ratio of deaths by suicide to population, while incidence rate was expressed as the ratio of suicide attempts to population in the specified group age. The direct standardization was omitted due to the unavailability of consistent data.

Results: From 2013 to 2023, Poland experienced 128,347 suicide attempts, resulting in 59,779 deaths (46.6%). The yearly average was 11,668 attempts and 5,434 deaths. The lowest attempts occurred in 2013 (n=8,575), peaking in 2023 (n=15,133). Lowest deaths were in 2022 (n=5,108), highest in 2014 (n=6,165). Most attempts were by individuals under 24 (n=45,211, mortality rate: 10/100,000); fewest were over 85 (n=1,677, mortality rate: 17/100,000). Attempt rates were 38/100,000 for 0-24, 20/100,000 for >85, peaking at 43/100,000 for 25-29. Most suicide deaths were under 24 (n=10,543), fewest over 85 (n=1,356). The highest death rate (22/100,000) was in the 55-59 age group.

Conclusions: In the years 2013-2023, approximately a twofold increase in the number of suicide attempts was observed, with a predominant involvement of individuals under 24 years of age. In the studied period, the frequency of deaths remained at a constant level, averaging 5,434Ī362 annually. Mortality in the studied groups shows an upward trend up to the 55-59 age group.

Keywords: Suicide, Suicide attempts, Epidemiology

Autonomic nervous regulation in sports? Heart rate variability as a fencing performance predictor.

Agnieszka Goryczka[1], Jakub Fick[1], Anna Gogola[1]

1. Department of Psychiatry in Tarnowskie Góry, Faculty of Medical Sciences in Zabrze, Medical University of Silesia in Katowice

Work's tutor: dr n. med. Magdalena Piegza, dr inż. Kamil Książek

Background: Sports disciplines are constantly being transformed by science, and the performance of athletes depends not only on physical but also on mental preparation. Concentration, resilience to stress, and motivation are the key to achieve better results. Concentration is influenced by variables related to the difficulty of the task, such as cognitive load, perceptual load, and sensory load. Inherent in these concepts is autonomic system activity, which in turn can be measured by Heart Rate Variability (HRV). It is a measure of the temporal variability between consecutive heart cycles, typically assessed between the peaks of the R-wave on an ECG.

The aim: The aim of the study was to evaluate the relationship between HRV variables and the psychophysical performance of fencing athletes, defined as their ability to successfully win fencing duels.

Materials and methods: Five adult fencers from the Piast Gliwice Fencing Club participated in the study. Resting ECG was measured using the POLARH10 device, along with continuous ECG recordings during fencing bouts. Each bout was recorded with a time-stamped camera synchronized with the POLARH10 device, ensuring precise timing of each hit with an accuracy of 1 second. The collected data were filtered using a wavelet transform and manually and graphically combined with the fencing duel results. The standard deviation of NN intervals (SDNN) and Root mean square of successive RR interval differences (RMSSD) were used in the analysis.

Results: Based on the data obtained, we can see that a fencer with a downward trend on average gains more points than he loses. On the other hand, an upward trend shows us that an athlete loses more points than he gains.

Conclusions: The limited sample size underscores the necessity for further development of the study to assess the impact of HRV on athletic performance comprehensively. In the future, HRV may be a budding predictor of competition outcomes.

Keywords: HRV, autonomic regulation, sport performance, heart rate variability, cognitive load

Identification of potential risk factors for suicide attempts in Poland in 2013- 2023

Tomasz Maciejczyk[1], Stanisław Kulejewski[1]

1. Department of Epidemiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. o z. Kamil Barański

Background: According to the World Health Organization, suicide is the fourth leading cause of death among individuals aged 15 to 29. In Poland, from 2013 to 2023, 128347 suicide attempts were recorded.

The aim: The aim of this study was to characterise suicides and suicide attempts contained in the National Police Information System.

Materials and methods: Data collected using the National Police Information System form collected by the National Police Headquarters was used for the analysis.

Results: In the period 2013-2023, 128347 suicide attempts were made in Poland. Men accounted for the largest share of deaths by suicide - a total of 85.2% (n=50916), women 14.8% (n=8857). The groups with the highest proportion of deaths to suicide attempts between 2013 and 2023 in the age category were those aged 85+ (80% n=1677); gender: men (54.7% n=93823); marital status: widows and widowers (70.0% n=5745); education: basic vocational (50.0% n=10532); occupation: farmers (74.2% n=3041); method of suicide: shooting (78% n=1080); reason: chronic illness (71% n=5585).

Conclusions: Between 2013 and 2023, the known groups of people with the highest risk of death by suicide attempt were those over 85 years of age, men, widowed people, people with basic vocational education, farmers, choosing shooting as a method, and suffering from a chronic illness. Belonging to these groups may be a potential risk factor for death by suicide attempt.

Keywords: suicide, suicide attempt, risk

Contrast enhanced ultrasonography (CEUS) in focal liver lesions (FLL) - this is how we do it

Agnieszka Czapska[1], Jan Jamroś[1]

1. Department of Radiology, Faculty of Medical Sciences, Jagiellonian University Medical Collage

Work's tutor: dr.n.med. Andrzej Fedak

Background: Popularisation of imaging techniques of abdominal cavity, especially ultrasound (US), have resulted in the higher detection rate of FLL. If other imaging results (magnetic resonance (MRI) or computed tomography (CT)) are inconclusive percutaneous liver biopsy should be considered. Both MRI and CT cannot be used intra-operatively, so this procedure is performed mostly with US assistance. It is a widely available, economical and real-time imaging, but there are situations in which B-mode US fails to deliver necessary information for safe and efficient biopsy. Modifications of US-guided biopsy emerged to address this problem, such as fusion imaging and CEUS.

The aim: In this paper we want to prove usefulness of CEUS and share the experience of our centre in performing liver biopsies under CEUS guidance.

Materials and methods: We used our University's hospital databases, reviewed articles from PubMed, Google Scholar and documents provided by producers.

Results: Fusion-guided biopsy combines CT/MRI images with these obtained from US. Through this, lesions that are barely visible on a B-mode US scans can be targeted successfully. It might sound compelling, but there are limitations to this method like prolonged time of data processing and difficulties in achieving optimal overlap of images.
CEUS involves using contrast agent which is a gas enclosed in microbubbles. Just as fusion imaging it enhances lesion visualization, but is devoid of its limitations - it is rapid and requires no additional processing.
Furthermore, because of necrotic – non-necrotic tissue distinction CEUS can increase efficiency of biopsy by collecting specimen of high quality. Moreover, due to superior to MRI and CT assessment of wash-out phenomenon and early arterial phase, it allows to initially determine the character of FLL.
Another benefit is that it can be safely applied to the patients with kidney function impairment, facilitating proper diagnostics in this group.

Conclusions: CEUS is a safe solution to perform efficient US-guided liver biopsy.

Keywords: CEUS, ultrasound, contrast, biopsy, US-guided

Assessment of anxiety and depression in patients with cardiac implantable devices prior to MRI scans

Paulina Leżoch[1], Wiktor Tenerowicz[1], Maria Masłowska[1], Emilia Szczepanowska[1], Wiktoria Sędziak[1]Marcelina Pawłowska[1]

1. Department of Electroradiology, Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. N. med Rafał Młynarski, dr hab. N.o.zdr Agnieszka Młynarska

Background: Magnetic resonance imaging (MR) in patients with cardiac implantable devices (CIED) is assumed to be a higher risk procedure for adverse reactions. A higher-risk examination can be a source of stress for patients. We decided to explore the possibility of the procedure's impact on the severity of depression and anxiety symptoms.

The aim: The aim of the study was to analyze the level of depression and anxiety and their correlation with selected sociodemographic data in a group of patients with CIED before MR examination.

Materials and methods: Ninety-two (25 women) patients with a mean age of 66 years referred for MR examination (GE 1.5T Gem suite) were included in the study. All patients were assessed for anxiety and depression prior to the study using the HADS-M scale, which consists of 16 statements that the subject addresses on a four-point scale. Eight statements of these are used to measure anxiety and other half is used to measure depression, each rated on a scale of 0 to 3 points. A higher total score obtained by the patient on the questionnaire indicates an increase in the severity of anxiety and depression symptoms. Scores from 0 to 7 - normal, 8 to 10 - borderline, while a score of 11 points and above indicates a pathological level of the measured variables.

Results: The mean value of depression symptom severity was 4.41 Ī 3.34 (min.0: ; max.15:), and anxiety was 5.85 Ī 3.71 (min.0: ; max.17:). There was a significant correlation of depression level with age (r=0.2189; p=0.0361); interestingly, there was no significant correlation with anxiety (r=0.1213; p=0.1627). Analyses also showed that women had higher levels of anxiety (p=0.0088) compared to men, as did subjects living in urban areas (p=0.016) compared to rural areas. There was no correlation with the education of the patients studied, as with other sociodemographic factors.

Conclusions: In women and urban residents with cardiac implantable devices undergoing MRI, additional education before the study is necessary.

Keywords: magnetic resonance, implantable devices, HADS scale, anxiety, depression

Work-Related Musculoskeletal Disorders in Polish Sonographers – a questionnaire study

Marcin Ciekalski[1], Izabela Rosół[1]

1. Department of Radiodiagnostics, Interventional Radiology and Nuclear Medicine, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Dr n. med. Mateusz Winder

Background: The ultrasound specialists face a substantial issue with work-related musculoskeletal disorders (WMSDs), characterized by occupation-related pain, reaching an estimated frequency of up to 90.5%. The type and location of pain vary depending on the sonographers specialty and the specific anatomical areas being examined.

The aim: Our study aimed to assess the prevalence and intensity of pain among Polish doctors from various specialties conducting ultrasound examinations.

Materials and methods: The study has been performed between July and December 2023, involving 90 participants (51.9% women) actively practicing ultrasound diagnostics. The data collection process utilized a structured questionnaire developed by the researchers for this study. The questionnaire covered personal factors, including gender and age, and work-related aspects like workplace, specialty, sonography experience, and the types of examinations conducted. Statistical analysis involved both descriptive statistics and correlation analysis.

Results: The age distribution ranged from 26 to 74 years, with mean (SD) of 43.1 (12.2) years. The leading specialties among physicians were radiology (22.2%) and internal medicine (22.2%). Among all physicians, 65.6% reported pain during or after ultrasound scans, with a mean (SD) pain intensity of 6.17 (2) in a 1-10 scale. The analysis indicated no correlation between age and gender and the occurrence of discomfort.

Conclusions: WMSDs pose a significant risk to Polish sonographers, especially those specializing in vascular surgery, general surgery and obstetrics and gynecology specialties. The study underscores a notable deficit, with only 10% of the personnel reporting training in ergonomics for ultrasound work.

Keywords: Ergonomy, Pain, Ultrasonography, WMSDs

Investigation of the transmittance of the light beam used in the pulse oximeter through layers of various hybrid varnishes during magnetic resonance measurements.

Martyna Migdał[1], Emilia Kuśmierczyk[1], Kinga Pelczar[1], Anna Radecka[1], Weronika Sapoń[1]

1. Department of Electroradiology, Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Prof. dr hab. n. med. i n. o zdr. Rafał Młynarski

Background: The following thesis presents the subject of studying the permeability of the light beam used in the pulse oximeter through layers of hybrid nail polish during magnetic resonance imaging.

The aim: Investigating the effect of painting nails with hybrid nail polish on the pulse reading on finger using a pulse oximeter during an MRI scan.

Materials and methods: MRI is a diagnostic method that uses electromagnetic waves to create images. During this type of examination, a pulse oximeter is used to monitor the patient's heart rate and pulse, based on light at a specific wavelength. The beam penetrates tissue (usually in the finger) and is picked up by a detector on the other side of the pulse oximeter. Our work is based on analysis made on 34 samples of various types of hybrid nail polish.

Results: In the course of the analysis, we find that some of them do not transmit the light emitted by the pulse oximeter - the turquoise color of sample No. 22 and the black color of sample No. 5.

Conclusions: Based on our study, we can conclude that patients with this color of hybrid nail polishes on their nails may receive a non-diagnostic pulse oximeter measurement results. In the next stages of the study, we will expand the number of nail polish samples and analyze the transmittance of the light beam used in the pulse oximeter.

Keywords: hybrid nail polish, MRI scan, pulse oximeter

Optimizing Radiation Dose in Multiphase Liver CT: The Impact of Patient Size and Positioning

Michał Azierski[1, 2, 3], Marcin Rojek[1, 2, 3], Maciej Baron[3]

1. Department of Radiodiagnostics, Interventional Radiology and Nuclear Medicine, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

2. , Students' Scientific MedTech Association of Silesian Medical Univeristy in Katowice

3. , Students' Scientific Association of Computer Analysis and Artificial Intelligence of Silesian Medical Univeristy in Katowice

Work's tutor: lek. Jakub Kufel

Background: Multiphase liver computed tomography (CT) is pivotal in diagnosing and managing liver pathologies. Optimizing radiation dose based on patient-specific characteristics can enhance both safety and image quality.

The aim: This study aims to elucidate the influence of patient body size, positioning, and isocenter alignment on the radiation dose in multiphase liver CT, aiming to recommend strategies for personalized dose optimization.

Materials and methods: We retrospectively analyzed CT imaging data from a university hospital, encompassing various patient sizes and positioning relative to the CT isocenter. The primary variables studied included Body Mass Index (BMI), patient dimensions, and isocenter alignment with respect to their impact on Dose Length Product (DLP).

Results: Our findings indicate significant positive correlations between patient size (BMI, weight, and maximum width) and total DLP, particularly in scans covering both abdomen and pelvis. Moreover, the location of the isocenter relative to the patient did not significantly affect the DLP or lamp operation parameters, suggesting other factors may be more influential in dose variation.

Conclusions: This study underscores the necessity for individualized radiation dose optimization strategies that consider patient size and anatomy but challenges the traditional emphasis on isocenter positioning in dose calculation. Implementing patient-specific dose settings could significantly reduce unnecessary radiation exposure while maintaining diagnostic quality.

Keywords: CT imaging, radiation dose, patient dimensions, isocenter, dose optimization, multiphase liver CT

MSCT features in prediction of histological differentiation of pancreatic neuroendocrine neoplasms

Jan Herzyk[1], Krzysztof Jakimów[1], Jakub Ciesielka[1]

1. Department of Radiodiagnostics, Interventional Radiology and Nuclear Medicine, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Joanna Pilch-Kowalczyk, lek. Karolina Majewska

Background: Pancreatic neuroendocrine neoplasms (PNENs) are 1-2% of all pancreatic tumours, but its occurrence is growing. Predicting the malignancy of a tumor can be based on findings in a multi-slice computer tomography (MSCT) examination.

The aim: Our study aimed to analyze the histological differentiation and MSCT imaging features of pancreatic neuroendocrine neoplasms.

Materials and methods: We performed a retrospective, single-center cohort study of 157 patients with histologically confirmed PNEN. We compared the results of the preoperative biopsy from the tumor with reports of the MSCT examination performed by a radiologist with 30 years of clinical practice.

Results: Specific MSCT features are associated with histological differentiation, such as density in the arterial phase, Wirsung's cord dilatation, organ infiltration, distant metastases and enlarged regional lymph nodes. When there is organ infiltration, the likelihood of the tumor having histological malignancy grades G2 or G3 triples. Likewise, the existence of distant metastases increases the risk almost fourfold, and a tumor size of 2cm or larger is linked to a nearly threefold rise in the risk of histological malignancy grades G2 or G3.

Conclusions: Certain MSCT characteristics: enhancement during the arterial phase, Wirsung's duct dilatation, organ infiltration, distant metastases and the enlargement of regional lymph nodes are linked to histological differentiation.

Keywords: computed tomography, pancreatic neuroendocrine neoplasms, grading, histological differentition

Analysis of radiation dose absorbed by vascular surgery patients

Maja Stróżny[1], Marcin Statkowski[1], Weronika Sypulska[1], Ewelina Porzycka[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. Tomasz Urbanek

Background: Due to the increasing number of surgical procedures requiring diagnostic methods utilizing γ-radiation, attention must be paid to the quantity of doses received by patients in comparison to doses considered safe.

The aim: The aim of this research is to analyze the radiation doses absorbed by vascular surgery patients and compare them to safe dosage levels.

Materials and methods: This is a retrospective study of surgical patients undergoing procedures and medical interventions used in vascular surgery: placement of carotid stent, branched stentgraft, abdominal stentgraft implantation and angiography. The radiation doses were collected from patients admitted to the Upper Silesian Medical Center in Katowice, at the Department of General Surgery, Vascular Surgery, Angiology and Phlebology between March 2022 and April 2024, and were compared to safe dosage levels. Additionally, patients with doses over 2000mGy were identified.

Results: Patients were randomly selected from four groups - ones that underwent angiography (n=49), ones that underwent procedure of inserting a carotid stent (n=102), ones that underwent the procedure of inserting abdominal stentgraft into abdominal aortic aneurysm (n=102) and ones that underwent procedure of branch-stent grafting of the descending aorta (n=50). The average dose absorbed was 231,74mGy (231% of nonhazardous dose), 86,67mGy (87% of hazardous dose), 1154,25mGy (1154% of nonhazardous dose) and 2128,31mGy (2128% of nonhazardous dose) respectively. The percentage amount of patients that absorbed dose higher than 100mGy was 32.7 in the first group, 21.6 in the second group, 100 in the third group and 100 in the fourth group.

Conclusions: Patients who undergo the procedures mentioned, are at risk of absorbing large amounts of radiation, which may lead to higher risk of developing malignancy or other X-ray exposure consequences. Despite the fact that the nonhazardous dose was exceeded in multiple amount of procedures, it is medically necessary because the benefits outweigh the risks.

Keywords: radiation dose, exposure, vascular, surgery, stentgraft, angiography

Factors impacting the recanalization of an aneurysm after flow diverter implantation

Julia Karpierz[1], Marcin Ciekalski[1], Izabela Rosół[1], Jakub Milczarek[1]

1. Department of Radiodiagnostics, Interventional Radiology and Nuclear Medicine, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Filip Szydło MD

Background: Aneurysm recanalization is defined as a return of blood flood inside the aneurysm sack after a successful embolization procedure. In 35% of patients with 11–25 mm aneurysms, and in as many as 59% of patients with giant aneurysms (> 25 mm) recanalization occurs within a year from embolization. Preventing aneurysm recanalization is crucial to avoid the risks associated with aneurysm rebleeding or aneurysm retreatment, especially in high-risk patients. There are many factors that might impact the probability of recanalization, but many of them need further evaluation.

The aim: The aim of our study was to investigate possible factors impacting the recanalization of aneurysm in 6 and 12 months follow up.

Materials and methods: A retrospective study was conducted to analyze patients who underwent planned aneurysm embolization procedures with flow diverter device. The data about patients, procedural and aneurysm characteristics were analyzed based on paper and electronic registers. The effect of the aneurysm occlusion was evaluated after 6 and 12 months after the procedure through angiography. Collected data was statistically analyzed.

Results: Our study included 167 patients (83.23% females, 55.35Ī11.64 years). 86.02% of patients (n=145) had 6 month follow up, 59.88% patients (n=100) had 12 month follow up. Significant recanalization was observed in 18 patients (12.41%) after 6 months and in 4 patients (4%) after 1 year. The mean aneurysm diameters were as follows: aneurysm maximum diameter 7.38Ī5.30mm, neck size 3.58Ī2.8mm, dome to neck length 5.46Ī4.26mm. The smaller dome to neck length was correlated with the increased aneurysm recanalization rate ($p<0.05$). The coils use, stent diameters and other operative parameters had no significant impact on follow up.

Conclusions: Aneurysm dome to neck length is the parameter that should be taken into consideration during planning the flow diverter implantation in patients with aneurysm. Its preoperative evaluation can help in predicting the long term impact of the intervention.

Keywords: flow diverter, interventional radiology, cereberal aneurysm, aneurysm recanalization

The dentist's eternal dilemma: dealing with a pregnant woman

Jakub Fiegler-Rudol[1], Stanisław Niemczyk[1]

1. Department of Conservative Dentistry and Endodontics, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Anna Zawilska

Background: A pregnant woman is an eternal challenge in the dental office. There are many myths surrounding dental prevention and treatment during pregnancy, making the work of both dentists and gynaecologists difficult.

The aim: The study aims to explore dentists' knowledge regarding the treatment of pregnant women.

Materials and methods: A cross-sectional survey was conducted from September to November 2023 among 250 dentists in Poland using a self-administered questionnaire. The questionnaire, developed based on literature review, international guidelines, and expert opinions, included questions on sociodemographic characteristics and awareness of dental care difficulties during pregnancy. It assessed dentists' preferences for patient positioning, timing for dental visits, choice of anaesthetics, and perceptions on the safety of dental procedures and medications during pregnancy.

Results: A significant portion of respondents preferred treating pregnant women in a lying position, leaning to the left, and acknowledged the importance of early dental consultation in the first trimester. However, discrepancies were found in the preferred timing for initial dental visits and the selection of anesthetics, with a considerable number opting for lidocaine. Most respondents recognised ultrasonic scaling as safe in the first trimester and preferred non-pharmaceutical methods for treating dental treatment anxiety. Notably, there was a strong consensus on the necessity of conservative treatment post-first trimester and the use of paracetamol as the preferred analgesic.

Conclusions: The study highlights the need for continued education and awareness initiatives among dental professionals regarding the care of pregnant women. While there is commendable understanding in certain areas, identified gaps and misconceptions emphasise the importance of reinforcing knowledge on evidence-based practices during pregnancy to ensure the safety and well-being of both the mother and the developing fetus.

Keywords: Gynaecology, pregnancy, Dentistry

A comparison of the efficiency of commonly available mouthwashes against selected bacterial and fungal strains

Julia Walendowska[1], Zofia Stefanik[1], Sara Wira[1], Helena Brawańska[1], Julia Bartecka[1]Maciej Jabłoński[1]

1. Department of Periodontal Diseases and Oral Mucosa Diseases, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr hab n. med. Rafał Wiench

Background: Oral hygiene is crucial for maintaining oral health. Mouthwashes are an important part of it and they are a complement to mechanotherapy. It is possible to get preparations with different compositions on the dental and pharmaceutical markets.

The aim: The study aimed to compare the effectiveness of various available rinses against selected model strains of bacteria and fungi.

Materials and methods: The study was performed by the disk-diffusion method using 4 bacterial reference strains: Staphylococcus aureus ATCC 43300, Streptococcus pyogenes ATCC 19615, Enterococcus faecalis ATCC 29212, Pseudomonas aeruginosa ATCC 27853 and by 4 fungal strains: C. albicans ATCC 10231, C. glabrata ATCC 15126, C. krusei ATCC 14243, C. parapsilosis ATCC 22019. The efficacy was evaluated on 5 commercial rinses containing various forumlations such as ethyl lauroyl arginate hydrochloride – LAE, chlorhexidine gluconate in various concentrations, 0.05% cetylpyridinium chloride – CPC, and silver nanocolloid and copper nanocolloid.

Results: The statistically significant differences were obtained between the evaluated preparations within a given strain and between strains. As for bacteria, the largest zone of inhibition was shown by S. pyogenes ATCC 19615, for CHX 0,12% and reached 17,41 mm, while for fungi, the largest zone of inhibition was shown by C. parapsilosis ATCC 22019, for CHX 0.06% and reached 11,57 mm.

Conclusions: The use of oral rinses can support oral hygiene by taking part in the effective reduction of microbial counts.

Keywords: mouthwashes, antimicrobial activity, disinfection

The analysis of the relationship between the angle of the mandible and the size of the freeway space.

Przemysław Koszuta[1], Karol Panasewicz[1], Adrian Pistelok[1], Tytus Klimczak.[1]

1. Department of Temporomandibular Disorders, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: prof. dr. hab. n. med. Stefan Baron

Background: There are no reports in the literature on the relationship between the dimension of angle of the mandible and the freeway space. Knowledge of such as relationship would facilitate the design process of relaxation splints, which should fit within its limits.

The aim: The aim of the study was to examine the relatiotionship between the size of the freeway space measured on premolars at different values of angle of the mandible.

Materials and methods: Cephalometric images were used to explore the relationship between the angle of the mandible and the freeway space. The angle of the mandible was measured on the images. Freeway space was determined using an electronic caliper and occlusal separators in the posterior segment.

Results: The results underwent statistical analysis using the Statistica software. This analysis demonstrated a correlation between the mandibular angle and the size of the freeway space in the lateral segment.

Conclusions: 1. There is a positive correlation between angle of the mandible and the dimension of the freeway space.
2. Knowledge of the size of the freeway space facilitates determining the height of the relaxation splint.

Keywords: Angle of the mandible, freeway space, analysis of the relationship, bruxism

Evaluation of Parents' Knowledge Regarding Interdental Cleaning for Children Aged 6-18

Oliwia Kowalska[1], Julia Kowol[1], Karolina Kurnik[1], Oliwia Kusak[1]

1. Student's Scientific Society, Department of Pediatric Dentistry, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice, Poland

Work's tutor: dr n. med. Danuta Ilczuk-Rypuła

Background: Maintaining optimal oral hygiene extends beyond merely brushing teeth; it also involves cleaning interdental spaces using specialized tools. Neglecting these practices can lead to the development of interdental caries, potentially resulting in more serious conditions such as periodontitis or even pulpitis.

The aim: The aim of this study was to evaluate the awareness of parents of children and adolescents aged 6-18 regarding the necessity of interdental cleaning.

Materials and methods: A survey was conducted between December 2023 and March 2024 among parents of 225 children residing mainly in the Silesian and Malopolska regions. An anonymous questionnaire consisting of 21 questions, covering both general information about the child and an assessment of oral hygiene practices by both parents and children, was utilized. The obtained results underwent statistical analysis.

Results: Ninety-four percent of respondents emphasized the importance of interdental cleaning for maintaining healthy oral hygiene. Among 225 children, 62.2% regularly cleaned their interdental spaces. Additionally, 74.1% of children used dental floss, but less than half practiced this daily. The majority of respondents (62.2%) obtained information about interdental cleaning from their dentist. Survey analysis revealed that among children undergoing orthodontic treatment aged 6-12 years, 83% regularly maintained interdental hygiene, compared to 56% without such treatment. In the age group of 13-18 years, 76% and 61% of patients respectively maintained interdental hygiene.

Conclusions: To ensure proper oral hygiene for children, parents and caregivers should pay special attention to regular interdental cleaning. Close collaboration between the dentist and the patient plays a significant role in this process.

Keywords: Interdental spaces, interdental cleaning devices, flossing, oral hygiene.

Is it possible to reduce craniofacial SCC incidence? Infrared spectroscopy as a promising screening method.

Monika Warlewska[1], Kamila Wolnica[1]

1. Department of Cranio-Maxillo-Facial Surgery, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: prof. dr. hab. n. med. Iwona Niedzielska, dr. n. med. Daria Wziątek-Kuczmik, dr Mateusz Dulski.

Background: In recent years, the incidence of craniofacial squamous cell carcinoma (CSCC) has been increasing steadily. Compounded by the tendency for patients to seek medical intervention at advanced stages of the disease, where curative prospects diminish markedly, this trend highlights the urgent need to develop innovative screening methods to reduce CSCC incidence. Our recent research on tumor tissue using infrared (IR) spectroscopy shows that it may be a promising method that can be used in everyday craniofacial clinical practice. IR spectroscopy operates on the principle of analyzing the interaction between infrared radiation and biological tissues, offering insights into molecular structures and compositions. Its potential to detect subtle biochemical changes associated with pre-cancerous and cancerous lesions presents a promising way for early and intraoperative diagnosis, as well as preventive screening and fast intervention.

The aim: Our pilot study aims to assess the IR spectroscopic response's accuracy in distinguishing SCC tissue from non-SCC tissue, paving the way for larger clinical trials and routine screening integration.

Materials and methods: Tumor samples were collected from craniofacial SCC patients at the Department of CranioMaxillo-Facial Surgery. IR analysis utilized an Agilent Cary 640 spectrometer, with data analyzed through Principal Component Analysis (PCA).

Results: The study reveals a clear differentiation between cancerous and healthy tissue, with variations among individuals. Even subtle differences prompt speculation about potential cancerous lesions or tumor indicators in healthy areas. PCA identifies differences in protein amide groups, notably alpha and beta structures, and phospholipid components.

Conclusions: Our study demonstrates the IR method's valuable insights into squamous cell carcinoma. Future advancements may integrate it into routine clinical practice, aiding in treatment monitoring, precise tumor assessment, and early diagnosis, even in GP dental offices.

Keywords: craniofacial, SCC, infrared, spectroscopy, screening method

Sleep assessment in students with bruxism

Helena Brawańska[1], Kamila Kuśpiel[1], Julia Pamulak[1], Wiktoria Bujak[1], Julia Bękarciak[1]

1. Department of Temporomandibular Disorders, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: Prof.dr hab.n.med. Stefan Baron

Background: Bruxism is a psychosomatic disease associated with excessive activity of the masticatory muscles, resulting in clenching and grinding of teeth. Symptoms of bruxism include headaches, crackling in the temporomandibular joints, decreased bite height and increased muscle tension. Bruxism has two forms - diurnal and nocturnal. The nocturnal form has a negative impact on the quality of sleep, causing night and morning headaches and toothaches as well as morning discomfort in an advanced stage.

The aim: The aim of the study was to assess sleep quality in students diagnosed with bruxism or with self-diagnosed bruxism at the Medical University of Silesia.

Materials and methods: Data were collected using an anonymous online survey. The survey was completed by 171 students of various faculties at the Medical University of Silesia. The questionnaire was divided into two parts - the first regarding the patient's self-diagnosis and the second regarding the assessment of sleep quality. The subjects were divided into 3 groups. 1.Diagnosed bruxism. 2.Self-diagnosed bruxism. 3.Healthy subjects.

Results: More than 80% of respondents suspected of having bruxism sleep too little compared to the control group, and more than half of respondents fall asleep harder and longer than healthy people. 40% of bruxists suffer from mental disorders and diseases, and 30% take antidepressants. Half of the respondents suspected of bruxism wake up at night due to pain. Daytime sleepiness often occurs in patients potentially suffering from bruxism and those diagnosed with the disorder. More than half of respondents with self-diagnosis experience sleepless nights.

Conclusions: 1.Students with self-diagnosed bruxism were found to have poor sleep quality. 2. Students diagnosed with bruxism have significantly better sleep quality, which may be a result of the treatment undertaken by a specialist.

Keywords: bruxism, sleep, survey, self-diagnosis

The comparison of cytotoxicity levels among materials used in guided bone regeneration

Katarzyna Janik[1, 2], Jakub Czapkiewicz[1, 2]

1. Department of Dental Surgery, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

2. Department of Microbiology and Immunology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Tadeusz Morawiec, dr hab. n. med. Anna Mertas, lek. dent. Agnieszka Balicz

Background: Alveolar bone loss is a common phenomenon in patients affected by tooth loss, sinus pneumatization, periodontal disease, or abscess. Reduced bone volume limits the possibility of introduction of intraosseous dental implants in the restorative treatment. In order to improve bone conditions, augmentation and guided bone regeneration can be conducted through substituting by biomaterials of allogenic, heterogeneous or synthetic origin.

The aim: The aim of the study was to evaluate the cytotoxicity of materials used widely in guided bone regeneration procedures.

Materials and methods: To accurately compare different biomaterials of various forms the solutions of extracts from individual products were obtained. By the means of incubation with adequate medium 2- and 10-day extracts were obtained and stored frozen. The mouse fibroblast cell line of the L929 was used in the study. Cells were monitored using an inverted microscope. The assessment of cytotoxicity was carried out using the MTT test, based on measuring the amount of formazan. On the basis of changes of the colour intensity of the solutions it was possible to assess the percentage of living cells.

Results: All materials fulfilled the normative requirements, as the obtained L-929 cell viability values are higher than the required minimum of 70%. In the case of 2-day extracts, the highest percentage of living cells was found for the Cera-Oss® (112,4%), which belongs to the xenogeneic materials. Similar results were observed when evaluating 2-day and 10-day extracts together (106,4%). For 10-day extracts, on the other hand, the highest values were observed for the BioBank® (105,2%), which is a representative of allogenic materials.

Conclusions: All of the assessed materials present a successful level of viability of the cells, however a xenogenic material presented the most promising properties in terms of cytotoxicity.

Keywords: bone regeneration, bone defects, cytotoxicity

The personality traits of bruxism patients

Wiktoria Galińska[1], Wiktoria Kukla[1], Jakub Jakimów[1]

1. Department of Temporomandibular Disorders, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: Prof.dr hab.n.med. Stefan Baron

Background: Bruxism is defined as a repetitive activity of the jaw muscles, characterized by clenching or grinding of teeth. It is one of the most common parafunctions in the stomatognathic system. The etiology of bruxism is not fully understood, although there is consensus regarding its multifactorial nature. Psychological factors such as personality and stress play a significant role in its occurrence.

The aim: The aim of the study was to investigate the relationship between bruxism and personality traits among students of the Medical University of Silesia.

Materials and methods: The research tool was an anonymous questionnaire. Bruxism was assessed using a questionnaire containing five questions regarding common symptoms related to bruxism and awareness of teeth clenching/grinding. Personality profiles were evaluated using the NEO-FFI questionnaire developed by Costa and McCrae, in its Polish adaptation by Zawadzki et al. The NEO-FFI questionnaire consists of 60 simple questions, and results are analyzed across 5 scales: 1) Extraversion 2) Neuroticism 3) Conscientiousness 4) Openness to Experience 5) Agreeableness. Data were collected using specially prepared Office Forms.

Results: 118 people aged 18-41 took part in the survey, including 30 men and 88 women. 35 individuals found symptoms of bruxism. Among the bruxism group, women constituted 77%, while men were 23%. Bruxism patients exhibited higher neuroticism, extraversion, and openness compared to non-bruxism counterparts who were more agreeable and conscientious.

Conclusions: Subjects with bruxism tends towards anxiety, tension, fear, depressive symptoms and workaholism. The conclusion is that not all personality types are equally susceptible to developing bruxism, which has significant implications for the prevention and treatment of this masticatory system dysfunction. However, further studies with larger sample sizes are needed to more accurately assess this relationship.

Keywords: bruxism, personality traits, temporomandibular disorders (TMD)

Salivary secretion disorders in patients with rheumatoid arthritis treated with Janus kinase inhibitors

Barbara Lipka[1], Jakub Fiegler-Rudol[1]

1. Department of Conservative Dentistry and Endodontics, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Anna Zawilska, prof. dr hab. n. med. Marta Tanasiewicz

Background: Rheumatoid arthritis is a systemic autoimmune disease of connective tissue characterized by inflammatory arthritis and extra-articular manifestations, including secondary Sjögren's syndrome, which includes symptoms of dry mouth and eyes. Current literature indicates quantitative and qualitative disorders of saliva in patients with RA, but there is no data on the impact of modern therapies, such as Janus kinase inhibitors, on these processes.

The aim: Assessment of quantitative and qualitative disorders of resting and stimulated saliva secretion in patients with RA treated with Janus kinase inhibitors (filgotinib, baricitinib).

Materials and methods: The study so far includes 10 patients treated at the Bif-Med center in Bytom, diagnosed with RA, who, due to the ineffectiveness of standard treatment, have been treated with Janus kinase inhibitors (Filgotinib, Baricitinib) for at least a year. The control group consists of 10 patients with RA treated standardly. Inclusion and exclusion criteria were also established. The study consists of two stages. In the first step, the amount of resting saliva secreted is measured. The second part, which examines the pH of resting saliva, secretion rate and buffer capacity of stimulated saliva, is performed using the Saliva Check Buffer GC test.

Results: Over the course of therapy, both groups showed a decrease in saliva secretion rate, particularly evident in the study group where the rate of simulated saliva secretion significantly declined. This correlation indicates that patients in the study group were exposed to disease factors for a longer period of time.

Conclusions: Preliminary results indicate that there might be a correlation between these two factors. It is necessary to extend the inclusion criteria and conduct this study on a larger number of patients.

Keywords: Rheumatoid arthritis, Janus kinase inhibitors, Xerostomia, Saliva

Dental and periodontal diseases among diabetes patients

Maria Breguła[1]

1. Department of Internal Diseases Propaedeutics and Emergency Medicine, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Sylwia Dzięgielewska-Gęsiak

Background: In the vast majority of cases, tooth loss in adults is primarily caused by periodontal diseases and dental caries. Chronic periodontitis, a type of periodontal disease, irreversibly affects the soft tissues and bone support around the teeth. Similar to diabetes, chronic periodontitis requires lifelong treatment and monitoring. Diabetes has been identified by the World Health Organization as a non-communicable epidemic of the 21st century. Due to the high prevalence of both periodontal disease and diabetes, it is crucial for both dentists and diabetologists to be aware of these conditions and their interactions.

The aim: The aim of this study is to evaluate the occurrence of dental and periodontal diseases among individuals with diabetes during dental visits.

Materials and methods: The research was carried out at the Poradnia Chorób Błon Śluzowych Przyzębia OLK in Gliwice from January to March 2024. It comprised two parts: an initial observational-research segment and a subsequent analysis of medical records pertaining to dental patients with diabetes. Prior written consent was obtained from the Outpatient Supervisor to conduct the study.

Results: Among the total of 90 individuals receiving dental treatment, 59 (65.56%) were diagnosed with periodontal disease, including 11 (12.22%) who also had diabetes. Within the diabetic subgroup undergoing dental treatment, prevalent findings included xerostomia in 8 cases (72.73%), plaque in 10 cases (90.91%), gingivitis in 10 cases (90.91%), and periodontitis in 4 cases (36.36%), along with caries observed in 7 patients (63.64%).

Conclusions: Given the widespread occurrence of periodontitis and diabetes, it is imperative for both dentists and diabetologists to be knowledgeable about both conditions and their interplay.

Keywords: periodontal disease, diabetes, xerostomia, gingivitis

Assessment of mandibular second molars as a predictive factor for the emergence and formation of third molars

Paulina Musiał[1], Aleksandra Grzyb[1], Julia Cabon[1], Magdalena Błasiak[1], Anna Kuzber[1]

1. Department of Orthodontics, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Agnieszka Machorowska-Pieniążek, dr n. med. Olga Miechlewicz

Background: The appearance of third molar is an important factor in determining the orthodontic-surgical treatment. The literature indicates clear time limits, defined by the patient's metric age, at which the appearance of third molar germs should be expected. However, there is a lack of precise data regarding the stage of formation of second molars as a predictor of the appearance and subsequent development of third molar

The aim: Evaluation of correlation between the age and developmental stage of second molars and the emergence and subsequent development of third molar in planning orthodontic-surgical management, according to Moorrees, Fanning and Hunt's method

Materials and methods: 230 orthopantomograms of patients, obtained from the historical database of the Department of Orthodontics in Zabrze, were analyzed. Based on the exclusion criteria, 80 patients were rejected. The inclusion criteria were based on the presence of mandibular second molars. Ultimately, radiographs of 150 patients between the ages of 5 years and 18 years and 5 months were qualified, including radiographs of 76 boys and 74 girls. To assess the developmental stage of second molars as well as third molars, the Moorrees, Fanning and Hunt method was used

Results: Among the 150 examined patients, 57 patients were found to have missing third molars in the mandible. Out of 150 patients examined, a total of 205 third molars of the right and left sides were found. Of these, 36 of the germs were distinguished to be in the crypt-Cco stages, 141 in the Coc-Crc, and 28 in the Ri-Ac stages. The average age of the children with a current third molar germ was 11 years and 4 months.

Conclusions: The lowest stage of the second molars at which a third molar germ among the patients studied was the Ri stage. It was also found that if the second molar is at the Rc stage there is a high probability that the patient will not develop a third molar. It was observed that the lowest stage of the mandibular third molar was detected in a patient at the age of 7 years and 6 months

Keywords: MFH method, dental age, chronological age, third molars

Health Risks Associated with Exposure to Mercury from Canned Fish

Mateusz Kapusta[1], Piotr Gregorczyk[1], Beata Nowak[1], Natalia Wróbel[1], Martyna Szymańska[1]

1. Department of Environmental Health, Faculty of Health Sciences in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr.hab.n.o.zdr. Grzegorz Dziubanek

Background: Fish are an essential component of the human diet, as they are a source of protein, fatty acids, vitamins, and minerals. Due to the widespread of water pollution with toxic metals there is a risk of accumulation of these compounds, especially Hg, in fish.

The aim: The aim of the study was to assess the exposure to Hg and the associated health risk for consumers of canned fish available on the Polish market.

Materials and methods: The study covered 49 samples of herring, mackerel, sprats, and tuna. Additionally, the popular Polish grocery product 'paprykarz szczeciński' containing salmon was examined. The samples were grouped according to the species and type of additives: oil, tomato sauce and natural liquid. The material was subjected to determination of Hg content using cold vapor generation combined with atomic fluorescence spectrometry. Based on the results, an assessment of adult consumers and children's exposure to Hg was conducted, followed by a health risk assessment according to the methodology of the US EPA

Results: The highest permissible concentration of Hg was exceeded in three of the tested samples, with the most heavily contaminated being herring in oil sourced from the Atlantic (1.66 mg/kg). Also, the average Hg content in the entire group of herring in oil was higher than the regulatory value (0.3 mg/kg). It was found that exposure of adult consumers to Hg poses a significant non-cancer risk only for individuals consuming the most heavily contaminated sample of herring (HQ=3.4). However, for children, significant health risks were demonstrated in the scenario assuming consumption of herring in oil with average mercury content (HQ=1.8), and in the scenario considering consumption of the most heavily contaminated sample (HQ=7.9). In other scenarios, exposure to Hg was close to the threshold dose

Conclusions: Given the demonstrated high exposure to mercury, it is recommended to limit the consumption of canned fish, especially by children.

Keywords: Canned fish, mercury, consumers, exposure, health risk

Diseases accompanying gout in older people during the Covid-19 pandemic

Anna Żygało[1]

1. Department of Internal Diseases Propaedeutics and Emergency Medicine, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. i n. o zdr. Teresa Kokot

Background: Gout is one of the most common rheumatic diseases in Poland and around the world. In addition to the arthritis characteristic of this entity, which is caused by the deposition of sodium urate crystals in the joint fluid and surrounding tissues, as well as in the subcutaneous tissue, changes in the cardiovascular system or kidneys are also important. In old age, gout accompanies other chronic diseases and intensifies their symptoms, which significantly worsens the quality of life of patients. During the Covid-19 pandemic, this age group of patients was particularly burdened due to limited access to primary care physicians and specialists.

The aim: To present what disease entities most often accompanied elderly patients with gout in the period of pandemic- covid-19.

Materials and methods: The study group consisted of 127 patients, including 82 women and 45 men. The subjects were aged 66 to 96 years. Retrospective evaluation of the records of patients of POZ in Bytom. The collected data were statistically analyzed using Microsoft Excel, chi2 test. A value of $p<0.05$ was considered statistically significant.

Results: Women constituted the largest group of subjects - 64.6% . Patients statistically significantly most often belonged to the age group of 71-80 years. Comorbidities in patients with gout were defined by a symbol according to the ICD10 classification. 54.9% of the surveyed women with gout had cardiovascular diseases, 30.5% had musculoskeletal diseases, and 20.7% had gastrointestinal diseases. Among men with gout, cardiovascular diseases were present in 73.3% of cases, diseases of the musculoskeletal system and gastrointestinal tract in 22.2%, and endocrine disorders in 46.7%.

Conclusions: Arterial hypertension, diabetes and hypercholesterolemia were most often diagnosed with gout in elderly women during the Covid-19 pandemic. Men with gout were accompanied by hypertension, diabetes and coronary heart disease.

Keywords: gout, old age, associated conditions, Covid-19 pandemic

The influence of chronic diseases on the severity of clinical symptoms of Covid-19

Tomasz Fajferek[1], Aleksander Joniec[1], Jędrzej Mikołajczyk[1], Seweryn Kaczara[1], Emilia Kołodziej[1]

1. Department of Medical Biophysics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr. n. med. Barbara Pietrzyk, dr hab. n. med. Patrycja Dolibog, dr.n.med.Tomasz Pryzwan

Background: Existing scientific reports mainly focus on COVID-19's causes in adults with chronic diseases (ChDs), especially severe respiratory and circulatory issues, including cancer, which correlate with disease symptoms. COVID-19's clinical course ranges from asymptomatic or mild to severe respiratory and circulatory failure, potentially leading to death.

The aim: The study aimed to explore if ChDs affect the severity of COVID-19 symptoms.

Materials and methods: The study analyzed data from 208 patients between October 2022 and February 2023. A questionnaire assessed symptoms post-SARS-CoV-2 infection, their intensity (mild, moderate, severe), frequency, and severity in patients with comorbidities. Descriptive statistics were used, with significance set at $p<0.05$. $\chi 2$ test compared variables.

Results: 50.48% of patients had a diagnosed ChD, 55.23% had mild symptoms of the disease, while 40% had moderate symptoms. In 49.52% of patients without diagnosed ChD, symptoms of mild intensity predominated 58.25%, and in the case of 35.92% of the examined people, symptoms of moderate intensity were observed. 5.29% of patients experienced severe symptoms of the disease, but did not require hospitalization; in this group, five patients reported chronic comorbidities. There was no statistical relationship between the occurrence of chronic diseases and the degree of clinical symptoms of COVID-19 ($p=0.809$).

Conclusions: The presence of comorbidities predicts a worse prognosis for the course of COVID-19 disease. However, it depends on the type and severity of the chronic disease, as well as its duration, as well as the fact that the viral load may be a potential prognostic indicator – in severe cases it is several dozen times higher than in patients with mild infection and people with mild comorbidities. In the conducted study, it should be noted that it included a group of people with chronic comorbidities, usually mild, without the need for hospitalization, which could have influenced the obtained level of statistical significance.

Keywords: chronic comorbidities, COVID-19, clinical symptoms

The nurse role at the care and treatment facility in caring disabled patient with diabetes.

Julia Gazdecka[1]

1. Department of Internal Diseases Propaedeutics and Emergency Medicine, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: Sylwia Dzięgielewska-Gęsiak, MD, PhD, Assistant Professor

Background: The nurse at the care and treatment facility participate in stabilizing diabetes and gaining control over the disease: ensures the patient receives the appropriate amount of food and fluids; monitors vital signs; keeps a diabetes card; controls blood glucose; monitors insulin and oral drugs delivery for proper management.

The aim: Assessment of the role of a nurse in a "Care and Treatment Facility" in the management of a patient with diabetes - including individualization of treatment.

Materials and methods: The study was conducted at the Care and Treatment Facility in Bytom and consisted of 2 parts: 1 observational-research part, 2 analysis of medical documentation of patients with diabetes. Written consent from the Facility's Supervisor was obtained to conduct the study.

Results: Out of 60 the Facility patients, n=22, 37% had diabetes (T2DM). All patients required regular blood glucose monitoring, all had HbA1c done on admission; On admission n=13 of patients were managed only with diet; n=4 patients received oral anti-diabetics, n=9 patients received insulin injections. During their stay at the Facility some patients required immediate introduction of insulin n=2 and n=1 oral drugs; due to normalization of lifestyle (regular meals, sleep regulation), the number of insulin injections was reduced or even discontinued for n=4 patients. In one case, a GLP-1 analog was added to help a patient maintain proper blood glucose levels and reduce overweight.

Conclusions: Special attention should be paid to the care of diabetes patients. Proper implementation of a diabetic diet allowed for complete or partial reduction of oral drugs or insulin and bringing blood glucose levels to normal values. Due to neglect, recommendations varied significantly for patients who arrived in a poor state. Patients with severe hyperglycemia required significantly longer time to stabilize their blood glucose levels.

Keywords: Diabetes, hyperglycemia, insulin, disabled patients

Aseptic and antiseptic approaches in the surgical ward - another perspective

Jakub Milczarek[1], Klaudia Jurkowska[1], Kamil Kania[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Tomasz Urbanek

Background: Hospital-acquired infections are a common occurrence carrying the risk of complications, not only postoperative. These can be transmitted by dirty hands of staff, non-sterile medical and non-medical equipment, lack of isolation of certain patients and contamination of the patient's environment. The number of cases of nosocomial infections is an ever-growing problem that can impair the healing of patients' wounds, prolong and impair their recovery, and consequently also increase the cost of care borne by the hospital.

The aim: A closer look at the issue of aseptic and antiseptic practices among medical staff and students in a hospital ward and the potential impact on the incidence of hospital-acquired infections.

Materials and methods: Questionnaires were distributed to 16 medical staff and 183 medical students. In addition, five samples were taken from the surfaces of the mobile phones of medical staff from the surgical ward and cultured.

Results: 87.5% of the medical professionals surveyed disinfect their stethoscope, while only 56.3% of them disinfect their mobile phone during their daily work. The situation is similar for medical students, where 87% disinfect their stethoscope, while only 28.3% disinfect their mobile phone during hospital activities. After five days of incubation, every of the samples taken from the mobile phones contained microorganisms The most prevalent strains that at varying frequencies and proportions across all samples were identified as Bacillus spp., Coagulase-negative Staphylococcus and Micrococcus spp. The presence of Staphylococcus aureus (MSSA strain) was detected in only one of the samples.

Conclusions: The results of surveys of medical professionals and students revealed a notable deficiency in the disinfection of mobile phones. The bacteriological results confirm these suspicions, further indicating the risk from highly pathogenic bacteria. Further investigation and analysis are necessary to elucidate these issues.

Keywords: hospital-acquired infections, aseptic, antisepsis

What affects sleep quality among nurses and midwives?

Agnieszka Sawina[1], Sara Rakotoarison[1], Martyna Nowak[1], Róża Salamon[1], Kinga Cogiel[1]Mateusz Zawisza[1]

1. Department of Environmental Medicine and Epidemiology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr. n. med. Karolina Lau

Background: Sleep is an integral part of life, and poor quality sleep can negatively affect personal as well as professional life. This leads to occupational burnout, reduced productivity and effectiveness at work. Shift workers, including nurses and midwives, are particularly vulnerable to sleep problems and insomnia because the diurnal rhythm of sleep is disrupted, leading to health consequences.

The aim: To investigate factors affecting sleep quality among nurses and midwives.

Materials and methods: The survey was conducted over a one-month period in March 2023, in the form of a questionnaire among nurses and midwives from various hospital departments, nursing homes, hospices and nursing homes. The Sleep Quality Scale was used, with responses on a scale of 1 (never) to 4 (always), and a Sleep Quality Index was calculated from it. The study group consisted of 245 subjects, including 231 women - 14 men, and 139 nurses and 106 midwives. Statistica package and RStudio software were used to perform statistical analysis. Relationships were examined with the ANOVA test in its parametric and non-parametric form (Kruskal-Wallis test). The second method of analysis was the chi-square test.

Results: The relationship between marital status and sleep quality was shown. Divorced and widowed people scored higher on the sleep quality scale. Weekly work hours also have an impact on sleep quality. Those working more than 61 hours per week scored higher on the sleep quality scale. As the number of hours worked per week increases, sleep quality decreases. The number of hours slept also affects sleep quality. As sleep duration decreases, sleep quality deteriorates.

Conclusions: Divorced and widowed had poorer sleep quality in them compared to the other. Fewer hours of sleep and long working hours worsen sleep quality among nurses and midwives. There is a need for further research to better investigate this problem.

Keywords: sleep quality, nurse, midwife, divorce

Level of stress among students of medical majors

Wiktoria Moik[1], Marta Tarapacz[1]

1. Student Scientific Association of Department of Kinesiotherapy and Special Methods, Faculty of Health Science in Katowice, Medical University of Silesia

Work's tutor: dr hab. n. med. i n. o zdr. Magdalena Dąbrowska-Galas, dr n. o. zdr. Magdalena Rutkowska

Background: Stress among medical majors is one of the main issues faced by young individuals. It often leads to unwanted consequences that students struggle with. Medical majors, however, are considered difficult to study in the 21st century, and the required subjects can further act as stressors affecting the bodies of young individuals.

The aim: The aim of the study was to assess the level of stress among students of medical majors and to evaluate differences in stress levels depending on the major and year of study.

Materials and methods: The study included 104 individuals (93 females and 11 males). 3 individuals were excluded from the analysis. The final analysis included 101 individuals. The participants were students of medical majors at the Medical University of Silesia. The mean age was (M=20.75; SD=1.08). The study was conducted using a self-prepared questionnaire and a standardized and validated stress questionnaire PSS10. The Shapiro-Wilk test was used for assessing the normality of distribution. The Kruskal-Wallis test was used to evaluate differences in stress levels among majors. A p-value <0.05 was considered statistically significant.

Results: The average stress level in individual majors was: in physiotherapy M=21.46; SD= 6.18, in medicine M=24.12; SD=5.48, in nursing M=24.58; SD=5.87. There were no statistically significant differences between stress levels and majors (p=0.082). 16.83% sought psychologist's advice during studies due to stress. The highest stress levels were noted in the first and second years (respectively, 1st year: M= 24.08; SD= 6.29, 2nd year: M=24.13; SD=5.84, and the lowest in the 4th year : M=18.00; SD=2.83 and 5th year: M=20.00. There was no statistically significant difference between stress levels and year of study (p = 0.1476).

Conclusions: Nursing students exhibit the highest level of stress. The year and major of study do not influence the level of stress.

Keywords: medical students, stress factors, stress

Lighting conditions in reading rooms in public and school libraries in the Silesian Voivodeship

Michał Meiser[1], Kathryn Kierepka[1], Julia Kałuża[1], Julia Barczyk[1], Natalia Brachmańska[1]

1. Department of Occupational Medicine and Health, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Jolanta Malinowska-Borowska

Background: In reading rooms and areas designated for reading, it is necessary to provide appropriate lighting conditions so that readers can use them comfortably while maintaining good wellbeing. According to the Polish Standard PN EN 12464 1:2022, the illuminance in the reading room should be no less than 500 lx..

The aim: The aim of the study was to conduct lighting measureme nts in various types of reading rooms and compare the results obtained with the values provided in the standard.

Materials and methods: Illuminance measurements were carried out in 19 city, municipal, and school libraries located in the Silesian Voivodesh ip. A Lutron Lx 105 lux meter was used for measurement. Measurements were taken at several points.

Results: In more than 36% of the surveyed libraries, especially school libraries, there were insufficient lighting conditions. The average illuminance in ov erall was 758 lx. The lowest illuminance measured was 313 lx and the highest 1408 lx. In over 31% of libraries, the ratio of window area to floor area was inconsistent with the standard.

Conclusions: A large portion of libraries in the Silesian Voivodeship does not meet the required standards regarding illuminance in reading rooms. Lighting conditions in school libraries are worse than in public libraries.

Keywords: lighting intensity, lighting, library, reading room

Burnout among veterinarians – preliminary results

Natalia Brachmańska[1], Julia Barczyk[1], Michał Meiser[1], Julia Kałuża[1], Kathryn Kierepka[1]

1. Department of Occupational Medicine and Health, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Jolanta Malinowska-Borowska

Background: Burnout is a state of emotional and physical exhaustion, which causes a loss of desire to act, reduces efficiency and satisfaction with the work performed. This is an increasingly common phenomenon, especially among veterinarians, who face difficult and stressful situations on a daily basis.

The aim: The aim of the study was to assess the health, especially mental health of veterinarians.

Materials and methods: The study was conducted in a group of 58 veterinarians, where 67% were women. The mean age was 41.8 (SD=9.9). In the study the author's questionnaire and 2 standardized questionnaires were used, Patient Health Questionnaire (PHQ-9) and OLBI.

Results: Most respondents experienced emotional exhaustion, 42% of respondents experienced depersonalization (loss of empathy towards patients), 61% of respondents experienced a decrease in their sense of professional effectiveness.

Conclusions: The data shows widespread emotional exhaustion, depersonalization and reduced sense of self-efficacy among respondents. Actions are needed to improve worker well-being and patient relationships, including stress management and social support.

Keywords: burnout, veterinarians, exhaustion, stress

Factors influencing the knowledge of nurses from the Upper Silesian Metropolis regarding the prevention of HPV

Kaja Hanys[1], Jadwiga Hartman[1], Aleksandra Hakało[1], Martyna Szymańska[2]

1. Department of Environmental Medicine and Epidemiology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

2. Department of Environmental Medicine and Epidemiology, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Alina Mroczek

Background: Every year worldwide, there are over 300 million new infections of the human papillomavirus (HPV). The risk of infection can be reduced by implementing appropriate preventive methods, such as vaccination, screening tests, and public education about the virus. Nurses have the closest contact with patients, so their role in education is paramount.

The aim: The aim of the study was to assess the level of knowledge regarding cervical cancer prevention and HPV vaccination among nurses in hospitals of the Upper Silesian-Zagłębie Metropolis.

Materials and methods: The study involved 200 nurses from various randomly selected hospital departments. The data was gathered using a self-designed survey questionnaire. The questionnaire consisted of 23 questions, including 19 single-choice questions, 4 multiple-choice questions and 1 open-ended question.

Results: The participants received knowledge test scores ranging between 21% and 70%. In the surveyed group the highest results were achieved by nurses aged 22-35 and departments of pediatrics, gynecology and obstetrics, general surgery, and internal medicine. The HPV vaccination rate among the respondents was only 19.5%, with the youngest group of nurses demonstrating the highest uptake.

Conclusions: In the surveyed group knowledge about HPV is insufficient. The reasons for the unsatisfactory knowledge may include: insufficient social campaigns targeting medical personnel, as well as inadequate self-education among nurses.

Keywords: HPV, cervical cancer, prevention, knowledge, vaccinations

Work-Related Quality of Life among Polish physicians

Joanna Rak[1], Monika Bonczek[1], Krzysztof Jakimów[1], Jakub Ciesielka[1], Magdalena Matlakiewicz[1]

1. Department of Radiodiagnostics, Interventional Radiology and Nuclear Medicine, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Mateusz Winder

Background: Physicians are exposed to the high level of stress and burnout syndrome, related to long working hours, high responsibility and emotional exhaustion. This contributes to decline in Work-Related Quality of Life (WRQoL), causing negative impact on patient care.

The aim: The aim of our study was to evaluate WRQoL among Polish doctors and to compare the results between interventional, non-interventional and diagnostic specialties.

Materials and methods: The survey was conducted among 257 physicians practicing in Silesia, Poland. Respondents, depending on medical speciality, were divided into 3 subgroups: interventional, non-interventional and diagnostic. Anonymous, standardized WRQoL questionnaire consisting of 24 close-ended questions was used. The WRQoL scale assessed perception of 6 factors, which affect overall quality of life: general well-being, home-work interface, job and career satisfaction, control at work, working conditions and stress at work.

Results: The analysis involved 246 doctors (11 forms were excluded due to incomplete data), 53.7% were women and 45.5% were men. The non-interventional group was the largest (48.4%), followed by interventional (35.4%) and diagnostic (16.3%) groups. The overall WRQoL in all analyzed groups scored 76.1 (SD=15.67). Total WRQoL score in the diagnostic subgroup was the lowest (73.6, SD=15.21), whereas it was best rated by the interventional subgroup (77.9, SD=14.8). However, none of the differences between analyzed groups were statistically significant.

Conclusions: General WRQoL among surveyed doctors in Poland is similar and the chosen medical speciality has no significant impact on their quality of life.

Keywords: quality of life, work, WRQoL, medicine, physicians

Health-Promoting Behaviors During the COVID-19 Pandemic: A Study Among Healthcare Workers and Medical Students

Tomasz Maciejczyk[1], Stanisław Kulejewski[1], Antoni Sieńko[1], Małgorzata Łabuś[1]

1. Department of Medical Biophysics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Barbara Pietrzyk

Background: Since the outbreak of the COVID-19 pandemic worldwide, there have been visible social changes affecting lifestyle. The implementation of social isolation has had a particular impact on the overburdened professional activities of medical professions.

The aim: The aim of the study was to investigate whether health-promoting behaviors related to the COVID-19 pandemic statistically depend on the medical profession.

Materials and methods: A survey was conducted among 133 healthcare workers and medical students. An author-prepared questionnaire containing demographic and anthropometric data, as well as information about health-promoting behaviors related to the COVID-19 pandemic, was analyzed. The collected data were analyzed using descriptive statistics, and a p-value less than 0.05 was considered statistically significant. Variable comparisons were made using Fisher's exact test.

Results: Based on descriptive statistics, it was found that during the COVID-19 pandemic, as part of health prevention, 40.6% of respondents engaged in regular physical activity, 33.8% implemented dietary interventions, and 18.8% exhibited other health-promoting behaviors (psychological assistance, spiritual support, meditation). In the surveyed groups, physical activity was undertaken by 40.2% of doctors and medical students, 31.0% of nurses and nursing students, and 54.0% of representatives of other medical professions; dietary intervention by 37.1% of doctors and medical students, 31.0% of nurses and nursing students, 45.5% of other medical professions; and other health-promoting behaviors by 22.0% of doctors and medical students, 3.5% of nurses and nursing students, 27.3% of other medical professions. No statistically significant relationship was found between the preventive measures used and belonging to the surveyed groups ($p>0.05$).

Conclusions: The medical profession did not have a significant impact on health-promoting behaviors during the COVID-19 pandemic.

Keywords: COVID-19, prevention, health-promoting behaviors

Concerns Regarding Distant Complications of SARS-CoV-2 Infection Among Healthcare Professionals

Tomasz Maciejczyk[1], Stanisław Kulejewski[1], Antoni Sieńko[1], Małgorzata Łabuś[1]

1. Department of Medical Biophysics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Barbara Pietrzyk

Background: With the development of the COVID-19 pandemic, an increasing number of complications related to SARS-CoV-2 infection have been observed. Healthcare professionals had a direct opportunity to experience their course and consequences, shaping personal concerns related to SARS-CoV-2 infection.

The aim: The aim of the study was to test whether concerns about the distant complications of SARS-CoV infection statistically depend on the medical profession.

Materials and methods: A survey was conducted among 133 healthcare workers and medical students. An author-prepared questionnaire containing demographic and anthropometric data, as well as information about concerns regarding distant complications after SARS-CoV-2 infection, was analyzed. The collected data were analyzed using descriptive statistics, with statistically significant data accepted with a p-value of less than 0.05. Comparison of variables was performed using Fisher's test.

Results: Based on descriptive statistics, it was found that during the COVID-19 pandemic, 48.9% of respondents had concerns about distant complications of SARS-CoV-2 infection. In the surveyed groups, concerns were expressed by 43.9% of doctors and medical students, 41.4% of nurses and nursing students, and 77.3% of representatives of other medical professions. A significant relationship was found between belonging to the study group and the presence of concerns about complications at a level of $p=0.01$. The majority of individuals with specific concerns (4 or more) were doctors and medical students. The statistical significance of this relationship was $p<0.05$.

Conclusions: Belonging to the studied group associated with a specific medical profession significantly affects concerns about distant consequences of SARS-CoV-2 infection and their severity.

Keywords: COVID-19, distant effects, complications, infection, concerns

Empower Minds, Save Lives: Unlocking the Power of Stroke Knowledge!

Iga Litwińska-Inglot[1], Julia Plewniok[1], Maria Partyka[1]

1. Department of Neurology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: lek. Aleksandra Krzan

Background: In Poland, stroke remains a significant health concern, with thousands affected annually. Statistics show that around 80,000 people experience a stroke each year in the country. Moreover, stroke accounts for approximately 10% of all deaths in Poland, underlining its substantial mortality impact. Given these numbers, understanding stroke's epidemiology is crucial. It allows for early recognition of symptoms, prompt treatment, and preventive measures, potentially reducing the incidence and severity of strokes. By raising awareness and disseminating accurate information, we can strive to lower these numbers, saving lives and improving public health outcomes.

The aim: Our aim was to assess the level of knowledge about stroke among students of Silesian universities.

Materials and methods: A Google form questionnaire was administered to Silesian university students from March 25th to April 7th, 2024. It comprised 8 sections and 36 questions covering stroke epidemiology, symptoms, risk factors, recognition, treatment, and rehabilitation.

Results: Of 150 participants, 61.3% were female, 36.7% male, and 2% neutral gender. Commonly recognized stroke symptoms were facial asymmetry (81.3%) and sudden speech disturbance (84.1%). Common risk factors included advanced age (82%) and obesity (77.3%). Calling emergency services (83.3%) was the primary first aid action, with 10.7% unsure. Websites (40.7%) were the main knowledge source, and only 8.7% attended stroke prevention classes. Most (88.7%) rated their knowledge ≤3 on a 5-point scale. 11.3% witnessed stroke symptoms, with 70.6% uncertain how to react.

Conclusions: These findings emphasize the need for improved stroke education among young adults. Enhancing awareness through targeted educational programs, both online and offline, could empower individuals to recognize symptoms promptly, understand risk factors, and take appropriate action, ultimately leading to better outcomes and reduced burden of stroke-related disabilities and mortality.

Keywords: stroke, knowledge of stroke, stroke education,

Machine Meets Brain: A Systematic Review of Effectiveness of Robotically Performed Cerebral Angiography

Paweł Łajczak[1], Przemysław Nowakowski[1], Kamil Jóźwik[1]

1. Department of Biophysics, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: Dr hab. N. Med. Zbigniew Nawrat

Background: Stroke is a leading cause of death in the United States, with significant economic and human costs. Early diagnosis and rapid treatment are critical for preventing stroke-related morbidity and mortality. However, accessibility to interventional medical centers remains a challenge for many Americans, highlighting the need for innovative solutions to improve stroke management.

The aim: This systematic review aimed to conduct a synthesis of robot assisted cerebral angiography procedures.

Materials and methods: This systematic review adhered to PRISMA guidelines and included five medical databases to identify relevant studies on robotically assisted cerebral angiography. Studies focusing on in-human robotic intracranial cerebral angiography were included. Bias assessment was conducted using appropriate tools for randomized controlled trials (RCTs) and non-RCTs.

Results: A total of seven studies met the inclusion criteria, with one RCT and six non-RCTs included in the analysis. Robotic systems such as CorPath GRX, Magellan Robot, YDHB-NS01, VIR-2, and RobEnt were evaluated. The studies reported varying success rates, procedure times, and complications associated with robotically assisted procedures. Overall, robotic interventions demonstrated promising results in terms of safety and efficacy, with comparable outcomes to manual methods.

Conclusions: Robotically assisted cerebral angiography shows potential as a valuable tool in neuroendovascular interventions. Addressing technical challenges and conducting further research will be crucial to fully realize the clinical benefits of this innovative technology and improve patient outcomes in stroke management.

Keywords: Cerebral angiography, robot assisted intervention

GUT MICROBIOTA AND ANOREXIA NERVOSA - THERAPEUTIC PERSPECTIVES

Zofia Spandel[1]

1. Department of Epidemiology, Medical University of Silesia in Katowice

Work's tutor: Dr n. med. Karolina Krupa- Kotara

Background: Psychological, behavioral, and neurodevelopmental disorders are common in the modern era, and their origins are complex. Anorexia is one of several eating disorders that may correlate with changes in the human microbiota. Understanding the relationship between gut microbiota and the maintenance of well-being, as well as the prevention of eating disorders, holds promise for therapeutic interventions by health professionals, including nutritionists.

The aim: This review aims to analyze scientific studies based on the relationship between the gut microbiota and Anorexia Nervosa with a therapeutic perspective.

Materials and methods: Data on the role of the microbiota in physiological changes in the host body were analyzed. The PubMed database was used as a methodological tool. The results of studies conducted on animals and humans in various disease states were analyzed.

Results: Current research shows the influence of the gut microbiota on eating disorders such as Anorexia Nervosa. Evidence supports the role of gut dysbiosis in both somatic and psychological symptoms. Probiotics are one way to manipulate the gut microbiome, and research suggests that the administration of specific strains of bacteria can have a beneficial effect on mood or gastrointestinal function, such as by transplanting the microbiota. Neuropeptides that regulate appetite play an important role in the etiology of eating disorders, which may have therapeutic implications.

Conclusions: The results of this review indicate that there is a correlation between gut microbiota and certain eating disorders. Moreover, such an interaction has been observed to regulate numerous mechanisms crucial to host balance. Distinguishing whether the observed changes in the microbiota in affected individuals are a consequence or a cause remains a challenge, given the incomplete understanding of the etiology of these disorders.

Keywords: microbiota, gut, eating disorders, anorexia, probiotics

Understanding Seasonal Trends in Depression and Anxiety: Insights from Adolescents to Adults

Ieva Vanagaitė[1], Gabija Venclovaitė[1]

1. Department of Medicine, Faculty of Medicine, Vilnius University

Work's tutor: Sigita Lesinskienė, MD Ph.D.

Background: Understanding seasonal patterns of depression and anxiety in adolescence and adulthood is vital for mental health interventions.

The aim: Investigate seasonal trends and connections in adolescent and adult depression and anxiety.

Materials and methods: The PubMed database was used for the literature review, covering articles from 2013 to 2023.

Results: There is a noticeable seasonal trend among 14 to 18-year-olds, with the highest rates of antidepressant prescriptions occurring in autumn. Research indicates a higher prevalence of depression among adolescents during winter compared to summer. The incidence of depression in this age group typically decreases from January to August, only to surge and reach its peak in November. Antidepressant prescriptions show peaks in spring and autumn for both genders while remaining relatively stable during summer. Furthermore, the highest levels of anxiety are reported between September and November in the 14-18 age group. The highest incidence of all types of depressive disorders in adults occurs during late autumn and early winter. Mild depressive episodes peak in November, while moderate and severe episodes without psychotic symptoms are most common in October and November. Bipolar depression peaks in November, and severe depression with psychotic symptoms peaks in December. Additionally, a slight increase in the incidence of unipolar depression is observed in spring. Those with bipolar depression report experiencing a significantly heightened impact of seasonality. Antidepressant prescription rates are highest during the winter months. Seasonality notably impacts depressive symptoms in middle-aged women and older adults (>50 years old), peaking in winter and decreasing in spring. Furthermore, the highest incidence of anxiety disorders is observed in November, while the lowest is in July and August.

Conclusions: Seasonal trends in depression and anxiety vary among adolescents and adults. Studying these patterns is crucial for tailoring interventions and treatments effectively.

Keywords: adolescent, adult, depression, anxiety, seasonality

Seasonal Patterns in Adult Bipolar Disorder

Gabija Venclovaitė[1], Ieva Vanagaitė[1]

1. Department of Medicine, Faculty of Medicine, Vilnius University

Work's tutor: Sigita Lesinskienė, MD Ph.D.

Background: Understanding the seasonal patterns present in adult bipolar disorder is crucial for refining and optimizing mental health treatment strategies, ensuring more targeted and effective interventions for individuals with this complex condition.

The aim: Investigate seasonal patterns and their causes in adult bipolar disorder.

Materials and methods: The PubMed database was used for the literature review, covering articles from 2013 to 2023.

Results: Up to 25% of individuals with bipolar disorder experience seasonal patterns of symptoms. Manic episodes peak in spring and summer, depressive episodes in early winter, and the mixed affective state in early spring and late summer. Seasonal variations may be more pronounced in young adults compared to middle-aged people. The photoperiod hypothesis suggests manic episodes correlate with daylight length increase. The mechanism is explained by the fact that the rapid increase in light during the warm seasons stimulates the pineal gland, leading to a decrease in melatonin secretion and the onset of manic episodes. Women with bipolar disorder may be more affected due to female reproductive hormones' links with sunlight sensitivity. While both bipolar types show seasonal patterns, type II demonstrates a notably higher incidence of seasonality affect with depressive symptoms lowest in summer and highest in early winter and hypomanic symptoms increased in early autumn. Geographical factors, such as the four-season climate and tropical climates, may influence disorder onset, with the risk of suicide and self-harm being up to 20-30 times higher than in the general population, especially in areas with significant sunlight variations between seasons.

Conclusions: Seasonal patterns in bipolar disorder, particularly in manic and depressive episodes, are influenced by increasing daylight length, with geographical factors such as distinct climates also playing a role in the onset, highlighting heightened suicide and self-harm risks in regions with significant sunlight variations between seasons.

Keywords: bipolar disorder, adult, seasonality

The Role of Aldehyde Dehydrogenase in Chemotherapy Resistance in Non-Small Cell Lung Cancer

Ernest Borkowski[1], Natalia Ryś[1], Bartosz Wierzbicki[1], Michał Chwaściński[1]

1. Student Science Club of the Department of Biomedicine and Genetics, Faculty of Medicine, Medical University of Lodz

2. Department of Biomedicine and Genetics, Faculty of Medicine, Medical University of Lodz

Work's tutor: dr n. med. Jolanta Kryczka, prof. dr hab. n. med. Ewa Brzeziańska-Lasota

Background: Lung cancer remains the leading cause of cancer-related deaths in Poland with 22,213 individuals succumbing to the disease in 2020. Among its histologic types, non-small cell lung cancer (NSCLC) deserves special attention, accounting for 80-85% of all primary lung cancers. Given the often encountered phenomenon of resistance to chemotherapeutic agents, such as cisplatin, there is a pressing need to delve into the molecular bases responsible for therapeutic failure.

The aim: Summary of up-to-date literature regarding the role of aldehyde dehydrogenase (ALDH) in the mechanisms of chemoresistance in NSCLC cells.

Materials and methods: We conducted an integrative review of the literature focusing on the role of ALDH in NSCLC chemotherapy, along with thematic data analysis. The PubMed and Google Scholar databases were used for article searches, limited to the years 2019-2024.

Results: The subpopulation of NSCLC cells resistant to chemotherapeutics exhibits increased gene expression level of various ALDH isoforms e.g. ALDH1A1 and ALDH3A1, compared to the subpopulation of cells that is more sensitive to these substances. Moreover, this elevated gene expression level correlates with a high carcinogenic potential, clonogenicity and the ability of cancer cell self-renewal. The role of ALDH in generating resistance to chemotherapeutic agents arises from its contribution to mechanisms such as ATP production (through the formation of NADH) in tricarboxylic acid (TCA) cycle. Additionally, it takes part in the metabolism of retinoids – signalling molecules for the differentiation of cancer stem cells. Furthermore, by reducing the levels of aldehydes and reactive oxygen species, ALDH protects cancer cells from oxidative stress and DNA damage.

Conclusions: The high level of ALDH in cancer cells is one of the main reasons for chemotherapeutic failure. Therefore, the future development of effective ALDH inhibitors could significantly contribute to improving the effectiveness of chemotherapy in patients diagnosed with NSCLC.

Keywords: non-small cell lung cancer, aldehyde dehydrogenase, chemoresistance

How does the obesity affect the brain?

Karolina Drygała[1]

1. , Faculty of Medicine, University of Rzeszów

Work's tutor: Dorota Bartusik-Aebisher, Ph.D., D. Sc., B. Eng., Professor UR

Background: Obesity is a disease characterised by an excessive accumulation of adipose tissue, Globally, the rate of obesity is rising at never-before-seen proportions, and the full impact that obesity has on the body's numerous organ systems is still emerging. There is likely to be variation in the presentation of obesity consequences in any given group due to the multitude of direct and indirect effects of dysfunction of many tissues and organs. When these facts are considered collectively, it becomes more challenging to comprehend the intricate interactions between the consequences of obesity on many organs, including the brain.

The aim: The aim is to review available knowledge about the impact of obesity on the brain.

Materials and methods: Review of the literature available in the PubMed scientific database using phrases obesity, brain structure, brain function.

Results: The causes and impact of obesity on overall health are far from straightforward and indicate a complicated web of relationships. Brain dysfunction can be recognized as a result from neuroinflammation, oxidative stress and change in gut-brain hormonal functionality. Obesity and metabolic syndrome have aslo been linked to reduced cognitive function, plasticity and brain volumes, and altered brain structure.Differences in gray and matter have been reported in obese individuals compared to their normal-weight counterparts.These studies provided consistent evidence of smaller cortical thickness or reduction in the gray matter volume in people with overweight and obesity; however, the investigated brain regions varied across the studies. In general, bilateral frontal and temporal areas, basal nuclei, and cerebellum are more commonly involved.

Conclusions: In conclusion, overweight and obesity generate a series of physiological changes in the brain. According to the available data, obesity is linked to changed brain anatomy, decreased adaptability and volume in the brain, and decreased cognitive performance.

Keywords: obesity, bran structure, brain function

The benefits of physical training in patients with depression.

1.Drygała Karolina[1], 2.Bębenek Natalia[1], 3. Barszcz Gabriela[1]

1. , Faculty of Medicine, University of Rzeszów

Work's tutor: Dorota Bartusik-Aebisher, Ph.D., D. Sc., B. Eng., Professor UR

Background: Depression is a serious condition that affects children, adolescents and adults. Exercise, yoga, and meditation are among the nonpharmacologic and nonconventional therapies that many people with anxiety or depression use. Physical activity interventions hold promise as an alternative or adjunctive approach to clinical treatment for depression.

The aim: The aim is to review available knowledge about the impact of physical training on depression.

Materials and methods: Review of the literature available in the PubMed scientific database using phrases depression treatment, physcial activty.

Results: The studies available reveal that physical exercise interventions may have a small but significant favorable effect reducing the onset of depressive symptoms. There are several biological and psychosocial mechanisms through which physical activity produces an antidepressant effect. Evidence from human and animal studies suggest that depression is associated with structural abnormalities and dysregulation of some neuroplastic mechanisms. Exercise stimulates many of the same neuroplastic mechanisms and is associated with growth in several brain regions that are adversely affected in people with depression, such as the hippocampus, prefrontal and anterior cingulate cortices. Numerous meta-analyses have demonstrated that exercise therapies can lower circulating inflammatory markers, and other lines of evidence imply that low-grade, chronic inflammation may contribute to the pathophysiology of depression.

Conclusions: The results of several studies suggest that physical activity interventions can alleviate symptoms of depression. Physcial exercises have antidepressant impact due to a variety of biological and psychological mechanisms.

Keywords: Depression, physical activty

How stress affects inflammatory bowel disease

Natalia Bębenek[1]

1. , Faculty of Medicine, University of Rzeszów

Work's tutor: Dorota Bartusik-Aebisher, Ph. D., D. Sc., B. Eng., Professor UR

Background: Inflammatory bowel diseases, which include Crohn's disease and ulcerative colitis, are chronic inflammatory diseases of not fully understood etiology and pathophysiology, related to among others with immune response disorders, genetic predispositions and environmental factors. One of the factors associated with the development of IBD is psychological stress.

The aim: The aim is to review available knowledge about interaction between IBD and psyhological stress.

Materials and methods: Review of the literature available in the PubMed scientific database form years 2021-2024 using phrases IBD, psyhological stress.

Results: How stress affects body's immune and inflammatory system usually depends on the stressor's length and degree. Chronic one is linked to reduction in macrophages, CD8+ lymphocytes, NK cells and also with subclinical increases in inflammation. Acute stress has been shown in tests to rapidly relocate the lymphocyte population and cause leucocytosis, which occurs in IBD. An aggravation of the disease is a possible outcome if there are changes in HPA axis, such as modifications to the neuroendocrine-immune system. Stress can also result in behavioral changes that raise the risk of disease flare-ups. A significant stressful incident may trigger an activation of the disease during the next three months, according to a prospective population-based study. Investigation combining several institutions indicated that having co-occurring anxiety and/or depression, which are typically linked to stress, was associated with a 28% higher risk of surgery in people with CD.

Conclusions: Studies have shown associations between stress with more severe symptoms, more episodes of relapse and higher rates of hospitalisation in patients with IBD. Through this connection psychological therapies have the potential to enhance the efficacy of gastrointestinal disease treatment, thereby augmenting the quality of life of patients.

Keywords: inflammatory bowel disease, stress, psychological stress

Avoidant/Restrictive Food Intake Disorder – a relatively new medical condition.

Monika Błądek[1]

1. , Faculty of Medicine, University of Rzeszów

Work's tutor: Dorota Bartusik-Aebisher, Ph.D., D. Sc., B. Eng., Professor UR

Background: ARFID (Avoidant/Restrictive Food Intake Disorder) is a disease that can affect children and adults in whom has persisted since childhood or first appears in adulthood. People with that condition may avoid eating certain foods due to dislike of certain tastes, textures, or smells what can cause malnutrition and other medical consequences.

The aim: The aim is to review available knowledge about ARFID.

Materials and methods: A systematic review of the literature available in PubMed from the last 5 years using the phrases ARFID, ARFID treatment.

Results: Typical symptoms of ARFID include avoiding food due to low appetite, sensory sensitivity, fear of choking and pain caused by ingested food, or fear of allergic reaction. Patients with ARFID may express a desire to increase food intake and increase weight but due to the disease, they cannot which differs ARFID from anorexia nervosa (AN) or bulimia. Selective food consumption can lead to nutritional deficiencies and underweight, although there are also cases of overweight or obese patients. Treatment ranges from outpatient treatment to medical hospitalization. ARFID shows phenotypic differences requiring personalized interventions such as psychotherapy, education, sensory treatment, or additional pharmacotherapy. ARFID patients can achieve a state of homeostasis, exhibiting less hypotension and bradycardia compared to patients with AN who continue to lose weight. Also, they rely more on enteral nutrition than those with AN when hospitalized. An important aspect of ARFID treatment is supplementing nutrient deficiencies to prevent their negative impact on appetite, mood energy levels and overall health.

Conclusions: ARFID is a disorder that significantly influences the person affected by it. In the treatment of this disorder, a multidirectional approach is important, including psychotherapy and supportive treatment to improve the patient's health and quality of life.

Keywords: ARFID, ARFID treatment, food restrictions

How vitamin D deficiency can affect the brain – a systematic review.

Monika Błądek[1]

1. , Faculty of Medicine, University of Rzeszów

Work's tutor: Dorota Bartusik-Aebisher, Ph.D., D. Sc., B. Eng., Professor UR

Background: The impact of vitamin D deficiency on the functioning of the human body has been the subject of many recent studies. It is already known that this vitamin plays an important role not only in regulating bone metabolism but also affects other organs and systems, including brain and nervous system.

The aim: The aim is to review available knowledge about the impact of vitamin D deficiency on brain function.

Materials and methods: A systematic review of the literature available in the PubMed scientific database from the last 5 years using the phrases 'vitamin D deficiency' and 'brain', 'brain dysfunction'.

Results: Studies show that vitamin D can be actively synthesized by neurons and microglia. Receptors for vitamin D are expressed in many areas of the brain, including the amygdala, hippocampus, cortex, or substantia nigra. Prenatal deficiency may affect basic brain development processes during the embryonic period. Moreover, vitamin D increases the level of neurotrophic factors such as NGF, GDNF, and NFT3, and has a neuroprotective effect by preventing damage caused by, for example, a sudden increase in cytoplasmic Ca2+ concentration. In neurons, vitamin D participates in suppressing oxidative stress and inhibiting inflammation. It also supports synaptic plasticity and neurotransmission in dopaminergic neural pathways. Deficiencies of this vitamin disrupt the previously mentioned processes and are also suspected of influencing the course of diseases such as Alzheimer's, Parkinson's, and depression.

Conclusions: Vitamin D plays an important role in many different processes occurring in the human body. Its appropriate concentration is necessary for the proper functioning of not only the skeletal system but also the brain and nervous system.

Keywords: brain dysfunction, vitamin d deficiency, brain damage

The effectiveness of antihaemorrhagic palliative radiotherapy for advanced gastric cancer patients

Anna Kozub[1, 2], Aleksandra Nasiek[1, 2]

1. , IIIrd Department of Radiotherapy and Chemotherapy, Maria Skłodowska-Curie National Research Institute of Oncology, Gliwice branch

2. Department of Microbiology and Immunology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Marcin Miszczyk

Background: There are not strict guidelines describing treatment of bleeding in advanced gastric cancer. The techniques of embolization, endoscopy or palliative radiotherapy may be administered to stop the haemorrhage.

The aim: This study aimed to summarize available evidence on the effectiveness of antihaemorrhagic palliative radiotherapy (pRT) in the treatment of advanced gastric cancer patients and synthesize acquired data in the form of the systematic review.

Materials and methods: We performed this systematic review in February 2024. The research question was formulated according to PICO framework. Four databases were screened: MEDLINE (PubMed), Embase, Scopus and Google Scholar (top 100 hits). The search strategy included only English-language articles without publication date filter applied. Two researchers independently searched for original studies focusing on the pRT results in the patients diagnosed with advanced gastric cancer and concurrent bleeding, performed abstract screening using Rayyan.ai tool and then selected records for full-text review. Conflicts were mediated by a work's tutor. The characteristics of the studies was extracted independently by 2 authors using the spreadsheet. The risk of bias was assessed with the usage of I-ROBINS tool.

Results: We included 44 studies into this systematic review. The median study group size was assessed as 33 (minimal n=9, maximal n=120). The most common dosage for pRT scheme was 3 Gy in 10 fractions to a total dose of 30 Gy on cancer lesion. The majority of studies analysed symptomatic relief, the changes in median haemoglobin level before and after RT, the need for blood transfusion and median overall survival. The follow-up periods in the studies varied significantly due to survival of the patients.

Conclusions: There is evidence on effectiveness of antihaemorrhagic pRT therapy for advance gastric cancer patients with persistent bleeding. The pRT scheme of total 30 Gy is said to induce hemostasis in patients with dim prognosis.

Keywords: Palliative radiotherapy, gastric cancer, stomach, haemorrhage, haematology

The prognostic and therapeutic significance of expression of CTLA-4 in CLL - a review of recent reports

Alicja Maziarczyk[1], Katarzyna Kulszo[1], Arkadiusz Ściubak[1]

1. Department of Experimental Hematooncology, Faculty of Medicine, Medical University of Lublin

Work's tutor: dr n. biol. Grażyna Stasiak

Background: Chronic lymphocytic leukemia (CLL) is one of the most common types of leukemia. In the course of the disease, there is clonal proliferation and accumulation of mature lymphocytes in the blood, bone marrow, lymph nodes and spleen. The main functions of cytotoxic T-lymphocyte-associated protein 4 (CTLA-4) are inhibition of T-cell function and maintenance of immune tolerance. In the course of CLL, there is increased expression of surface and cytoplasmic CTLA-4 on T lymphocytes, resulting in a strong suppression of T-cell effector functions.

The aim: The aim of this study is to present the prognostic and therapeutic significance of CTLA-4 molecules in CLL.

Materials and methods: Data was collected from Pubmed from the period 2017-2024 by searching the following keywords: "CLL", "CTLA-4", "anti-CTLA-4 monoclonal antibodies".

Results: It has been shown that the level of CTLA-4 expression can be both a favorable and unfavorable factor for CLL patients, depending on the localization - elevated CTLA-4 expression on T lymphocytes reduces anti-tumor immunity and indicates an unfavorable prognosis, while on CLL cells it is associated with better clinical outcomes. The efficacy of CTLA-4 blocking therapy in patients with CLL depends on the initial level of CTLA-4 expression on CLL cells.

Conclusions: CTLA-4 may be an important prognostic factor in CLL patients. Given the significant role of CTLA-4 molecules in the course of CLL, monoclonal antibodies blocking CTLA-4 could provide a highly effective alternative to traditionally used therapies and contribute to a significant improvement in the prognosis of patients.

Keywords: CLL, CTLA-4

A review of inflammatory markers in Parkinson's Disease and potential effects of FMT

Weronika Zając[1], Karol Sadowski[1]

1. Department of Neurology, Faculty of Health Sciences, Medical University of Warsaw

Work's tutor: dr n. med. Monika Figura, dr hab. n. med. Dariusz Koziorowski

Background: Parkinson's disease (PD) is the second most common neurodegenerative disease. Recent data highlights a potential role of the gut microbiota in its pathophysiology. The degeneration of dopaminergic neurons leads to motor impairments: tremor at rest, rigidity, and bradykinesia. Non – motor symptoms also occur, including gastrointestinal manifestations, notably constipation. Consequently, the gut emerges as a plausible modulator of PD progression.

The aim: The aim is to review the state-of-the-art information on the role of inflammation in pathology of PD. It explores the relationship between gastrointestinal tract and central nervous system. Thus, it also assesses the effects of Fecal Microbiota Transplantation (FMT) as a potential disease-modifying therapy of PD.

Materials and methods: Data were collected from original, and review papers with PubMed database and Google Scholar using key words: "Parkinson's disease" "Fecal microbiota transplantation" and "neuroinflammation". Information on ongoing clinical trials of FMT in PD were obtained from clinicaltrials.gov registry.

Results: The unique changes in the microbiota composition in the alimentary tract of PD patients promote inflammation, which can be attributed to a reduction in short chain fatty acid-producing bacteria. The inflammation later spread to the brain. This is supported by significant increase in proinflammatory cytokines in the serum and cerebrospinal fluid of PD patients including TNF-α, IL-1β, and IL-6. Thus, FMT emerged as a promising therapy. Preclinical studies suggest a reduction in inflammatory markers post-FMT. Clinical trials have shown some improvement in PD patients, particularly regarding non-motor symptoms.

Conclusions: Investigation of the relationship between PD and inflammation may lead to advancement in our comprehension of neurodegeneration, unveiling potential avenues for the therapeutic interventions. The evaluation of FMT is promising, as it has potential to reduce the inflammatory influence of the microbiota.

Keywords: neurology, neurodegenerative diseases, Parkinson's disease, neuroinflammation, microbiota, FMT

Enhancing Precision and Safety in Spinal Surgery: A Comprehensive Review of Robotic Assistance Technologies

Paweł Łajczak[1], Krzysztof Żerdziński[1], Kamil Jóźwik[1], Maciej Laskowski[1]

1. Department of Neurosurgery1, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: lek. Mikołaj Dymek

Background: The intricate nature of spinal surgery demands unprecedented precision to avoid severe complications such as nerve damage and paralysis. Recent advancements have steered spinal surgery towards robotic assistance, which enhances precision beyond human capabilities. These robotic systems allow for detailed pre-operative planning and real-time guidance during surgery, significantly reducing the margin for error and promoting the adoption of minimally invasive techniques.

The aim: This review aims to evaluate the application of robotic systems in spinal surgeries, focusing on the accuracy and efficacy of these technologies in clinical settings.

Materials and methods: The authors utilized comprehensive literature searches in databases such as PubMed and Scopus, focusing on terms like "robot," "robot-assisted," and "spine surgery." The search was aimed at gathering both original research and review articles to assess the current status and advancements in robotic spinal surgery.

Results: Robotic systems, such as the Mazor X Stealth, have demonstrated high precision in pedicle screw placement with minimal deviation. Studies show a significant increase in the accuracy of screw placement compared to traditional methods. Furthermore, the use of robotic assistance in surgery has been linked to reduced operative times, less blood loss, and decreased radiation exposure to both patients and surgical teams.

Conclusions: Robotic systems significantly enhance the precision and safety of spinal surgeries. They reduce the risk of complications, minimize surgical invasiveness, and maintain or improve operative outcomes. However, challenges such as high costs and the need for specialized training persist. Continuous technological advancements and training are essential for the broader adoption of these systems in spinal surgeries.

Keywords: Spine Surgery, Robot, Robot-Assisted Surgery

The role of mesenchymal stem cell derived extracelluler vesicles in regulation of the inflammatory process

Zuzanna Witkowska[1], Dominika Centner[1]

1. Department of Cytophysiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Bartosz Sikora

Background: Extracellular vesicles are a heterogenous group of membrane-bound structures released by cells, serving as mediators in intercellular communication. They are involved in modulation of immune cell activity. In recent years, they have become an object of avid interest, which is being reflected by a notable surge of scientific literature regarding this topic. Therapeutic applications involve influencing the immune system, treating corneal injuries, and promoting tissue regeneration.

The aim: The purpose of the review was to examine recent advancements in therapeutic application of extracellular vesicles and their anti-inflammatory properties.

Materials and methods: Medical literature databases such as PubMed and Google Scholar were searched using keywords "extracellular vesicles" and "inflammation". The papers selected for the review were published between 2018 and 2024 and written in either Polish or English.

Results: Over 25 studies meeting the criteria were selected for the analysis. These studies assessed the efficacy of extracellular vesicle utilization across various scenarios.

Conclusions: Numerous studies have identified extracellular vesicles as promising tools in treatment, including the promotion of tissue regeneration and the therapy of inflammatory disorders.

Keywords: extracellular vesicles, inflammation, exosomes

NeuroScan: Advancements in Deep Learning for Brain Stroke Identification

Alexandru Calin[1], Maria-Bianca Andrei[1]

1. General Medicine, Medicine, University of Medicine and Phamacy "Grigore T. Popa"

Work's tutor: Alin Ciubotaru, MD PhDs

Background: Deep learning algorithms have significantly revolutionized various research domains, offering effective solutions to complex challenges. The medical sector, in particular, has witnessed substantial improvements from the advancement of deep learning models, streamlining processes and ensuring precise outcomes.

The aim: This study endeavors to underscore the profound influence of deep learning models in the realm of brain stroke detection and lesion segmentation. It delves into the latest advancements put forth by recent studies, elucidating their state-of-the-art approaches in this specialized field

Materials and methods: This review highlights the progress made in detecting and segmenting stroke lesions. A comprehensive survey was conducted, scrutinizing 13 research papers sourced from PubMed, Embase and Medline. Through meticulous filtering based on predefined criteria, the aim was to extract key insights pertinent to stroke lesion detection and segmentation.

Results: The characteristics of stroke lesions vary depending on the imaging modality used. Crafting an effective method for stroke lesion detection requires meticulous extraction of features from input images. This review endeavors to categorize and explore the diverse deep architectures utilized in stroke lesion detection and segmentation, categorized by the underlying imaging modality. It sheds light on the significance of two key components in medical image analysis: Convolutional Neural Networks (CNN) and Fully Convolutional Networks (FCN). Additionally, it alludes to potential alternative deep architectures that could yield enhanced results in stroke lesion detection. Furthermore, this assessment outlines the emerging trends and advancements in stroke detection.

Conclusions: This study concludes by scrutinizing both technical and non-technical challenges encountered by researchers and highlighting their implications for the future of stroke detection.

Keywords: deep learning, CNN, FCN

The impact of anti-vaccine movements on vaccination rates

Kaja Hanys[1], Jadwiga Hartman[1], Aleksandra Hakało[1], Martyna Szymańska[1]

1. Department of Environmental Medicine and Epidemiology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Alina Mroczek

Background: Reluctance and denial of the idea of vaccination is a serious public health issue in the 21st century. The promotion of mandatory and recommended vaccinations has become one of the main goals of contemporary medicine and government organizations. The effectiveness of vaccinations in eliminating many dangerous diseases, paradoxically, results in the growing popularity of the anti-vaccination movement.

The aim: The aim of the study was to examine the impact of the anti-vaccination movement on vaccination rates.

Materials and methods: A systematic literature review was conducted. We included studies related to the anti-vaccination movement, the attitudes and behaviors of supporters of the anti-vaccination movement and its impact on vaccination rates. The databases used were GoogleScholar, PubMed and Scopus. The search was conducted in April 2024. The selection of the studies was done independently. Firstly, title, keywords and abstract were read and then the full text was analyzed.

Results: People in various countries are believing unverified pseudo-scientific sources that spread false and harmful information about vaccines. This public health issue has contributed to a decrease in the vaccination rate within the population, especially concerning selected vaccines, and poses a particular danger to individuals in high-risk groups.

Conclusions: The ineffectiveness in combating false information and promoting evidence-based medicine can result in a long-lasting negative impact on the global public opinion regarding medicine and virology.

Keywords: anti-vaccination, HPV, COVID, vaccination;

Characterization of bacteriophages from clinical strains of Clostridioides difficile

Natalia Frankowska[1]

1. Department of Molecular Bacteriology, Intercollegiate Faculty of Biotechnology of University of Gdansk and Medical University of Gdansk, Medical University of Gdansk

Work's tutor: dr hab. Krzysztof Hinc

Background: Bacterium C. difficile has been considered a main cause of antibiotic-associated diarrhea in nosocomial settings that can lead to colitis or toxic megacolon. To date, several bacteriophages that infect C. difficile cells have been isolated and are mostly lysogenic phages. This is probably because lytic phages require their host to be metabolically active cells in a vegetative growth state to multiply. However, C. difficile lives in an oxygen environment in the form of spores, which do not have the typical structures of vegetative cells recognized by phages during the adsorption process.

The aim: To characterize the bacteriophages from clinical strains of C. difficile.

Materials and methods: C. difficile clinical strains were cultivated in an anaerobic chamber in a supplemented BHI medium, grown to the mid-log growth phase, and mitomycin C was added for phage induction. After the samples were filtrated, leftovers of genomic bacterial DNA were digested. The next step was to release DNA from the heads of bacteriophages by boiling the sample and then detection of genes encoding triosephosphate isomerase and holin of Myoviruses or Siphoviruses was performed by conducting PCR. The genetic material of functional bacteriophages was isolated with the commercial kit and sequenced by an external company.

Results: The results of the research indicate that the majority of functional phages, mostly belonging to the Myoviridae family, occur in the genomes of hypervirulent strains of C. difficile of ribotypes 027, 023, and 176. DNA sequence analysis of the newly discovered phages revealed the presence of genes encoding toxins and many regulatory genes in their genetic material.

Conclusions: Prophages of C. difficile are prevalent in the environment and their genomes may be the source of new genes affecting the phenotype and virulence of the bacterial host.

Keywords: Clostridioides difficile, bacteriophages, ribotypes, genomes

Method of doping selected organic matrices with four chosen photosensitizers

Aleksandra Lorek[1], Krzysztof Bednarski[1]

1. Department of Biomedical Engineering, Faculty of Fundamental Problems of Technology, Wrocław University of Science and Technology

Work's tutor: dr hab. inż. Agnieszka Ulatowska-Jarża

Background: Innovations in photodynamic therapy aim to revolutionize cancer treatment as well as antimicrobial effect by reducing dose and chemical exposure. Organic polymer matrices like agar, starch, and gelatin offer promising, neutral platforms for hosting photosensitizers, potentially transforming drug delivery system approaches.

The aim: In this study we examined agar, starch and gelatin matrices' potential as neutral carriers for photosensitizers in photodynamic therapy. Our research focused on the spectroscopic properties of matrices doped with photosensitizers, looking for optimal combinations for therapeutic efficiency while minimizing patient discomfort and chemical exposure.

Materials and methods: Spherical matrices were synthesized with four photosensitizers: Chlorin e6, Pheophorbide a, protoporphyrin IX, and 5-aminolevulinic acid solutions (20 samples per each drug-material combination). Two production methods were used: bulk doping and impregnation. By UV-VIS reflectance spectroscopy absorbance and luminescence was measured with analysis supported by OriginLab software, comparing results with literature data.

Results: The absorption band shift of 3.5 nm for the second Q band in gelatin matrices at 660-665 nm may be attributed to its animal-derived organic matrix nature, potentially involving protein interactions or the doping method. Agar matrices showed superior spectroscopic properties consistent with literature data. Conversely, doping with 5-aminolevulinic acid showed no luminescence or absorbance, aligning with previous findings. Starch and agar samples impregnated with protoporphyrin IX demonstrated high similarity between measurements.

Conclusions: Our findings distinguish agar matrices, especially doped with Chlorin e6, as promising candidates for photodynamic therapy application. Starch and gelatin matrices also exhibit potential, particularly with protoporphyrin IX impregnation. This research lays groundwork for optimizing photosensitizer-matrix combinations, advancing photodynamic therapy efficiency.

Keywords: photosensitizers, photodynamic therapy, organic matrice, Chlorin e6, protoporphyrin IX

Change in pulse waveform of cerebral blood flow velocity and total hemoglobin concentration in hypercapnia

Marta Hendler[1], Arkadiusz Ziółkowski[1]

1. Department of Biomedical Engineering, Faculty of Fundamental Problems of Technology, Wroclaw University of Science and Technology

Work's tutor: dr hab. inż Magdalena Kasprowicz, prof. PWr

Background: Transcranial Doppler ultrasonography (TCD) and functional near-infrared spectroscopy (fNIRS) are noninvasive measurement methods for monitoring brain hemodynamics. They measure cerebral blood flow velocity (FV) in large brain vessels and total hemoglobin concentration (tHB) in small vessels, respectively. Both signals comprise of pulse-related complex waveforms. Changes in brain hemodynamics, e.g. the state of elevated end-tidal CO2 (EtCO2) during hypercapnia are reflected in the change of FV and tHB morphology.

The aim: The aim of the study is to investigate whether temporal relationship between pulse waveforms of FV and tHB is affected by the state of hypercapnia and whether it expresses link to cerebrovascular resistance (CVR).

Materials and methods: Continuous records of high-resolution (200 Hz) FV and tHB in a resting state and under hypercapnia-inducing test were collected from 24 healthy young volunteers (age: 21-35, M: 7) along with EtCO2 and arterial blood pressure (ABP). Data acquisition – ICM+, Cambridge Enterprise. Two representative, symmetrically-located fNIRS channels were selected. Records were divided into single pulse waveforms. Time delay between the FV and tHB onsets was calculated (TDdias) along with CVR (mean ABP/mean FV), for each pulse waveform. All variables were tested against normal distribution using Shapiro-Wilk test. Statistical significance of changes between normo- and hypercapnia was determined using Wilcoxon test. Correlations were calculated using Spearman correlation coefficient.

Results: TDdias significantly decreases during hypercapnia ($W = 7.5$, $p < 0.001$). TDdias is positively correlated with CVR in normocapnia ($RS = 0.434$, $p = 0.034$), hypercapnia ($RS = 0.563$, $p = 0.004$) and regarding relative changes between normo- and hypercapnia ($RS = 0.549$, $p = 0.005$).

Conclusions: Time delay between FV and tHB pulse waveform onsets gets shorter during hypercapnia, reflecting changes in cerebrovascular resitance.

Keywords: compliance, cerebral blood flow, functional near-infrared spectroscopy

Biological activity of polyphenolic extract from root of Japanese knotweed (Reynoutria japonica Houtt.)

Teresa Kaźmierczak[1], Katarzyna Męczarska[1]

1. Department of Physics and Biophysics, The Faculty of Biotechnology, Wrocław University of Environmental and Life Sciences

Work's tutor: dr hab. inż. Sabina Lachowicz-Wiśniewska, prof. dr hab. inż. Jan Oszmiański, dr hab. inż. Sylwia Cyboran-Mikołajczyk, dr hab. Dorota Bonarska-Kujawa

Background: Plant extracts are commonly used to treat many diseases, including civilizational ones. Japanese knotweed (Reynoutria japonica Houtt.) is a rich source of many bioactive and antioxidant substances, such as polyphenols and vitamins. However, few studies are determining the polyphenolic composition of its extracts and their impact on living cells such as erythrocytes, which are mostly exposed to oxidative stress regarding their oxygen transport function.

The aim: Therefore, the study aimed to investigate Japanese knotweed root extract's composition and biological activity on the erythrocytes.

Materials and methods: The phenolic composition of the extract was studied using the UPLC-PDA-ESI-MS/MS method. The spectrophotometric method studied the hemolytic activity and the impact of the extract on the osmotic resistance of erythrocytes. The antioxidant activity of the extract against erythrocytes oxidized by AAPH and UVC was studied using spectrophotometry and fluorometry. The impact of the extract on the physical properties of erythrocytes was studied under the microscope and fluorometrically.

Results: Obtained results have shown that the root of Japanese knotweed is rich in polyphenolic compounds. The extract is not cytotoxic and makes the erythrocytes more resistant to the changes in the environment's osmolarity. Its components protect the erythrocytes and their membranes against AAPH-induced hemolysis and AAPH and UVC-induced lipid oxidation. Root extract changes the shapes of erythrocytes without altering their membrane fluidity.

Conclusions: The research demonstrated that used extract possesses high biological activity, in particular antioxidant activity, and therefore can be used in the protection of organisms against free radicals.

Keywords: japanese knotweed, polyphenols, erythrocytes, antioxidant activity, spectroscopy, microscopy

Analysis of properties of HPMC based composites produced using additive manufacturing for medical applications

Maja Ducka[1], Patrycja Szymczyk-Ziółkowska[1], Grzegorz Ziółkowski[1], Mikołaj Kotowski[1]

1. Department of Mechanics, Materials Engineering and Biomedical Engineering, Faculty of Mechanical Engineering, Wroclaw University of Science and Technology

Work's tutor: prof. dr hab. inż. Jerzy Detyna

Background: HME is a well established technology for pharmaceutical use, allowing for production of oral drug delivery systems. It is also being researched as a method to create feedstock for AM techniques. HME can be used to create filaments with APIs for printing of implants with a complex geometry and fully controlled solubility, for use in medical sector.

The aim: The aim of this study was to measure chosen material properties of HPMC composites, which were created with HME technique, to be of use for AM methods such as Fused Filament Fabrication.

Materials and methods: AFFINISOL™ HPMC HME polymer was chosen as the carrier in this study. Two APIs were used – ibuprofen and paracetamol. Triethyl citrate was used as an plasticizer. Based on those materials, 6 blends were created by HME and then injected into dog-bone shaped sample molds for tensile testing. Cylinder shaped samples were manufactured using FFF technology for compression testing.

Results: The tensile strength test was used to measure 3 parameters - tensile strength, elastic modulus and elongation at break. Based on obtained results it can be said that both APIs and plasticizer noticeably affected mechanical parameters of the material. Ibuprofen and paracetamol acted as a plasticizer for HPMC, lowering durability of the material while increasing its ductility. Compression test was used to measure yield point and elasticity modulus for HPMC+API blends at different temperatures of nozzle during printing of samples. Blends containing paracetamol had higher compressive strength. As the temperature of the nozzle increased, so did the parameters, indicating that only at higher temperatures material was properly plasticised.

Conclusions: Filament for FFF should be characterised by elastic modulus of about 300 MPa-700 MPa. Such filament should be stiff enough but not be too brittle, as to break in the nozzle. Blends containing API and plasticizer had modulus much lower than recommended. Such high plasticity could lead to non-optimal feeding of filament and clogging of the nozzle

Keywords: additive manufacturing, hot-melt extrusion, fused filament fabrication, hydroxypropymethylcellulose

Expression of genes related to NLRP3 pathway in benzalkonium chloride-treated limbal stem cells

Agnieszka Prusek[1]

1. Department of Cytophysiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Bartosz Sikora, prof. dr hab. n. med. Piotr Czekaj

Background: Limbal stem cells (LESCs) are involved in replenishing and maintaining the epithelium of the cornea. One of the factors negatively affecting the function of the corneal epithelium are the preservatives contained in eye drops, like benzalkonium chloride (BAC). BAC has been associated with activation of various inflammatory pathways, including the NLRP3 inflammasome. NLRP3 is associated with the formation of inflammasome complexes, leading to the activation of CASP1, IL1B and IL18, which are pro-inflammatory cytokines. MMP3 and MMP9 gene expression may be increased in response to inflammation and their activity may be regulated by the NRLP3 pathway. Understanding the mechanisms underlying BAC-induced inflammation is crucial to assess its potential adverse effects and for the development of strategies to treat the effects of inflammation.

The aim: To evaluate the impact of benzalkonium chloride on limbal stem cells in vitro.

Materials and methods: LESCs were isolated from the corneoscleral rim by explant culture and then its markers were identified by RT-qPCR and immunostaining. LESCs were cultured and treated for 48 h with 0.0002% BAC solution and 2 μg/ml LPS. The expression of genes NLRP3, IL1β, IL18, CASP1, MMP3, MMP9, TIMP1 was assessed.

Results: The results showed a statistically significant increase in the expression of CASP1, MMP3, IL18 and MMP9 genes in the LPS-treated LESC group compared to the BAC-treated group. The expression of IL1β was significantly upregulated in BAC treated group compared to control. The expression of inhibitor of metalloproteinases (TIMP1) did not show statistically significant changes.

Conclusions: The LPS-induced inflammatory response is associated with the NLRP3 pathway. BAC does not induce inflammatory response as strong as LPS. The novel findings presented in this study demonstrate the influence of BAC in the context of promoting inflammation in LESCs.

Keywords: benzalkonium chloride, limbal stem cells, NLRP3 pathway, LPS, inflammation

Artificial Intelligence Model in Lung Cancer Diagnosis

Alhassan Ali Ahmed *[1]

1. Department of Bioinformatics and Computational Biology, Poznan University of Medical Sciences

Work's tutor: prof. dr hab Elżbieta Kaczmarek

Background: Lung cancer is the leading cause of cancer-related deaths worldwide and the main cause of death in Poland. One of the crucial factors contributing to these fatalities is the delayed diagnosis process. The rapid advancement of artificial intelligence (AI) approaches provides a significant opportunity for medical application techniques to play a crucial role in the early diagnosis of lung tumors and the following stages of treatment.

The aim: This study presents an AI-based model for efficient lung cancer detection using Whole Slide Images and validated by active pathologists.

Materials and methods: Our methodology started by interviewing 68 Polish active pathologists to gather their opinions toward AI applications in medical diagnosis, then collect their needs in order to design a dedicated AI-based model to distinguish between healthy and tumor lung cells. The model uses convolutional neural networks (CNNs) to improve cancer cell detection and reduce data complexity.

Results: The model's overall accuracy (96% to 98%) with the ability to detect tumor lung cell images in less than 10 seconds.

Conclusions: The model outperformed results reported by active pathologists, suggesting that an AI algorithm assisted by pathologists can enhance diagnostic skills and reduce the lead time in the diagnosis process.

Keywords: Artificial Intelligence; Machine Learning; Lung Cancer; Deep Learning; Histopathology; Medical Diagnosis

Pro-cancerous effect of adipose-derived mesenchymal stem cell medium in hepatocellular carcinoma.

Aleksandra Gładyś[1], Aleksandra Skubis-Sikora[1], Patrycja Wieczorek[1], Bartosz Sikora[1]

1. Department of Histology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Piotr Czekaj

Background: Advanced hepatocellular carcinoma is a disease with few treatment opportunities, including the use of sorafenib. Currently, the paracrine effect of adipose-derived mesenchymal stem cells (ADSC) has been investigated as a potential new therapeutic option.

The aim: To evaluate the effect of ADSC-derived conditioned medium (CM ADSC) on cell signaling and apoptosis of HepG2 hepatocellular carcinoma cells

Materials and methods: HepG2 cells were cultured with CM ADSC and/or 7.5ĶM sorafenib for 48h. Expression of genes representing Ras/Raf/MEK/ERK pathway, as well as alpha-fetoprotein and apoptosis genes, was evaluated with RT-qPCR. Viability was measured with the MTT test.

Results: CM ADSC increased HepG2 viability 1.59 times, while sorafenib decreased its viability by 38.62%. Similarly, alpha-fetoprotein expression was upregulated by CM ADSC and downregulated by sorafenib. Expression of apoptotic genes: Bax, TP53, CASP3 and CASP7, differed from control, but without clear synergism or antagonism between CM ADSC and sorafenib.

Conclusions: Increase in AFP expression and cell viability after incubation with CM ADSC suggest pro-cancerous effect of CM ADSC in HepG2. However, certain pro-apoptotic effect of CM ADSC has been identified. Futher research is needed to evaluate if sorafenib can diminish the pro-cancerous effects of CM ADSC.

Keywords: hepatocellular carcinoma, adipose-derived mesenchymal stem cells, conditioned medium, apoptosis

CLASSIFICATION OF HEART PROJECTIONS IN TRANSTHORACIC ECHOCARDIOGRAPHY USING ARTIFICIAL INTELLIGENCE METHODS

Gabriela Orzeł[1], Łukasz Łomozik[1]

1. 1 st Department of Cardiology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice, Poland

Work's tutor: prof. dr hab. n. med. Katarzyna Mizia-Stec

Background: The integration of AI in cardiology could prove transformative in diagnosis of cardiovascular diseases, offering speed and precision surpassing traditional methods. A key application of AI is the interpretation of medical imaging such as echocardiograms, magnetic resonance imaging, and computed tomography, where algorithms can identify subtle changes with greater accuracy than the human eye.

The aim: Assembly of a database of 2D transthoracic echocardiography (TTE) images and their expert analysis.
Creation the artificial intelligence prototype for interpretation of 2D TTE projections, which will improve the teaching process for young adepts of echocardiography.

Materials and methods: The methodology of the project focused on analyzing cardiac images in as many adult patients as possible, in each age group. Patients studied had TTE performed as part of their diagnostic process during the hospitalization in the 1st Cardiology Department/Emergency Department of the GCM. Data selection and anonymization were performed. This was followed by image augmentation techniques such as rotation, scaling and contrast changes. An isotical part of the processing was the determination of regions of interest (ROIs), which focused the learning process on relevant features of the cardiac anatomy. Advanced image processing algorithms were used for feature extraction and selection. The model was tested using cross-validation techniques on an independent test set, which allowed an objective evaluation of its performance.

Results: The results showed that the designed classifier achieves high precision in identifying cardiac projections compared to conventional methods, confirming the potential benefits of its implementation in diagnostic imaging systems.

Conclusions: In conclusion, the application of artificial intelligence methods in the classification of cardiac projections opens up new perspectives for medical diagnostics, but requires continuous monitoring and adjustment of models in a clinical context.

Keywords: artificial intelligence, cardiology, echocardiography, POCUS

Uric acid reduces telomere length – A Mendelian randomization study

Karol Krystek[1]

1. Department of Pharmacology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Mateusz Lejawa

Background: Mendelian randomization (MR) is a statistical method used to make causal inferences based on observational data regarding genetically-determined traits. Uric acid (UA), despite being a major antioxidant in the human plasma, both correlates and predicts development of numerous conditions associated with oxidative stress. Furthermore, numerous studies have shown that oxidative stress is associated with accelerated telomere shortening and dysfunction.

The aim: The aim of the study was to demonstrate the influence of genetically-predicted UA levels on TL and vice-versa using the Mendelian randomization.

Materials and methods: MR was utilized to determine the impact of genetically-predicted UA concentration on TL and of genetically-predicted TL on UA concentration. Inverse-variance-weighted mean (IVM) approach was used in primary analysis. Secondary and sensitivity analyses included: weighted median (WME), MR-EGGER, MR-PRESSO, Cochran Q test and leave-one-out analysis. Data on single-nucleotide polymorphisms (SNPs) affecting UA concentrations and TL were obtained from UKBiobank for N=470,158 (UA) and N=472,174 (TL). Instrumental variable SNPs were selected based on previously reported associations with TL and from genes responsible for UA synthesis and transport.

Results: A total of 12 SNPs were included in the analysis of UA-TL as IVs and 14 SNPs in the analysis of TL-UA. Increased UA concentrations were found to significantly reduce TL (IVM $p<5*10^{-10}$; MR-Egger $p<5*10^{-2}$; WME $p<5*10^{-6}$). TL did not affect UA levels (IVM, MR-Egger and WME $p>0.05$). Neither analysis displayed significant IV heterogenity (Cochran Q $p>0.2$ for UA-TL and TL-UA). No significant horizontal pleiotropy was detected in either analysis by MR-EGGER intercept test and MR-PRESSO in either analysis ($p>0.2$ in all analyses). Findings were not affected by single SNPs in leave-one-out analysis.

Conclusions: This MR analysis showed a causal link between UA and TL. The exact mechanism remains to be elucidated.

Keywords: Mendelian randomization, Telomere length, Uric acid

Trust is good, but in medicine control is better - how much natrium butyrate is in natrium butyrate products?

Maciej Borówka[1], Michał Nicze[1]

1. Department of Internal Medicine and Clinical Pharmacology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Dr hab. n. med. Łukasz Bułdak, Dr n. med. Aleksandra Bołdys

Background: Butyric acid is counted among short chain fatty acids (SCFAs), the substances produced by anaerobic gut microbiota in the fermentation process of complex carbohydrates such as dietary fiber. Butyric acid exerts many beneficial effects on the gastrointestinal system including nutrition for colon epithelial cells, improvement of cellular regeneration and immunomodulating activity. According to the current literature, supplementation of its derivative, natrium butyrate, is a promising add-on therapeutic strategy for example in inflammatory bowel diseases (IBDs) or irritable bowel syndrome (IBS), and it is necessary to determine its place in the treatment of these conditions in the near future. However, on the Polish market all available oral pharmaceuticals are registered as dietary supplements, which do not have to fulfill stringent requirements as in the case of products registered as medicines.

The aim: Comparison of the actual natrium butyrate content with the one declared by producers in different orally administered pharmaceuticals registered as dietary supplements.

Materials and methods: We extracted natrium butyrate with diethyl ether from eight different orally delivered products before their expiry date. We subsequently inserted obtained extracts and standard solutions of natrium butyrate to high-performance liquid chromatography and ultraviolet-visible spectrophotometry (HPLC-UV-Vis) detectors in order to assess the content of natrium butyrate in each of the analyzed products.

Results: We confirmed that the analyzed products contained natrium butyrate and then we compared their exact contents with each other and with the declared contents, demonstrating slight differences, which may result from various oral formulations.

Conclusions: Natrium butyrate may be a promising therapeutic option in many gastrointestinal conditions and more strict criteria of obtaining a marketing authorisation might improve its safety and repeatability of beneficial effects.

Keywords: natrium butyrate, dietary supplements, high-performance liquid chromatography (HPLC), bowel diseases

Analysis of variants of unknown clinical significance from NGS results in children with autism

Gabriela Ręka MD[1], Katarzyna Wojciechowska MD PhD[1], Monika Lejman PhD Professor[1]

1. Independent Laboratory of Genetic Diagnostics, Second Department of Pediatrics, Medical University of Lublin

Work's tutor: Katarzyna Wojciechowska MD PhD, Monika Lejman PhD Professor

Background: Autism spectrum disorder (ASD) is a group of neurodevelopmental disorders of various etiology. Common features of ASD include deficits in communication, social relationships, and rigid, repetitive behavior patterns. Data from the literature indicate that in approximately 1/3 of autism cases, a genetic cause can be found.

The aim: The study aims to analyze variants of unknown clinical significance from next-generation sequencing in children with ASD.

Materials and methods: Overall, 73 pediatric patients with ASD were enrolled in the study. The mean age of patients was 8 years 6 months, with a predominance of boys (78.08%). NGS results came from children diagnosed from 2017 to 2023 in the Genetic Outpatient Clinic of the University Children's Hospital in Lublin. NGS was conducted as panels (73.97%) or whole-exome sequencing (26.03%).

Results: Pathogenic variants in NGS associated with the phenotype were diagnosed in 27.4% of children with ASD. Variants of unknown clinical significance were found in 2 alleles or in ≥2 patients in the following genes: MTHFR, VPS13B, ABCA2, MBOAT7, KIAA0753, NSD1, NSUN2, DYNC1H1, GRIK2, NRXN1, CUL7, OBSL1, AFF2, FANCA, CHD7, APC2, ADSL, FRMPD4, TRIO, FANCI, CNTNAP2, GALT, NCAPD2, PACS1, PIEZO2, ANKRD11, KMT2D, FOXP1, SUMF1, ARID1B, KAT6A, AUTS2, SMARCA4, SPTBN2, STAG1, KPTN, RUSC2, TNIK, HUWE1, RYR1, SON, VPS11. Variants of unknown significance possibly associated with ASD were found in 61.9 % of all repeated variants. Most variants were substitutions (silent, missense, and nonsense mutations). Other types of point mutations included deletions, duplications, and frameshift mutations.

Conclusions: Autism in most patients results from other than genetic reasons. There is a great heterogeneity of variants of unknown significance in children with ASD. All patients with ASD should have NGS testing performed. Because almost 2/3 of repeated variants of unknown clinical significance were found in genes potentially associated with ASD, there is a need to evaluate databases used to analyze NGS results.

Keywords: autism spectrum disorder, genes, next-generation sequencing, pediatrics

Genes Expression Analysis among Polish Children with Molar Incisor Hypomineralization (MIH)

Wojciech Tynior[1], Dorota Hudy[1], Karolina Gołąbek[1], Agnieszka Raczkowska-Siostrzonek[2]

1. Department of Medical and Molecular Biology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

2. Department of Dental Surgery, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Joanna Strzelczyk, prof. SUM

Background: Molar incisor hypomineralization (MIH) is a developmental defect that affects the enamel tissue of permanent teeth. Clinicians observe a range of opacities in the affected teeth, varying from white to creamy and brown. Another symptom is the difficulty in obtaining full dental anesthesia of the patient. Despite the clear clinical picture of MIH, the etiology has not been fully understood. Researchers believe that there are many potential etiological factors with strong genetic and/or epigenetic influence. Special attention is given to genes and their protein products involved in amelogenesis and pain response. The first group consists of AMELX, AMBN, ENAM, TUFT1, and MMP20 genes. In the second group are SCN10A, and SCN11A genes.

The aim: The aim of the study is to analyze AMELX, AMBN, ENAM, TUFT1, MMP20, SCN10A, SCN11A and FAM83H genes expression in different tissues of patients with MIH and healthy control group.

Materials and methods: The tissue sampling protocol involved the collection of oral mucosal specimens using a sterilized cotton swab and extracted teeth from children with MIH and healthy controls during dental appointments. After RNA isolation, gene expression analysis was performed by Real-Time PCR (qPCR) technique. The analyses involved a group of 8 genes: AMELX, AMBN, ENAM, TUFT1, MMP20, SCN10A, SCN11A and FAM83H. Data were statistically analyzed using STATISTICA 13.1 software.

Results: In buccal swabs, two genes presented expression; FAM83H and TUFT1. The median relative TUFT1 gene expression was 0.328 (0.08-0.875) in the control group and 1.183 (0.099-2.144) in the study group. Furthermore, children with MIH had significantly higher TUFT1 expression levels compared to the control group (p-value = 0.0043). Among teeth tissue, 4 genes presented expression; AMBN, FAM83H, MMP20 and TUFT1. However, we did not find statistically significant differences in AMBN, FAM83H, MMP20 or TUFT1 gene expression between groups.

Conclusions: The higher TUFT1 expression gives an intriguing anchor point for future studies.

Keywords: MIH, genetics, genes, children, Poland, expression

Nutrition and lifestyle of oncological patients: the importance of tertiary prevention in therapeutic process

Kamil Mąkosza1 1Doctoral School, Medical University of Silesia in Katowice, Department of Internal Diseases Propaedeutics and Emergency Medicine, Faculty of Public Health in Bytom, Medical University of Silesia in Katowice

Work's tutor: dr hab. n. med. Sylwia Dzięgielewska-Gęsiak

Background: In patients with cancer, proper nutrition and lifestyle can improve the quality of life. Promoting beneficial nutritional behaviors supports the treatment process and reduce medications side effects.

The aim: Assessment of nutritional and health behaviors of cancer patients in the field of tertiary prevention, including identifying differences depending on gender, age and type of therapy.

Materials and methods: The study was conducted in Oncology Departments of the Silesian Voivodeship. The research tool: an original, anonymous questionnaire. The inclusion criteria: voluntary consent of the patient, diagnosed colorectal cancer and traditional oral nutrition. Exclusion criteria: resignation from participating in the study, incomplete or inconsistent filling of the questionnaire. Data analysis using MS Excel and Statistica 13.3. Statistically significant results were considered $p<0.05$.

Results: Of the patients (n=202; 100%), half did not follow a therapeutic diet (50%), while the majority indicated various nutritional problems during the disease (92.6%). Respondents most often declared eating 3 meals a day (57.4%). Most patients do not consume fast food and alcohol (77.2%; 69.3%). Some of patients do not undertake physical activity (22.3%). Women declared frying meat significantly less often than men (19.8% vs. 27.7%, p=0.003). Middle-aged patients smoked cigarettes significantly more often during the disease than elderly patients (6.4% vs. 0%, p=0.04). Patients treated radically drank > 2 liters of fluids significantly more often than patients treated palliatively (22% vs. 8.7%, p=0.02).

Conclusions: Among nutritional and health behaviors in tertiary prevention in cancer patients were observed both pro- and anti-health. It was found that less satisfactory behaviors were presented by respondents: male gender, middle-aged and palliatively treated. It proves the need to strengthen health-promoting activities in tertiary prevention by an interdisciplinary team, especially among the above-mentioned patient groups.

Keywords: nutrition, lifestyle, oncological patients, tertiary prevention, therapeutic process

Analysis of factors affecting the efficacy of syphilis therapy in people with HIV

Aleksandra Hejnosz[1], Mateusz Szczerba[1], Krzysztof Bratek[1]

1. Department of Infectious and Tropical Diseases and Hepatology, Faculty of Medicine, Medical University of Warsaw

Work's tutor: Krankowska Dagny MD , Lembas Agnieszka MD , Mikuła Tomasz MD, PhD , Załęski Andrzej MD, PhD , Wiercińska-Drapało Alicja Professor

Background: Syphilis infections in Poland surged by 77% in 2022, resulting in nearly 2000 new cases compared to 2021. HIV and syphilis coinfection poses a global health challenge and presents diagnostic complexities. HIV can impact syphilis symptoms, exacerbating or suppressing them, as well as cases result in serological failure despite treatment.

The aim: The objective of this study was to assess laboratory characteristics and the course of syphilis treatment in a group of Polish patients with HIV.

Materials and methods: We evaluated data from male patients with HIV diagnosed with syphilis in the years 2011-2023. Age, gender, type of ART and syphilis treatment, CD4 and CD8 T lymphocyte cell counts and percentage ratio, serum HIV-1 RNA VL, HBV and HCV infection, stage of syphilis, AIDS stage, VDRL test, and FTA-ABS test, were analyzed.

Results: Patients aged from 26 to 57 with an average HIV duration of 6.3 years were in a 12-month follow-up. Among all 44 patients, 20 had primary syphilis, 16 had late syphilis, and 8 had syphilis of unknown time. After finishing syphilis treatment, there was a decrease in mean HIV-1 RNA VL ($p=0.044$) and an increase in CD4 T lymphocyte % ($p=0.043$) with no change in ART. Of all 44 analyzed patients 6 patients did not reach the expected 4-fold loss in VDRL. Out of the 6 mentioned patients, 5 had late-stage syphilis ($p=0.018$), and 1 had an unspecified time of syphilis infection. Patients with serological failure had higher CD4 T lymphocyte counts ($p=0.003$) and a lower CD4:CD8 lymphocyte ratio ($p=0.016$) compared to those with successful serological response. Analysis confirmed the correlation of high CD4 T lymphocyte count ($p=0.003$) and late-stage syphilis ($p=0.009$) with serological failure.

Conclusions: Early detection of syphilis in people with HIV improves treatment outcomes. Monitoring serological reactions of syphilis is advised for all people with HIV, irrespective of antiretroviral therapy efficacy or immune status.

Keywords: HIV, syphilis, VDRL, serological failure

Risk factors analysis for spinal deformity following resection of intradural spinal cord tumors from the poste

Maciej Szyduczyński[1], Natalia Anna Koc[1], Johannes Korneliussen[1], Oscar Landé[1], Grzegorz Miękisiak[2]

1. Department of Neurosurgery, Faculty of Medicine, Medical University of Gdansk

2. Department of Neurosurgery, Institute of Medicine, Opole University

Work's tutor: Grzegorz Miękisiak, MD, PhD

Background: Intradural spinal cord tumors (IDSCTs) represent 30% of all primary spinal tumors. Treatment involves tumor resection via laminectomy, laminoplasty, or laminotomy. Postoperative spinal deformity (SD) develops in about 10% of adults, with an increased risk of up to 100% in children.

The aim: Our study aimed to identify risk factors for developing SD following IDTSCs resection via posterior approach.

Materials and methods: A review of the literature was performed according to PRISMA guidelines. Databases PubMed, Web of Science, and Scopus were searched using keywords "laminoplasty", "laminotomy", "laminectomy", "tumor", "resection", "spinal deformity", "kyphosis", "intradural", "intramedullary", "extramedullary". Odds ratio (OR) for dichotomous values and mean difference (MD) for continuous values were calculated. The quality of each study was assessed using the Newcastle-Ottawa Scale (NOS).

Results: Eleven retrospective studies involving 715 patients revealed 183 patients with postoperative SD. Younger age (up to 13 and 25 years old) was associated with a higher risk of postoperative SD (OR=3.72, p=0.003 and OR=4.03, p < 0.0001, respectively). Preoperative SD strongly predicted postoperative SD in both fusion and non-fusion groups (OR=12.19, p=0.0007). Thoracolumbar junction involvement in surgery increased risk of SD (OR=3.11; p=0.04). In the fusion subgroup, surgery involving at least 3 levels also increased risk of SD (OR=9.18, p=0.02). Another risk factor for postoperative SD, in the non-fusion subgroup only, included intramedullary location of a tumor (OR=3.67; p=0.04).

Conclusions: Younger age, preoperative spinal deformity, and thoracolumbar junction involvement during surgery are risk factors for postoperative SD after resection of IDSCTs via posterior approach. Involving three or more levels during surgery in fusion group and intramedullary location of a tumor in non-fusion patients predicted SD. These findings may contribute to the decision-making and surgical strategies in treatment of high-risk patients.

Keywords: spinal cord tumors, tumor resection, posterior decompression, spine surgery, spinal deformity

Waist circumference and patient survival - an analysis of primary care patients in LIPIDOGRAM studies

Marcin Goławski[1]

1. Department of Pharmacology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Tadeusz Osadnik

Background: Waist circumference (WC) is an obesity index used more rarely than BMI. Despite this, it is well known that it is an indicator of central adiposity and metabolic health.

The aim: We sought to evaluate the association of WC with long-term all-cause mortality in the adult population under the care of family physicians and assess the utility of this obesity index in clinical practice.

Materials and methods: LIPIDOGRAM studies were conducted in primary care in Poland in 2004, 2006, and 2015 and enrolled a total of 45,615 patients. Follow-up data up to December 2021 were obtained from the Central Statistical Office. The association between waist circumference (WC) and mortality was analysed by Cox regression analyses. WC was analysed both as binary variable (normal vs. overweight/obese; >94 cm for males and >80 for females) and also in a spline-based approach to account for non-linear relationship between WC and survival.

Results: Follow-up was available for 44,620 patients (97.8%, median duration 15.3 years, 61.7% females). Average WC was 93Ī14 (meanĪSD). Elevated WC was noted in 68.8% patients. Importantly, increased WC was found to correlate with increased all-cause mortality in univariate (HR=1.46; p<0.001) and multivariate analysis (HR=1.06; p=0.034). In a spline-based univariate analysis, it was found that patients with WC=70cm exhibited the lowest mortality rate, which is below aforementioned cut-offs set for abdominal overweight. In a multivariable analysis, patients with WC of 82cm had the lowest mortality, which is below the cut-offs for abdominal obesity (>102cm for males and >88cm for females).

Conclusions: This analysis demonstrates the usefulness of WC in estimating the prognosis of primary care patients. Interestingly, in the same population in a previously conducted analysis, BMI was shown to be susceptible to "obesity paradox" upon adjustment for confounders, hinting at WC being a useful obesity index in those with comorbidities.

Keywords: waist circumference, prognosis, primary care, mortality

Diet and Quality of Life of Women with Fatty Liver: Identification of Intervention-Requiring Behaviors

Barbara Janota[1], Anna Dolipska[1]

1. Department of Basic Medical Sciences, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Ewa Janczewska

Background: Considering the impact of daily dietary choices on metabolic health and quality of life, it appears necessary to analyze lifestyle to identify behaviors that need to be improved.

The aim: Assessment of dietary behaviors, body composition and quality of life among women with fatty liver.

Materials and methods: The study included 79 women diagnosed with fatty liver and overweight. Dietary behaviors and quality of life were assessed using the KomPAN and WHOQOL-BREF questionnaires. Body composition analysis was conducted using the InBody 770 device. Statistical analyses were performed.

Results: The women's diet was characterized by a low level of health-promoting features, scoring on average 23.6/100 points. However, 64.5% of respondents rated their nutrition as at least good. Among women, 34.2% ate meals irregularly, and 35.4% sweetened drinks. Compliance with recommendations for legume consumption was observed in 35.5% of participants, and for vegetables in 21.5% of women. More frequent legume consumption correlated with body fat percentage (r= -0.3), visceral fat level (r= -0.3), and waist circumference (r= -0.4); more frequent vegetable consumption correlated with extracellular water index (r= 0.2), while fruit consumption correlated with body fat percentage (r= -0.3) and visceral fat area (r= -0.37). Quality of life increased with increased frequency of vegetable consumption (r= 0.2) and decreased with higher frequency of fast food consumption (r= -0.2). The amount of joy in life decreased with increased frequency of white bread consumption (r= -0.3) and rice consumption (r= -0.3).

Conclusions: The prevalence of improper dietary behaviors among women may negatively impact their quality of life. Encouraging increased consumption of vegetables, fruits, and legumes, along with educating about the advantages of avoiding highly processed and low-fiber products, can positively impact both metabolic health and the quality of life of patients.

Keywords: fatty liver, diet, quality of life

Acceptance of illness in multiple sclerosis patients

Barbara Lewicka[1], Kamila Czepczor-Bernat[2], Katarzyna Oberska[1]

1. Department of Rehabilitation, Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

2. Department of Pediatrics, Childhood Obesity and Bone Metabolic Diseases, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Edyta Matusik

Background: Multiple sclerosis (MS) is a chronic, neurodegenerative disease leading to a progressive disability, that can affect not only the physical but also the mental state of patients. The psychological adaptation to the illness plays an important role in the general effectiveness of treatment.

The aim: The study aimed to determine modifiable and nonmodifiable correlates of acceptance of illness.

Materials and methods: A total of 96 patients with MS (75 females) with a mean age of 41.9 ± 11.1 was included. The Acceptance of Illness Scale (AIS), the Body Appreciation Scale (BAS-2), and the Depression, Anxiety and Stress Scale – 21 items (DASS-21) together with socio-demographic and clinical data, including the Expanded Disability Status Scale (EDSS), were used. The data were collected in multiple sclerosis centers in Katowice, Poland between January 2023 and January 2024.

Results: Lack of acceptance of illness was reported in 20 individuals (20.1%), the average level of acceptance was presented by 19 individuals (19.8%) and 57 patients (59.4%) presented the acceptance of illness at a good level. The AIS score was significantly, negatively correlated with age ($r_s = -0.35$, $p < 0.001$), EDSS ($r_s = -0.43$, $p < 0.001$), and time since the diagnosis ($r_s = -0.27$, $p < 0.01$). Moreover, the AIS score was positively associated with the BAS-2 score ($r_s = 0.54$, $p < 0.001$) and negatively associated with all three subscales of DASS-21: depression ($r_s = -0.50$), anxiety ($r_s = -0.50$), and stress ($r_s = -0.46$), all $p < 0.001$. In addition, the AIS score was positively correlated with employment status: the working or studying patients had higher AIS score than homemakers ($r_s = 0.42$, $p < 0.001$).

Conclusions: The acceptance of the disease is correlated with both modifiable and nonmodifiable factors. The work on the modifiable factors should be taken into account in creating a complex program of rehabilitation and treatment of MS patients.

Keywords: multiple sclerosis; AIS; body image

Fasting plasma glucose and mortality – a survival analysis of primary care patients with and without diabetes.

Marcin Goławski[1]

1. Department of Pharmacology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Tadeusz Osadnik

Background: Current fasting plasma glucose (FG) cut-offs for the diagnosis of impaired fasting-glucose (IFG) have been established in 2003.

The aim: The aim was to evaluate the association between FG with long-term all-cause mortality in adult population under the care of family physicians.

Materials and methods: LIPIDOGRAM 2015 study was conducted in primary care in Poland and enrolled a total of 13,724 patients. Follow-up data up to December 2021 were obtained from the Central Statistical Office. The association between FG and mortality was analysed by Cox regression analysis, using a spline approach to account for non-linear relationship between FG and mortality. For patients with type 2 diabetes (T2D), FG thresholds of 90 and 130 mg/dl were analysed which broadly correspond to a therapeutic target of Hba1c=7%.

Results: Follow-up was available for 1,793 patients with T2D and 11,175 without T2D. In the univariate analysis of the whole group, FG 100-125 and >125 mg/dl were correlated with increased mortality ($p<0.001$), while in the multivariate analysis only the influence of FG>125 mg/dl was statistically significant ($p<0.001$). In the multivariate analysis, it was determined that FG>130 mg/dl corresponded to increased mortality ($p=0.044$) in patients with T2D. When FG splines were analysed, the lowest mortality was noted for FG=78 mg/dl in the univariate analysis of the whole group. In the multivariable analysis, the splines showed the lowest mortality for FG=100mg/dl, likely due to mortality being mediated by comorbidity-related covariates more prevalent among patients with elevated FG ($p<0.001$ for myocardial infarction, hypertension and dyslipidemia).

Conclusions: This analysis has confirmed general appropriateness of FG thresholds presented in guidelines. Interestingly, in the general population mortality rises continuously when with FG above 78 mg/dl, which may indicate that some patients with FG<100 mg/dl could benefit from lifestyle interventions aimed at reducing FG.

Keywords: fasting plasma glucose, mortality, Cox regression

Endoscopic treatment of craniosynostosis with complementary helmet therapy - early outcomes of treatment.

Karolina Sztuba[1], Michael Schrotter[1]

1. Department of Paediatric Neurosurgery, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Ryszard Sordyl

Background: Craniosynostosis, a birth defect affecting 1 in 2,500 live births, involves premature closure of cranial sutures. For years the primary line of treatment was open cranial vault remodeling (CVR). Despite good results, this major surgery had contingent effects. Thus, minimally invasive correction possibilities emerged, involving spring-assisted distraction or endoscopic removal of the fused suture followed by helmet therapy.

The aim: The aim of the study was to analyze early outcomes of endoscopic treatment of craniosynostosis with complementary helmet therapy.

Materials and methods: A retrospective analysis of children treated for craniosynostosis using endoscopic method followed by complementary helmet therapy in the Department of Pediatric Neurosurgery in Katowice in 2021 to 2023 was performed. Radiological findings, clinical picture and postoperative outcomes had been investigated.

Results: The study included 11 patients, median age 4 months. All had head CT scans; 5 also underwent sutures USG examination. Sagittal suture was affected in 5 cases, frontal in 3, coronal also in 3. Scaphocephaly was treated with endoscopic cranial vault and base remodeling (double-π type); others with a 5-10mm width suturectomy. Over half (n=6) required pRBCs transfusion during procedure; no post-op neurological disturbances were found. Frequent side effect was eyelid edema (5 cases). Median hospitalization was 6 days (min=5, max=9). All children were enjoined to start helmet therapy. Median time of onset of said therapy was 26 days post-op, median time of treatment-6 months (min=0, max=9). Complications included compliance issues (n=3) and one pressure sore. 9 cases achieved satisfying results; 1 withdrew from helmet therapy and 1 from control visits.

Conclusions: Endoscopic treatment of craniosynostosis with complementary helmet is safe and effective. Due to the need for long-term helmet therapy, family compliance is crucial for the effectiveness of the treatment. Further follow-up is necessary.

Keywords: craniosynostosis, endoscopic surgery, helmet therapy

The human body - an invaluable element in the training of future health professionals

Radosław Karaś[1], Aleksandra Kępczyńska[1], Bartosz Pomianowski[1], Konrad Barszczewski[1]

1. Department of Anatomy, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Tomasz Lepich

Background: The first cadaver dissections to teach anatomy to future doctors took place in Alexandria in the 3rd century BC. Today, human bodies from the conscious cadaver donation program are used for this purpose. Students' contact with a dead human body is not only an irreplaceable part of their education, but also affects their emotional maturity. The first conscious cadaver donation program was established in 2003 at the Silesian Medical University in Katowice, Poland.

The aim: To find out the awareness and opinion of the Polish public on the donation of cadavers for scientific and didactic purposes.

Materials and methods: The study used an original single-choice questionnaire. The survey included 1004 people (700 women and 304 men). Questionnaires were collected on paper and electronically from adults throughout the country.

Results: Of those who were surveyed, 86% of respondents believe that human cadavers are essential for effective teaching of anatomy. 56% of respondents would consider donating their bodies for scientific and teaching purposes. There was no correlation between gender and willingness to donate a body ($p=0.074$). Among concerns about body donation, the predominant concerns were students' lack of proper respect for the corpse (18%) and family opposition (16%). Non-believers are more likely to donate than believers ($p<0.001$). Also, residents of rural areas and small towns are less likely to consider donating a body to science and education than residents of large cities ($p=0.002$).

Conclusions: The Polish society is aware of the significance of the human body in the teaching of anatomy. At the same time, they are accompanied by a number of concerns, the resolution of which could increase the number of donated bodies in the donation program.

Keywords: Keywords: donation, cadaver, anatomy, education.

Analysis of Adolescent Mothers' Childbirths and Health Trends in Lithuania

Ieva Vanagaitė[1], Viktorija Virbauskytė[1]

1. Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Vilnius University

Work's tutor: Eglė Marija JAKIMAVIČIENĖ, PhD

Background: Adolescent pregnancy is a multifaceted issue impacting both mothers and children. Studying trends in adolescent motherhood is crucial for understanding maternal well-being.

The aim: To assess the socio-demographic, health, and physical characteristics of adolescent mothers (aged 10 to 19 years) who gave birth between 1995 and 2020.

Materials and methods: Data from the Lithuanian Birth Medical Data Register, involving 46,295 adolescent mothers, from 1995 to 2020, were analyzed. Statistical analysis was conducted using MS Excel and R software, with significance set at $p<0.05$.

Results: Between 1995 and 2020, births to adolescent mothers in Lithuania declined significantly from 9.6% to 2.1% of all births. The mean age of adolescent mothers was 18.20 years, with 78.63% aged 18-19. Annually, 136 girls aged 10-14 gave birth. Most adolescent mothers were of Lithuanian ethnicity (87.36%), had primary education (56.1%), and were unmarried (48.6%). They had a higher smoking rate during pregnancy (9% vs. 4.4%) and a higher incidence of spontaneous births (89.1% vs. 74.9%), but a lower incidence of cesarean sections (10.6% vs. 22.2%) compared to the general population. Although they experienced lower rates of obstetric complications (45.9% vs. 66.8%) and pregnancy-related pathologies (53.5% vs. 69.2%), they faced higher incidences of narrow pelvis (8% vs. 0.1%), impending termination of pregnancy (17.3% vs. 6.5%), and premature rupture of membranes (20.6% vs. 14.3%). Despite having a lower overall incidence of chronic diseases (66.8% vs. 44%), they exhibited a significantly higher incidence of anemia (30.05% vs. 15.9%) and a lower incidence of reproductive tract infections (2.4% vs. 13%) compared to the general population.

Conclusions: Adolescent births in Lithuania decreased from 1995 to 2020, especially among 18-19-year-olds. Most mothers had limited education, were unmarried, and lived outside major cities. They smoked more during pregnancy but had fewer complications and chronic diseases compared to the general population.

Keywords: Adolescent mothers, Lithuania, birth trends, socio-demographic factors

Physical and Health Analysis of Newborns Born to Adolescent Mothers in Lithuania: 1995–2020

Viktorija Virbauskytė[1], Ieva Vanagaitė[1]

1. Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Vilnius University

Work's tutor: Eglė Marija Jakimavičienė, PhD

Background: Despite advances in maternal and neonatal healthcare, understanding the physical and health status of newborns is crucial, given the significant health risks associated with adolescent pregnancies.

The aim: To determine the physical and health characteristics of newborns born to adolescent mothers (aged 10 to 19 years) in Lithuania from 1995 to 2020.

Materials and methods: Medical birth data from 1995 to 2020, involving 46,780 newborns born to mothers aged 10-19 in Lithuania, was analyzed using MS Excel 2019 and R software, with significance set at $p<0.05$.

Results: Among newborns from adolescent mothers, the mean gestational age was significantly lower than the general population ($p<0.001$). The majority (92%) were born full term. The proportion of preterm births ranged from 5.8% to 8.9% between 1995 and 2020. Neonatal weight, with a median of 3350 g, was significantly lower than the general population ($p<0.001$). 150 (0.3%) newborns were extremely low birth weight (≤ 999 g), 275 (0.6%) were very low birth weight (1000-1499 g), 2357 (5.1%) were low birth weight (1500-2499 g), and 3997 (8.6%) were high birth weight (≥ 4000 g). The mean height of newborns was 51.6 ± 2.5 cm, and their head circumference was 34.6 ± 1.6 cm, both significantly lower than that of the general population ($p<0.001$). Neonatal morbidity was significantly higher ($p<0.01$), with 67.2% of newborns having one pathology and 32.8% two or more. Common neonatal abnormalities were related to gestation and fetal growth (10.3%), respiratory and cardiovascular disorders (6.5%), and hemorrhage and hematological disorders (6.4%). 3.8% were born with congenital malformations. Neonatal mortality was 0.47%, with common causes being intrauterine hypoxia, neonatal respiratory distress syndrome, and cardiac malformations. 62% of deaths were premature (22-36 weeks). Stillbirth incidence ranged from 0.2% to 1.1%.

Conclusions: Adolescent mothers' newborns face diverse health challenges, requiring targeted interventions for better outcomes.

Keywords: adolescent mothers, Lithuania, newborns, neonatal morbidity, neonatal mortality

Frequency of vitamin D3 deficiency in the adult population of the Warsaw University Hospital

Kaja Tyszkiewicz[1], Barbara Buchalska[1]

1. Department of Orthopaedic Surgery and Traumatology, Medicine, Medical University of Warsaw

Work's tutor: dr hab. n. med. Grzegorz Szczęsny

Background: Vitamin D3 deficiency (VDD) occurs worldwide, and is associated with a wide range of health disturbances affecting musculoskeletal, cardiovascular, mental, and immune systems.

The aim: The study aimed to assess the frequency of VDD in the blood serum, as well as to validate the impact of the Covid-19 pandemic on its frequency of it.

Materials and methods: We based on the hospital's laboratory data of the vitamin D3 concentrations in blood serum obtained from patients treated in the University Hospital in Warsaw between 2011 and 2022. For analysis a total number of 13520 patients were included (7972 females and 5548 males), defining deficiency as vitamin D concentration below 30 ng/mL. For more precise analysis groups of patients presenting critical (<10 ng/mL), severe (10-19 ng/mL), and mild (20-29 ng/mL) deficiencies were distinguished considering values 30-50 ng/mL as recommended ones.

Results: Collected data showed the decreasing frequency of VDD from 92,2% in 2011 to 62,8% of patients in 2017 (mean value 72,2%), including critical from 18,6% to 3,0%, severe from 40,2% to 26,7%, and the least stable frequency of mild deficiency occurring in 30,7-33,3% of patients. In 2022, during the Covid-19 pandemic, VDD showed 46,8% of patients, including 5,7% critical, 16,5% severe, and 24,5% mild deficiencies. VDD was more frequent in men than women and in patients above 55 years old than younger.

Conclusions: Our study shows that despite the fact that the frequency of VD deficiency in the polish population gradually decreases, most probably due to supplementation, it remains significant. The most endangered are women above 55 years. Thus, much more effort has to be paid to the propagation of VD supplementation, especially among elder men, with a possible re-evaluation of recommended doses and principles of application. The Covid-19 pandemic allowed us to reduce the frequency of VDD, most probably due to increased interest in a healthy way of life and methods supporting the immune system.

Keywords: vitamin D3 deficiency, adult population, hospital data analysis

Assessment of the prevalence of Demodex spp. in the selected population of the Silesian Voivodeship

Julia Strzelczyk[1]

1. Student Research Group at the Department of Medical and Molecular Biology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia in Katowice

Work's tutor: dr hab. n. med. Marek Asman, prof. SUM

Background: Currently, over 100 different species of skin mites (Demodex spp.) are known, which are obligatorily associated with their hosts. They can cause a disease called demodicosis. Two species of these parasites occur in humans: Demodex folliculorum and Demodex brevis.

The aim: The aim of the study was to determine the prevalence of Demodex spp. in a selected population of the Silesian Voivodeship.

Materials and methods: The presence of Demodex spp. was examined in 55 individuals, including 34 females and 21 males. The study group was divided into the following age groups: under 18, 18-30, 31-45, 46-60, and above 60. Mites were collected from three facial areas of the participants using cosmetic pads. Additionally, each participant completed a customised questionnaire containing 20 questions regarding i.a. age, frequency of occurrence of conjunctivitis. The mites were detected under a light microscope. The results were obtained using odds ratio analysis.

Results: The presence of Demodex spp. was detected in a total of 37 individuals, including 24 females and 13 males. Overall, 240 D. folliculorum and 1 D. brevis were found. Demodex spp. were most commonly found in the areas around the nostrils (n = 88) and least often on the chin (n=69). Furthermore, the highest frequency of skin mite occurrence was observed in the group 31-45 - 86%, while the lowest frequency was observed in the group under 18 - 36%. Meanwhile, in the other examined age groups: 18-30, 46-60, and above 60, mites were observed in 60%, 80%, and 70% participants, respectively. Trend analysis of mite occurrence in the participants demonstrated a polynomial relationship (R2=0.962) with age, peaking in the 31-45 age group, while no statistically significant Spearman correlation (rS=0.6, p=0.5) was observed.

Conclusions: The conducted studies revealed the presence of Demodex spp. in all examined age groups. The frequency of occurrence of these mites in human population increases with age, reaching a maximum in the 31-45 age group, and then decreases.

Keywords: Demodex spp., demodicosis, Silesian Voivodeship, Demodex brevis, Demodex folliculorum, prevalence

Adverse reactions after vaccination against COVID-19

Kaja Sobieszczuk[1], Julia Rak[1], Natalia Kamińska[1], Weronika Nowak[1], Martyna Najmrocka[1]

1. Department of Medical Biophysics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Barbara Pietrzyk, dr hab. n. med. Patrycja Dolibog, dr n. med. Tomasz Pryzwań

Background: Since the COVID-19 pandemic was declared, widespread vaccinations have been carried out around the world to minimize the risk of infection and the development of critical illness. Usually, a severe course of the disease was observed in unvaccinated patients, the assessment of disease symptoms and the severity of side effects after vaccination may help in understanding the still urgent need for vaccination against SARS-CoV-2.

The aim: It was to investigate whether side effects after vaccination depend statistically on COVID-19 disease symptoms divided by their severity.

Materials and methods: The study was conducted retrospectively among 116 patients from October 2022 to February 2023. An original questionnaire containing demographic and anthropometric data, as well as information on clinical characteristics - symptoms after infection with the SARS-CoV-2 virus and the severity of post-vaccination side effects was analyzed, divided into (mild, medium, severe). The collected data were analyzed using descriptive statistics, and a p value of less than 0.05 was considered statistically significant. Variables were compared using the Fisher test.

Results: It was found that the degree of symptoms of COVID-19 disease in the study group was mild in 53.45%, moderate in 41.38%, and severe in 5.17%. In the majority of the study group, mild side effects after vaccination against COVID-19 predominated; it was found that mild symptoms occurred in 61.21% of people, medium 36.21%, and severe 2.59%. No statistical relationship was found between the severity of disease symptoms and the severity of side effects after vaccination $p = 0.090$.

Conclusions: Knowing the high risk of severe post-COVID complications, it is possible to minimize it by taking protective vaccinations. The occurrence of post-vaccination side effects is usually mild and short-lived, with local post-vaccination reactions.

Keywords: COVID-19, vaccine, adverse event following immunization (AEFI)

Retrospective Analysis Of Repeated Work Capacity Evaluations In Lithuanian Occupational Disease Cohort

Andrius Jurgelėnas[1]

1. , Faculty of Medicine, Vilnius University

Work's tutor: dr. Daiva Valadkevičienė, dr. Jelena Stanislavovienė

Background: Occupational diseases impose significant burden on individuals, employers, and governing bodies, affecting workers in all countries and industries.

The aim: To analyze distribution of work capacity levels in occupational disease patients who applied for disability compensation; to assess the efficiency of repeated short-term evaluations.

Materials and methods: Anonymized data was obtained from Agency for the Protection of the Rights of Persons with Disabilities database. Total of 5827 entries of 2856 individuals were analyzed dating throughout 2013-2022 period. Research data was systemized using "Microsoft 365 Excel" and data analysis was performed using "IBM SPSS 27.0".

Results: Research cohort consisting of 2080 males and 776 females was analyzed. Majority of participants fell within the age bracket of 55 years and older (75% of males, 68% of females). 54% of participants were referred for repeated (≥2) evaluations. While most of them had 2 evaluations (26%, n=752), 27% (n=770) were evaluated 3-7 times, only 0.3% (n=8) - more than 8 times. Trend was observed for working capacity levels to stay the same between evaluations (e.g. in the group of 2 consecutive evaluations, results did not change for 60% of applicants). Difference in working capacity levels comparing first and last (2nd/3rd/4th) evaluations were not statistically significant (p=0.655/p=0.172/p=0.026 respectively). P-values were calculated using paired samples T-test.

Conclusions: Work capacity levels did not fluctuate significantly. The data suggests that current practice of repeated evaluations for assessing working capacity levels may not be necessary, as it does not significantly alter the results. This could have implications for healthcare systems, potentially leading to more efficient resource allocation by reducing unnecessary evaluations.

Keywords: Occupational diseases, work capacity levels, public health, disability compensation

Sociomedical Study on Knowledge, Beliefs and Attitudes of Hemodialysis Patients Towards Xenotransplantation

Żakowska Maria[1], Jonczyk Wojciech[1], Nowacki Michał[1]

1. , Jan Dlugosz University in Czestochowa

Work's tutor: dr n. hum. Katarzyna Kowal

Background: According to December 2023 statistics, 1193 patients awaited kidney transplants, while only 81 organs were transplanted (source: Poltransplant). The demand for organs surpasses the available supply, prompting exploration into xenotransplantation as a potential solution. Preparations for pig kidney transplantation have been ongoing since 2020, and our study focuses on patients' attitudes toward this procedure.

The aim: This paper presents socio-medical study findings regarding patients' knowledge, beliefs, attitudes, and social resistance toward two types of transplants: from deceased human donors and from pigs.

Materials and methods: The study, conducted between 2020 and 2023 at the Department of Nephrology, Transplantology, and Internal Medicine of the Silesian Medical University in Katowice, combined medical and sociological perspectives. Dr. Katarzyna Kowal supervised the sociological aspect, and data analysis relied on in-depth sociological interviews conducted by Jan Długosz University students. The study included 60 chronically dialyzed patients.

Results: Patients exhibited diverse perspectives, categorized into five typologies: exclusive acceptance of human kidneys, unequivocal support for xenotransplantation, conditional acceptance of pig kidneys, openness to organs of any origin, and categorical rejection of animal-derived kidneys. Analysis revealed a tendency among patients to trust fellow patients' experiences over doctors' opinions. Many patients also expressed concern for the welfare of animal donors post-transplantation.

Conclusions: The data highlighted two polarized attitudes: absolute rejection or unconditional acceptance of xenotransplantation. This polarization stems from the innovative nature of xenotransplantation, causing apprehension and skepticism. Human kidney transplantation is perceived as safer and more established, but patients indicated a willingness to consider xenotransplantation if pig kidneys demonstrated superior longevity.

Keywords: Xenotransplantation, Hemodialysis, Kidney transplantation, Patient attitudes, Sociomedical study

The impact of air pollution on the respiratory system issues among the inhabitants of Svalbard (Longyearbyen)

Natalia Leszczyńska[1], Aleksandra Nasiek[2], Barbara Chłapek[2], Karolina Krzywiecka[1]

1. , Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

2. , Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Work's tutor: Prof. dr hab. inż. Jerzy Wiciak, Assoc. prof. Tomasz Ciesielski

Background: Longyearbyen, the capital of Svalbard, home to approximately 2,500 residents, holds the distinction of being the northernmost inhabited land, situated just 1,300 kilometres from the North Pole. Moreover, the city is renowned for its coal mining industry as well as the centre of tourism.

The aim: This study aimed to investigate the potential impact of Longyearbyen's unique geographic location, isolated climate and the presence of air pollution on health issues, with a specific emphasis on respiratory system.

Materials and methods: In March 2024, a survey was conducted to assess the overall health among residents of Longyearbyen. The study included a cohort of 19 respondents, from whom demographic information was gathered, such as age and general health status. Additionally, factors potentially influencing respiratory system were analysed, such as air pollution levels in the residential area and any history of cigarette usage among participants.

Results: The study revealed that the average age of respondents was 36, with 37% (n=7) being male. 95% (n=18) of participants reported their health status as good or very good, contrasting with only 5% (n=1) rating it as average. However, 21% (n=4) of respondents experienced respiratory issues, mainly during the winter months. Moreover, 74% (n=14) of participants expressed a belief that enhancing the standard of living could be achieved through various means. These included reducing tourism and transportation (21%, n=4), phasing out mining activities in favour of renewable energy sources (16%, n=3) and promoting environmental initiatives both individually and on a global scale (57%, n=10).

Conclusions: The study emphasizes the importance of environmental protection to safeguard the health of Longyearbyen residents, particularly by reducing air pollution in the city centre. However, conducting a similar study with a larger and more diverse group is necessary to get a clearer picture of the community's health needs.

Keywords: health status, respiratory system, air pollution correlations

Medicus curat, verbum sanat - the impact of a doctor's interpersonal skills on the treatment process in the ex

Jan Kinasiewicz[1], Magdalena Szóstkiewicz[1]

1. , Wladyslaw Bieganski Collegium Medicum, Jan Dlugosz University in Czestochowa

Work's tutor: dr n. hum. Katarzyna Kowal

Background: In this paper, we intend to present the results of sociomedical research on communication between a doctor and a patient undergoing chronic dialysis.

The aim: We intend to take a special look at the issue of factors of patients' (non)compliance with medical recommendations.

Materials and methods: The research consisting of qualitative interviews with dialysis patients (N = 60) was carried out in 2020-2023. The supervisor and coordinator of the work is Dr. hum. Katarzyna Kowal. The place of research was the hemodialysis station at the Department of Nephrology, Transplantology, and Internal Diseases of the Medical University of Silesia in Katowice.

Results: The analysis of empirical material shows that the most serious problem indicated by the patients is the lack of full clarity regarding the patient's treatment plan. Another important aspect is the lack of information from the attending physician about the treatment method the patient is undergoing. The respondents also point out the lack of empathy on the part of doctors from dialysis centers and the lack of communication between doctors. In the context of interpersonal relations, the doctor's language is important, as it may be incomprehensible to the patients examined, and the doctor's ability to actively and empathetically listen to the patient.

Conclusions: The analysis of the statements of the patients indicates the characteristics and behaviors of a good doctor, such as the patient's motivation to fight for health, honest conversation with the patient, empathy, caring, and sense of humor and also points to the fact that these features aid in adherence.

Keywords: dialysis, chronic kidney disease (CKD), following the recommendations, doctor-patient communication

Impact of the circumstances of SARS-CoV-2 infection on the degree of disease symptoms

Magda Pryczkowska[1], Oliwia Żurawik[1], Aleksandra Pawłowska[1], Aleksandra Pasternak[1], Zuzanna Norymberczyk

1. Department of Medical Biophysics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr. n. med. Barbara Pietrzyk, dr hab. n. med. Patrycja Dolibog, dr. n. med. Tomasz Pryzwan

Background: During the COVID-19 pandemic, the transmissibility of the SARS-CoV-2 virus was extremely dynamic. People with a mild clinical course of infection were usually professionally active, so they changed places of residence and moved around, transmitting infectious virions that can infect for up to 10 days from the appearance of the first subtle symptom of infection. The study paid attention to the site of SARS-CoV-2 infection and the degree of clinical symptoms of infection.

The aim: The aim of the study was to examine the relationship between the occurrence of COVID-19 disease symptoms and their severity on the circumstances of virus infection.

Materials and methods: The study was conducted retrospectively among 208 people from October 2022 to March 2023 based on an original questionnaire containing information on clinical characteristics, i.e. symptoms after virus infection, severity (mild, moderate, severe) and non-clinical information regarding the site of infection. The data were subjected to statistical analysis, and a p value of less than 0.05 was considered statistically significant. Variables were compared using the Fisher test.

Results: In patients infected with Covid-19, mild symptoms predominated - 56.73% and moderate - 37.98%. Infection most often occurred at home (33.17%) and in public spaces (32.21%). Mild symptoms of the disease were observed in the majority of 56.73% of patients, who contracted the infection in public spaces - 38.14%, or from household members - 30.51%. However, in patients with average severity of COVID-19 symptoms, infection usually occurred at home (35.44%) or in public spaces (25.32%). Despite significant differences in the percentage of the highly probable site of infection, no statistical significance (p=0.411) was observed between the site of infection and the degree of COVID-19 disease symptoms.

Conclusions: The site of SARS-CoV-2 infection does not have a direct impact on the degree of COVID-19 disease symptoms, despite the increased risk in large crowds in public spaces.

Keywords: COVID-19, symptoms, circumstances,SARS-CoV-2 infection

Knowledge of ergonomics and its application among IT industry workers

Magdalena Henke[1]

1. Department of Adapted Physical Activity and Sport, Faculty of Health Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: student

Background: The rapid advancement of science and technology has led to an increasing number of individuals engaging in sedentary work. This group includes individuals working in the IT industry. This type of work poses several risks, including deterioration of psycho-physical condition, high levels of sympathetic arousal, worsening relationships and social withdrawal.The direct consequences of this work relate to the musculoskeletal system, especially the spine. Hence, the problem of seeking preventive measures, the need to develop knowledge of ergonomics, and its application seem highly relevant.

The aim: The aim of the study was to investigate the knowledge and application of ergonomic principles in the daily work of individuals working with computers. The study also aimed to examine the health consequences of these variables.

Materials and methods: The study involved 213 people working within one IT company.An author-designed questionnaire was used to assess the daily time spent at the computer, self-assessment of ergonomic knowledge, and its application in practice. Spinal pain complaints were assessed using the VAS scale. A standardized NDI(Neck Disability Index)questionnaire was used to assess the impact of pain on daily functional activities.

Results: The average time spent at the computer was 9.24(Ī1.73)hours.Only 49.30% of the participants declared knowledge of ergonomic workstation setup.The average intensity of pain among the participants was 4.47 points. All participants reported experiencing spinal pain at least several times a month. Over 65% of the participants decided to make changes in their work environment to reduce existing pain. It was observed that individuals with longer work experience more often adhere to ergonomic principles (U=2.226, p=0.026).

Conclusions: Placing the monitor directly on the desk causes the greatest discomfort in the cervical and lumbar spine. Knowledge and implementation of preventive measures among the presented professional group are insufficient and lead to negative health consequences.

Keywords: health behaviors, lifestyle, contemporary society, ergonomics, habits

Knowledge and attitudes of nurses not working in the intensive care unit about transplantology

Agnieszka Szałach[1]

1. , Institute of Medicine, Academy of Zamosc

Work's tutor: dr n. o zdr.Magdalena Brodowicz - Król; dr n. o zdr.Magdalena Korżyńska-Piętas

Background: Transplantology is a medical field that aims to save health and life through the transplantation of cells, tissues or organs. It is a fairly "young" discipline of medicine, because its beginnings, although dating back to antiquity, flourished and developed only in the second half of the nineteenth century. Transplantology is an unusual and demanding field of medicine, addressing issues related to broadly understood science, including anatomy, pathomorphology, pathophysiology, but also ethics.

The aim: The aim of the study is to collect information not only about the knowledge about transplantology and the dilemmas related to it possess by nurses who do not work in the Intensive Care Unit, but also about their attitude towards organ transplantation.

Materials and methods: Material and methods: The study included a group of 105 nurses, including 102 women and 3 men. The condition for joining the study was the place of work, as the subjects could not work in the intensive care unit. Other hospital wards and primary care clinics were most often declared.

Results: Results: An unsatisfactory result was achieved, as 20 respondents were found to have an insufficient level of knowledge, which gives 19.05%. 59 respondents (56.19%) were at a satisfactory level. Only 26 respondents (24.76%) have a good result. Despite medical education, only more than half of the respondents consider brain death to be the death of a human being – which is undeniably a medical fact, scientifically confirmed and supported by law.

Conclusions: Conclusions: Transplant medicine is currently undergoing intensive development. A very important element is the implementation of nursing tasks in the field of education and raising awareness not only of patients but also of the rest of society on the idea of donation of organs, blood or bone marrow. This opinion suggests that there is a need to educate and promote knowledge about post-traumatic brainstem dysfunction and its consequences already at undergraduate studies.

Keywords: Key words: knowledge of nurses, knowledge of medical personnel, transplantology, gaining knowledge

The impact of the time of onset of COVID-19 disease symptoms on the degree of clinical symptoms

Emilia Reszka[1], Katarzyna Pietroniec[1], Weronika Siemieniuk[1], Maksymilian Janeczek[1], Tomasz Kram[1]

1. Department of Medical Biophysics, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr. n. med. Barbara Pietrzyk, dr hab. n. med. Patrycja Dolibog, dr. n. med. Tomasz Pryzwan

Background: Infectivity of a COVID-19 patient begins on average 1-2 days before the first disease symptoms, making an asymptomatic patient a potential source of the virus. However, the most infectious appear to be people with clinical symptoms of the disease as the increasing number of virions in the body accelerates the virus transmission in the population.

The aim: The aim of the study was to assess the relationship between the degree of COVID-19 symptoms and the time of symptom onset.

Materials and methods: The retrospective study included 208 patients, from October 2022 to March 2023. Analyzed data were based on a self-prepared questionnaire, which included data on onset of COVID-19 symptoms after pathogen exposure and the severity of the symptoms. The collected documentation was analyzed using descriptive statistics, statistical significance was assumed at a p value of less than 0.05. Variables were compared using the Fisher test.

Results: Statistically, COVID-19 symptoms were most often observed 5-10 days (29.33% of respondents) and 2-4 days (28.85%) after contact with the pathogen, most often of mild (56.73%) or medium intensity (37.98%). The mild symptoms appeared 5-10 days after contact with the virus (36.44%) and moderate symptoms - 2-4 days after (37.97%). Moreover, severe symptoms not requiring hospitalization occurred in 5.29% of patients, with four people displaying symptoms one day after exposure. The results showed statistical significance between mild and moderate symptoms ($p=0.0147$), mild and severe symptoms ($p=0.23$) and between the time of the symptom onset and the degree of clinical symptoms ($p=0.0279$).

Conclusions: The highest percentage of COVID-19 disease symptoms - 29.33% - appeared 5-10 days after contact with the virus. The results seem to indicate the shorter incubation period corresponds with more severe COVID-19 symptoms, highlighting the need to continue protective vaccinations against the disease, for individual and population protection.

Keywords: COVID-19, time, grade, clinical signs, vaccination

Metformin therapy in patients with acne vulgaris – meta-analysis

Weronika Szybiak-Skora[1], Lidia Szefler[1]

1. Student's Scientific Society, Endocrinology Section at the Department of Endocrinology, Metabolism and Internal Medicine, Poznan University od Medical Sciences, Poznan, Poland

Work's tutor: Prof. dr hab. n.med. Katarzyna Lacka

Background: Acne vulgaris is a common disease, which occurs in adolescents as well as adults. Due to resistance to standard therapies, there has been a need to prospect for new treatment strategies. It is important to highlight that diagnosis and treatment of the underlying cause of acne such as metabolic and hormonal disorders may significantly improve the effectiveness of acne treatment. Metformin, an antihyperglycemic agent, seems to be a possible therapy option, not only because of its insulin sensitizing ability but also through plenty of additional effects of this medicine.

The aim: This meta-analysis aimed to estimate the effectiveness of oral metformin as a monotherapy in acne patients without PCOS or other endocrinopathies

Materials and methods: Study selection was performed with included criteria such as no PCOS and other endocrinopathies diagnosed, oral administration of metformin and metformin in monotherapy. Selected studies contained comparisons in GAGS (Global Acne Grading System) before and after metformin therapy.

Results: The heterogeneity between studies was I2 = 63.79% (95%CI for I2 = 0% to 89.64%; p=0.063). The results of Cohen's d show that there is a statistically significant publication load. Cohen's d = 1.47 (SE =0.27; 95 CI =0.93 to 2.00; p= 0.00000008).

Conclusions: Our meta-analysis indicated a statistically significant improvement in acne grading after metformin treatment. It might be an appropriate direction for acne treatment in patients with resistance to standard therapies. However, it is still essential to conduct more adequate studies, which will be performed with precise duration of therapy and the same method of metformin administration in acne treatment in monotherapy as well as adjuvant therapy.

Keywords: acne vulgaris, insulin resistance, metformin treatment, meta-analysis

Sharper than Human Eyes? A Meta-Analysis of Artificial Intelligence for Retinal Detachment Detection

Paweł Łajczak[1]

1. Department of Ophthalmology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Sebastian Sirek

Background: Retinal detachment (RD) is a condition requiring rapid diagnosis. Artificial intelligence (AI) has emerged as a tool for improving diagnostics.

The aim: This meta-analysis evaluates the performance of AI for RD detection.

Materials and methods: Studies investigating the application of AI for RD diagnosis were included from four databases. The DTA (diagnostic test accuracy) analysis included sensitivity, specificity, and other accuracy parameters. Subgroup analyses explored the impact of AI technique, imaging modality, testing set size, and validation method.

Results: Twenty studies were included in the analysis. The overall sensitivity was 0.958 (95% CI: 0.941-0.97), indicating high accuracy in identifying RD. The pooled specificity was 0.993 (95% CI: 0.988-0.996), demonstrating a low misdiagnosis rate. Deep learning models achieved better performance compared to machine learning models. Fundus image-based models outperformed ultrasound and OCT models. Substantial heterogeneity was observed.

Conclusions: This work provides the first systematic meta-analysis on the diagnostic accuracy of AI models for RD detection. The findings suggest promising potential for AI-based RD detection with high sensitivity and specificity. However, addressing the observed heterogeneity, mitigating potential biases in the included studies, and conducting further research are crucial for the safe and effective integration of AI into clinical practice for RD diagnosis.

Keywords: artificial intelligence, deep learning, diagnostic accuracy, retinal detachment

The Effectiveness of New Drugs Used in Anemia in Chronic Kidney Disease Dialysis Patients - A Meta-analysis

Dominik Lewandowski[1], Mateusz Serwiński[1], Aleksander Początek[1], Miłosz Miedziaszczyk[1]

1. Department of General Surgery and Transplantology, Faculty of Medicine, Poznan University of Medical Sciences

Work's tutor: Dr. hab. n. med. Ilona Idasiak-Piechocka

Background: Throughout last years patients suffering of Chronic Kidney Disease (CKD) had a possibility of treatment with Erythropoiesis Stimulating Agents (ESAs) which became a worldwide standard. Hypoxia-Inducible Factor Prolyl Hydroxylase Inhibitors (HIF-PHDIs) - roxadustat, vadadustat, daprodustat show promise as potential treatments for anemia in CKD patients, with their ability to stabilize HIFs and improve erythropoiesis. They offer a more physiologic approach to treating renal anemia, with the potential to increase endogenous erythropoietin (EPO) levels close to the physiological range

The aim: The aim of this meta-analysis was to compare the effectiveness of HIF-PHDIs and intravenous ESAs as comparators in the treatment of anemia based on the assessment of hemoglobin concentration in the study groups

Materials and methods: We searched databases from their inception up to September 2023, using the Medical Subject Headings (MeSH) terms and the corresponding keywords. Three authors independently performed the study selection and quality appraisal, as well as data collection, and resolved differences by consensus to reduce the potential for selection bias. We conducted bias assessment with the use of RoB2 Tool for every each individual study. The meta-analysis was performed using the Hedges g statistic with the fixed effects model. Hedges g is measure of standardized mean difference. Egger's test was used to assess publication bias. Evaluation of heterogeneity was performed using the I2 statistic.

Results: Roxadustat demonstrated a significant increase in hemoglobin levels compared to ESAs in dialysis-dependent CKD. Unfortunately, due to significant heterogeneity in the studies, it was not possible to analyze the efficacy of Vadadustat and Daprodustat compared to ESAs

Conclusions: This meta-analysis provides evidence that roxadustat can be considered as an alternative to ESAs treatment, as it is more effective in raising hemoglobin levels than ESAs

Keywords: Chronic Kidney Disease, Roxadustat, Dialysis

Post-Pandemic Health Challenges: Investigating Post-COVID Syndrome

Julia Chyrchel[1], Natalia Czekańska[1], Aleksandra Erdowska[1], Karol Plaza[1], Laura Popławska[1]Radosław Pudełko[1]

1. Department of Pathology, Faculty of Pharmaceutical Sciences in Sosnowiec, Medical University of Silesia, Katowice

Work's tutor: Ph.D. Anna Kleczka

Background: The COVID-19 pandemic led to a global health crisis, posing new challenges to healthcare. Understanding the long-term health effects of SARS COV-2 virus infection is the subject of many studies. Particular attention has been paid to the Post-COVID Syndrome (PCS). PCS refers to a spectrum of persistent symptoms experienced by individuals after recovering from acute COVID-19 infection.

The aim: This paper aim to set out the issue of Post-COVID Syndrome, promote knowledge regarding the late complications of viral infection and discuss possible patient support schemes.

Materials and methods: This paper reviews the scientific literature

Results: The first part elucidates the definition and pathophysiology of PCS as well as the general symptoms and organ-specific consequences of severe infections, such as pulmonary, cardiovascular, haematological, autoimmune, and neuropsychiatric complications associated with the syndrome. Methods used in PCS diagnostics were discussed along with related difficulties.Current approaches to treating patients with Post-COVID Syndrome were also presented, taking into account both pharmacological therapies and rehabilitation.

Conclusions: The paper highlights the need for further research into PCS and for the development of effective strategies for diagnosing and treating this syndrome. Lastly, the thesis addresses the necessity to devise new schemes supporting the convalescence of patients after severe infections and to raise public awareness regarding PCS in general.

Keywords: Post-COVID Syndrome, Symptoms, Diagnostics, Therapy

Obesity's Impact on Maternal and Fetal Health: Preconception Strategies and Interventions

Mateusz Szczerba[1], Katarzyna Falecka[1], Aleksandra Hejnosz[1], Aleksandra Urban MD[1]

1. 2nd Department of Obstetrics and Gynecology, Faculty of Medicine, Medical University of Warsaw

Work's tutor: Ewa Romejko-Wolniewicz MD PhD

Background: According to the WHO, the number of overweight and obese people nearly tripled between 1975 and 2016. Given that obesity inherently carries numerous somatic and mental complications, it is crucial to determine its impact on the course of pregnancy in the context of the mother's and child's subsequent development.

The aim: The objective of this study is the analysis of research published within the recent 5 years on the impact of obesity on the course of pregnancy, childbirth, and the subsequent development of both the mother and the child with a particular focus on lifestyle interventions.

Materials and methods: A literature review was conducted, focusing on obesity, preconception care, and lifestyle interventions. PubMed and Embase databases were searched for studies published from 2019 to 2023 by using the following search string: ((“obesity” OR “overweight”) AND “preconception”). 15 studies were selected for review.

Results: Obesity is associated with increased maternal and neonatal complications, including labor induction, cesarean delivery, preterm birth, and neonatal care. Gestational diabetes risk is elevated, leading to dysglycemia post-delivery. Preconception weight reduction, shows promise but faces challenges such as sustaining motivation and identifying optimal timing for intervention. Additional supplementation's impact is inconclusive, though weight loss correlates with improved fertility outcomes. Safety concerns regarding sudden weight loss pre-conception were noted, with varied effects on pregnancy and neonatal complications. Effective lifestyle changes in preconception may improve fertility and childbirth outcomes, with weight loss being a key factor.

Conclusions: Obesity significantly impacts pregnancy outcomes, underscoring the importance of preconception interventions. While lifestyle changes show promise, more research is needed to optimize their effectiveness and ensure safety, highlighting the ongoing significance of addressing obesity in maternal healthcare.

Keywords: preconception, obesity, overweight, interventions,

3D Assisted Physician-Modified Stent Graft Implantation for Abdominal Aortic Aneurysms Treatment

Wiktoria Zasada[1], Magdalena Węglewska[1], Łukasz Świątek[1], Jerzy Kluba[1], Hubert Stępak[1]

1. Department of Vascular and Endovascular Surgery, Angiology and Phlebology, University Hospital of Lord's Transfiguration, Poznan, Poland,, Faculty of Medicine, Poznan University of Medical Sciences

Work's tutor: Zbigniew Krasiński, MD, PhD, Prof.

Background: Abdominal aortic aneurysm (AAA) remains a significant health concern requiring effective treatment strategies.

The aim: This systematic review examines procedural characteristics, complications, and outcomes associated with physician-modified stent graft (PMSG) implantation using three-dimensional (3D) printed aortic models (3DAMs).

Materials and methods: A total of 812 articles were initially identified through database searches, resulting in 92 articles eligible for full-text analysis after screening. The included studies with data from China, South Korea, Poland, and Germany, collectively involved a median patient cohort of 34.4 individuals. Various endovascular approaches, including thoracic endovascular aortic repair (TEVAR), fenestrated endovascular aortic repair (FEVAR), and branched endovascular aortic aneurysm repair (BEVAR), were examined.

Results: The mean weighted stent modification time ranged from 37.63 to 109.6 minutes and an average procedure duration of 249.95 ± 70.03 minutes. Optimal angiographic results were achieved in 97.21% of cases, with a 30-day survival rate averaging 97.6%. However, complications such as early and late endoleak, infection, neurological and renal complications, dissection, and postoperative pain were reported across the studies. Statistical analysis utilizing meta-analysis techniques revealed significant heterogeneity among studies and provided insights into the variability of outcomes.

Conclusions: Overall, this review underscores the importance of PMSG implantation using 3D-printed models in AAA treatment, highlighting both its potential benefits and associated complications, while emphasizing the need for further research and standardization in this evolving field.

Keywords: 3D printing, AAA, FEVAR, TEVAR, PMSG

Repetitive Transcranial Magnetic Stimulation (rTMS) In The Treatment Of Postpartum Depression (PPD).

Sopuruchi Angel Chidi-Ikeji[1], Maryam Abubakar[1]

1. , Faculty of Medicine, Kyiv Medical University

Work's tutor: prof. dr. Kopchak Oksana

Background: Concerns about drug metabolites in breast milk often discourage women from using medication-based treatments for postpartum depression (PPD). Repetitive transcranial magnetic stimulation (rTMS) is an alternative approach that shows promise. This non-invasive therapy uses magnetic fields to stimulate specific regions of the brain, particularly the left dorsolateral prefrontal cortex (DLPFC).

The aim: This systematic review evaluates the efficacy of rTMS as a treatment for PPD, by analyzing a range of studies.

Materials and methods: We conducted a systematic review and meta-analysis to analyze the effectiveness of rTMS in treating PPD. Following PRISMA guidelines, we searched databases (PubMed, EMBASE, Scopus, BioMed journal) from 2010-2024. Exclusions were reports with insufficient data and duplicated analysis

Results: Out of 122 records, a total of 4 studies and 115 participants were included in the analysis. The following scales were used: Hamilton Rating Scale for Depression-24 item (HRSD-24), Edinburgh Postnatal Depression Scale (EPDS), Inventory of Depressive Symptomatology-Self-Report (IDS-SR), Clinical Global Impressions-Severity (CGI-S), quality-of-life scores with the standardized mean differences and a 95% confidence interval. The study involved women with PPD who received sessions of rTMS (Hz) over the left dorsolateral prefrontal cortex (DLPFC) over a 4-week period. The results showed a significant reduction in depressive symptoms by the end of Week 2. The treatment parameters varied across the studies, reflecting the absence of established guidelines for rTMS therapy in PPD. Overall, there were significant improvements in depressive symptoms and cognitive performance following rTMS treatment.

Conclusions: Our study provides strong evidence supporting the effectiveness of rTMS as a treatment of PPD in women. rTMS shows promise in reducing depressive symptoms, achieving remission, as well as producing favorable long term outcomes. Further research is needed to establish standard protocols for rTMS therapy in PPD.

Keywords: Postpartum depression (PPD), Repetitive Transcranial Magnetic Stimulation (rTMS), DLPFC.

The paradox of weight and power – the most suitable animals for atrial fibrillation models

Ana Lupsor[1], Alexandru Necula[1]

1. , Medicine, Iuliu Hatieganu University of Medicine and Pharmacy Cluj-Napoca

Work's tutor: Lecturer Gabriel Cismaru

Background: Atrial fibrillation (AF) is one of the most frequent arrhythmias, with an increased incidence of 33% in the last 20 years. The available therapy consists of antiarrhythmic medication and catheter ablation, but the pathological background is not entirely known. Studies based on animal models can enhance understanding of the mechanisms leading to AF and the development of better treatments.

The aim: This presentation aims to examine the main ways of inducing AF in animal models and discuss each species' advantages and disadvantages for different types of procedures.

Materials and methods: To understand the reproducibility in humans of AF experiments, we studied the medical literature using the engines Pubmed, UptoDate, Elsevier and analyzed the most suitable animal model and their particularity for each proposed AF design.

Results: The major arrhythmogenic mechanisms involved in AF pathogenesis are the ectopic electrical activity of the pulmonary vein and reentry due to atrial fibrosis and dilatation. The most common AF designs imply drug induction (acetylcholine, streptozocin, beta-adrenergic agents, pro-arrhythmic medication), inflammatory pericarditis induction, invasive intracardiac or non-invasive transesophageal stimulation, and atrial/ventricular ischemia.

Conclusions: Depending on the animal's weight, AF's duration increased, starting from seconds to minutes in small animals (mice, rats, rabbits), up to 2 weeks in medium animals like dogs, sheep, horses, and even several months in pigs. Although small animals cannot sustain AF and need permanent triggering, they are more versatile for testing different substances' effects. However, the long-term outcomes can be better analyzed on bigger models such as horses, that maintain arrhythmia longer and mimic human physiopathology better. Experimental AF can be performed on different animal models by various mechanisms, each being more or less suitable for a different objective, so researchers need a well-defined objective for a statistically significant experiment.

Keywords: atrial fibrillation, experimental model, pathogenesis, pacing triggering, antiarrhythmic drugs

The Impact of Smoking on Postpartum Depression: A Systematic Review

Karol Knysak[1], Alicja Maj[1], Karolina Domosud[1], Aleksandra Urban[1]

1. 2nd Department of Obstetrics and Gynecology, Faculty of Medicine, Medical University of Warsaw

Work's tutor: dr hab. n. med. Ewa Romejko-Wolniewicz

Background: The prevalence of a major depressive disorder following childbirth, specifically unipolar major depression, exhibits significant variability across various research studies. This variation is contingent upon the specific country under investigation (with low- and middle-income countries tending to report higher rates), the duration of time following delivery during which prevalence is assessed, the methodology employed to identify depression (whether self-report measures or clinical interviews were utilized), the inclusion of patients with minor depression within estimates, and whether postpartum depression was evaluated within community or clinical settings.

The aim: The study aimed to investigate the correlation between prenatal smoking and postpartum depression (PPD) to determine if smoking cigarettes is associated with an increased risk of PPD, a prevalent emotional distress in women across various cultures.

Materials and methods: A systematic investigation was conducted to find suitable literature following PRISMA guidelines. Authors searched PubMed and Web of Science using specific search terms related to depression and smoking. They included articles published in English between November 2019 and November 2023. Titles and abstracts were reviewed for relevance, and eligible papers underwent detailed full-text analysis.

Results: 334 records were screened, of which 32 met the eligibility criteria, and 10 were included in this review.

Conclusions: Our review concludes that smoking before and during pregnancy increases the risk of postpartum depression, especially for women who smoke more cigarettes, according to research. A more detailed examination of the specific mechanisms linking smoking to postpartum depression is essential for future research.

Keywords: postpartum depression, prenatal smoking, antenatal smoking, systematic review

Methylene blue utility in patients during septic shock- systematic review with meta-analysis

Jakub Rąpała[1], Michał Piotrowski[1]

1. , Faculty of Medicine, Jagiellonian University, Medical College, Cracow, Poland

Work's tutor: MSc Tomasz Kozioł

Background: Methylene blue is a drug known from its inhibition of cGMP/NO pathways which provide vasodilation in septic shock. Researchers investigate if MB usage can decrease mortality rate, time spended on ICU and reduce vasopressors usage by improving hemodynamic results. Multiple studies cover beneficial effects of MB on the hemodynamic instability but its impact on mortality seems to be unknown.

The aim: The aim of this review was to investigate potential benefits of use of MB in septic shock patients.

Materials and methods: Two investigators independently performed a literature search in the PubMed, Scopus, Embase and Clinicaltrials.gov databases for eligible articles using phrases: "methylene blue" and "septic shock". The review was performed according to the PRISMA guideline. Inclusion criteria were: "adult patients with septic shock treated using MB", and whereas exclusion criteria: "review, expert opinion or case report study type". Risk of bias assessment of studies was performed. The primary outcome was mortality. The meta-analyses of randomized controlled trials (RCT) was performed.

Results: 17 studies were chosen as eligible (including 3 RCTs), with a total population of 846 patients. RCTs have not shown significant reduction of mortality after MB therapy compared to placebo OR: 0.56 (CI 95%: 0.26-1.21, p=0.14, I2=0%). Main hemodynamic result of MB infusion was increased MAP. It also reduced vasopressors usage, inflammation, lactate levels and normalized cardiac index. The MB administration was also correlated with lower incidence of renal failure. Despite general improvement of hemodynamic parameters after MB, some patients had a tendency to have no response to this drug. No significant adverse effects were reported.

Conclusions: MB impact on mortality still requires further investigations on bigger cohorts of patients in RCTs, although the tendency of reduced mortality is visible in nonrandomized studies. We also suggest that the factors which have an impact on responding to MB therapy should be uncovered.

Keywords: methylene blue, shock, intensive care

Leaky gut, disfunctional lungs – applying zonulin to respiratory diseases

Julia Szlążek[1], Aleksandra Broniak[1]

1. Department of Internal Medicine, Autoimmune and Metabolic Diseases, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: lek. Aleksandra Pilśniak, lek. Marta Pietrukaniec, prof. dr. hab. n. med. Michał Holecki

Background: Zonulin, which is primarily known for its involvement in the function of the intestinal barrier, regulates the opening and closing of the tight junctions between intestinal cells. Elevated zonulin levels can increase permeability, allowing allergens and pathogens to worsen respiratory conditions. While it has been studied extensively in autoimmune diseases, recent interest in its role in respiratory health has prompted this review.

The aim: A systematic review of the significance of zonulin, a biomarker of intestinal permeability in respiratory diseases.

Materials and methods: Pubmed, Scopus and Embase were searched to find relevant articles describing the use of zonulin in various pulmonary diseases. 107 articles were found after entering the keywords: zonulin, lungs, respiratory in databases. As a result of the selection, articles that did not meet the inclusion criteria for the subject of the study and the type of publication with duplicates were removed, while 35 publications (2013-2024) remained for analysis.

Results: The review revealed a correlation between elevated zonulin levels and SARS-CoV-2, multisystem inflammatory syndrome, asthma, COPD, and interstitial lung diseases. Zonulin-mediated changes play a key role in the production of proinflammatory cytokines that could potentially contribute to the development or progression of lung inflammation. Clinical studies investigating the modulation of gut permeability as potential therapeutic targets for respiratory diseases could provide further insights into the complex relationship between the lung and gut.

Conclusions: Future research is needed to investigate the potential role of zonulin as a target for prevention
strategies in respiratory diseases and studying the relationship between disease severity and zonulin concentration. Investigating the mechanisms by which zonulin contributes to disease pathogenesis and identifying therapeutic interventions that modulate its activity could lead to new approaches for prevention and treatment of respiratory diseases.

Keywords: zonulin, biomarkers, respiratory diseases, leaky gut

Does “vaping” mean “ exacerbating” in skin diseases? – E-cigarettes in dermatology

Paulina Rutecka[1], Dawid Wolak[1]

1. Department of Dermatology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work’s tutor: lek. Karina Polak

Background: Electronic cigarettes (e-cigarettes) that were invented in China in 2003 and then introduced to the market in 2004, have been gaining world-popularity for several years, making “vaping” a major alternative to regular tobacco smoking. Yet, the data concerning their health effects, including possible influence on the intercourse of dermatological diseases, is still lacking. The authors conducted a systemic review on the reported effects of e-cigarettes, both on healthy skin and in various dermatological diseases.

The aim: There is still a lack of data on the occurrence of dermatological diseases due to e-cigarettes, so the research was performed.

Materials and methods: A review of literature was performed in EMBASE and MEDLINE databases, including keywords such as “e-cigarettes”, “electronic cigarettes”, “vaping”, “skin diseases”, “dermatology”, “skin”. The searching was as broad as possible, including EMTREE and MESH approaches, conducted according to the PRISMA guidelines. 35 results were identified and given further analysis with additional manual research. 11 articles were included in the final analysis.

Results: Electronic cigarettes were identified both as an initiating and aggravating factor in several dermatological diseases, including allergic contact dermatitis, morphea and cutaneous lupus. Vaping resulted in impaired wound healing and thermal injuries in healthy skin. All parts of the e-cigarette (case, the mechanism, the liquid filling) may be involved in causing reported effects.

Conclusions: Electronic cigarettes were reported to have some harmful effects on the skin, possibly contributing to the development of various skin diseases and being a source of thermal injuries. Lack of data from large randomized-control trials, variety of available products, poor compliance concerning reporting the side effects of vaping, short time on the market with lack of long-term follow-up concerning health impact make this topic an important issue to monitor in the future.

Keywords: “e-cigarettes”, “electronic cigarettes”, “vaping”, “skin diseases”, “dermatology”, “skin”

Concha Bullosa in Romanian Patients: Prevalence, Morphological Classification, and Clinical Significance

Maria-Bianca Andrei[1], Alexandru Calin[1]

1. General Medicine, Medicine, "Grigore T. Popa" University of Medicine and Pharmacy Iasi

Work's tutor: Lecturer Alin Horatiu Nedelcu MD, PhD

Background: The pneumatized cavities within the skull exhibit numerous anatomical variants, with the aberrant pneumatization of the middle turbinate being notable both in prevalence and clinical impact. While anterior or posterior rhinoscopy can clinically identify this anomaly, spiral computer tomography (CT) and cone-beam computed tomography (CBCT) scans serve as the gold standard for diagnosis.

The aim: The aim of our study is to determine the prevalence of concha bullosa (CB) in the Romanian population and its distribution according to sex and age groups. Moreover, we propose a new clinical classification based on CB morphology and this review highlights the association between concha bullosa and rhinosinusitis.

Materials and methods: We conducted a retrospective randomized study involving 105 non-traumatic patients (mean age 60.34 Ī 20.48 years) who underwent cranio-cerebral CT scans between 01.07.2023 - 31.12.2023 at the Iasi Clinical Rehabilitation Hospital. Artifact-free CT datasets containing the entire viscerocranium and skull base were included, while the exclusion criteria were CT scans of patients with a history of skull trauma.

Results: 57 out of 106 patients (53.77%) presented concha bullosa, with 30 (28.3%) having bilateral and 27 (25.47%) unilateral forms. Statistical tests showed a uniform distribution across age and gender groups. Our proposed classification revealed nine subtypes, with statistical significance ($p = 0.00092$) observed between subtypes I (A, B, C) and II (A, B, C), indicating a predominance of the lamellar type over the bulbous type.

Conclusions: Concha bullosa exhibits a high prevalence in the studied cohort and shows no significant variations related to age or sex, supporting its malformative origin. Our proposed classification offers improved understanding of the local mass effect caused by CB.

Keywords: concha bullosa, rhinosinusitis, rhinogenic headache

Global perspectives on atopic dermatitis: clinical phenotypes and immune responses among diverse populations

Joanna Zygadło[1]

1. Department of Pediatric Pneumonology and Allergy , Medical University of Warsaw, Warsaw, Poland

Work's tutor: Karolina Dumycz MD, Wojciech Feleszko MD PhD

Background: Atopic dermatitis (AD) is a chronic inflammatory skin disorder with a heterogenous etiology involving genetic predisposition factors, environmental triggers and immune dysregulation. Despite its global prevalence, existing literature primarily focuses on Western populations, resulting in a limited understanding of the diverse clinical presentations and immune responses observed among various ethnic groups.

The aim: This review aims to elucidate the variations observed in AD among European, American, African, East Asian, and Southeast Asian patients.

Materials and methods: We included data from the accessible peer reviewed literature extracted from online databases including PubMed, Embase, Scopus, Medline, Web of Science and Google Scholar. Each database was last searched on December 21 th 2023 and 51 studies that met the selection criteria were included. We excluded: case reports and reports with missing/insufficient data.

Results: Ethnic diversity significantly influences the clinical presentation and immune mechanisms underlying AD. While Asian patients often exhibit a Th17-dominant immune response, African individuals manifest a robust Th2/Th22 skewing with limited Th17 involvement. Clinical features, such as the absence of erythema in African patients, pose challenges in accurate diagnosis and may require alternative assessment approaches. Furthermore, disparities in filaggrin and filaggrin-2 mutations contribute to the heterogeneous nature of AD severity and treatment response across ethnic groups.

Conclusions: By prioritizing inter-ethnic comparisons in AD research, we can advance our understanding of disease pathogenesis and pave the way for more inclusive and effective healthcare interventions tailored to the needs of diverse populations. Embracing ethnic diversity in dermatological research and clinical practice is key to achieving equitable healthcare delivery and optimizing outcomes for patients with AD worldwide.

Keywords: atopic dermatitis, dermatology, ethnic differerences, skin of color

The impact of sarcopenia on postoperative complications after pancreaticoduodenectomy

Jakub Ciesielka[1], Krzysztof Jakimów[1]

1. Department of Gastrointestinal Surgery, , Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Beata Jabłońska

Background: Patients with periampullary malignancies often suffer from sarcopenia and sarcopenic obesity. The tumor microenvironment, immunological response, and the relationship of the tumor to surrounding tissues play a key role in the pathophysiology of those conditions. The best method to assess sarcopenia and sarcopenic obesity is a computed tomography.

The aim: The aim of this review was to establish whether there is an association between preoperative sarcopenia and the occurrence of postoperative complications in patients undergoing pancreaticoduodenectomy for periampullary malignancies.

Materials and methods: Between November and December 2023, 254 studies from the PubMed and SCOPUS databases were identified. 26 of them were included in this review regarding the inclusion and exclusion criteria.

Results: Several postoperative complications were associated with sarcopenia and sarcopenic obesity. The one that was most frequently reported was postoperative pancreatic fistula (POPF) type B and C with odds ratio established between 2.65 (95%CI 1.43–4.93, p=0.002) and 4.3 (95%CI 1.154–16.005, p<0.03). Delayed gastric emptying (DGE, OR 6.042, 95%CI 1.131–32.319, p=0.036), infectious complications, postoperative hemorrhage, and intraabdominal abscesses were also among complications within 30 days after the surgery. Sarcopenic patients tended to stay longer in a hospital and were more likely to be admitted to an intensive care unit (ICU). Median overall survival was also shorter in patients with sarcopenia. Sarcopenia-burdened patients may benefit from multifactorial prehabilitation which seems to reduce the incidence of some postoperative complications but more studies are needed.

Conclusions: A higher incidence of postoperative complications including POPF (type B and C), DGE, and infectious complications is associated with sarcopenia and sarcopenic obesity. Sarcopenic patients also exhibited longer duration of hospitalization and a higher incidence of ICU admissions.

Keywords: sarcopenia, muscle atrophy, pancreatic cancer

The role of sex hormones in physiological adaptation and athletic performance in women with hyperandrogenism

Kamil Górecki[1], Aleksandra Kępczyńska[1], Przemysław Prokop[1]

1. Department of Anatomy, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Tomasz Lepich

Background: Hyperandrogenism in women's sports, has been the subject of many controversies, discussions and debates internationally for years. It concerns the participation of women with elevated testosterone concentrations in sports competitions, especially in disciplines where physical strength and performance are crucial. Gender categorization in sports has a biological basis and stems from significant physiological differences between men and women. Its purpose is to provide fair competition. The issue of hyperandrogenism in sports often comes up in the context of controlling the fairness of competition.

The aim: The purpose of this review is to define the effects of sex hormones on female body metabolism, particularly elevated androgen levels, and to demonstrate the impact on athletic performance in elite athletes.

Materials and methods: A systematic review explored the link between androgen levels and athletic performance improvement. Google Scholar was searched using keywords like 'hyperandrogenism', 'female athlete', 'sexual development disorders' and 'free androgen index'. Only articles in Polish and English published after 2010 were included.

Results: The literature review identified 25 publications concerning the direct influence of hormones on muscle mass and strength growth, as well as the endurance capabilities of the female body. 14 articles demonstrated a significant impact on achieving better results by professional athletes in competitions depending on serum androgen levels. Mild hyperandrogenism was associated with greater muscle strength in upper/lower limb exercises and positively influenced maximum oxygen uptake, thereby affecting endurance test results.

Conclusions: In sports, success depends on many aspects.Testosterone plays a key role in sports performance and gender differences. Hyperandrogenism in women's sports raises many contradictions and ethical challenges, which requires oversight by legislation and international organizations.

Keywords: hyperandrogenism, female athlete, disorders of sex development, free androgen index

Metabolic effects of deep brain stimulation in Parkinson's disease – systematic review and meta-analysis.

Julia Węgrzynek-Gallina[1], Amadeusz Kasprzyk[1], Michał Borończyk[11]

1. Department of Neurology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Tomasz Chmiela, dr hab. n. med. Joanna Siuda

Background: Deep brain stimulation (DBS) is an effective therapy for patients with advanced Parkinson's disease (PD). The significant improvement in motor symptoms is undoubtedly. However side effects of the procedure sometimes appear as well.

The aim: Several sources observe the metabolic changes after the procedure. However there is no summary of current knowledge about the impact of DBS on metabolic parameters changes expressed in weight gain in PD individuals, that could guide further research.

Materials and methods: A systematic review was conducted on articles evaluating a gain of weight after DBS in patients with PD following PRISMA recommendations. Four databases were searched by two independent authors according to established criteria. Collected data involved body mass, body mass index (BMI) or changes in these parameters before DBS and after the procedure, mean age of patients, disease duration, gender, L-dopa equivalent daily doseand The Unified Parkinson's Disease Rating Scale part III.

Results: Among 1290 articles found, 28 were evaluated as eligible and involved into analysis. Total number of patients enrolled in analyzed studies was 950. Mean age of patients at baseline range from 51.8Ī8.3 to 66Ī8 years.The mean body weight was higher by 6,15 kg one year after DBS-STN procedure ($p<0.001$, 95% CI: 4.49-7.81), which was associated with statistically non-significant heterogeneity. It showed an increase of BMI was 1.87 kg/m2 ($p<0.001$, 95% CI: 1.11-2.64). In a comprehensive review possible causes of this state were assumed, as well as impact on glucose and lipid profile.

Conclusions: DBS procedures contribute to significant weight gain in PD patients. A precise mechanism of this phenomenon has several different possible explanations. Until this issue is fully clarified, it seems to be necessary to continuously monitor metabolic parameters and pay accurate attention to cardiometabolic risk in this specific group of patients.

Keywords: Parkinson's disease, deep brain stimulation, weight gain, lipid profile, glucose metabolism

Safety and Efficacy of Local Anesthesia in Facelift Surgery: A Review of Patient Outcomes and Complications

Rohit Ganduboina[1], Palak Dutta[2], Cankutay Muderrisoglu[2], Keerthi Palagati[3], Sai Sweta Kanigicherla[4]

1. , NRI Institute of Medical Sciences

2. , Kyiv Medical University

3. , Goverment Medical College, Anantapur, India

4. , Dr Patnam Mahender Reddy Institute of Medical Sciences

Work's tutor: Dr. Indraneil Mukherjee (MBBS, MD, FACS)

Background: Facelift surgery, a sophisticated procedure for facial rejuvenation, has evolved over the past century. Historically, general anesthesia was used, posing risks and requiring longer recovery periods. Recent surgical innovations have allowed for local anesthesia, prioritizing patient well-being. This shift has led to research establishing facelift surgery as a secure, efficient outpatient procedure, allowing patients to undergo facial rejuvenation and be discharged on the same day.

The aim: The study explores the use of local anesthesia in facelift surgery, focusing on safety, effectiveness, patient outcomes, potential complications, and management strategies, aiming to provide a comprehensive understanding of this emerging method.

Materials and methods: A literature review was conducted using databases PubMed, Google Scholar, and Cochrane Library yielding 395, 800, and no results respectively.

Results: The study primarily focused on female patients. Smoking was the predominant health condition associated with negative consequences, with Lidocaine being the primary drug used. Combinations of bupivacaine and ropivacaine were used, with epinephrine as the predominant additive. Combining lidocaine and epinephrine allowed for larger doses and slower absorption. Adverse reactions included infections, contusions, and edema. Limited studies investigated using Tranexamic acid (TXA) as a substitute for epinephrine in bleeding management, but research showed a decrease in both bleeding and drainage.

Conclusions: Local anesthesia, particularly lidocaine with epinephrine, is a popular choice for facelift procedures due to its safety and efficacy. It allows patients to maintain consciousness, regulate blood pressure, reduce hematoma risk, and prevent nausea and vomiting. The study found low incidence of surgical site infections and no local anesthetic toxicity, proving its effectiveness in facelift procedures.

Keywords: Facelift, Local Anesthesia, Epinephrine

Antiplatelet drug resistance in vascular surgery patient – clinical implications.

Anna Gwóźdź[1], Dorota Woźniak[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Tomasz Urbanek

Background: The majority of patients undergoing vascular surgery, in the perioperative period, are typically prescribed antiplatelet drugs, such as acetylsalicylic acid (ASA) and clopidogrel. Currently, there is insufficient conclusive data regarding both the frequency and underlying causes of antiplatelet drug resistance observed in vascular surgery patients who are prescribed ASA and clopidogrel.

The aim: The purpose of this study was to evaluate platelet functionality amongst patients undergoing vascular surgery who were administered ASA and/or clopidogrel.

Materials and methods: We conducted an examination involving group of patients treated the Department of General Surgery, Vascular Surgery, Angiology and Phlebology in Katowice. Platelet function assessment was performed via two distinct platelet function tests: one utilizing adenosine diphosphate (ADP) to evaluate resistance to clopidogrel and the other utilizing arachidonic acid to assess resistance to ASA. In the paper the result of the analysis of 100 patients undergoing endovascular and open vascular procedures were analyzed.

Results: Resistance to ASA was identified in 64% of tested patients, while resistance to clopidogrel was observed in 34%. Examination of demographic variables such as sex and age within the study population indicated no significant association with resistance to these antiplatelet drugs. The number of haemorrhagic and ischaemic complications during vascular procedures was comparable between both patient groups. This may be caused by the proper management and medication adjustments in order to counteract the resistance. However, the result was not significant, so it is crucial to enlarge the patient database to establish conclusive results (which is currently performed).

Conclusions: The topic of antiplatelet drug resistance among vascular surgery patients remains insufficiently explored. Consequently, there is a need for additional research efforts to enhance patient care strategies.

Keywords: resistance to aspirin, resistance to clopidogrel, vascular surgery, antiplatelet drugs

Clinical outcomes in patients with peripheral arterial disease and femoral amputations

Klaudia Jurkowska[1], Klaudia Wojciech[1], Jakub Milczarek[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof.dr hab.n.med.Tomasz Urbanek

Background: Femoral amputation is one of the most common consequences of critical lower limb ischemia. The cause may be arterial thrombosis, including stent or bypass, or popliteal artery aneurysm. The initial symptoms appearing in the patient may be intermittent claudication, rest pain, and as the duration of ischemia increases, ulceration and then necrosis may occur.

The aim: Evaluation of complications of femoral amputations in terms of patient survival and their further prognosis.

Materials and methods: The analyzed group consisted of 37 women (31,4%) and 59 men (68,6%), who had femoral amputation in the Department of General and Vascular Surgery, Angiology and Phlebology between January 2021 and December 2022. The average age of the women was 72 and the men 69. We collected data about risk factors, cause and length of hospitalization and treatment complications.

Results: The most common procedure was primary femoral amputation (83,7%) and the main cause of hospitalization was critical ischemia with constant pain and necrosis (64,0%). In the majority of patients, the cause of ischemia was arterial thrombosis. Postoperative complications occurred in 30,2% patient with femoral amputations. 21 patients died (24,4%: 42,9% women and 57,1% men).

Conclusions: Femoral amputation is a surgical procedure that can be used to save patients' lives. In most cases, patients who undergo this procedure do not experience severe postoperative complications however, the high in hospital mortality rate correspond with the significant advancement of cardiovascular disease (especially heart ischemic disease) in the study group.

Keywords: peripheral vascular disease, ischemia of lower limb, femoral amputations

Medical compression by short stretch bandage - how many tries does it take to acquire the proper technique?

Emilia Borys[1], Maria Kuczera-Jarosz[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr n. med. Tomasz Urbanek

Background: Medical graduated compression belongs to the effective treatments of venous and lymphatic system diseases. The use of bandages, including short stretch bandage requires the proper application technique and experience which often makes their application challenging.

The aim: Assessing the learning curve for the proper short stretch bandage application to achieve the optimal clinical results in patients with lower limb vascular disease.

Materials and methods: The study was made on the group of medical students who got the task to learn proper lower limb bandaging with double layer short stretch bandage (Rosidal K). The way of bandaging was shown to the students and two layer bandage efficacy (applied by the students) was verified by the subbandage pressure measurements using a Kikuhime device. The pressure gradients and maximum subbandage pressures were checked during each trial. The number of trials to achieve the optimum results was noticed.

Results: The duration of bandaging in the initial phase of training ranges from 7 to 17 minutes and was significantly shorter in the later phase of excercises. The number of the trials to achieve the proper bandaging was from 5 to 20 when performed by medical students. However, the proper subbandage pressure was achieved only in 45% of the study cases. In the study subjects the pressure at the level of the ankle ranges from 19 to 65 mm Hg. The study is continued on the larger group of medical students.

Conclusions: The proper application of the medical graduated compression with the dedicated short stretch bandage remains the challenging problem not only for the patients but also for health care proffesionals. To achieve the optimal results, the proper training should always be included.

Keywords: medical graduated compression, short stretch bandage

Non-medical compression – does it matter?

Ewa Wiaderny[1], Aleksandra Zaremba[1], Kamila Wolak[1]

1. Department of Human Nutrition, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice

Work's tutor: prof. dr. hab. n. med Tomasz Urbanek

Background: Compression therapy is commonly used for effective treatment of lymphatic oedema and oedema caused by venous diseases. Consideration should be given to the daily wearing of tight-fitting trousers and their potential impact on the physiology of the venous system of the lower extremities, particularly the venous flow gradient.

The aim: In our study, we focused on comparing the pressure exerted by tight pants to that of medical compression stockings.

Materials and methods: The Kikuhime device allowed us to measure the pressure exerted by everyday trousers such as skinny, slim, straight and leggings worn by young women. Measurements were taken at point B (above the medial malleolus), point B1 (apex of gastrocnemius muscle), point C (the greatest circumstance of the lower leg's medial side), point F (half the distance between inguinal ligament and quadriceps tendon), point H (below the inguinal ligament) in different positions (standing, sitting and supine position). Subsequently, the results were compared to the pressure values measured under second-degree compression stockings.

Results: The arithmetic means of pressure collected from skinny jeans were significantly lower in point B (4,47 mmHg) than pressure measured in point B1 (10,6 mmHg) and point C (12,4 mmHg) in sitting position. Pressure measured in supine and standing positions in skinny jeans and all positions in slim jeans also showed similar dependency. However, measurements from under second-degree compression stockings showed different results. In point B the pressure was larger (36 mmHg) than point B1 (29 mmHg) and C (22 mmHg).

Conclusions: Based on the obtained results, it can be noted that the pressure exerted by everyday clothes differs significantly from the graduated compression provided by compression stockings and may potentially be harmful to individuals with tendencies for oedema and venous diseases.

Keywords: non-medical compression, venous diseases

Preoperative NLR in predicting postoperative complications in patients with colorectal cancer

Wiktoria Bajek[1], Agnieszka Partyka[1], Paulina Wietrzycka[1]

1. Department of Gastrointestinal Surgery, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Beata Jabłońska

Background: Colorectal cancer is one of the most common causes of cancer death worldwide. It is necessary to identify patients with a poor prognosis or a high risk of recurrence. Neutrophil-to-lymphocyte ratio (NLR) belongs to the most efficient biomarkers to predict prognosis in various types of cancer.

The aim: Analysis of the association between preoperative NLR, clinical data and postoperative complications.

Materials and methods: The medical records of 71 pts (64.79% M) undergoing surgery for colorectal cancer in the Department of Digestive Tract Surgery in Katowice between March of 2023 and March of 2024 were analyzed retrospectively. NLR was calculated. The NLR cutoff value for development of complications was determined as 3.70 with the sensitivity as 53.7% and specificity as 70.6%.

Results: The analyzed cohort was divided into 2 subgroups: pts with NLR ≤ 3.70 and NLR > 3.70. In both groups predominance in males was observed (29, 74.36% vs 17, 53.13%, p=0.05). Considerably lower median age (68, 41-84, IQR 12 vs 73.5, 47-91, IQR 11.5, p=0.008) and higher mean BMI (27.16±4.63 vs 25.30±2.89, p=0.04) was noted in group with NLR > 3.70. Occurrence of symptoms (26, 66.67% vs 25, 78.13%), comorbidities (34, 87.18% vs 30, 93.75%), positive family history in terms of cancer (14, 35.90% vs 14, 43.75%) and positive history of smoking (9, 23.08% vs 4, 12.50%) was similar in both groups (p>0.05). In total, 17 (23.94%; 12, 30.77% vs 5, 15.63% p=0.11) patients experienced complications and 9 (12.68%) had to be reoperated on. Statistically significant positive correlation between preoperative NLR and TNM staging (UICC) was detected (r=0.35, p=0.01).

Conclusions: In the analyzed group, colorectal cancer was more frequently reported in males. Higher NLR was associated with higher BMI and lower age. No association between NLR and occurrence of symptoms, complications, comorbidities rate, positive family history in terms of cancer and positive history of smoking was noted. Higher NLR correlated with more advanced TNM staging.

Keywords: neutrophil to lymphocyte ratio, colorectal cancer

Critical leg ischemia treatment in the postpandemic era

Sandra Gołąbek[1], Aleksandra Pytlarz[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr n. med. Tomasz Urbanek

Background: Critical ischemia of the lower limbs is a serious clinical condition affecting an increasing number of patients, resulting from the progression of atherosclerosis. It is characterized by a significant reduction in blood flow and blocking of the arteries supplying blood to the lower limbs, which leads to pain at rest, ulcerations and even tissue necrosis.

The aim: An evaluation of the critical leg ischemia treatment results in the pospandemic era.

Materials and methods: Among patients admitted to the department of general surgery, vascular surgery, angiology and phlebology after July 1, 2022, 92 cases with critical lower limb ischemia were selected.
Treatment results were assessed, including limb preservation, perioperative complications and deaths.

Results: In the study group of patients with critical limb ischemia, surgical treatment enabled limb preservation in 90.5% of patients, and two deaths were recorded. Significant peri- and post-procedural complications were recorded in 7.6% of patients, including 3.2% of them were systemic complications. Long-term results of treatment under development.

Conclusions: The reconstructive, endovascular and classic surgical treatments used significantly prevent permanent disability due to amputation. Early diagnosis of critical ischemic changes, even before the occurrence of advanced necrotic changes, is a justified indication for urgent hospitalization and an attempt at reconstructive treatment.

Keywords: ischemia, amputation, atherosclerosis, diabetes, limbs, necrosis

Metastatic renal cell carcinoma to the pancreas: clinicopathologic characteristics and surgical outcome

Joanna Rak[1], Monika Bonczek[1]

1. Department of Gastrointestinal Surgery, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr hab. n. med. Beata Jabłońska

Background: Metastatic renal cell carcinoma (mRCC) is one of the most common metastasis to the pancreas. However, mRCC diagnosis is challenging due to its often asymptomatic course and the occurrence many years after radical nephrectomy.

The aim: The aim of our study was to describe the incidence, clinicopathologic characteristics, surgical treatment and outcome of mRCC.

Materials and methods: The medical records of 25 patients undergoing surgery for mRCC in Department of Digestive Tract Surgery from 2014 to 2023 were retrospectively analyzed.

Results: There were 10 (40%) women and 15 (60%) men, aged 64Ī7.6 (52-77) years in the analyzed group. The mean period between nephrectomy and pancreatic metastasis resection was 10Ī7.3 (1-29) years. Five (20%) patients had previous surgery for mRCC, among them 2 (8%) had distal pancreatectomy (DP). Most patients were asymptomatic (n=23; 92%). The mRCC was most frequently located in the pancreatic tail (n=7 (28%)), followed by body (n=4 (16%)), head (n=4 (16%)) and whole pancreas (n=4 (16%)). The remaining patients had metastases located in several parts of the pancreas (n=5 (20%)). DP (n=15 (60 %)), pancreaticoduodenectomy (PD) (n=9 (36%)) and total pancreatectomy (n=1 (4%)) were performed. The postoperative complications occurred in 9 (36%) patients. The most frequent complication was intra-abdominal fluid collection (n=3 (12%)). Postoperative mortality was 8% (n=2). The histopathological examination revealed the presence of 1-44 metastases (average number of tumors was 4), with a mean size of 26Ī12.9 (1.5-48 mm). 14 (56%) patients had multi-focal pancreatic metastases. Histopathological G2 grading (n=14 (56%)) was the most common.

Conclusions: The mRCC to the pancreas typically is asymptomatic and emerges more than 10 years after primary nephrectomy, often as multiple foci. Although usually partial pancreatectomy is performed, some patients require another surgery due to the mRCC in the remaining pancreatic parenchyma.

Keywords: metastatic renal cell carcinoma, pancreatic metastasis, metastasectomy, pancreatectomy

Biological graft implantation procedures in patients with an infected artificial graft– retrospective analysis

Wiktor Kruczek[1], Michał Serafin[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: dr n. med. Agnieszka Święszek

Background: The development of grafts has revolutionized vascular surgery. One of the primary objectives in saving life and limbs during graft implantation is minimizing the incidence of recurrent infection. Prosthetic infection is an uncommon but severe complication in vascular surgery and is associated with a high mortality and morbidity rate. Biological grafts could be a promising advancement.

The aim: Our study aimed to evaluate the safety and efficacy of biological graft implantation and assess crucial re-operation causing risk factors.

Materials and methods: The data were retrospectively collected from patients' past medical records. Between 01.2020 and 12.2022, 12 patients underwent reoperation of infected prosthesis using biological graft. Postoperative outcomes - procedural success and complication rates were assessed during the hospital stay and the follow-up period. Long-term outcomes and improvement in patient quality of life were evaluated. Statistical analysis were conducted.

Results: The median patients' age was 66,5 years (range, 56-77 years) with 66,7% men and 33,3% women. 3 types of biological prosthesis implantation were performed: femorofemoral crossover bypass, aortofemoral bypass and aortobifemoral bypass. Mean hospital length of stay was 21 days. Statistical analysis including Kaplan–Meier estimator has shown that 3-month post operation period is crucial. A correlation between lower early survival rate and either lower BMI or higher glucose level has been observed. After a 18-month follow up, 33% of our patients with biological grafts survived. The follow up is pending.

Conclusions: Vascular prosthesis infection is an infrequent but very difficult condition and it is still associated with a high mortality rate. Improving the safety and efficacy of biological grafts, identifying new ways to optimize their performance with awareness of risk factors is a main purpose in further research. The preliminary results suggest that biological grafts implantation could be a promising way to cope with grafts infections.

Keywords: biological grafts, infections, re-operation

Comprehensive Patient Education in EndoVenous Laser Ablation: Exploring contraindications, outcomes and complications

Jonasz Osiecki[1], Aleksandra Podraszka[1]

1. Department of General and Vascular Surgery, Angiology and Phlebology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: prof. dr hab. n. med. Tomasz Urbanek

Background: EndoVenous Laser Ablation is gradually replacing traditional surgical methods for treating varicose veins. EVLA involves using a fiber optic inserted into the malfunctioning vessel, causing it to shrink and then close the diseased vein. This method is popular due to its short operation time, reduced bleeding and lack of postoperative scars. However, like any medical procedure, complications may arise. Patients should receive comprehensive information about the procedure, contraindications, complications, as well as postoperative care.

The aim: We decided to verify the quantity and quality of information reaching patients regarding the procedure and its complications. We also wanted to assess the level of education provided to patients by medical staff regarding post-procedural care.

Materials and methods: A study was conducted analyzing data gathered from the websites of 50 medical centers in Poland offering endogenous laser ablation treatment. The information provided by these centers was categorized into five primary sections: general details about the procedure, description of indications, details on contraindications, guidelines for post-procedure care, and potential complications.

Results: Among the data analyzed, less than a half because only 46% of medical centers provided information on contraindications to potential patients, while just 42% mentioned possible procedur complications on their websites. The most frequently cited complications were pain in the treated area, discomfort and skin discoloration. Unfortunately, information about the most serious complications such as deep vein thrombosis or pulmonary embolism was only indicated in 10% od the surveyed clinics.

Conclusions: Medical centres specializing in the treatment of varicose veins present EVLA as a minimally invasive, painless procedure, which carries minimal risk of complications for the patient. To attract patients medical clinics only inform patients about the indications for the procedure, but do not provide information about the complications.

Keywords: Varicose veins, endovenous laser ablation, contraindications,

Video-Based Multimedia Information in Reducing Pre-Operative Anxiety, a randomized interventional study.

Rohit Ganduboina[1], Palak Dutta[2], Keerthi Palagati[3], Arjun Sreekumar[4], Rama Chandra Mohan[5]Jerry Lorren Dominic[1]

1. Department of Medicine and Surgery, NRI Institue of Medical Sciences, Visakhapatnam, India

2. Department of Medicine and Surgery, Kyiv Medical University, Kyiv, Ukraine

3. Department of Medicine and Surgery, Government Medical College, Anantapur, India

4. Department of Medicine and Surgery, K S Hedge Medical Academy, Mangaluru, India

5. Department of Surgery, NRI Institue of medical sciences, Visakhapatnam, India

Work's tutor: Dr. Indraneil Mukherjee (M.B.B.S ,MD, FACS)

Background: Preoperative anxiety negatively impacts patients' healing and well-being, leading to longer hospital stays and depressive symptoms. Multimedia therapies, using videos as standardized information delivery, have shown effectiveness in reducing anxiety.

The aim: The study tested the efficacy of video-based information in reducing pre-surgical anxiety using validated questionnaires and randomized intervention approaches, assessing both preoperative anxiety and postoperative outcomes.

Materials and methods: A randomized, single-blinded trial with 41 participants assessed preoperative anxiety levels using validated questionnaires. Participants were assigned to either a case group or a control group depending on their exposure to pre-operative video. The APAIS and STAI measure anxiety related to surgery, anesthesia, or lack of knowledge.

Results: The study aimed to investigate the effect of a video-based intervention on anxiety levels in 41 patients. The control group consisted of 17 participants, while the video group had 24 participants. Both groups had similar mean ages, but both showed a tendency towards illiteracy. The study found that not all participants completed the questionnaires, with only 14/17 participants in the control group and 14/27 in the video group completing the anxiety scale. Despite this, the video-based intervention showed positive results in decreasing anxiety scores. Further examination of these findings will be conducted in the next section.

Conclusions: The study evaluated the effectiveness of an instructional video intervention in reducing preoperative anxiety. Despite limited completion rates, data analysis showed positive results, indicating the potential of educational interventions in managing anxiety and promoting personalized care protocols. Furthermore, utilizing both APAIS and STAI assessments would yield a more comprehensive comprehension of patient anxiety.

Keywords: Pre-operative anxiety