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ANAESTHESIOLOGY AND INTENSIVE CARE SESSION

Difficult airway management in patients with mandibular fracture

Authors:

Egle Glumbakaite
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Mantas Jaras
Department of Anesthesiology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Lina Kalibatiene
Department of Anesthesiology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Mandibular fracture may predict a difficult intubation [1]. Identification of functional and anatomical changes allows anesthesiologists to anticipate difficult airway, hence, prepare alternative airway devices. Mandibular fracture-related difficult airway management may pose challenges for beginning anesthesiologists, though the management may be less challenging for experienced anesthesiologists [2,3].

Aim

To analyze the link between mandibular fracture-related difficult airway and the use of alternative intubation equipment used by anesthesiologists with different work experience.

Methods

The approval (No.BEC-MF-73) for the research, conducted from October 2019 to October 2020, was granted by the Centre for Bioethics of Lithuanian University of Health Sciences. 33 patients with mandibular fracture were examined before surgery by anaesthesiologists or senior residents. Anesthesiologists were asked to complete a questionnaire on patient demographics. Before the surgery, they also assessed the condition of the patients' airway using Mallampati scoring system. Anesthesiologists were asked to indicate their work experience. The Mann Whitney U test and $\chi2$ were used. P level < 0.05 was considered to be significant.

Results

The mean age of the examined patients (29 male and 4 female), was 37.9 ± 3.02 years. 54.5 % of patients were with normal body composition, 33.3% – asthenic, 12.1% – overweight. Mean time from injury to surgery was 7.06 ± 1.904 days. Mallampati class I was in 6.1 % cases, II - in 24.2 %, III - in 12.1%, IV – in 57%. Mouth opening from 1 to 2 cm was for 48.5% patients. In 93.9 % of cases, the thyromental angle was right. Mallampati score, mouth opening and thyromental angle were not related to the time after injury, age and gender. Although most of the surveyed patients had high score of Mallampati and limited mouth opening, in 94% of intubations visualization of vocal chords was not restricted. It was assessed as Grade I according to Cormack-Lehane. 48.5 % of intubations were performed by senior anaesthesiology residents. In 4 intubations, the oropharyngeal tube or tweezers were used, whereas anaesthesiologists of the department, all of whom with 10(+) years of experience, managed without the aforementioned alternative

devices. Patients with mandibular fracture and mouth opening 1-2 cm usually did not pose intubation difficulties, as limited mouth opening is pain related.

Conclusions

The study revealed that the use of alternative devices is dependent on work experience of anesthesiologists. Nevertheless, difficult airway management equipment has to be readily accessible for all anesthesiologists, regardless of their years of experience.

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The influence of frailty in elderly patients on postoperative outcomes after elective cardiac surgery

Authors:

Dipali Bhardwaj
Lithuanian University of Health Sciences Department of Nursing and Care, Faculty of Nursing,

Judita Andrejaitiene
Lithuanian University of Health Sciences, Faculty of Medicine, Department of Cardiothoracic and Vascular Surgery, Lithuania

Introduction

Despite surgical, anesthetic and medical advances, older surgical patients continue to suffer from adverse postoperative outcomes [1]. Literary review suggests that frailty predisposes elderly patients to worsening outcome after cardiac surgery. That it is important to assess the frail patient before the surgery and determine the risk [2].

Aim

To analyse the influence of frailty in elderly patients on postoperative outcomes after elective cardiac surgery.

Methods

Study was conducted between 2nd of December 2020 and 28th of January 2021 at Hospital of Lithuanian University of Health Sciences Kaunas Clinics. Data on 72 patients after elective cardiac surgery on cardiopulmonary bypass (CPB) were analyzed retrospectively. The patients were assessed and monitored preoperatively, during surgery and in the early postoperative period. Frailty syndrome was evaluated using Edmonton Frail Scale (EFS). The most common postoperative complications may include: cardiac complications (one of either ischemia, congestive heart failure, new arrhythmia or sudden death), shock, hemorrhage, lung (pulmonary) complications, wound infection, deep vein thrombosis (DVT) and pulmonary embolism (PE), renal or neurological dysfunction. The data are presented as the mean and the standard deviation (M(SD). Differences were considered as statistically significant at p<0,05.

Results

Preoperatively, frailty syndrome was identified 52.8%. The study revealed that frailty was found more frequently in older patients: in pts aged 75-79 yrs., frailty was found 72.2%, in pts older than 85 yrs. - 100%, in the 65-69 yrs. group, frailty was 28.6%. Frailty is more common in patients with heart failure 21.1% (p=0.030). The duration of anesthesia was longer in pts with mild frailty (344.07±68.89) than in pts without frailty (296.6±62.28) or moderate/severe frailty (284.55±36.98), (χ^2=10.118; df =2; p=0.006). The duration of CPB was longer (107.19±42.47) in those with mild frailty than in those pts with no evidence of frailty (93.39±20.91) or moderate / severe frailty (7±21.9), (χ^2=8.354; df=2; p=0.015). Patients with frailty syndrome more frequently had complications of rhythm/conduction 17.6% (p<0.05) during the intraoperative period. Patients with more pronounced frailty had longer length of stay in the hospital: pts with moderate frailty prolonged length of stay in the hospital (13.36±8.87) than pts without frailty (8.58±5.66) or mild frailty (11.76 ±7.66), (χ^2=6.421; df=2; p=0.040). Length of stay in the hospital depended on the level of frailty (r=0.268; p=0.026).

Conclusions

This study illustrates the complexity of frailty assessment and reveals the importance of the older patient's problem. The rate of surgical procedures in the older population is rising and the preoperative period is an ideal time for baseline assessment to guide both perioperative optimization and management. It is important to assess the frail patient before cardiac surgery, identify risks and anticipate the post-operative measures.

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The influence of cardiopulmonary bypass on acute renal failure after cardiac surgery

Authors:

Sakshi Rana
Department of Nursing and Care, Faculty of Nursing Lithuanian University of Health Science

Judita Andrejaitienė
Lithuanian University of Health Sciences, Faculty of Medicine, Department of Cardiothoracic and Vascular Surgery, Lithuania

Introduction

Acute renal failure (ARF), characterized by sudden loss of the ability of the kidneys to excrete wastes, concentrate urine, conserve electrolytes, and maintain fluid balance, is a frequent clinical problem, particularly in the intensive care unit, where it is associated with a mortality of between 50% and 80% [1]. Renal dysfunction following cardiopulmonary bypass (CPB) is well recognized but causes of acute postoperative renal impairment are not fully understood yet. It is believed that the ARF is influenced by low perfusion pressure (PP) during cardiac surgery on CPB [2].

Aim

To identify ARF risk factors and their influence on post-operative outcomes and to evaluate the influence of cardiopulmonary bypass perfusion pressure (PP) on postoperative acute renal failure development

Methods

Study was conducted between 2nd of December 2020 and 28th of January 2021 at Hospital of Lithuanian University of Health Sciences Kaunas Clinics. The study was approved by the Ethics Committee. Data on 179 patients after elective cardiac surgery on CPB were analysed retrospectively .In the study adult patients with normal preoperative renal function who had been pts subjected to cardiac surgeries procedures on CPB were randomized into three groups: group I (68) with mean PP during CPB 60–69.9 mmHg; group II (59 pts) with mean PP during CPB 50–59.7mmHg and group III (52 pts) with mean PP during CPB 70–86.3 mmHg. Preoperative patient condition, intraoperative and postoperative variables were recorded. The statistical analysis was performed using IBM SPSS Statistics software (v. 23.0). The normality of data was assessed with Kolmogorov–Smirnov test. Groups were compared by independent samples t-test. For nonparametric statistics, a Mann–Whitney U-test was performed for comparison between groups. Pearson correlation analysis was performed to determine the association between two variables. Statistical tests were two-sided, with $p < 0.05$ considered significant.

Results

Incidence of ARF in the early postoperative period did not differ among the groups. We found that urine output during the surgery was statistically significantly lower in group II than in groups I and III. There were 19 cases of ARF (10.6 %), but no one of these patients needed renal replacement therapy (RRT). We found that age (70.0±7.51 vs

63.5±10.54,p=0.016), allogeneic blood transfusion during surgery (31.6% vs 18.4%, p=0.001), complex surgical procedure (valves replacement and/or reconstruction surgery (57.9% vs 27.2%, p=0,011), combined valves and cardiovascular surgery (15.8% vs 1.4%, p=0.004%)), duration of CPB (134.74±62.02 vs 100.59±43.99 min., p=0.003) and duration of aortic cross clamp (75.11±35.78 vs 53.45±24.19min., p=0.001) were most important independent risk factors for ARF.

Conclusions

Our data suggest that low perfusion pressure (PP 50-59.9 mmHg) during CPB did not cause post operative ARF. According to our data there were multiple causative factors for ARF after cardiac surgery on CPB

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The influence of postoperative delirium on post-operative outcomes after cardiac surgery and its relation with sociodemographic factors.

Authors:

Felicia Partey
Department of Nursing and Care, Faculty of Nursing, Lithuanian University of Health Sciences, Lithuania

Judita Andrejaitiene
Department of Nursing and Lithuanian University of Health Sciences, Faculty of Medicine, Department of Cardiothoracic and Vascular Surgery, Lithuania

Introduction

Patients who undergo cardiac surgery have an increased risk of delirium, which is associated with many negative consequences [1]. Postoperative delirium (POD) has been reported to occur in 10 to 60% [2]. However, the incidence of delirium in older surgical patients may be as high as 73% [3].

Aim

To determine the incidence of postoperative delirium after cardiac surgery, to find its relation with sociodemographic factors and influence on post-operative outcomes.

Methods

Study was conducted between 2nd of December 2020 and 28th of January 2021 at Hospital of Lithuanian University of Health Sciences Kaunas Clinics. Data on 90 patients after elective cardiac surgery on cardiopulmonary bypass (CPB) was analysed retrospectively. Subjects were divided into two groups, with postoperative delirium (I group) and non-delirious patients (II group). POD was evaluated using The Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) delirium assessment tool. The data are presented as the mean and the standard deviation (M(SD). Differences were considered as statistically significant at p<0,05.

Results

The incidence of POD after cardiac surgery with CPB was 28%. Average age of delirious patients was significantly higher than non-delirious patients 69.84(±10.01) vs 65.83(±10.61) yrs., p=0.003. The patients in I gr. had higher preoperative risk score: the body mass index was 28.8 (±4.4) (kg/min^2), the majority were male (72.2%), ejection fraction was 46.1(±11.9)%. The analysis of perioperative period showed that average duration of CPB were longer 111.29(±41.05) vs 100.8(±36.87) min, p=0.003. The analysis showed that POD prolonged the length of the ICU stay 5.8(±2.89) vs 3.86(±1.91) days, p<0.001 and patients with POD more frequent was required re-intubation (OR: 13.169, CI 1.456-119.087, p=0.022). Length of stay in the hospital after stay in ICU were 14.51(±11.67) vs 11.10(±9.07) days, p=0.016. Multivariate analysis remained as an independent predictors for POD: age > 70 yr (OR: 2.227; 95% CI 1.325-3.742, p=0.003), ejection fraction < 42% (OR: 2.398; 95% CI 1.397-4.117, p=0.002), duration of CPB > 86 min (OR: 2.068; 95% CI 1.182-3.618, p=0.009). POD may affect the many reasons and a multifactorial risk model such as elderly age, gender, longer duration of CPB and less ejection fraction should be applied to identify patients at an increased risk of developing POD.

Conclusions

Our data suggest that POD is a common complication and worsen patient outcome following cardiac surgery: early postoperative delirium significantly prolonged the length in stay at the ICU and hospital stay after surgery.

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Risk factors associated with an increased risk of deep sternal wound infections in patients after coronary artery bypass grafting and heart defect surgery at the Department of Thoracic, Cardiac and Vascular Surgery of the hospital of Lithuanian University of Health Sciences

Authors:

Migle Vitartaite
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Donata Vaiciulyte
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Jurgita Grigaitiene
Republican Siauliai Hospital, Department of anesthesiology and intensive care, Siauliai, Lithuania

Edmundas Sirvinskas
Department of Cardiothoracic and Vascular Surgery, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Despite improvements over time with regard to morbidity, mortality and long-term survival, deep sternal wound infection (DSWI) continues to be a major complication after an open heart surgery (1,2). This is why it is important to identify possible risk factors for postoperative development of DSWI in patients undergoing coronary artery bypass grafting and valve replacement.

Aim

The aim of this study was to identify the risk factors for postoperative development of deep sternal wound infection in patients after coronary artery bypass grafting and heart defect surgery at the Department of Thoracic, Cardiac and Vascular Surgery of the hospital of Lithuanian University of Health Sciences.

Methods

This retrospective study analyzed 201 patients who underwent coronary artery bypass grafting and heart defect surgery between January 2017 and December 2017. The case group contained 45 patients who had to be reoperated because of deep sternal wound infection and the control group consisted of 156 randomly selected patients. For descriptive statistics we used means, median values, ranges, standard deviations and 95% confidence intervals where appropriate. Categorical data were analyzed using the chi-square or Fisher's exact test. T-test and Mann-Whitney used to compare numerical variables. Logistic regression model adjusting for age, gender, were used to compare the risk of infection. A p value of < 0.05 was considered to be statistically significant. STATA v13 was used for calculations.

Results

Logistic regression analysis revealed that independent risk factors for sternal wound infection were: high BMI (odds ratio [OR] 3.14), long duration of cardiopulmonary bypass (odds ratio [OR] 2.26) and intraoperative anemia (odds ratio [OR] -3.8).

Conclusions

This study demonstrates that higher BMI, anemia, and the duration of extracorporeal circulation are independent risk factors for the development of postoperative deep sternal wound infection.

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Automated cardiopulmonary resuscitation device for pre-hospital cardiac arrest: a single-centre experience of AutoPulse-CPR

Authors:

Elza Anna Norina
University of Latvia

Eva Vitola
University of Latvia

Dzintra Jakubaņeca
State Emergency Medical Service, Riga, Latvia

Introduction

A low quality of cardiopulmonary resuscitation (CPR) predicts adverse out- come. The usage of A-CPR following out-hospital cardiac arrest remains poorly described. Two automatic mechanical chest compression devices – LUCAS and AutoPulse – have been used in Latvia in order to optimize the circulation in patients with cardiac arrest. Objective. To determine the implementation and effectiveness of AutoPulse for out-of-hospital cardiac patients in Latvia.

Aim

To determine the implementation and effectiveness of AutoPulse for out-of-hospital cardiac patients in Latvia.

Methods

A retrospective cross-section study was carried out, involving adult patients with out-of-hospital cardiac arrest with sustained circulatory arrest. The data from State Emergency Service of Latvia regarding the patients resuscitated with mechanical chest compression device – AutoPulse was used in the study. This is retrospective cross-section study on adults patients with out-of hospital cardiac arrest with sustained circulatory arrest. Latvia's Emergency Medical Service data about patients group used to be mechanical chest compression device-AUTOPULSE.

Results

From May 2016 to December 2018, 232 patients, 182 (78.4 %) of those men and 50 (21.6 %) women (p < 0.001) were resuscitated with AutoPulse. The median age for women was 62.5 (12.0–92.0) years and 59.0 (17.0–88.0) for men (p = 0.101). Of those patients, in 70/232 (30.2 %) cases the return to spontaneous circulation and a successful admission to the hospital, 59/70 (84.3 %) were male and only 11/70 (15.7 %) were women. The median age (min-max) of patients who had survived was 58.50 (17–92) years, but in patients' group who died, the median age 60.0 (12–88) years (p = 0.375). The aetiologies of cardiac arrest were followed: unknown cause 126/232 (54.31), the second most common cardiac arrest reason was an acute myocardial infarction in 44/232 (19 %) cases, and Chronic Ischemic heart disease in 23/232 (9.9 %) cases, while non-cardiogenic cause was present in 39/232 (17 %) cases. 68.2 % (30/44) of the patients with myocardial infarction and 14/23 (60.9 %) of the patients with the diagnosis CIHD (p = 0.549) experienced the return of spontaneous circulation and were admitted to hospital. The most common location of cardiac arrest was found to be a patient's residence – 137 (59.1 %) cases, and 95 (40.9 %) – in public places.

Conclusions

AutoPulse is effectively used in Latvia and the study shows a positive outcome. In other studies have also shown that using Autopulse pre-hospital has better rates. The time to return of spontaneous circulation (ROCS) in the group with mechanical compressions was significantly longer (48,3+/- 26 min) than in the group with manual compressions (22,4 +/- ,17 min; p<0,001) .The mechanical compression group also had a higher proportion of ST-elevation acute myocardial infarction as the cause of arrest (Iglesies et al.,2019).

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Does experience of the intubator affect aerosol and droplet generation during intubation: a simulation study

Authors:

Edvards Kalnins
Faculty of Medicine, University of Latvia, Rīga, LATVIA

Marta Silina
Faculty of Medicine, University of Latvia, University of Latvia, Rīga, LATVIA

Sigita Kazune
Department of Anaesthesiology, Riga Stradins University, Rīga, LATVIA

Introduction

COVID-19 pandemic is affecting many countries all over the globe. All the efforts are given to limit the spread of the pandemic, including medical staff being infected when treating patients. For COVID-19 patient management, intubation may be needed, which also is an aerosol and droplet generating procedure. It can promote virus spread via contact, droplet, or aerosolization routes. It is advised that intubation is performed by an experienced intubator as it allows better visualization of the vocal cords and shorter intubation time thus decreasing aerosol and droplet generation time.

Aim

The aim of this study was to examine the duration of the intubation and the extent of contact contamination, droplet spread and aerosolization that occur during intubation in a mannequin study and to compare the results between a certified anesthesiologist and 1st year anesthesiology resident.

Methods

In the experiment an atomiser device containing luminescent fluid was placed into Laerdal Airway mannequin's pharynx and attached to steady(6 L/min) oxygen flow. An anesthesiologist and a resident intubated the mannequin 5 times each using a video laryngoscope while 0.5 mls of luminescent fluid was sprayed through atomiser. The duration of intubation was taken and the droplet spread and contact contamination after intubation was visualised using ultraviolet light and standardised photographs taken. The extent of spread was evaluated using a 4-point Likert scale (0 to 3) by two independent observers. To assure the reliability of the results, the Cohen κ coefficient of interrater reliability between the 2 examiners was calculated. IBM SPSS was used to calculate p and value of less than 0.05 was considered significant.

Results

For experienced intubator contact contamination and droplet spread was 1(0-1) and 2(1-2). For young doctor the results were 2,5(2-3) and 1(0-1) for contact contamination and droplet spread, accordingly. The Cohen κ coefficient was 0.6, which demonstrated substantial agreement between examiners. The mean intubation time was 47($\pm$7)s and 65($\pm$10)s for the anesthesiologist and resident, respectively. There was a statistical significance between the experience of the intubator and the extent of contact contamination (p 0.012), but no strong correlation was observed between the experience and aerosolization and droplet spread.

Conclusions

Intubation done by an anesthesiologist causes less contact contamination. It takes longer for a resident to do intubation.

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Methods and effectiveness of oxygen therapy for patients with COVID-19 in the Hospital of Lithuanian University of Health Sciences Kauno Klinikos, the Department of Anaesthesiology

Authors:

Gintarė Iveta Semėnaitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Viktorija Mačiulytė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Jurgita Borodičienė
Department of Anaesthesiology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been established as a cause of severe alveolar damage and pneumonia in patients with COVID-19. Management of respiratory failure include supplemental oxygen, oxygen delivered through high flow nasal cannulas, non-invasive positive pressure ventilation (NIPPV) and intubation [1, 2]. The wide variation in mortality rates across different intensive care units raises the possibility that the approach to ventilatory management could be contributing to the outcome of the patients [3].

Aim

To analyze and to present features of therapeutic oxygen therapy and outcome of the patients with COVID-19.

Methods

The research was carried out with the permission of the Hospital of Lithuanian University of Health Sciences Centre of Bioethics (No. BEC-MF-232) from November of 2020 to February of 2021. Data was collected from the depersonalized medical histories of 101 patients that were treated in the Hospital of Lithuanian University of Health Sciences Kauno Klinikos, Department of Anaesthesiology, COVID-19 sector ICU. The collected data include the sex of research subjects, their age, comorbidities, application of measures to ensure and maintain their respiratory function and methods of oxygen therapy they have received while in the ICU. The data were analysed using the Microsoft Excel software.

Results

The study involved 101 patients: 52,5% men and 47,5% women. The average age of the patients was 66,31 years. The majority of the patients (94,1%) were multimorbid with comorbidities in cardiovascular (46,1%), kidneys and urinary (21,1%), gastrointestinal (18,9%), neurological (9,5%) systems and oncological (16,8%) diseases. 56,8% of them had two or more comorbidities. 72,82% of the patients had respiratory failure. All of the patients with respiratory failure have received treatment for it. 48,7% of all patients received combination oxygen therapy. 46,2% received oxygen through nasal cannulas or oxygen mask with reservoir. Oxygen therapy through high flow nasal cannulas was used on 28,2% of patients, NIPPV was needed for 26,9% of the patients and 28,8% of the patients were intubated. The combinations of oxygen therapy were various: 15,8% of patients were treated with all four oxygen therapies, 43,6% of patients who were treated in the IUC have died. 43,2% of dead patients required more than one respiratory protection method, 88,6% was intubated. 93,2% of the dead patients had comorbidities.

Conclusions

48,7% of all patients and 43,2% of dead patients have received combination oxygen therapy with various combinations of the measures taken. The most common initial oxygen therapy method for all patients was simple oxygen therapy. The majority of the patients that have died have been intubated for their ventilation management as most of them were in sever condition. The outcomes and measures of Covid positive patients varies, which indicates ventilation management approach should be individualized by each patient's condition and needs.

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Factors associated with extubation and reintubation in NICU patients

Authors:

Migle Jurgelenaite
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Migle Vitartaite
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Neringa Balciuniene
Lithuanian University of Health Sciences Hospital Kaunas Clinics Neurosurgery Intensive Care Unit, Kaunas, Lithuania

Introduction

Patients admitted to neurointensive care may require intubation and ventilation for very different reasons but most common are either central or peripheral neurological pathology. The extubation of these patients is complicated because of extubation failure which leads to reintubation and is associated with increased morbidity and mortality (1,2,3). There are no certain criteria for when extubation is required and standard ICU criteria do not apply to this particular group (2,3). This is why it is important to analyze factors leading to successful extubation of NICU patients.

Aim

To analyze extubation rate and factors associated with successful extubation and reintubation of NICU patients.

Methods

This was a single-centre retrospective analysis of 109 intubated patients due to severe neurocritical conditions during the period of 2019 in LUHS KC Neurosurgery Intensive care Unit (NICU). Inclusion criteria were: not post-operation, intubated at or on arrival to NICU, age ≥ 18, were discharged from NICU. Demographic data, diagnoses, frequency of successful extubations and reintubations were analyzed. Statistical analysis was performed with IBM SPSS Statistics v. 23 and MS Excel 2007 programs. In order to carry out research objectives Mann-Whitney test, Kolmogorov-Smirnov and Chi-Square criteria were used. The significance level of 0.05 was chosen to test statistical hypotheses.

Results

109 patients were analyzed: 71 men and 38 women. Average age 64,39±16,517 years (range 18-92 years). Reasons for ICU admission: traumatic brain injury (46), intracerebral hemorrhage (22), ischemic stroke (16), subarachnoid hemorrhage (9) and other (16) ND. Comparing groups of extubated (n=30, 27,5%) and non-extubated (n=79, 72,5%) (formed tracheostoma) patients there was a statistical significance in age (58,20yr. vs 66,75yr, p=0,036), mechanical ventilation time (4,90d. vs. 6,87d., p=0,0001), GCS before extubation (10,13 vs. 6,06, p=0,0001). Diagnoses of extubated and non-extubated patients weren't significantly different (p=0,786). Ventilation parameters and modes, FiO2, PaO2, RR and diagnoses had no impact on extubation (p>0,05). Out of 30 extubated patients 12 were

reintubated (7 of them had tracheostoma formed, 5 were extubated), 18 patients were successfully extubated. Reintubation reasons: deteriorating consciousness (5), progressing respiratory failure (4), lack of muscle tone, strength to expectorate (1), asystole (1), generalized seizure attack (1). NICU and hospital stays were longer for non-extubated patients than extubated patients (14,15d. vs. 9,83d., p=0,008 and 17,55d. vs. 15,78d., p=0,873). GOS score of extubated patients was higher (3,35 vs. 2,49, p=0,001).

Conclusions

16,5% of patients were successfully extubated. Factors associated with successful extubation of NICU patients are better consciousness (evaluated using GCS), younger age, shorter ventilation time. Most common reintubation reasons are deteriorating consciousness and progressing respiratory failure.

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Stevens-Johnson syndrome and toxic epidermal necrolysis management at the acute phase and outcomes

Authors:

Viktorija Karpavičiūtė
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Vesta Kučinskienė
Department of Skin and Venereal Diseases, Medical Academy, Lithuanian University of Health Sciences; Hospital of LUHS Kauno klinikos, Kaunas, Lithuania

Introduction

Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) are acute, severe dermatoses characterized by epidermal loss and multi-site mucositis accompanied by multiple organ disturbance. Both differ the body surface area (BSA) detachment: SJS with up to 10%, TEN with more than 30% detachment. The latter represents the most severe cutaneous adverse reaction to drugs and is associated with 15 to 30% mortality during the acute phase. The treatment can vary from supportive care only to immunomodulatory therapy which includes systemic corticosteroids, IVIg, cyclosporine or TNFα inhibitors.

Aim

To find the most common culprit drug group for SJS/TEN patients. To evaluate immunomodulatory therapy and supportive care only in patients with SJS/TEN and to compare treatment impact to disease course. To find mortality rates under given treatment for SJS/TEN patients.

Methods

A retrospective study on the management of SJS/TEN patients who were admitted to the Hospital of LSMU Kaunas Klinikos from 2009 to 2019 (LSMU Centre for Bioethics permission No.BEC-MF-68). The following data were collected: demographics, suspected drugs, SCORTEN at admission, maximal detached BSA, treatment and main complications at the acute phase, mortality in 6 weeks. The statistical strength and direction of association between two variables were counted with Spearman's correlation coefficient (R). The value of $p < 0.05$ presents a statistically significant difference. The results were analyzed using IBM SPSS Statistics 27.

Results

The data of 24 patients with SJS/TEN (67% women) were analyzed. Mean age was 50 ($\pm$21) years. The culprit drug was found in 79% cases. The most common drugs were anticonvulsants (53%), non-steroidal anti-inflammatory drugs (37%), antibiotics (37%), and allopurinol (5%). The mean SCORTEN was estimated 2.4($\pm$1.3) points while maximal detached BSA mean was 23.1($\pm$17.1)%, respectively. Eighteen patients (75%) were treated with systemic corticosteroids while supportive care only was given to 17% (n= 4) and IVIg to 8% (n=2). None of patients were treated with cyclosporine or TNFα inhibitors. We found a connection between the usage of systemic corticosteroids and increased risk of bloodstream infection (R=0.412, p=0.046) while connection between the same treatment and infection in different other locations (R=0.385, p=0.063) was not significant. There was no positive correlation between supportive care only and complications like infections. Six week mortality rate was estimated 16%, of those 75% were treated with systemic corticosteroids. There was no significant difference in mortality rates and treatment modalities.

Conclusions

Our retrospective analysis identified that the most common culprit drugs of SJS/TEN were anticonvulsants. Immunomodulatory therapy by systemic corticosteroids was administered for the majority of the patients however it gave significant difference in developing bloodstream infection (p<0.05). No significant difference in 6 weeks mortality was found in treatment groups.

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BASIC SCIENCES & VETERINARY MEDICINE SESSION

The antioxidant activity of polyphenolic compounds of Guarana dry seed extract

Authors:

Emilija Nemickaite
Faculty of pharmacy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Asta Špadienė
Department of Drug Chemistry, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Guarana (*Paullinia cupana*) is a Brazilian plant whose seeds are rich in caffeine and has more 1,3,7-trimethylxanthine than coffee beans. Guarana is widely used in energy drinks, food supplements and phytochemical products. Apart from caffeine, the Guarana seed extract contains polyphenolic compounds, such as purine alkaloids, catechins, epicatechins, proanthocyanidins, which have antioxidant properties. It is uncertain how much polyphenolic content the seed extract contains and how many of them have antioxidant activity. In addition, there is also a need to determine the chelating and reducing abilities of the compounds. Thus, the antioxidant ability of the seed extract compounds will be thoroughly analyzed.

Aim

To determine the amount of the total phenolic content and their antioxidant activity in Guarana dry seed extract.

Methods

One type of the Guarana seed extract was studied (Swanson Health Products Inc. "Guarana", USA). Methods applied in the analysis are the determination of total phenolic content was done with the Folin–Ciocalteu method. The antioxidant activity of the polyphenolic compounds was determined by the DPPH and ABTS methods. Reducing activity was tested with the FRAP method, and the chelating activity was evaluated by Fe^{2+} ion chelation capacity. Each method was repeated three times and the average was calculated. Statistical analysis was done both by Excel and SPSS using Pearson Correlation evaluation along with the test of Normality. The results are considered statistically significant if $p < 0.05$.

Results

The analysis provided the following results: the total phenolic contents in Guarana seed extract varies between 34,13 – 38,95 mg/g GAE. Antioxidant activity in the DPPH method vary between 28,29 – 41,11 % and ABTS between 13,77 – 22,63 μmol/g TE. Reducing activity in the FRAP resulted in between 18,7 – 22,7 μmol/g TE and Fe^{2+} ion chelating activity results achieved are between 48,91– 54,30 %. The correlation between total phenolic contents and the DPPH and ABTS antioxidant activity was statistically significant ($p <0.05$), but not statistically significant with FRAP and Fe^{2+} ion chelating activity. The correlation between total phenolic contents and DPPH antioxidant activity was 0.424 and with ABTS - 0.370.

Conclusions

After the analysis of Guarana seed extract has been carried out, the following conclusions can be drawn: the avarage amount of phenolic compounds in Guarana seed extract is 37,07 mg/g GAE. Compared with other researchers work (H. Peixoto, M. Roxo - 1250 mg/g GAE, L. Majhenic - 166 mg/g GAE) the phenolic content was much higher. According to the antioxidant evaluation methods (DPPH, ABTS and FRAP), the polyphenolic compounds have moderate antioxidant activity compared with the Trolox equivalents. The iron chelation of the Guarana seed extract resulted in moderate activity. The statistical analysis shows statistical significance ($p<0.05$) between total phenolic contents and the DPPH and ABTS antioxidant activity.

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The efficacy of vibrating massage of back in sport horses on functionality of back, based on MNT changes

Authors:

Raimonda Tamulionytė
Raimonda Tamulionytė, Veterinary faculty, Lithuanian university of Health sciences, Kaunas, Lithuania

Giedrė Vokietytė-Vilėniškė
Veterinary academy, Lithuanian university of health sciences Large Animal Clinic, Kaunas, Lithuania

Introduction

The spine is a complicated arrangement of structures, forming a bridge between the fore and hindlimbs [1]. Strong forces applied to equine back creates excessive tension for back muscles and that's one of the most common reasons for poor performance and further pathological changes at the back. The clinical assessment of equine back pain is very subjective, mostly based on palpation. Pressure algometry has been shown to be an objective method to quantify pain on pressure over specific landmarks until avoidance response is noted, it is called the mechanical nociceptive threshold (MNT) expressed in kg/cm² [3]. The better back functionality is, the bigger is MNT. Numerous types of physiotherapy are available to maintain a healthy horse's back. Further investigations shown, that manual massage therapy increases MNT by 12% [2]. Does vibrating massage therapy pad also affects MNT changes?

Aim

The aim of this investigation was to evaluate vibrating massage pad therapy effectiveness in increasing back functionality of sport horses back based on MNT changes.

Methods

20 clinically healthy adult horses (experimental group n=10, control group n=10), without current history of back pain aged averagely 7 y/o, various breeds, both male and female, in stable X were included in this study. Measurements were carried out at both sides using a Pain Test FDX 100 Algometer (Wagner Instruments s Inc., Greenwich, CT, USA) with rubber tip, starting from cranial to caudal and left to right side. The specific measure landmarks have been

adopted from Haussler and Erb and Varcoe-Cocks et al. at saddle application site, between T7-L1 before A(0) and after A(1) 30 min. of high intensity vibrating massage pad therapy program (for the control group massage pad wasn't turned on).As a positive reaction indicator of reaching MNT by pressure algometry was considered obvious behaviour change such as ears pinning back, stepping away, hollowing the back, sudden lifting of a limb, kicking. To increase reliability, three measurements were recorded for each site, with the mean of these measurements used for statistical analysis[3]. Statistical analysis was performed with Microsoft Excel 2016 using paired t-Test, value p ≤0,05.

Results

Significant increasement of MNT values was detected at 50% of measured landmarks in experimental group. MNT increased at both sides of T7-T8, T16-T17, T17-T18 (p<0.0001). No significant difference detected at T12-T13, T14-T15, T15-T16. MNT values A(1) increased by 0,55-2.25 kg/cm². The biggest increasement was detected at T7-T8 and T17-T18. Left-to-right difference averagely was 1,38-1,59 kg/cm². No significant difference was found in control group (p<0.0001).

Conclusions

Based on the results of this study vibrating massage pad is an effective tool in increasing back functionality based on MNT change, by 5.86-27,45% ,even for healthy horses back. Further investigation is needed to evaluate full massage pad effectiveness and outcome in horses with back pain.

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Osteopathic manual therapy in equine

Authors:

Gabrielė Babarskaitė
Faculty of Veterinary Medicine, Veterinary Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Giedrė Vokietytė-Vilėniškė
Large Animal Clinic, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Osteopathic manual therapy (OMTh) is getting more common in Equine veterinary medicine. It is known that these physical manipulations affect joints, soft tissues, bones and muscles, that may be affected by trauma or inflammation (1,2).It is known that heavy pain may elevate the heart rhythm, activate respiratory rate or increase serum cortisol level (3,5). With this type of therapy major results were achieved such as increased range of motion and tissue extensibility, reduced pain and inflammation (4). In addition after OMTh horses were found to be more relaxed (1). This research could influence the future treatment choice for horses that require rehabilitation after trauma as OMTh is a non-invasive procedure which doesn't involve any harsh medication or surgical interventions.

Aim

To evaluate the impact of OMTh of equine on changes in physiological factors such as heart rate (HR) and respiratory rate (RR) and blood serum cortisol level (BSCL).

Methods

In this study 30 sport horses were evaluated of which 15 were experimental group (OG) – treated by OMTh and 15 were control group(CG). Treatment was performed by the same equine osteopath. HR, RR evaluation and BSCL measurements were taken before (P0), immediately after (P1) and an hour after (P2) OMTh in OG and at the same time in CG.

Results

The average HR of OG was P0=39,33b/min, P1=35,07b/min, P2=35,33b/min. Average of the HR after procedure decreased 4,27b/min and an hour later 4b/min. The average HR of CG was P0=42b/min, P1=38,67b/min, P2=36,8 b/min. Average of the HR after procedure decreased 3,33b/min, and an hour later 5,2 b/min. The average RR of OG P0=14,13t/min, P1=12t/min, P2=13,73t/min. Average of the RR immediately after procedure decreased 2,13t/min, after an hour 0,4t/min. The average RR of CG P0=13,33t/min, P1=11,47t/min, P2=11,87 t/min. RR decreased 1,87t/min immediately after therapy and 1,47t/min an hour later. OG average BSCL P0=4,83µg/dL, P1=5,77µg/dL, P2=5,21µg/dL. Average of BSCL increased 0,94µg/dL and an hour later 0,39µg/dL. There was statistically significant change comparing BSCL at P1 and P2 in OG group. This increase of BSCL may mean activated hypothalamic-pituitary-adrenal axis after applied stressor (in this research – an osteopathic procedure) (6,7). CG average of BSCL - P0=4,48µg/dL, P1=4,84µg/dL, P2=4,43µg/dL. The average of BSCL increased 0,36µg/dL and after an hour decreased 0,06 µg/dL. Analysing P1 data discovered correlation between HR and RR p=0,005 (p<0,05) (8).

Conclusions

Osteopathic manual therapy increases blood serum cortisol level. In OG it increased 0,58 µg/dL more than in CG evaluating P1 data. Therapy had no statistically significant change for heart rate and respiratory rate. Discovered medium strength correlation between heart and respiratory rate (p=0,004, p<0,05) may mean that when HR increases – RR increases too.

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Systems biology approach to the surfaceome of human melanocytes and melanoma cells

Authors:

Emese Zsigrai
Faculty of Medicine, University of Debrecen, Debrecen, Hungary

Tibor Hajdu
University of Debrecen, Department of Anatomy, Histology and Embryology, Debrecen, Hungary

Csaba Matta
University of Debrecen, Department of Anatomy, Histology and Embryology, Debrecen, Hungary

Introduction

The complement of cell surface proteins is collectively referred to as the surfaceome. The composition of the surfaceome undergoes significant alterations during pathological conditions. Therefore, proteomic analysis of the surfaceome during the development of diseases such as malignant melanoma can provide valuable information for therapy, diagnosis, or prognosis. However, the surfaceome of human pigment cells is currently unexplored.

Aim

The aim of our study was to characterize the surfaceome of human cutaneous melanocytes and melanoma cells and to explore signalling pathways related to cell surface proteins. This *in silico* approach may give us a global picture on possible relationships between the identified proteins and networks involved in melanoma evolution.

Methods

Three pigment cell cultures were used in our experiments. Epidermal melanocytes were isolated from human skin samples. WM35 melanoma cell line was established from *in situ* melanoma, while A2058 is derived from metastatic melanoma. Cell surface proteins were labelled with aminooxy-biotinylation, followed by mass spectrometry using high throughput shotgun proteomics to define the surfaceome. Gene ontology (GO) annotations of the identified proteins were obtained from the UniProt database.

Results

According to the proteomic analysis, 70-84% of the identified proteins were found to be cell surface proteins. A total of 416 (melanocytes), 256 (WM35) and 567 (A2058) surface proteins were discovered in the cell cultures. The combined list comprised 754 different proteins, of which 128 proteins were detected in melanocytes only, whereas 338 proteins were specific to the melanoma cell lines. These proteins could be useful indicators of benign vs. malignant transformations. 164 proteins were identified in all three cell types; this group may comprise proteins with altered expression and/or function in malignant cells. The next step was to further examine the identified surfaceome proteins by the Reactome database. The analysis revealed that signalling pathways present in melanocytes with the highest possibility are not related to surface proteins. In WM35 cells MET, RAP1, MAPK and B-Raf signalling was significantly over-represented amongst the identified pathways. In A2058 cells the Rho-GTP-ase, Slit-Robo and L1CAM signalling cascades were detected to be the most possible pathways in correlation with the surfaceome.

Conclusions

Our results identified new molecular targets that may serve as potential biomarkers in melanoma treatment. The novel, systems biology approach enabled a more targeted analysis of the pigment cell surfaceome database. The differences found in the surfaceome and related pathways of healthy vs. malignant pigment cells can lead to the discovery of highly selective biomarkers on disease onset and progression.

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1. Supported by the ÚNKP-20-2 New National Excellence Program of the Ministry for Innovation and Technology from the Source of the National Research, Development and Innovation Fund.

When RNA-binding proteins meet the Hutchinson-Gilford Progeria syndrome: a gene delivery approach to mitigate premature aging

Authors:

Rafael G. Costa
Universidade do Algarve, Faculty of Medicine and Biomedical Sciences, ABC-RI

Inês T. Afonso
Universidade do Algarve, Faculty of Medicine and Biomedical Sciences, ABC-RI

Célia Aveleira
University of Coimbra, Centre for Neuroscience and Cell Biology

Carlos A. Matos
Universidade do Algarve, Faculty of Medicine and Biomedical Sciences, ABC-RI

Clévio Nóbrega
Universidade do Algarve, Faculty of Medicine and Biomedical Sciences, ABC-RI

Introduction

Lamins are structural proteins that compose the nuclear lamina and confer integrity to the nucleus (1). Mutations in lamin coding genes have been associated with several diseases (2), including the Hutchinson-Gilford Progeria Syndrome (HGPS; OMIM #176670). HGPS is an uncurable rare disease characterized by the acceleration of the aging process, towards a premature death. The underlying cause for the classical HGPS is a mutation in the lamin A/C gene (*LMNA*) that results in a truncated protein (3), termed progerin, which accumulates in the nuclear lamina and disturbs the nuclear structure (4). Molecularly, HGPS cells exhibit age-associated markers, such as increased DNA damage (5) and senescence (6). Previous work in our group showed that a particular RNA-binding protein (RBP-X) with endonuclease activity modulates the levels of different transcripts. Due to HGPS molecular pathogenesis, we hypothesized that progerin could be one of RBP-X targets and if so, this interaction would attenuate the age-associated markers.

Aim

1) to investigate if RPBX can modulate progerin levels and mitigate the age-associated abnormalities; 2) to characterize the molecular mechanism underlying RBP-X function.

Methods

HEK 293T cells were transfected with progerin or co-transfected with progerin and RBP-X. After 48 hours, the cells were harvested for fluorescence microscopy, RT-qPCR, and immunoblot analyses to assess the nuclear circularity and progerin levels, respectively. HEK 293T cells were further co-transfected with progerin and RBP-X constructs lacking its RRM or NTF2-like domains to assess nuclear circularity and progerin protein levels. Additionally, we transduced human HGPS fibroblasts with lentiviral vectors encoding RBP-X to assess DNA damage, by labeling the phospho-histone H2A.X, and cellular proliferative status, through Ki67 immunolabeling.

Results

RBP-X expression in progerin-expressing cells led to (i) an improvement in the nuclear structure, (ii) a decrease in progerin protein and RNA levels, (iii) a reduction in DNA damage, and (iv) an increase in cell proliferative capacity. Besides, RBP-X seems to mitigate the HGPS cellular phenotype via its NTF2-like domain.

Conclusions

HGPS is caused by the dominant-negative effect of progerin, hence it would be expected that its reduction could be beneficial. Here, we suggest that RBPX impairs progerin accumulation in the nuclear lamina via its NTF2-like domain, and that is sufficient to mitigate several age-associated markers, namely nuclear structural abnormalities, DNA damage accumulation, and cellular senescence. Therefore, our results suggest that RBP-X could hold the promise of a potential therapeutic strategy that should be further explored in Progeria in vivo studies.

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Morphometric assessment of the hip joint in dogs with hip dysplasia

Authors:

Augustė Šarakauskaitė
Faculty of Veterinary Medicine, Veterinary Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Kristina Ramanauskaitė
Dr. L. Kriaučeliūnas small animal clinic, Veterinary Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Hip dysplasia (HD) is a common developmental disorder of the dog, consisting of varying degrees of hip laxity, progressive remodeling of the structures of the hip, and subsequent development of osteoarthritis (1). The prevalence varies in different breeds between 2 and 80% (2). The proximal end of the femur and acetabulum form one functional unit, and depend on each other for their synchronised growth and shape (3). Any changes in biomechanical balance (caused by morphometric abnormalities) can lead to abnormal growth, decreased joint weight-bearing surface, cartilage overload, and the development of osteoarthritis (4). Knowing the morphometric regularity, the mentioned pathology could be diagnosed as early as possible.

Aim

To determine relationship between the degree of canine hip dysplasia and morphometric parameters (FAI, FNLi, FNWi, ADi) of canines hip joints.

Methods

40 hips radiographs (Ventrodorsal hip-extended projection) obtained from clinical cases of canine HD were used in this study. Femoral angle of inclination (FAI), femoral neck length index and width index (FNLi and FNWi) and acetabular depth index (ADi), Fédération Cynologique Internationale (FCI) scoring mode and Norberg angle (NA) for detection of hip dysplasia were measured from the radiographs (3). Digital radiography with related software (ECOray 400, Germany) was used for obtaining the images and the measurements. Data analysis was performed using IBM SPSS statistics version 20 statistical software, and statistics were calculated for FAI, FNL, FNW, AD and FCI scores applying a Spearman's correlation coefficient. All differences were considered statistically significant at $p < 0,05$.

Results

The study showed the correlation between the degree of dysplasia (FCI score based on NA) and the FNW index $(0,65 \pm 0,1)$ is a weak but statistically significant $(p < 0.05)$. Also, there are moderate $(p < 0.05)$ correlations between the degree of dysplasia and the AD index $(0,53 \pm 0,08)$. The study showed that there is very weak statistically insignificant relationship between the degree of dysplasia and the FAI angle $(130,64^0 \pm 7,94)$ and FNL index $(1,42 \pm 0,12)$ $(p > 0,05)$. The most similar study (3) was performed for a group of a specific variety (Estrela Mountain Dogs). The study analyzes the morphometric indices of "normal" (FCI A or B) and "abnormal" (FCI C, D or E) dog groups. Meanwhile, our study examines the overall regularity between each group of FCI club dysplasia and morphometric indices among non-specific breeds. Despite the above differences the results are very similar to those obtained in our study. We think, that after analyzing regularities of different dog breeds, the above parameters could be used as an additional tool in the early diagnosis of hip dysplasia.

Conclusions

We concluded that measurements of hip joint (FNW index and AD index) are associated with FCI score by NA. The higher the degree of dysplasia, the higher the FNWi. The higher the degree of dysplasia, the lower the ADi.

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Tumor-Infiltrating Lymphocytes and Their Role as a Prognostic Indicator for Primary Cutaneous Melanoma

Authors:

Rugilė Vareikaitė
Lithuanian University of Health Sciences, Faculty of Medicine

Neringa Musteikaitė
Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Department of Pathological anatomy

Jurgita Makštienė
Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Department of Pathological anatomy

Introduction

Tumor-infiltrating lymphocytes (TILs) are considered a sign of the host immune response to tumor [1]. It causes discussions between scientists – some state that increased density of TILs is a mark of efficient antitumor immunity and a better outcome, some state vice versa [2].

Aim

The aim was to evaluate the clinical and morphological factors of histologically confirmed primary skin melanomas and determine whether the TILs grade is a valuable factor to predict sentinel lymph node (SLN) status.

Methods

We retrospectively analysed 825 patients in the Department of Pathological anatomy of Hospital of Lithuanian University of Health Sciences Kaunas Clinics from 2009 to 2019. TILs had three categories based on TILs density and distribution (brisk, non-brisk, absence) which were analysed with age, sex, tumor localization, histological type,

invasion depth, mitotic index, regression, ulceration, SLN status. Statistical analysis was performed using SPSS 25.0 software. Were used descriptive statistics. Differences between the variables assessed using the chi-square (χ^2) criteria, One-Way ANOVA tests. The results were statistically significant when $p < 0.05$.

Results

Total of 825 patients: 490 (59.4 %) women and 335 (40.6%) men. The median age was 64 (± 15.4 SD) yr. TIL groups did not differ in sex (p=0.583), age (p=0.285); had differences in comparison with tumor site (p=0.0001), histological type (p=0.0001), invasion depth (p=0.0001), mitoses (p=0.01), regression (p=0.026), ulceration (p=0.001), SLN status (p=0.01). Brisk TIL consisted 163 (19.8%), had significantly lowest average of invasion depth (2 mm ± 2.4 SD), mostly had Breslow group <0.8 mm (62, 38%), 0 mitoses/mm^2 (67, 41.1%), back area (59, 36.2%), superficial spreading (SSM) type (111, 68.1%), absence of ulceration (127, 77.9%). Least observed when Breslow >4 mm (24, 14.7%), ≥ 11 mitoses/mm^2 (26, 16%), in lower limbs (30, 18.4%) and not specified (NOS) histological type (14, 8.6%) (p<0.05). Non-brisk TIL consisted 445 (53.9%), had significantly medium average of invasion depth (2.7 ± 2.8 SD), mostly seen in lentigo maligna melanoma (LMM) (39, 8.8%) and least in upper limbs (73, 16.4%) (p<0.05). None TIL consisted 217 (26.3%), had significantly highest average of invasion depth (3.5 mm ± 3.8 SD), was most seen in Breslow group >4 mm (75, 34.6%), lower limbs (82, 37.8%), NOS type (74, 34.1%), absence of regression (209, 96.3%) and positive SLN status (96, 69.1%). Least was in presence of regression (8, 3.7%), chest-abdominal site (11, 5.1%), SSM (54, 24.9%) (p<0.05).

Conclusions

Brisk infiltration is associated to lower invasion depth, less common ulceration, less mitoses and vice versa in absence on TIL. Brisk infiltration was less common in head and neck area, rare types of melanoma, but more common in back and SSM. Brisk and non-brisk TILs less common seen in melanoma with positive SLN status. The presence and quantification of TILs are associated with clinical and morphological primary cutaneous melanoma factors of good prognosis.

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Social demographic and morphological profile of primary invasive and non-invasive cutaneous melanoma

Authors:

Ieva Snieckute
Lithuanian University of Health Sciences, Faculty of Medicine

Neringa Musteikaite
Lithuanian University of Health Sciences, Department of Pathological Anatomy

Jurgita Makstiene
Lithuanian University of Health Sciences, Department of Pathological Anatomy

Introduction

Cutaneous melanoma (CM) is an uncommon but often aggressive form of skin cancer owing to its significant morbidity and high mortality rates (1). Although it accounts for less than 5% of all skin cancers, most deaths related to skin cancer are from melanoma (2). The incidence of cutaneous melanoma is increasing promptly and depends on environmental factors, geographical area, social and more factors. For this reason, it is crucial to search and identify clinical and morphological characteristics of melanoma in Lithuania.

Aim

To evaluate the social demographical and morphological factors of patients diagnosed with primary cutaneous invasive and non-invasive melanoma at the Department of Pathological anatomy of Hospital of Lithuanian University of Health Sciences Kauno klinikos from 2009 to 2019.

Methods

This was a retrospective study of patients who were diagnosed with primary cutaneous melanoma between 2009 and 2019. Parameters for the invasive CM included gender, age, tumour site, histological type, Breslow thickness, tumor-infiltrating lymphocytes, mitotic index, presence of ulceration. As well as gender, age, tumour site, histological type for melanoma in-situ (MIS). Data were analysed statistically using SPSS 27.0 software. Were used descriptive statistics to data. Differences between the variables assessed using the chi- square (χ2) test. The results were statistically significant when p <0,05.

Results

The study included 195 MIS and 825 invasive CM cases. Among MIS patients, mean age was 64,8 ($\pm$ 14,7 SD) years and more commonly diagnosed were females 136 (69,7%) with predominant head and neck site 80 (58,8 %) (p=0,016) and histological type of lentigo maligna 70 (51,5%) (p=0,095). Meanwhile, among invasive CM patients, mean age was 62,1 ($\pm$ 15,4 SD) years. Females were more common as well 490 (59,3%) with predominant localizations of lower limbs 190 (38,8%) and back site for man 113 (33,7 %) (p=0,0001). For both genders with predominance in women, the most common histological type – superficial spreading melanoma (110 (32,8%) males and 215 (43,9%) females) (p=0,0001). Breslow thickness <0,8 (140 (28,6%) mm were most common in females and >4 mm

was more common in males 112 (33,4%) (p=0,0001). Female group had dominant mitotic index - 1-4mitoses/mm^2 – 162 (33,3%), while mitotic index >10 mitoses/mm^2 was more frequent in males 100 (29,9%) (p<0,001). Ulceration was presence more common in men 140 (41,8%) vs women 146 (29,8%) (p=0,001). Non-brisk lymphocytic infiltration was most common 445 (53,9%) but did not differ between genders (p=0,583).

Conclusions

MIS patients classically are old women on the head and neck localised lentigo maligna type of melanoma. Meantime, in the invasive CM patients, females remained the leading group, characterised by leg localization, thin melanoma and lower mitotic index. Men more often had back site, thick melanoma and higher mitotic index. As well, the most common type was superficial spreading melanoma. Recommendations will be presented at the conference.

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CARDIOLOGY SESSION

Risk factors of a discrepant echocardiographic evaluation in hemodynamically significant mitral regurgitation

Authors:

Ričardas Kundelis
Lithuanian University of Health Sciences, Medical Academy, Faculty of Medicine

Kajus Merkevičius
Lithuanian University of Health Sciences, Medical Academy, Faculty of Medicine

Neris Stoškutė
Lithuanian University of Health Sciences Hospital Kaunas clinics, Department of Cardiology

Introduction

Two-dimensional (2D) transthoracic echocardiography (TTE) for mitral regurgitation (MR) evaluation plays a vital role in choosing the adequate type of treatment. Considerable undertreatment prevalence suggests a possible knowledge gap. The aim of the present study was to assess physician diagnostic adherence according to echocardiographic evaluation guidelines and recommendations (1,2).

Aim

Assess the risk factors contributing to deviations in assessment of hemodynamically significant MR.

Methods

Research was approved by the Lithuanian University of Health Sciences (LUHS) Bioethics centre. 438 echocardiographically confirmed hemodynamically significant (moderate to severe) MR case reports evaluated by 60 beginner, intermediate, or expert level physicians at LUHS Hospital Kaunas clinics Department of cardiology were obtained from clinics' database and analyzed retrospectively. MR eyeballing tendencies, quantitative method (simplified proximal isovelocity surface area, vena contracta width, effective regurgitant orifice area, and regurgitation volume) application accuracy, and guideline adherence were analyzed. IBM SPSS 27.0 was used to implement Chi-square, Fisher's exact, Mann-Whitney, Kruskall-Wallis, Shapiro-Wilk tests, logistic regression. Statistical significance – $p<0,05$.

Results

Main discrepancies in echocardiographic MR evaluation were unjustified eyeballing (66.95% n=158, $p<0.001$), followed by inaccurate method application (22.46% n=53, $p=0.002$), the rest misinterpreted diagnostic criteria (10.59% n=25). Female patient gender (OR=1.645, 95% CI 1.060-2.554; $p=0.026$) and lower physician competence levels (OR=0.403, 95% CI 0.312-0.522; $p<0.001$) were identified as predictors for unjustified eyeballing possibility. The latter was also a predictor of quantitative method discrepancies (OR=0.651, 95% CI 0.429-0.986; $p=0.043$). Method choice had the most substantial correlation to discrepancies when determining moderate–severe MR (OR=5.177, 95% CI 2.794-9.590; $p<0.001$).

Conclusions

Echocardiographic evaluation of hemodynamically significant MR had at least one discrepancy in half of cases as invalid non-quantitative evaluation, methodological inaccuracies, and misinterpretation of diagnostic criteria compile the largest proportion of discrepancies. Female gender, lower physician competence, and downgraded diagnostic method application were the most substantial predictors of discrepancy occurrence.

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Patient adherence to antihypertensive medications during arterial hypertension therapy

Authors:

Veronika Ribcova
Riga Stradins University, Faculty of Medicine, Latvia

Dmitrijs Kustovs
Riga Stradins University, Faculty of Pharmacy, Latvia

Kārlis Trušinskis
Riga Stradins University, Department of Internal Diseases, Latvia

Introduction

Adherence to therapy is crucial for reaching the target blood pressure in hypertensive patients. Patient adherence can be assessed directly on the basis of the drug or its metabolites concentrations in blood and urine, or indirectly through various surveys. According to the guidelines for the treatment of arterial hypertension (AH), amlodipine is often predominant component in the fixed-dose combination. Amlodipine has perfect pharmacokinetic parameters which allows to assess the patient's adherence to medications.

Aim

This study aims to evaluate medication adherence in hypertensive patients. The Morisky Medication Adherence Scale (MMAS-8) is a commonly used survey. It has been validated in patients with chronic diseases, providing reliable results on drug adherence.

Methods

All data were collected through patient survey at Pauls Stradiņš Clinical University Hospital. The inclusion criteria

were patients age over 18 years, diagnosis of arterial hypertension and use of blood pressure lowering medications for at least six months. MMAS-8 was assessed and compared to measured arterial pressure using manual blood pressure monitor. Using MMAS-8 to determine patient adherence indirectly, adherence level 6-8 points is considered as adherent, 1-5 points is considered as non-adherent. For respondents younger than 65 years, target systolic blood pressure was determined below 130 mm Hg. For respondents in age 65 and older, target systolic blood pressure was determined below 140 mm Hg.

Results

The study involved 81 participants with hypertension - 31 women and 50 men - all of whom had been taking antihypertensive medicines for at least six months. We used MMAS-8 to determine patient adherence. The mean age of total respondents was 66.6 years, where 64.6 years for male and 69.8 years for female. The average level of adherence was 6.57 (SD = 1.61): the adherent group consisted of 66 (81.5%) respondents. The prevalence of non-adherence to medications was 18.5%. Adherent respondents in age 65 and older with systolic blood pressure (SBP) below and above 140 mm Hg consisted of 24 and 15, respectively. Adherent respondents younger than 65 years with SBP below and above 130 mm Hg consisted of 13 and 14, respectively. While non-adherent respondents in age 65 and older with SBP below and above 140 mm Hg consisted of 4 and 2, respectively. Along with non-adherent respondents younger than 65 years with SBP below and above 130 mm Hg consisted of 4 and 5, respectively. Target blood pressure was not reached in 36 (44.4%) hypertensive patients.

Conclusions

We found poor correlation between patient adherence to medications using MMAS-8 scale and target clinic blood pressure in different age groups. Further investigation of the metabolite concentration of blood pressure lowering medications is ongoing. These data would give more reliable results about adherence to medication, but we do not have such a validated method to define the amlodipine concentration in blood.

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Relationship Between Right Ventricular Geometry and Function Parameters and Tricuspid Annuloplasty Efficacy

Authors:

Greta Gujytė
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Ieva Daniliauskaitė
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Aušra Krivickienė
Department of Cardiology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Eglė Ereminienė
Department of Cardiology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

The prevalence of moderate and severe tricuspid regurgitation (TR) increases with age and is often present in patients with left-sided valvular heart disease and has a poor prognosis. Tricuspid annuloplasty (TA) concomitant with left-sided valve surgery is commonly used to control functional TR and has shown favorable outcomes in terms of the freedom from residual TR. However, the factors leading to recurrent TR have not been well investigated.

Aim

The aim is to investigate the relationship between right ventricular (RV) geometry and function parameters and recurrent TR after tricuspid annuloplasty.

Methods

48 patients who presented with functional moderate or severe TR due to left-sided valvular heart disease (the dominant pathology was severe mitral regurgitation) and underwent surgical tricuspid valve (TV) repair (2017-2020) at the Hospital of Lithuanian University of Health Sciences were retrospectively enrolled into the study. The data of geometry and function defining parameters of TV, RV and right atrium (RA) from 2D and 3D transthoracic baseline (before surgical TV repair) echocardiographic measurements were collected. Patients were divided into two groups according to the outcomes of TA: effective (n=34) and ineffective (n=14) TV repair. Effective TA was considered if TR 1 year after surgery decreased to mild, while ineffective – TR remained moderate or severe (recurrent TR). IBM SPSS Statistics version 25.0 was used for data analysis. A p-value <0.05 was considered significant.

Results

The mean age of the study population was 67 years, 37.5% were male and 62.5% female. Age, sex, body mass index, left ventricular (LV) functional, as well as left atrial parameters did not differ between effective and ineffective TA groups. However, LV volumes were correspondingly higher (p=0.018 for LV end-diastolic, p=0.026 for LV end-systolic volume) in patients with better surgery efficiency. The parameters of TV annulus and RV geometry (p=0.018 for tricuspid annular diameter, p<0.001 for RV diastolic and p=0.005 for systolic diameters, p=0.027 for RV end-diastolic and p=0.049 for end-systolic area, p=0.003 for RV sphericity index) were significantly higher in the ineffective TA group compared to the effective group. The difference of RV functional (tricuspid annular plane systolic excursion, S', RV fractional area change and RV ejection fraction) and myocardial deformation parameters (RV global and free wall longitudinal strain) were not significant among these two groups. Also, significantly enlarged RA parameters (length (p=0.015), end-systolic area (p=0.037) and end-systolic volume (p=0.031)) as well as higher TR defining quantitative measurements (vena contracta (p=0.001), effective regurgitant orifice area (p=0.016)) were in ineffective TA group.

Conclusions

Recurrent moderate or severe TR after tricuspid annuloplasty is associated with preoperative tricuspid annulus size, the severity of TR, pathological RV remodeling, but not with changes of RV function.

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Changes of Ventricular Repolarization in Anterior Acute ST Segment Elevation Myocardial Infarction after Percutaneous Coronary Intervention

Authors:

Giedrė Vanagaitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Ieva Daniliauskaitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Jonas Jucevičius
Department of Internal Medicine, Lithuanian University of Health Sciences Kaunas Hospital, Kaunas, Lithuania

Daiva Emilija Rekienė
Department of Internal Medicine, Lithuanian University of Health Sciences Kaunas Hospital, Kaunas, Lithuania

Introduction

The repolarization of ventricles is reflected by QT and JT intervals. The formula of Bazzet helps to correct QTc and JTc intervals depending on a heart rate. Dispersion of QTc (QTcd) and JTc (JTcd) is the difference between the longest and the shortest QTc and JTc intervals within a 12-lead ECG and represents heterogeneity of ventricular repolarization. Prolonged QTc, QTcd and JTc, JTcd intervals can occur in anterior acute ST segment elevation myocardial infarction (STEMI) and reperfusion therapy helps to decrease them.

Aim

To determine the effect of reperfusion therapy in changes of QTc, QTcd and JTc, JTcd intervals after percutaneous coronary intervention (PCI) in patients with anterior acute STEMI.

Methods

The data of 28 anterior STEMI patients who underwent primary PCI were enrolled in this retrospective study. Patients with previous ischemic diseases, valvular heart defects, cardiomyopathies, arrhythmias and anemia were excluded. The measurements of QT and JT intervals were analyzed in standard 12-lead ECG recordings before PCI and 4-5 days after it. The formula of Bazett was used to obtain QTc, JTc values and QTcd, JTcd were measured. Microsoft Excel and IBM SPSS Statistics version 23.0 were used for data analysis. Repolarization data significance was evaluated using Paired Samples T-test. A p <0,05 was considered significant. Results are stated as follows: before PCI mean +/- std. deviation vs after PCI mean +/- std. deviation, Confidence Interval (CI) 95% lower - upper value, p value.

Results

The mean durations of QTc in leads V2, V5, V6 and JTc in leads III, V2, V5, V6 4-5 days after PCI were statistically significantly shorter compared with values before PCI (QTc V2: 438,21 ms +/- 45,85 vs 411,18 ms +/- 41,31, CI 95% 4,25 – 49,82, p = 0,022; QTc V5: 432,5 ms +/- 38,28 vs 413,09 ms +/- 38,07, CI 95% 1,55 – 37,28, p = 0,034; QTc V6: 436,14 ms +/- 38,9 vs 409,68 ms +/- 41,53, CI 95% 8,92 – 44, p = 0,005; JTc III: 351,74 ms +/- 44,63 vs 325,89 ms +/- 26,85, CI 95% 6,59 – 45,11, p = 0,01; JTc V2: 348,93 +/- 36,38 vs 326,18 +/- 36,43, CI 95% 3,22 – 42,28, p = 0,024; JTc V5: 345,35 ms +/- 34,14 vs 319,52 ms +/- 41,49, CI 95% 7,02 – 44,66, p = 0,009; JTc V6: 347,57 ms +/- 33,24 vs 315,4 ms +/- 38,7, CI 95% 15,48 – 48,87, p < 0,001). In all other leads the mean duration of QTc, JTc intervals and QTd, JTd values 4-5 days after PCI compared with corresponding values before PCI were not statistically significantly shorter. However, results demonstrated a tendency to decrease. The mean durations of QTc in leads I, aVF, V5, V6 and JTc in leads I, aVL, V5 4-5 days after PCI were statistically significantly shorter compared with values immediately after PCI.

Conclusions

PCI has a beneficial effect on ventricular repolarization treating anterior STEMI 4-5 days after the intervention.

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Changes of Ventricular Repolarization in Inferior Acute ST Segment Elevation Myocardial Infarction after Percutaneous Coronary Intervention

Authors:

Giedrė Vanagaitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Ieva Daniliauskaitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Jonas Jucevičius
Department of Internal Medicine, Lithuanian University of Health Sciences Kaunas Hospital, Kaunas, Lithuania

Daiva Emilija Rekienė
Department of Internal Medicine, Lithuanian University of Health Sciences Kaunas Hospital, Kaunas, Lithuania
Medicine, Lithuanian University of Health Sciences Kaunas Hospital, Kaunas, Lithuania

Introduction

QTc and JTc intervals reflect the repolarization of ventricles. Dispersions of QTc (QTcd) and JTc (JTcd) are the maximum inter – lead variations between the shortest and longest QTc and JTc intervals representing the inhomogeneity of ventricular repolarization. Prolonged ventricular repolarization is a risk factor for ischemic heart disease and cardiovascular mortality due to life-threatening arrhythmias such as ventricular fibrillation. Increased duration of QTc, JTc intervals and QTcd, JTcd can occur in inferior acute ST segment elevation myocardial infarction (STEMI). Percutaneous coronary intervention (PCI) reduces the duration of ventricular repolarization reflecting intervals.

Aim

To determine the impact of PCI on the course of QTc, QTcd, JTc and JTcd in patients with inferior acute STEMI.

Methods

We retrospectively studied 32 inferior acute STEMI patients who were treated with PCI. Patients with previous ischemic diseases, valvular heart defects, cardiomyopathies, arrhythmias and anemia were excluded. The measurements of QT, JT intervals were performed in standard 12-lead ECG before PCI, immediately after PCI and 4-5 days after the procedure and corrected using Bazett's formula. Dispersions of QTc and JTc intervals were also measured. Microsoft Excel and IBM SPSS Statistics version 23.0 were used for data analysis. Data significance was evaluated using Paired Samples T-test and the Wilcoxon test. Statistically significant results were considered when $p < 0.05$. If there was a normal distribution the data presented as follows: before PCI mean +/- std. deviation vs after PCI mean +/- std. deviation, Confidence Interval (CI) 95% lower - upper value, p value. If there was a non-normal distribution the results are stated as follows: median (min - max), p value.

Results

The mean duration of QTc interval in leads I, V2, V5, V6 and JTc interval in lead V6 4-5 days after PCI were statistically significantly shorter compared with values before PCI (QTc I: 413,16 ms +/- 42,78 vs 395,66 ms +/- 26,71, CI 95% 2,51 – 32,47, p = 0,024; QTc V2: 422,95 (388,29 - 501,9) ms vs 394,75 (357,77 - 433,2) ms, p = 0,016; QTc V5: 415,07 ms +/- 38,49 vs 394,35 ms +/- 29,97, CI 95% 3,8 – 37,63, p = 0,018; QTc V6: 416,49 ms +/- 37,94 vs 393,31 ms +/- 30,06, CI 95% 7,19 – 34,92, p = 0,006 JTc V6: 322,74 ms +/- 39,72 vs 305,19 ms +/- 28,34, CI 95% 0,19 – 34,92, p = 0,048). The mean duration of QTd and JTd values 4-5 days after PCI were significantly shorter compared with values before PCI (Before PCI QTd: 60 (40 - 120) ms; After PCI QTd: 40 (20 - 80) ms; p = 0,026; Before PCI JTd: 60 (40 - 120) ms; After PCI JTs 40 (20 - 80) ms; p < 0,001). The mean durations of QTc interval in leads I, aVL, aVF, V2, V5, V6 and JTc interval in lead aVL 4-5 days after PCI were statistically significantly shorter compared with values immediately after PCI.

Conclusions

PCI has a beneficial effect on ventricular repolarization treating inferior STEMI patients 4-5 days after it.

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Peripheral eosinophilia severity in clinical manifestations of coronary syndrome

Authors:

Arnoldas Leleika
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Einius Trumpa
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Palmira Leišytė
Department of Internal Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Few data have been reported on the relationships between eosinophilia and coronary artery disease [1]. Eosinophilia can be related with slow coronary flow, increase vasoconstriction and inflammation of the endothelium. Also can be related with aggregation of thrombocytes and thrombosis. Oxidants of eosinophilic granulocytes, including hydrogen peroxide (H_2O_2) and hypochlorous acid (HOCl) stimulate tissue factor expression modestly in endothelial cells and contribute to the pathogenesis of thrombosis. These findings suggest that eosinophilia can correlate with myocardial ischemia and modify further disease course [2].

Aim

To exam the relationships between peripheral eosinophilia and clinical manifestations of coronary syndrome.

Methods

Retrospective study was performed: 199 patients (91 [45,7%] women and 108 [54,3%] men), hospitalized in the Department of Cardiology of LUHS Kaunas Hospital between May 2018 and July 2020, and 126 (80,25%) of them was with diagnosed coronary syndromes and detected blood eosinophilia. This population of 126 patients was included in the study. We graded eosinophilia by ourselves in grades as following - I° (0,45–0,74x10^9/l), II^0 (0,75–0,99x10^9/l), III° (1–1,24x10^9/l), IV° (1,25–1,62x10^9/l) and most of these categories belongs to mild eosinophilia (<1,5x10^9/l) according to the World Health Organisation classification. Clinical and laboratory findings were analyzed according to the grade of eosinophilia. The statistical analysis was performed with statistical tool (SPSS version 23.0). The result was stated as statistically significant when calculated p value was less than 0,05.

Results

Peripheral eosinophilia was found in 73 (57,9%) patients with chronic coronary syndrome (stable angina pectoris) and in 53 (42,1%) patients with acute coronary syndromes: 15 (11,9 %) with diagnosed ST-elevation myocardial infarction (STEMI), 11 (8,7%) – non-ST-elevation myocardial infarction (NSTEMI), 27 (21,4%) – unstable angina. Analysis declared that for 11 (8,7%) patients with NSTEMI significant relationship with higher eosinophils count (0,45-1,62x10^9/l) was detected and this group had higher eosinophils count than other groups (r=0,14; p<0,05): 10 (90,9%) of them belongs to I° eosinophilia and 1 (9,1%) to II°. Although 12 (80%), 2 (13,3%), 1 (6,7%) patients of STEMI and 25 (92,6%), 1 (3,7%), 1 (3,7%) patients of unstable chest angina belongs to I°, II° and III° respectively, but these syndromes were not associated significantly with higher eosinophil count (p>0,05). Overall absolute eosinophil count correlates with CRP mean 41,6 mg/l (SE=9,5; r=0,36; p=0,02) in patients with acute coronary syndrome, but divided by groups only in patients with NSTEMI statistically significant correlation was observed when mean of CRP was 61,6 mg/l (SE= 25,8; r=0,86; p=0,01).

Conclusions

NSTEMI was associated with mild peripheral eosinophilia. Also, analysis showed correlation between CRP and peripheral eosinophilia in patients with acute coronary syndrome, especially in NSTEMI group.

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Impact of COVID-19 pandemic on ST-segment elevation myocardial infarction care

Authors:

Grytė Ramantauskaitė
Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Kamilė Gerulytė
Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Neda Jonaitienė
Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Olivija Gustienė
Department of Cardiology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Coronavirus 2019 (COVID-19) infection occurs in addition to existing challenges to emergency services, such as reperfusion of ST-elevation myocardial infarction (STEMI) patients (pts) (1). The COVID-19 pandemic could cause the overload of emergency medical systems, decreased awareness of pts, fear of infection, which could lead to not receiving proper treatment (2). According to guidelines, reperfusion should be performed within 12h from STEMI symptoms onset (3).

Aim

To assess the impact of the COVID-19 outbreak on incidence, delays and outcomes of very acute presentation (<12 hours from the onset of pain until primary percutaneous coronary intervention (PPCI)) STEMI pts.

Methods

The study involved very acute presentation STEMI pts, treated with PPCI<12 hours after symptoms onset in the Cardiology department in 2019-2020. Pts were divided into two groups: pts treated during the first COVID-19 pandemic lock-down in Lithuania (lock-down group (LDG), matched the 2nd quarter (qtr) of 2020) and pts treated in 2019 the same period (control group (CG), matched the 2nd qtr of 2019). Also, patients were divided into inferior (inf) and anterior (ant) STEMI groups, based on the site of ST-segment elevation in the electrocardiogram. We compared age, gender, mortality rate in hospital, time from symptom-onset to door, from door

to coronary angiography (CA) and to wire crossing for PCI. Statistical analysis was performed using SPSS 22.6 software. P value<0.05 was considered significant data.

Results

The overall sample consisted of 936pts with acute STEMI treated with PPCI 2019-2020. We included 69pts in the 2020 LDG and 110pts in the 2019 CG. The average age of subjects was 68.05±12.39 years: LDG 67.1±12.1; CG 68.9±12.4 (p=0.18). Comparing the gender between the groups CG consisted of 62,7% (69) men, LDG – 59,4% (41), p=0.38. Mortality rate in hospital between groups was as follows: LDG 6.4%; CG 6.3%, p=0.97. Time from symptoms onset to admission was similar in both periods (238.86±19.4 vs 236.2±21.5min, p=0.59). We compared ischaemic time and delays in pts with ant (2019 - 58; 2020 - 25pts) and inf STEMI (2019 - 52; 2020 - 44pts). There were no statistically significant differences in pts with ant STEMI: from door to CA (39.8±10.15 vs 55.1±10.2min, p=0.37) and wire crossing (55.03±10.24 vs 72.3±10.5min, p=0.32). However, lock-down caused a significant delay in pts with inf STEMI: from door to CA (85.3±16.5 vs 46.3±9.3min, p=0.03) and wire crossing (103.1±17.1 vs 63.25±9.3min, p=0.03) in LDG and CG, respectively. There were no statistically significant differences in mortality rate in pts with ant STEMI between CG and LDG (3.6% (3) vs 6% (5)pts, p=0.05) and pts with inf STEMI (4.1% (4) vs 0% (0)pts, p=0.12).

Conclusions

The frequency and mortality rate of very acute presentation STEMI did not differ between LDG and CG. Lock-down period caused significantly longer delays to coronary interventions in inf STEMI pts group. To evaluate overall COVID-19 impact on the outcomes further investigations are needed.

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Hemodynamic response in athletes versus sedentary individuals

Authors:

Žilvinas Krivickas
Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Ali Aldujeli
Department of Cardiology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Ramūnas Unikas
Department of Cardiology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Exercise is planned, structured, repetitive and intentional movement intended to improve or maintain physical fitness [1]. Physical exercise causes the heart to pump blood into the circulation more efficiently as a result of more forceful and efficient myocardial contractions, increased perfusion of tissues and organs with blood, and increased oxygen delivery [2]. The present knowledge of blood pressure behaviour during and instantly after physical activity is relatively scarce [3-5]. It is within the scope of knowledge, that athlete's heart rate at rest and sub-maximal workloads may be considered low when compared to the general population [6-8]. Clinical studies have revealed that in athletes heart rates return to basal level faster than sedentary individuals. It is well known that sinus bradycardia in athletes is due to the heart adapting to the physical stresses that it is put under by the athlete's physical activity [9].

Aim

Assess the dynamic variation occurring in blood pressure and heart rate in athletes versus healthy sedentary individuals for a given amount of exercise.

Methods

A total of 180 Lithuanian males aged between 21-25 years volunteered to participate in the study. Male athletes (N.=90) were included in the study based on the criteria of at least 2 years of regular aerobic training and they were compared with untrained healthy sedentary individuals (N.=90). Exercise performance test was Harvard step test. The individual who is taking the test steps up and down on a platform in a cycle of two seconds. The platform is at a height of about 50 cm. The rate of 30 steps per minute must be sustained for five minutes or until exhaustion. Statistical analyses were performed using the SPSS 20.0 software. The value of $P < 0.05$ was considered as statistically significant.

Results

The mean systolic blood pressure in untrained healthy sedentary individuals before exercise was statistically insignificant compared to athletes at rest (122.55 ± 3.05 vs. 125.75 ± 3.20, $P > 0.05$). Similarly diastolic blood pressure at rest (80.05 ± 3.27 vs. 82.69 ± 1.70, $P > 0.1$). Whereas mean heart rate at rest was significantly higher in sedentary individuals compared to athletes (77.75 ± 2.46 vs. 61.5 ± 3.1, $P < 0.01$). Systolic blood pressure in untrained healthy sedentary individuals was higher compared to athletes after 5 minutes of Harvard step test ($150.05 \pm 5,3$ vs. 156.81 ± 5.24, $P < 0.001$), similarly diastolic blood pressure (83.5 ± 2.97 vs. 85.0 ± 1.60, $P > 0.1$), whereas heart rate (133.8 ± 3.01 vs. 113.0 ± 1.10, $P < 0.01$).

Conclusions

Athletes have lower resting heart rates. Moreover, Athletes cardiovascular response to exercise was an increase in the systolic blood pressure with proportionately lower heart rates when compared to healthy sedentary individuals.

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Non-antiarrhythmic drug premedication for elective electrical cardioversion in atrial fibrillation patients – effect and clinical perspectives for early arrhythmia relapse prevention

Authors:

Baiba Kokina
Faculty of Medicine, Riga Stradins University, Riga, Latvia

Oskars Kalejs
Department of Internal Diseases, Riga Stradins University, Riga, Latvia; Latvian Centre of Cardiology, Pauls Stradins Clinical University Hospital

Introduction

Antiarrhythmic drugs (AAD) are commonly implemented for facilitating elective electrical cardioversion (ECV) for atrial fibrillation (AF), with class IC/III highlighted[1], yet early AF recurrence remains problem[2]. Published data

suggests additional benefits of non-AADs via pathogenetic effects, including angiotensin-converting enzyme inhibitors (ACEIs), angiotensin receptor blockers (ARBs), mineralocorticoid receptor antagonists (MRAs) and statins, however results are unconvincing[3,4,5,6]. Limited information regarding upstream therapies from premedication perspective is available.

Aim

To evaluate clinical perspective of the effect of non-AAD (ACEI/ARB, MRA, statin) premedication for elective ECV in AF patients for early arrhythmia relapse prevention.

Methods

Patients of Latvian Centre of Cardiology were enrolled in prospective study (October 2018–June 2019). Inclusion criteria were age ≥18 years, diagnosis of AF, non-valvular, persistent or longstanding persistent type (according to guidelines[7]), hospitalization for elective ECV, preprocedural class IC/III AAD prescription (medications established effective for sinus rhythm maintenance[8]), prior ACEI/ARB, MRA, statin intake ≥3 months (if present), successful ECV. Patients not fulfilling criteria were excluded. Eligible patients signed informed consent. Face-to-face interview was conducted, based on data collection protocol. Information on demographics, medical history, medication intake was acquired, with re-evaluation on 1- and 3-month follow-up. Statistical analysis was performed using SPSS. Efficacy endpoint was early AF relapse, defined as first experienced AF episode within 3 months since ECV. Main results were obtained in logistic regression analysis ($\alpha=0.05$).

Results

Among 101 patients, 93.1% had persistent, 6.9% – longstanding persistent AF. To ensure equivalence, baseline parameters among users and non-users of non-AADs were compared, evaluating gender, age, body mass index, CHA_2DS_2-VASc, comorbidities (coronary artery disease (CAD), arterial hypertension, heart failure (HF), diabetes), glomerular filtration rate, echocardiographic values (LAVI, LVMI, EF), AF characteristics (type, episode duration, total history), with no statistical significance (p>0.05) for all subgroups, except HF and EF for MRAs, CAD for statins. ACEI/ARB therapy was present in 67.3%, with no significant impact on AF recurrence likelihood (OR1.363, 95%CI0.545-3.407, p=0.508), compared to non-use. MRAs were used by 25.7%, reducing AF relapse odds by 69.5% (OR0.305, 95%CI0.095-0.977, p=0.046), with statistically significant effect, also adjusted to HF, EF. Statins were used by 51.5%, without significant AF recurrence prospect reduction (OR1.101, 95%CI0.476-2.549, p=0.822).

Conclusions

Among analyzed non-AADs, only MRAs demonstrated significant impact, indicating effect for early post-cardioversion AF recurrence prevention. Results suggest potential of MRA prescription when preparing for elective ECV, achieving better sinus rhythm maintenance prospects.

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Factors related to quality of life and quality of life early changes after rhythm control intervention in patients with atrial fibrillation

Authors:

Kotryna Druteikaitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Simona Bėrontaitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Rasa Karaliūtė
Department of Cardiology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Tomas Kazakevičius
Department of Cardiology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Gintarė Šakalytė
Department of Cardiology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Atrial fibrillation (AF) is associated with a decreased quality of life (QoL) [1]. In certain patients (pts) a rhythm control strategy has been shown to improve QoL. However, the factors impacting QoL in pts with AF are not well understood.

Aim

To evaluate the factors related to a decreased QoL in pts with AF. To determine early QoL change after the rhythm control intervention.

Methods

This prospective study included 158 pts with AF scheduled for rhythm control strategy: 93 (58.5%) for elective electrical cardioversion and 66 (41.5%) for cryoablation. Primary outcome was the recurrence of AF within 40 ± 10 days after intervention. Before intervention and at follow-up participants completed disease-specific QoL questionnaire - AF-QoL-18, that consists of 18-item and represents three domains: psychological, physical and sexual activity. Sexual activity domain was completed only by 50 (32%) respondents and was not analysed. All domains have been standardized for a scoring 0-100. The threshold for the assessment of baseline total QoL was chosen to be the 50% percentile - 33 points. Data was analyzed using SPSS software. Results were considered significant if $p<0.05$.

Results

The mean age of the respondents was 58.19 ± 11.21 years and 101 (64%) were males. Total QoL was statistically significantly decreased in females 34 (68.0%) compared to males 36 (39.6%), $p=0.001$, in pts with higher CHA_2DS_2-VASc Score (≥ 2) 44 (58.7%) vs 25 (39.1%), $p=0.02$ and with paroxysmal AF episodes >1 time/year 40 (58.8%) vs 28 (40.6%), $p=0.03$. At follow-up 98 (62%) pts did not have AF recurrence and 60 (38%) had ≥ 1 AF episodes. In a period of follow-up AF relapse did not occur in 51 (55.4%) pts after electrical cardioversion and in 47 (71.2%) pts after cryoablation, $p=0.03$. Improved psychological QoL was observed in 81 (57%) pts, physical - in 91 (63%), total QoL - in 97 (68%). Statistically significant change of psychological (from 34.97 ± 16.88 to 40.32 ± 17.24, $p<0.001$), physical (from 35.99 ± 15.66 to 44.07 ± 15.91, $p<0.001$) and total QoL (from 35.19 ± 14.78 to 42.26 ± 14.53, $p<0.001$) was observed in pts without AF recurrence. There was an improving tendency for psychological ($p=0.05$), physical ($p=0.15$) and total QoL ($p=0.06$) in pts with AF episodes after intervention. Physical and total QoL were considered statistically significant in pts without AF relapse compared to pts with AF episodes (physical: 61(70.1%) vs 30 (53.6%), $p=0.03$; total QoL: 65 (74.7%) vs 32 (57.1%), $p=0.02$), psychological QoL did not reach statistical significance, $p=0.43$. Binary logistic regression analysis showed that only the absence of AF relapses determines the improvement of total QoL (HR 2.1,95% CI 1.03-4.38, $p=0.04$).

Conclusions

Worse QoL in pts with AF was associated with female gender, higher CHA_2DS_2-VASc Score (≥ 2) and AF episodes >1 time/year. Improvement of total QoL in the early period after rhythm control intervention was found in 68% cases,

independently of AF relapse. The only independent factor of total QoL improvement was the absence of AF recurrences.

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INTERNAL MEDICINE SESSION PART I

The morphological patterns of immune response in duodenum with celiac disease

Authors:

Kajus Merkevičius
Lithuanian University of Health Sciences, Medical Academy, Faculty of Medicine

Milda Kuprytė
Lithuanian University of Health Sciences Hospital Kaunas clinics, Department of Pathological anatomy

Dainius Jančiauskas
Lithuanian University of Health Sciences Hospital Kaunas clinics, Department of Pathological anatomy

Introduction

Around 1% of global population is affected by celiac disease and the rates of this disease are rising [1, 2]. Both naive and acquired immune response are present in the pathophysiology of celiac disease, however clinical manifestation and serology is heterogeneous and varies in all cases [1]. Therefore, it is essential to determine more accurate immune response patterns of celiac disease to optimize objective diagnostic parameters.

Aim

To evaluate morphological patterns of immune response in gluten enteropathy cases.

Methods

Research was approved by the Lithuanian University of Health Sciences (LUHS) Bioethics centre. Celiac disease cases diagnosed at LUHS Hospital Kaunas clinics Department of Pathological anatomy in 2018-2019 were included. Histological slides stained with hematoxylin-eosin were examined by light microscopy for morphology of duodenum biopsy. Morphological changes were identified according to Marsh classification [2]. Intraepithelial lymphocytic count per 100 enterocytes and eosinophilic granulocytes' count per one high power magnification field were evaluated. IBM SPSS 27.0 was used to implement Chi-square, Fisher's exact, Mann-Whitney, Kruskall-Wallis, Shapiro-Wilk tests. Statistical significance – $p<0,05$.

Results

Total of 193 cases with celiac disease were included, 67.4% (n=130) of patients were female, average age of patients was 40.79 y. o. (SD 17.19). Majority of patients were diagnosed with type I gluten enteropathy (56.48%, n=109), while type IIIA was the second most common (30.57%, n=59) category. On average, from 25.57 (SD 9.12) to 50.25 (SD 12.05) lymphocytes per 100 enterocytes were detected in examined samples. The lowest count of lymphocytes per 100 enterocytes was significantly higher in type IIIA (28.47 (SD 8.87)) compared to type I (23.89 (SD 9.00)) (p=0.004). Eosinophilic granulocyte infiltration was present in 55.44% (n=107) with 6.78 (SD 4.58) eosinophilic granulocytes per one field, and this parameter was similar in all gluten enteropathy diagnostic types (p=0.310). Lymphocytic and eosinophilic granulocytes patterns were similar among males and females (p=0.920 and p=0.576,

respectively). Lymphocytic count was similar in all age groups (p=0.200). Infiltration of eosinophilic granulocytes was more likely to be detected among patients up to 31 y. o. (70.9% (n=39); p=0.013).

Conclusions

Lymphocytic count in duodenal biopsies was significantly higher in type IIIA gluten enteropathy. Infiltration of eosinophilic granulocytes was present in more than half of celiac disease cases and was more likely to be detected for patients under 31 years old.

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Ligation of esophageal varices: repeated ligations, short-term treatment outcomes, survival rates, and complications.

Authors:

Antanas Dambrauskas
Faculty of Medicine, Lithuanian University Of Health Sciences, Kaunas, Lithuania

Gintarė Jurgutytė
Faculty of Medicine Lithuanian University of Health Sciences, Kaunas, Lithuania

Kęstutis Adamonis
Department of Gastroenterology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania

Introduction

According to prospective researches, 90 % of all cases of esophageal varices are formed due to hepatic cirrhosis. Bleeding from esophageal varices is one of the most dangerous complications about 1/3 of all patients The mortality rate of these patients can reach up to 30% or 50 %.

Aim

The main objective of this study was to evaluate short-term treatment outcomes, survival rates, repeated ligations, and development of complications for patients who underwent endoscopic band ligation (EBL) at the LSMUL KK Gastroenterology Clinic.

Methods

We performed a retrospective study at the LUHS 2015-2019 in which 131 cases with described EBL were analyzed. Chi-square test Kramer coefficient was used to compare qualitative data between groups. Data differences were considered statistically significant at p <0.05. Permission for the research was obtained by the Bioethics center (No. BEC-MF-255.).

Results

131 cases with recorded EBL procedures were analyzed. Among those, 72 were male and 59 were female. The average age of the participants was 49 years. Few different causes of esophageal varices were observed: hepatitis B with cirrhosis 1 (0.8%), hepatitis C with cirrhosis for 30 (22.9%), toxic cirrhosis for 11 (8.4%), cryptogenic cirrhosis for 37 (28.2%), echinococcosis for 1 (0.8%), first biliary cirrhosis for 15 (11.5%), portal vein thrombosis for 19 (14.5%), hepatitis B with thrombosis for 2 (1.5%), hepatitis C with thrombosis for 2 (1.5%) and for 13 patients causes were unknown. (9.9%). Of all the analyzed patients 7 (5, 3 %) had F1 esophageal varices, 62 (95.7%) had F2 and 55 (42.%) had F3. For 37 (28.2%) patients indication for EBL procedure was primary prophylaxis, 44 (33.6%) was secondary prophylaxis and 50 (38.2%) required ligation due to bleeding. Emergency ligation was performed in 43 (32.8%) cases. Rebleeding occurred in 29.2% of all patients - in 3 patients with grade F1, 23 with F2, and 12 patients with F3 (p=0.048). 114 (87.0%) patients did not have any acute complications, 3 (2.3%) had a fever, 4 (3.1%) had stenocardia, and 1 (0.8%) had the pathology of the esophagus. After EBL, the patients with F2 varices had several complications: fever, stenocardia. Patients with F3 varices had a fever, stenocardia, and pathology of the esophagus. In contrast to the latter, the patients with F1 varices did not suffer any complications after procedures. We found a significant correlation (p=0.033) between esophageal varices grade and acute complications. In total, the death was certified for 9 patients, 3 of who had F2 varices and 6 of who had F3 varices. In 34 cases repeat ligation was performed

Conclusions

A significant correlation between rebleeding and esophageal varices grade was found. The most common complication after EBL was stenocardia, but the frequency of complications was low, and it did not affect the patient's short time condition. Mortality after EBL was 9.28%. Complications and the patient's mortality correlated significantly with esophageal varices grade.

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Factors influencing GERD and their treatment

Authors:

Antanas Dambrauskas
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Rima Lukoševičienė
Department of Internal Medicine, Kaunas Clinical Hospital, Kaunas

Neringa Toliušytė
Department of Gastroenterology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania

Introduction

Gastroesophageal reflux disease (GERD) is a condition, when refluxes cause uncomfortable symptoms such as heartburn, and/or acid backflow, additionally to an injury of mucosal integrity for not less than one week [1,2]. Several common risk factors associated with GERD for example smoking, obesity, stressful lifestyle and irregular eating has been demonstrated [3].

Aim

To identify the most common risk factors influencing development of GERD and efficiency of its treatment.

Methods

A total of 81 patients with GERD was surveyed using a standardized questionnaire in the Department of Internal Medicine, Kaunas Clinical Hospital. Gender, BMI, smoking, eating regularity, the treatment recommended by a physician, the severity of GERD symptoms (heartburn, pain while laying down, dysphagia, regurgitation, etc.) per last 2 weeks were assessed during the survey. Chi-square test Kramer coefficient was used to compare qualitative data between groups. Data differences were considered statistically significant at $p < 0.05$.

Results

We examined 81 patients: 45 (55,6%) woman and 36 (44,4%) men. Dividing our population according to BMI, 22.2% had normal BMI, 34.6% were overweight, 37% had class I obesity, 6.2% - class II. 67.9% of participants had irregular eating habits. 12% of patients had snacks 1-2 times per day, 48,1% - 3-4 times per day, 39,5% - 5 times and more. Among all the participants 24,7% were regular smokers, 34,6% - irregular smokers, 40,7% - non-smokers. The biggest group – 63% claimed to use alcohol during celebrations, 27,2% - once per day and 9,9% did not use alcohol at all. 66,7% of patients drank coffee, 33,3% did not. Among all the participants 54,3% encountered frequent stress in their lives, 35,8% - (encountered stress rarely, 9.9% - did not have stress at all. Correlation was found between alcohol consumption and dysphagia (r=0.386, p= 0.007) and heartburn (p=0.462, r=0.004). In addition, the correlation between smoking and the taste of sour or bitter was found (r=0.758, p= 0.003). Correlation between obesity and dysphagia was found (r=0.571, p= 0.03). There was no correlation between stressful lifestyle and symptoms of GERD (p<0.05). A correlation was found between irregular eating habits and heartburn (r=0.824, p=0.001). A correlation

between heartburn, acid regurgitation, and the duration of PPI usage was (2 weeks or longer) found. (p=0.04). In 58% of a participant who were using medications, the appearance of GERD symptoms were noticed, 12,4% of symptoms affected daily lifestyle, and 29,7% had no symptoms at all.

Conclusions

1) The main factors influencing the appearance of GERD are alcohol consumption, obesity, smoking, and irregular eating habits. 2) Using PPI for two weeks or longer is an effective way to reduce heartburn and acid regurgitation.

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The regulatory role of microRNAs in intestinal epithelial barrier in inflammatory bowel disease

Authors:

Błażej Ochman
Department of Medical and Molecular Biology, Faculty of Medical Sciences, Medical University of Silesia, Zabrze, Poland

Agnieszka Kula
Department of Medical and Molecular Biology, Faculty of Medical Sciences, Medical University of Silesia, Zabrze, Poland

Bogumiła Strzałkowska
Department of Medical and Molecular Biology, Faculty of Medical Sciences, Medical University of Silesia, Zabrze, Poland

Elżbieta Świętochowska
Department of Medical and Molecular Biology, Faculty of Medical Sciences, Medical University of Silesia, Zabrze, Poland

Introduction

Inflammatory bowel disease (IBD) is an immune-mediated chronic disorder, which includes Crohn's disease (CD) and ulcerative colitis (UC). Mechanisms of pathogenesis and pathophysiology of IBD are complex and partially unexplained. Dysregulated integrity of intestinal epithelial barrier (IEB) impair gut homeostasis and contributes to

the induction of inflammatory processes, being one of the major pathological mechanisms in IBD. IEB function could be modified by many molecules, including microRNAs (miRNAs). MiRNAs belong to noncoding, single-stranded, and non-messenger RNAs, which can modulate gene expression by binding predicted mRNAs. MiRNAs interact with relevant signaling pathways in the pathogenesis and pathophysiology of IBD and many other diseases.

Aim

The aim of the study is to gather and evaluate the most recent publications on the role of microRNAs in the intestinal epithelial barrier in inflammatory bowel disease, in terms of their benefits in explaining pathogenesis and creating a new therapeutic methods for IBD.

Methods

This review is based on pertinent articles searched using PubMed, encompassing literature published over the last five years. The eligibility criteria were as follows: in vivo and in vitro studies, studies performed on humans, animals, and cell cultures, studies resulted in significant changes of intestinal barrier integrity in inflammatory bowel disease caused by miRNAs, published in English. The key search words were as follows: Inflammatory Bowel Disease, Crohn Disease, Ulcerative Colitis, microRNA, Cell Junctions, Intestinal Epithelial Barrier.

Results

Dysregulated intestinal epithelial barrier function in IBD is associated with altered expression of miRNAs. They interact with many relevant processes, such as: NFkB regulation(1-3), cytokine expression-depended signalling pathways modulation(4-11) growth factors receptors activation(11, 12) or modulation of the enzymes activity(6,13). Alteration of these processes contributes to significant changes in expression of tight junction proteins or in cell junctions stabilization and leads to intestinal barrier disruption (1-14). In murine models of IBD treating with inhibitors or mimics of proper miRNA caused enhance of intestinal barrier function and reduction of intestinal damage or IBD symptoms (5,7-10). Therefore, miRNAs have the potential to be novel targeted pharmacological treatment, but further investigation is necessary.

Conclusions

Summarizing miRNAs interact with many signalling pathways associated with immune response and with TJs epithelial barrier integrity. They play important role in the pathogenesis of IBD as provokers of the inflammation, contributing to increased secretion of many cytokines responsible for a cytokine-induced negative effect on TJs proteins expression and IEB function. Modulation of miRNAs expression can decrease inflammatory response or contribute to the improvement of IEB in many other ways, therefore miRNAs are promising therapeutic targets.

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Relations of physical activity and sleep quality in patients with type 2 diabetes mellitus

Authors:

Natalija Markevičiūtė
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Karolina Krikščiūnaitė
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Lina Lašaitė
Institute of Endocrinology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Sleep disturbances are related with chronic metabolic diseases [1,2]. The incidence of sleep disturbances in patients with type 2 diabetes mellitus (T2DM) amounts to 25 percent [1]. Physical activity may be related to sleep duration and sleep quality [3-5].

Aim

The aim of this study was to detect possible relations between physical activity and sleep quality in patients with type 2 diabetes mellitus.

Methods

The research was performed in the Clinic of Endocrinology of Lithuanian University of Health Sciences Hospital Kaunas Clinics. Participants: 49 patients with T2DM (25 (51.0%) men, 24 (49.0%) women). The inclusion criteria were age more than 18 years and absence of functional disabilities which limit mobility. Participants filled the adapted Lithuanian versions of The Pittsburgh Sleep Quality Index [6] and The Physical Activity Adult Questionnaire [7]. The Physical Activity Adult Questionnaire is based on the directions of The Canadian Physical Activity Guidelines [8] that physical activity of an adult person should be not less than 150 minutes physical activity per week. Data about diabetes and metabolic state were taken from the medical records of the participants. Statistical analysis was made using IBM SPSS Statistics software.

Results

Age of the participants was 60.9 ± 10.7 years, diabetes duration was 11.2 ± 8.1 years, glycated hemoglobin (Hb1C) level was 8.9 ± 1.3 %, body mass index (BMI) was 30.6 ± 6.4 kg/m². Of all the researched participants, 24 (49.0%) patients had physical activity less than 150 minutes per week and 25 (51.0%) patients had 150 or more minutes per week. Patients with higher physical activity were of significantly younger age ($p < 0.001$), shorter diabetes duration ($p = 0.001$) and lower BMI ($p = 0.018$) than those with lower physical activity, but there was no significant difference in Hb1C level ($p = 0.349$). All the researched sleep quality domains (subjective sleep quality ($p < 0.001$), sleep latency ($p < 0.001$), sleep duration ($p < 0.001$), habitual sleep efficiency ($p < 0.001$), sleep disturbances ($p < 0.001$), use of sleeping medications ($p < 0.001$) and daytime dysfunction ($p = 0.016$)) were significantly better in patients with higher physical

activity than in those with lower physical activity. Significant correlations were detected: physical activity correlated negatively with subjective sleep quality (r=-0.732, p<0.001), sleep latency (r=-0.648, p<0.001), sleep duration (r=-0.66, p<0.001), habitual sleep efficiency (r=-0.435, p=0.002), sleep disturbances (r=-0.614, p<0.001) and use of sleeping medications (r=-0.530, p<0.001).

Conclusions

Type 2 diabetes mellitus patients with higher physical activity have better sleep quality and lower body mass index than patients with lower physical activity, but not different Hb1C level. Duration of physical activity in type 2 diabetes mellitus patients is negatively related to subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances and use of sleeping medications.

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Diabetes mellitus as a prognostic factor for a more severe course of COVID-19

Authors:

Aleksandra Chałupnik
Student Scientific Group at the Chair and Department of Family Medicine at Medical University of Lublin

Zuzanna Chilimoniuk
Student Scientific Group at the Chair and Department of Family Medicine at Medical University of Lublin

Maciej Dobosz
Student Scientific Group at the Chair and Department of Family Medicine at Medical University of Lublin

Aleksandra Borkowska
Student Scientific Group at the Chair and Department of Family Medicine at Medical University of Lublin

Anna Sobstyl
Student Scientific Group at the Chair and Department of Family Medicine at Medical University of Lublin

Grzegorz Mizerski
Chair and Department of Family Medicine at Medical University of Lublin

Introduction

COVID-19 is a disease caused by the SARS-CoV-2 coronavirus, whose dangerous feature is its high transmission rate combined with a higher risk of death. Patients hospitalized with COVID-19 had a mortality risk that was nearly 3.5 times higher than those hospitalized with influenza. In a significant proportion of COVID-19 patients requiring hospitalization, diabetes was a primary risk factor.

Aim

The aim of the study is to show that the presence of diabetes in COVID-19 patients is a risk factor for increased mortality among these people.

Methods

The analyzed data is based on a systematic review from 2020-2021 on PubMed platform. The following key words were used: type 2 diabetes, COVID-19, SARS-CoV-2, mortality risk. The articles most relevant to the topic of the work were selected. The overall number of reviewed articles was 9.

Results

The results of a study in China that was published in BMJ Open Diabetes Res Care showed that patients with severe COVID-19 and diabetes mellitus were significantly more likely to require intensive care unit (ICU) treatment with mechanical ventilation compared to those without diabetes. In Italy the Istituto Superiore di Sanità published a report according to which diabetes was the second most common comorbidity after hypertension in those who died from COVID-19. In 2021, The American Journal of Medicine published the results of a retrospective cohort study that was conducted in Wuhan on a group of 584 COVID-19 patients, in which 84 patients had diabetes comorbidity. It was noted that there were more critically ill patients in the diabetic group, suggesting that this group was more likely to progress to severe disease following SARS-CoV-2 infection. Compared with patients without diabetes, patients with diabetes had higher levels of neutrophils, troponin I, CRP, procalcitonin and D-dimers. The results also showed that people with diabetes were more likely to receive intravenous immunoglobulin and mechanical ventilation. This group also had a higher rate of complications such as respiratory failure and acute heart injury. Looking at the research results, the question arises - how does diabetes contribute to the deterioration of COVID-19. Study published in Cell Metabolism shows that in human monocytes, elevated glucose levels increase SARS-CoV-2 replication, and glycolysis sustains virus replication due to the production of mitochondrial reactive oxygen species. High stress on

inflammatory cells can also affect the function of skeletal muscles and the liver, the organs responsible for most of the insulin-mediated glucose uptake.

Conclusions

Study results show that diabetes is one of the predictors of more severe course of COVID-19. The course of the disease in this group of patients is characterized by higher values of inflammatory markers and more advanced treatment. In conclusion, patients with COVID-19 and coexisting diabetes require special attention because more often than in non-diabetic patients, severe complications can be observed.

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The quality of pain management in adult cancer patients

Authors:

Aleksandra Gładyś
Students' Scientific Society, Department of Oncology and Radiotherapy, Medical University of Silesia in Katowice, Poland

Katarzyna Słupińska-Borówka
Students' Scientific Society, Department of Oncology and Radiotherapy, Medical University of Silesia in Katowice, Poland

Maciej Gucwa
Students' Scientific Society, Department of Oncology and Radiotherapy, Medical University of Silesia in Katowice, Poland

Agnieszka Stępińska
Students' Scientific Society, Department of Oncology and Radiotherapy, Medical University of Silesia in Katowice, Poland

Wiktoria Strona
Students' Scientific Society, Department of Oncology and Radiotherapy, Medical University of Silesia in Katowice, Poland

Monika Godawska
Students' Scientific Society, Department of Oncology and Radiotherapy, Medical University of Silesia in Katowice, Poland

Natalia Oukal
Students' Scientific Society, Department of Oncology and Radiotherapy, Medical University of Silesia in Katowice, Poland

Iwona Gisterek
Students' Scientific Society, Department of Oncology and Radiotherapy, Medical University of Silesia in Katowice, Poland

Introduction

Cancer patients often suffer from both chronic and acute pain related to their disease [1-3], which may be caused by the disease itself or be the side effect of oncological treatment [4]. Therefore, pain management is an essential part of modern anti-cancer treatment [3]. The level of pain control has an impact on patients' quality of life [3, 4] and their attitude towards further treatment, such as chemotherapy or radiotherapy [3].

Aim

The aim of the study was to assess the quality of pain therapy received by cancer patients, to investigate their satisfaction with pain management and to determine factors affecting their perception of pain related to cancer.

Methods

An original questionnaire was distributed among 194 patients (63,7±10,8 years, 54% females) treated in two oncological departments of Medical University of Silesia, Katowice, Poland. The questionnaire was anonymous, designed in paper format, and was approved by the chairs of both oncological departments. Each of the patients of the departments at the time of the study was kindly invited to fill out the form. Patients willing to participate returned it to the research team member after finishing the survey. The questionnaire contained a statement on the lack of questions requiring confidential data and both open and closed questions regarding patients' medical history, their perception of pain and its severity in the Numerical Rating Scale (NRS) as well as demographic questions. Statistical analysis was performed using Statistica 13.3 software.

Results

39.9% of patients confirmed the feeling of cancer-related pain, without any statistically significant differences in the incidence or severity of pain for gender or tumor location. Most frequently (51.4%), the pain was mild (NRS scores 0-3), but patients reported also moderate (NRS 4-6; 27%) and severe pain (NRS 7-10; 21,6%). Among patients declaring the presence of pain, 81.4% received pain therapy, mostly (95.6%) pharmacotherapy, usually prescribed by oncologist (69.1%), less often by family doctor (14.7%) and palliative care specialist (10.3%). The majority (73.9%) of treated patients agreed that they received optimal care. However, in group of patients receiving pain therapy, 63% declared that they wished to make changes in current pain treatment. 67.9% of patients linked their pain sensation to mood deterioration, more frequently in patients describing their pain as severe (p=0.0001), and moderate and severe pain impaired their daily living more often (p=0.0001). Gender did not affect the perception of pain or mood lowering (p>0.05).

Conclusions

In our pilot study, patients received therapy for acute and chronic pain, which they declared to be optimal. However, the results suggest that some patients remained undertreated. The perception of cancer-related pain cancer patients may be related to their mood deterioration.

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The impact of sociodemographic and clinical factors on the lifetime of voice prosthesis

Authors:

Gabija Pajėdienė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Gabija Gaučė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Kipras Pribuišis
Department of Otorhinolaringology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Lithuania

Introduction

Total laryngectomy impacts essential functions, such as breathing, communication and swallowing. Voice prosthesis (VP) is a current gold standard method for a voice rehabilitation after total laryngectomy [1,2]. However, the device lifetime is a determining factor in patient quality of life and patient readmission rates [3].

Aim

The aim of the study was to evaluate the impact of age, sex, place of residence, neck irradiation, gastroesophageal reflux disease (GERD) and the use of heat and moisture exchanger (HME) on the lifetime of VP.

Methods

This retrospective cohort study included patients, who underwent total laryngectomy followed by secondary VP implantation in Lithuanian University of Health Sciences Kaunas Clinics and Kaunas Clinics Affiliate Hospital of Oncology. All patients received Provox Vega VP. Collected data included age, sex, place of residence, documented neck irradiation, GERD, and use of HME. Places of residence were divided into rural and urban areas. Urban area includes three biggest Lithuanian cities with suburb and municipality centers. Patients were divided into two age groups: younger than 65 years old and older. The main outcome measure of this study was the lifetime of VP device measured in days: from the day of insertion to the day of removal. Statistical analysis was performed using Student's t-test for comparison of means, and Kaplan Meier analysis for the device lifetime.

Results

A total of 322 VP used for 59 patients were analyzed in the study. The mean lifetime of VP was 184.7 ± 123.3. VP lifetime was significantly longer in the older patient group rather than the younger group (mean 211.9 ± 16.9 vs 176.3 ± 7.3) $p=0.0001$, also in male group compared to female (mean 192.5 ± 7.7 vs 138.7 ± 12.5) $p=0.0001$. Place of residence had a statistically significant impact comparing rural (mean 189.0 ± 11.3) and urban areas (mean 182.2 ± 8.7) $p=0.0001$. For patients who received radiotherapy, the device lasted significantly longer compared to those who did not (mean 191.2 ± 7.6 vs 151.3 ± 14.9) $p=0.0001$. Significantly longer device lifetime was seen in patients without GERD compared to those with documented GERD (185.7 ± 8.9 vs 182.7 ± 10.7) $p=0.0001$. Use of HME in comparison with no HME also had a significant impact on the device lifetime (mean 213.0 ± 20.0 vs 179.3 ± 7.2) $p=0.0001$.

Conclusions

Older age, male sex, rural living area, neck irradiation, no presence of GERD and the use of HME had a statistically significant impact in prolonging the lifetime of voice prosthesis.

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INTERNAL MEDICINE SESSION PART II

SARS-CoV-2 specific IgG seroprevalence during the first wave of the COVID-19 pandemic

Authors:

Lukas Vitkauskas
Lithuanian University of Health Sciences, Faculty of Medicine

Laura Pereckaitė
Lithuanian University of Health Sciences, Department of Laboratory medicine

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was discovered in China at the end of 2019 and rapidly spread around the world causing up to 40 million of COVID-19 cases during the first wave of the pandemic [1]. Due to regular and direct contact with patients, healthcare workers (HCW) are at higher risk to get infected, therefore SARS-CoV-2 seroprevalence is higher among HCW, compared to general population [2]. The most important use of SARS-CoV-2 specific IgG antibody testing is to determine virus exposure in the selected populations and to assess infection risk at the individual level [3].

Aim

The aim of our study was to determine SARS-CoV-2 IgG seroprevalence in HCW of Kaunas hospitals during the first wave of the COVID-19 pandemic, and to compare two methods for specific antibody testing.

Methods

From June 2020 to September 2020, HCW working with patients, who had acute respiratory symptoms, were invited to voluntarily participate in the study. Upon arrival at the testing site, they were asked to fill a questionnaire including information about the contact with suspected or confirmed COVID-19, and experienced acute respiratory symptoms. Each participant had two blood samples taken. Finger capillary blood was used to test for SARS-CoV-2 specific IgG using lateral flow immunoassay. Serum was used to test for SARS-CoV-2 spike protein specific IgG using semiquantitative enzyme-linked immunosorbent assay (ELISA). For quantitative data, mean, range, and standard deviation were calculated. Pearson's Chi-square test was used to analyze qualitative data. Statistically significant findings were assumed with $p < 0.05$.

Results

302 HCW of Kaunas hospitals were included in the study and tested using both lateral flow immunoassay and ELISA. SARS-CoV-2 specific IgG were found in 3 (0.99%) participants using rapid lateral flow immunoassay. Using ELISA, SARS-CoV-2 specific IgG were found in 4 (1.32%) cases. There were only 2 (0.66%) cases when both ELISA and lateral flow immunoassay detected SARS-CoV-2 specific IgG. Thus, positive percent agreement of both tests was 50%, and negative percent agreement exceeded 99%. All of the SARS-CoV-2 IgG positive individuals detected using lateral flow immunoassay had a contact with COVID-19 and developed characteristic symptoms. Among IgG positive individuals detected using ELISA, 75% had a known contact with COVID-19 and developed the symptoms. Diarrhea,

and loss of smell and taste sensations were the most statistically significantly prevalent symptoms in both groups (p < 0,05). Similar results were also shown in a study performed at Vilnius University Hospital Santaros Klinikos where 2 (0.66%) of 300 tested HCW had SARS-CoV-2 specific IgG [4].

Conclusions

During the first wave of the COVID-19 pandemic, only about 1% of tested HCW of Kaunas hospitals had SARS-CoV-2 specific IgG antibodies.

Positive percent agreement of anti-SARS-CoV-2 IgG detection using lateral flow immunoassay and ELISA was 50%, and negative percent agreement exceeded 99%.

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Tick-borne encephalitis and its prophylaxis: parent knowledge, attitude and causes of children vaccination or anti-vaccination among Raseiniai, Kedainiai and Kaunas outpatients

Authors:

Miglė Puodžiūnaitė
Department of Family Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Agnė Augustaitytė
Department of Family Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Jolanta Sauserienė
Department of Family Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

In 2017 98 % of TBE patients have not been vaccinated (1). Despite the positive attitude towards vaccines against TBE, one of the main reasons for not vaccinating children is the high cost of the vaccine, especially in urban areas

(2). Furthermore, parents tend to lack knowledge about the usefulness and effectiveness of the vaccine, as the healthcare professionals fail to represent their value (2, 3).

Aim

To evaluate Raseiniai, Kedainiai and Kaunas outpatients' knowledge about TBE, their attitude towards vaccines against TBE and causes of their children vaccination and anti-vaccination.

Methods

Prospective anonymous survey was conducted from December of 2019 to May of 2020 in PI Kedainiai Primary Care Centre, Hospital of LUHS Kaunas Clinics Family Medicine Clinic and LLC Raseiniai Family Doctors' Centre by distributing questionnaires made by researchers. The questionnaires consisted of 22 questions with 3 domains: general information (4 questions), parents' attitude towards the vaccine (9 questions), knowledge about the TBE (9 questions). Knowledge was evaluated using a score system: 1-2 points per question. Participants in each city were selected according to their age (≥18 years old) and whether they had ≥1 child. Data was analyzed by using MS Excel, Power BI and SPSS programmes. The comparative groups were analyzed using Kolmogorov-Smirnov and Shapiro-Wilk criteria and compared using Pearson's Chi-square test and Student's t-test. The results were considered statistically significant at $p<0.05$.

Results

352 questionnaires (148 in Kaunas, 113 in Kedainiai, 91 in Raseiniai) were filled. The average age of the participants ± SD was 36 ± 7.68. The data was not grouped according to the gender as the majority of questionnaires were filled by both of the family members. The prevalence of higher education was 57.1%. 85.8% of respondents had a positive attitude towards the vaccine against TBE. Parents who vaccinate themselves significantly more often vaccinate their children than the parents who do not vaccinate themselves (29.5% vs. 0.6%, respectively; $p<0.001$). Parents significantly more often vaccinate their children with state-funded vaccines than with TBE vaccines (81.8% vs. 41.5%, respectively; $p<0.001$). The difference of knowledge about the importance of the vaccine was significantly higher among the people with higher education than without one (58.7% vs. 42.7%, respectively; $p<0.001$). Knowledge about the vaccine is better among respondents from Raseiniai than Kedainiai (average score 6.04 and 5.37, respectively; $p=0.013$). The high cost of the vaccine is the most common reason for anti-vaccination (41.3%). 48.9% of respondents stated that they were not informed enough about the advantages of the vaccine.

Conclusions

Even though the price of the TBE vaccine is too high for most of the parents, a positive outlook towards vaccination among them still remains. Additionally, higher education is linked to a better understanding about the advantages of the TBE vaccine.

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The effect of extracellular matrix protein on eosinophil adhesion and pulmonary structural cell proliferation in asthma

Authors

Airidas Rimkūnas
Laboratory Medical Biology, Faculty of Medicine, Lithuanian University of Health Sciences

Andrius Januškevičius
Laboratory of Pulmonology, Department of Pulmonology, Lithuanian University of Health Sciences

Ieva Janulaitytė
Laboratory of Pulmonology, Department of Pulmonology, Lithuanian University of Health Sciences

Virginija Kalinauskaitė-Žukauskė
Department of Pulmonology, Lithuanian University of Health Sciences

Eglė Jurkevičiūtė
Laboratory of Pulmonology, Department of Pulmonology, Lithuanian University of Health Sciences

Beatričė Tamašauskaitė
Laboratory of Pulmonology, Department of Pulmonology, Lithuanian University of Health Sciences

Jolita Palačionytė
Department of Pulmonology, Lithuanian University of Health Sciences

Kęstutis Malakauskas
Department of Pulmonology, Lithuanian University of Health Sciences

Introduction

Asthma is a chronic inflammatory respiratory disease, defined by increased eosinophil - the most important inflammatory cells in the pathogenesis of asthma - infiltration into the airways. Eosinophils express high levels of various cytokines, chemokines and growth factors which leads to airway inflammation and structural changes (1). Adhesion to pulmonary structural cells or their produced extracellular matrix (ECM) components may activate the eosinophils and prolong their viability (2), thus further promoting the progress of airway remodeling in asthma. We hypothesized that eosinophils may directly via adhesion or indirectly via production of mediators disrupt ECM

proteins production by airway smooth muscle (ASM) cells and pulmonary fibroblasts contributing to airway remodeling in asthma.

Aim

To evaluate the difference of eosinophil adhesion to pulmonary structural cells vs. their secreted ECM proteins and pulmonary structural cell proliferation in asthma.

Methods

8 allergic asthma (AA), 6 severe eosinophilic asthma (SEA) patients and 9 healthy subjects (HS) were included into the study. Blood eosinophils were isolated by using high density Ficoll centrifugation and magnetic separation. For each study individual combined cell cultures (co-cultures) between isolated eosinophils and ASM cells, pulmonary fibroblasts and their released ECM proteins were prepared. ECM protein purification was performed using NH_4OH based cell lysis. Eosinophils adhesion was evaluated by measuring eosinophil peroxidase activity in co-cultures; Cell proliferation was measured by Alamar blue assay. Significant differences between two separate groups were determined using Mann–Whitney U-test; within one study group—Wilcoxon signed-rank test. Data shown as mean ± SEM. Minimum limit for statistically significant value—$p<0.05$

Results

We observed that 78.2±2.0%, of AA patients, 69.0±5.3% of SEA patients and 57.2±5.4% of HS eosinophils adhere to ASM cells, meanwhile 89.0±1.0%, 90.2±0.8% and 76.6±1.0% respectively adhered to ASM cell secreted ECM proteins (p<0.05). Similarly, 81.2±2.3% of AA patients eosinophils adhere to pulmonary fibroblasts and 89.6±0.7% to their secreted ECM proteins, p<0.05. However, no significant differences between eosinophil adhesion to pulmonary fibroblasts and their secreted ECM proteins were found in SEA and HS groups. ECM proteins, purified from cultivated pulmonary structural cells in co-culture with SEA and AA patients eosinophils, promoted proliferation of newly seeded ASM cells by 12.9±1.6% and 13.5±1.7% respectively, p<0.05; pulmonary fibroblasts by 7.8±1.2% and 7.9±1.2% respectively, p<0.05, meanwhile HS eosinophils provided no significant effect.

Conclusions

Eosinophils adhere more intensively to ECM proteins than ASM cells, and this adhesion is further enhanced in asthma; however only AA patients eosinophil adhesion to pulmonary fibroblast secreted ECM proteins was enhanced. Eosinophil affected ECM protein production increases pulmonary structural cells proliferation in asthma.

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Identification of eighteen novel mutations in COL4A3, COL4A4 and COL4A5 genes in Lithuanian families with Alport syndrome

Authors:

Karolina Janonyte
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Agne Cerkauskaite
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Ieva Jeremiciute
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Rimante Cerkauskiene
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Marius Miglinas
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Arndt Rolfs
Centogene AG, Am Strande 7, Rostock, Germany

Introduction

Alport syndrome (AS) is an inherited disorder characterized by hematuria, proteinuria and progressive renal failure [1]. It can also be associated with extrarenal manifestations [2]. Mutations in COL4A5 usually cause X-linked (XLAS) Alport syndrome, whereas mutations in COL4A3 and COL4A4 genes can be associated with autosomal dominant (AD) or recessive (AR) inheritance. To date, more than 1000 different mutations in COL4A5, COL4A3, and COL4A4 are identified [3].

Aim

To evaluate genotype-phenotype correlation in 15 Lithuanian families with novel mutations.

Methods

In this study mutational analysis by next generation sequencing (NGS) was performed. Low-quality single nucleotide and small deletion/insertion variants were confirmed by Sanger sequencing in Centogene laboratory, Germany.

Results

Molecular testing of 150 suspected individuals led to the detection of 18 novel mutations, including nine, four and five mutations in COL4A5, COL4A4 and COL4A3 genes, respectively. Mutations in COL4A5 gene, including 4 missense, 2 splice site and 3 frameshift mutations were associated with X-linked inheritance. Three missense and 1 stop codon mutations in COL4A4 and five missense mutations were found in COL4A3 and led to autosomal dominant or autosomal recessive inheritance. Two families possessed double mutations in both COL4A5 and COL4A4 and one family had double mutation in COL4A3. Sensorineural hearing loss and chronic kidney disease were more common in XLAS male patients with hemizygous missense mutations, whereas the heterozygous mutations in XLAS female

patients showed milder phenotype and different level of kidney injury. Two women from the same family had double missense mutations in COL4A3 gene and presented ARAS, interestingly, age of hearing loss, onset of hematuria, proteinuria and kidney insufficiency were different among these patients. Genotype-phenotype correlation analysis suggested that some mutations may show intra-familial phenotypic variability. We observed no phenotypic difference between people who had double mutations in both COL4A5 and COL4A4 genes. Evaluating the clinical manifestations caused by different types of mutations did not show any difference between large fragment mutations and other missense mutations in AS.

Conclusions

Our study broadens the knowledge of genetic mutations and phenotypic spectrum for Alport syndrome, thus expanding the spectrum of known mutations causing AS.

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Genotype - phenotype correlation in 37 Lithuanian families with Alport syndrome

Authors:

Karolina Bagdonavičiūtė
Faculty of Medicine, Vilnius university, Vilnius, Lithuania

Emilija Biekšaitė
Faculty of Medicine, Vilnius university, Vilnius, Lithuania

Agnė Čerkauskaitė
Faculty of Medicine, Vilnius university, Vilnius, Lithuania

Introduction

Alport syndrome (AS) is a nephropathy of genetic origin, caused by defects in type IV collagen (1). Inherited in either autosomal or X-linked pattern, the syndrome is due to mutations in *COL4A3*, *COL4A4* or *COL4A5* genes, making it a genetically heterogenous condition (2,3). The severity of kidney dysfunction, as well as manifestations of extrarenal abnormalities vary considerably depending on different mutations (4).

Aim

The aim of this study was to identify AS causing mutations in 37 Lithuanian families and describe the genotype-phenotype correlations of affected individuals.

Methods

Analysis of data of the patients with suspected AS was performed using SPSS statistical software platform. We analysed the presence of hematuria as well as proteinuria, chronic kidney disease (CKD), end stage renal disease, sensorineural hearing loss, ocular abnormalities. Histological records of patients that had undergone kidney biopsy were also taken into account. Mutations were detected by next generation sequence (NGS). Low-quality single nucleotide and small deletion/insertion variants are confirmed by Sanger sequencing in Centogene laboratory, Germany.

Results

Molecular genetic analysis was performed to 150 patients with suspected Alport syndrome, 66 patients (13 children and 53 adults) from 37 families were diagnosed of having Alport syndrome, including 41 females and 25 males. AS-specific histological pattern in renal bioptate as well as positive family history were the suspicion criteria for a proportion of patients. ~97 % of patients were genetically confirmed to have AS, caused by 38 different mutations in the genes *COL4A5*, *COL4A4* and *COL4A3* (62,5 %, ~20,83 %, ~16,67 %, respectively). The most frequent mutation was c.1871G>A p.(Gly624Asp) in *COL4A5* gene. The majority of patients had hematuria (~86%), while proteinuria was detected in ~67% of affected patients. Chronic kidney disease was present in ~32 % of patients, whereas in 33 % of these patients the disease progressed to end-stage renal disease with an average age of 36 years on its onset (19 – 60 y). Comparing with mutations in *COL4A3* and *COL4A4*, CKD was more frequently diagnosed in patients with *COL4A5*mutations. The progression of the disease correlated with the age (p<0.05). Bilateral neurosensory hearing loss was detected in ~15% of all patients with AS, whereas ocular abnormalities were presented only in ~5% of them. Both of these extrarenal manifestations were mostly associated with mutations in *COL4A5* gene.

Conclusions

Clinical phenotypes of AS patients depend largely on the gene and severity of the mutations. Patients carrying mutations in the gene *COL4A5* present with more severe kidney dysfunction as well as extrarenal manifestations, whereas pathogenic variants in *COL4A3* and *COL4A4*, associated with autosomal inheritance, cause milder phenotypes.

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Nephrogenic systemic fibrosis - clarifying risk factors and maintaining vigilance: a literature review

Authors:

Kamilė Počepavičiūtė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Erika Jauraitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Algidas Basevičius
Department of Radiology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Nephrogenic systemic fibrosis (NSF) is a rare but debilitating disease, which manifests as scleroderma, leads to contractures of limbs, severe pain and may even affect vital organs. Although exact etiology is not clear, NSF is strongly associated with gadolinium-based contrast agents (GBCAs) and is mostly seen in patients with advanced kidney disease [1-3]. The first case of NSF was identified in 1997, but the relation between the disease and GBCA's wasn't noticed until 2006 [4,5]. Whereas NSF is potentially iatrogenic, it is important to note possible risk factors which, according to the recent literature, are less stable non-linear GBCA's, high-dose gadolinium-enhanced MRI, dialysis, kidney transplantation in history and proinflammatory processes [6].

Aim

To overview the incidence of nephrogenic systemic fibrosis in patients with renal impairment, evaluate dependence on GBCA and other related risk factor from available literature.

Methods

Data search was conducted using MEDLINE, ScienceDirect, Oxford journals databases. Keywords used for the research: nephrogenic systemic fibrosis, gadolinium, renal failure, MRI. Inclusion criteria: access to full articles in English, randomized controlled trials, center studies and cohorts, population with renal impairment. Exclusion criteria: conference abstracts, non-English studies.16 articles met criteria, after further inspection (only renal impaired NSF population, MRI done before NSF diagnosis) - 9 were selected for analysis and 8 were included into calculation of population. Data were expressed as percentage (%) and mean. Statistical analysis was performed using MS Office.

Results

In 8 included articles total population was 3 791 patients and consisted of patients with stage 3-5 of chronic kidney disease only [7–14]. 692 of them were both, diagnosed with end-stage renal disease (ESRD) and received dialysis [7,10,13]. Incidence of NSF in total population was 0.185 %, but significantly higher in ESRD group – 1.012 %. Notable that all of 7 NSF patients belonged to both groups. 6 of them received non-linear non-ionic GBCA – gadodiamide (85.7 %). In all studies NSF patients received higher doses of GBCA than considered maximum safe dose in MRI (> 0.1 mmol/kg). After a specific evaluation of contrast media used in 216 NSF case reports it was revealed that gadodiamide was the most common GBCA (84.3 %) in studied NSF population too, which remains true to our findings. (84.3 % vs. 85.7 %) [3].

Conclusions

This literature review reveals that NSF is a rare disease with the incidence of 0.185 % in patients that have renal impairment. 85.7 % of NSF cases where caused by gadiodiamide and higher doses than recommended maximum safe dose (0.1 mmol/kg) were given. Type and dose of GBCA, stage of kidney disease together with renal replacement therapy should be taken into consideration by radiologist, because even though NSF is rare, it can cause devastating or even lethal outcomes.

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The relationship between lower back pain and urinary incontinence

Authors:

Ieva Karaliūtė
Faculty of Medicine, Lithuanian University of Health Sciences

Rugilė Dubickaitė
Faculty of Medicine, Lithuanian University of Health Sciences

Lina Bykovienė
Department of Rehabilitation, Hospital of Lithuanian University of Health Sciences Kaunas Clinics

Introduction

Low back pain (LBP) is the main reason for disability in the world (1) and is more prominent in women (2). Furthermore, females have 2-3 times higher odds to suffer from urinary incontinence (UI) (3). It has been noticed that women who have LBP are more likely to suffer from stress UI (4). Additionally, the increase of LBP level results in a higher risk of urgency UI (5). There is no research done on the correlation between LBP and UI in Lithuania.

Aim

To determine the relationship between lower back pain and urinary incontinence in adults with LBP.

Methods

The prospective study was performed at the Department of Rehabilitation in the Hospital of LUHS Kauno klinikos in the period of 2020.07.01- 2021.02.01. The study was approved by the Bioethics centre of the LUHS (BEC-MF-410). The participants were patients suffering from LBP. Patients who had urinary tract infections were excluded. The ICIQ-UI-SF and anamnestic questionnaires were given to the participants. A higher ICIQ score indicated greater severity of UI symptoms. UI was considered to be associated with LBP when the onset of UI matched the occurrence of LBP or developed later. Statistical calculations were performed using SPSS 23.0 software. Data significance was evaluated using the Mann-Whitney U test and the Student's T-test. A p-value of <0.05 was stated as statistically significant.

Results

36 patients who reported LBP were included in the study. 32 of them were female (88.9 %) and 4 male (11.1 %). The mean age of interviewee was 55.72 years (SD= 15.35). 27 respondents (75 %) did not report UI, 3 (8.3 %) patients reported that UI occurred before the LBP, 6 (16.7 %) patients reported the onset of UI matched the occurrence of LBP or developed later. All reports of UI (n=9) were given by female patients. 4 of them had stress UI, 4 – urgency UI and 1 reported mixed UI. 5 (55.55%) respondents consulted a doctor (3 – family physician, 2 – gynaecologist). Medicaments or Kegel exercises were prescribed for 4 patients but there was not enough data to evaluate efficiency. The mean age among patients who suffered from UI associated with LBP was higher (66.83 years (SD= 8.49)) compared to patients who did not report UI associated with LBP (53.5 years (SD=15.53)), the difference was not statistically significant (p=0.051). The mean ICIQ result was higher among the patients suffering from UI associated with LBP (8.83 points (SD= 2.48)) compared to patients who reported that UI occurred before the onset of LBP (3.67 points (SD= 2.52)), the correlation was statistically significant (p=0.022).

Conclusions

16.7% of patients reported that UI matched the onset of LBP or developed later. These patients had more severe UI symptoms than 8.3% of tested participants who reported UI before the LPB. The correlation between LBP and UI is unclear due to a limited number of participants. The links between LPB and UI necessitate further evaluation.

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Treatment of membranous nephropathy using Rituximab: a literature review

Authors:

Erika Jauraitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Asta Stankuvienė
Department of Nephrology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Membranous nephropathy (MN) is the main reason of nephrotic syndrome (NS) for adults and is described as a deposition of immune complexes on the glomerular basal membrane and it's thickening [1]. In severe cases without treatment membranous nephropathy leads to end stage kidney failure [2]. MN is a disorder caused by reactive B cells and autoantibodies, so scientists started exploring agents that selectively depletes B cells and therefore could reduce NS and resolve glomerular injury [3]. One of the specific agents chosen was anti- CD monoclonal antibody Rituximab which quickly eliminates circulating B cells and could potentially be better and more specific treatment for patients with severe MN [4]. Literature and case series was collected to review Rituximab's use in treating MN, how effective it was and what adverse effects were reported.

Aim

To discuss the use of Rituximab for membranous nephropathy treatment, efficacy and adverse effects.

Methods

A literature review of articles was conducted by using PubMed, ScienceDirect databases restricted to 2011-2020. Keywords were used for the research: "rituximab", "membranous nephropathy", "side effects". Inclusion criteria: access to full articles in English; randomized controlled trials, center studies and prospective cohort studies. Review population- patients with biopsy proven MN. Single case reports, abstracts, studies with minors were excluded. 552 articles were found, out of which 8 matched criteria [5-12]. Aspects that had been evaluated: proteinuria g/24h before and after Rituximab, remission, follow up time and side effects.

Results

In 8 included articles population was 324 patients. Proteinuria means varied from 1.13 to 11.9 g/24h in each study before Rituximab. After treatment, complete or partial remission was seen in 195 patients, and proteinuria decreased significantly, mean varying from 0.68 to 6.5 g/24h [8-13]. Follow up time median- 19.5 months [5-12]. Over the course of treatment, GFR was slowly increasing and renal survival was better in patients with remission after Rituximab, whereas renal function declined in those without remission [7,10,12,14]. Despite promising results, 5 studies mentioned nephrotic proteinuria relapse, it occurred to 54 patients [7-9,12,14]. Literature also suggests that some of the patients can be non-responders to the treatment [10–12]. 95 out of 324 patients experienced side effects (SE), and most common ones were infections and cardiovascular events. Other SE were infusion related reactions, hematologic toxicity [5,7,8,10]. None SE were life threatening and most were mild.

Conclusions

After Rituximab 195 out of 324 achieved remission and decrease in proteinuria was observed. Drug was well tolerated with only mild side effects, mostly infections and cardiovascular events. Despite the encouraging results, non-responders need to be taken in to consideration. Rituximab is an effective and relatively safe alternative for membranous nephropathy treatment.

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OBSTETRICS & GYNAECOLOGY AND NEONATOLOGY SESSION

Healthy term newborns weight loss after delivery

Authors:

Karolina Stankevičiūtė
Medicine faculty, Lithuanian University of Health Sciences, Kaunas, Lithuania

Dalia Stonienė
Department of Neonatology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Physiologically normal for babies to lose 5-7 % of weight within the first few days of birth due to body fluid adjustments (1). Supplementary feeding with adapted milk formula or donor breast milk is indicated when the weight loss is more than 10% (2).

Aim

To analyze the factors influencing the weight loss of healthy term newborns in the first 24 hours after birth.

Methods

Retrospective cohort study at LUHS Hospital Kaunas Clinics, between 2019 November 1st – December 31st. Medical records of 352 healthy term newborns were analyzed. Statistical analysis was performed using SPSS 22.0 software package. Data is presented as average (standard deviation) of birth weight and 24 hours after birth weight loss percentage, statistically significantly different at p<0.05.

Results

Newborns born with vaginal births (VB) were 283(81%), C-sections (CS) were 69(19%). Newborn's average weight was 3437.4(515.5) g, Apgar scores 9.17(1.08), gestational weeks 38.86(3.16). Females were 52%. Skin-to-skin contact and breastfeeding during the first 2 hours occurred 90.8% of newborns. Women chose medication analgesia 219(63%) and non-medication 71(20%) times. Regional nerve blockade 145(67%), inhalation sedation masks 64(28%) times were used. Diabetes mellitus (DM) had 126(35.5%), obesity 11(3%), arterial hypertension (AH) 14(4%) of mothers. Newborns born with CS had a significantly higher weight loss 5.96(2.15) comparing with VB 3.95(2.12) p=0.001. Birthweight <2999g and Apgar score <8 had no significant difference comparing delivery method. 39-40 gestational weeks newborns born with VB and regional nerve blockade average weight loss 4.93(2.22) was significantly higher than with inhalation mask 4.08(1.98) p=0.02. There were no significant differences between medication analgesia and non-medication p=0,17. Newborns whose mother's had DM or obesity and have done VB with regional nerve blockade analgesia average weight loss was significantly higher than with inhalation sedation masks p=0.005. AH had no such effect.

Conclusions

CS was an associated factor with neonatal weight loss after birth in newborns. DM was a significant cause comparing

newborns average weight loss after CS. Newborns whose mothers had DM or obesity and had VB with regional nerve block had a significantly higher average weight loss than those who used inhalation sedation masks.

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Mothers' and Vilnius University Children's Hospital Neonatology Department Staff Attitudes Towards Neonatal Pain

Authors:

Patricija Gudeikaitė
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Judita Dovydėnaitė
Neonatology Department, Vilnius University Hospital "Santaros Klinikos"

Arūnas Liubšys
Neonatology Department, Vilnius University Hospital "Santaros Klinikos"

Nijolė Drazdienė
Neonatology Department, Vilnius University Hospital "Santaros Klinikos"

Introduction

Newborns infants in need of hospitalization often experience painful procedures such as blood draws from the heel or vein and many other invasive treatments. If a newborn is hospitalized in an intensive care unit, according to the literature, they have an average of 7-17 painful procedures per day (1). Over the last 5 - 10 years, there has been a sharp increase in the focus on neonatal pain relief, and a deepening of knowledge on how to effectively reduce neonatal pain, as it has been shown that long-term, severe pain can have consequences for neonatal development (2).

Aim

To find out the attitude of Mothers and Vilnius University Children's Hospital Neonatology department physicians and nurses towards neonatal pain, to determine which parameters are most often used to assess neonatal pain and which methods are used to decrease it.

Methods

Research design - descriptive study. 66 mothers, 20 physicians and 40 nurses were interviewed during 2021. The parent-staff questionnaire consisted of three equal parts: attitudes toward neonatal pain; parameters used to assess

neonatal pain; non-pharmacological methods by which the pain of the newborn is alleviated. In the personnel questionnaire fourth part was also included: an opinion on the pain management strategy in the department.

Version 26 of the IBM SPSS program was used for data analysis. Descriptive analysis methods were used to analyze survey data and demographic statistics. Chi-square analysis was used to compare responses between physicians, nurses and mothers.

Results

According to all staff interviewed and 92.4% of mothers, continuous and systematic pain assessment has an impact on achieving the pain reduction effect. 100% of neonatologists, 95% of nurses and 80.3% of mothers believe that the pain experienced by a newborn can have long-term consequences for the development of his nervous system. 69.7% of mothers state that they do not have enough knowledge about assessing and relieving newborn pain, while 90 % of staff correspondents state that they do have enough knowledge (the difference is statistically significant, p value = 0.023). When assessing pain, 100% of physicians, 90% of nurses and only 59.1% of mothers rely on physiological parameters (statistically significant difference, p value = 0.034), while 100% of mothers and 97% of staff correspondents rely on behavioural changes. 100% of mothers, 95% of neonatologists, 98% of nurses use physical non-pharmacological methods to relieve pain such as touching, choosing the right position.

Conclusions

There is statistically significant difference between the mothers and staff correspondents when they are asked about their knowledge in assessing and relieving newborn pain. Most doctors and nurses base their assessment of newborn pain on both physiological parameters and behavioural changes while mothers pay closer attention to behavioural changes. Both mothers and staff correspondents mostly use physical non-pharmacological methods to relieve pain.

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Associations of sociodemographic factors and depressive mood of a pregnant woman during the COVID-19 pandemic

Authors:

Gabrielė Repšytė
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Eglė Radzevičiūtė
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Lina Adomaitienė
Department of Obstetrics and Gynaecology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania

Introduction

Decreased activity, no meetings or changed relationship with a partner are just a part of the consequences of the COVID-19 pandemic, which may have put a woman at risk of depression moods after pregnancy. Yet there are limited studies how the quarantine affected women's psychoemotional state after childbirth. The incidence and risk factors for depressive state among Lithuanian women are not documented.

Aim

To investigate how depressive mood was associated to sociodemographic factors among Lithuanian women after childbirth during the COVID-19 pandemic.

Methods

The research was carried out with permission of Lithuanian University of Health Sciences Centre of Bioethics (No. BEC-MF-172). It was conducted in December 2020 by sharing an anonymous online survey in social media groups concerning pregnancy, birth and early motherhood. Women who have given birth during the pandemic in Lithuania were asked to answer the questions about their latest pregnancy, delivery and early postpartum period. A questionnaire consisted of Edinburgh Postpartum Depression Scale (EPDS), sociodemographic questions and original questions about relationship with their family, care received during pregnancy and partner participation in the delivery. Statistical analysis was performed using IBM SPSS Statistics 26.0.

Results

206 respondents participated in the survey. There was no association between the EPDS score rates and attending antenatal classes once, more than once, or not attending (median EPDS rates were 11(0-29), 12.5(0-29), 11(0-30), p=0.235, respectively. There was no significant age difference between these groups, p=0.489, however, there was a significant relationship between classes attendance and level of education ($\chi 2$=15.845, p=0.045). No significant difference in risk of postpartum depressive state was detected between the group of giving birth alone during the first lockdown, median EPDS 12(0-30), the group where partner participated in delivery, 11(0-29), and the group where partner was not attending for other reasons, 8.5(0-22), p=0.260. Marital status did not have significant effect on depressive state (p=0.377), but the relationship with partner and care during pregnancy/postpartum period did, r=-0.326, p<0.001. Neither level of education (p=0.199), nor women age (p=0.87) had effect on depressive moods. Significantly higher mental distress was among women living in urban areas than among those living in rural, mean EPDS 11.73(s=7,513) vs 8.86(s=6.614), p=0.022, respectively.

Conclusions

Higher severity of depressive symptoms among Lithuanian women after pregnancy during the COVID-19 pandemic were related to living in urban areas, having worse relationship with a partner, receiving less support during pregnancy and postpartum period. Marital status and giving birth alone did not affect woman's depressive moods during the pandemic.

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The influence of delivery-related factors on increased depressive state after childbirth during the covid-19 pandemic

Authors:

Eglė Radzevičiūtė
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Gabrielė Repšytė
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Lina Adomaitienė
Department of Obstetrics and Gynaecology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania

Introduction

Decreased follow-up visits, long hospital stay or giving birth alone during the pandemic may increase depressive state for women. Many of them who conceived and gave birth in a pandemic may experience depressive moods after pregnancy. Yet there are no information how the pandemic influenced Lithuanian women labour and emotional state after delivery.

Aim

To investigate the incidence of depressive moods and delivery-related factors among Lithuanian women who gave birth during the COVID-19 pandemic.

Methods

The research was carried out with permission of Lithuanian University of Health Sciences Centre of Bioethics (No. BEC-MF-172). This study was conducted in December 2020 by sharing an anonymous online survey in Facebook groups concerning pregnancy, birth and early motherhood. The members of the groups were asked to share details about their pregnancy, delivery and early postpartum period during the COVID-19 pandemic period in Lithuania. The questionnaire consisted of Edinburgh Postpartum Depression Scale (EPDS) and original questions assessing pregnancy planning, number of pregnancy visits, parity number, mode of delivery and length of postpartum hospital stay. Statistical analysis was performed using IBM SPSS Statistics 26.0.

Results

206 respondents participated in the survey. Depression symptoms ($\geq$10 EPDS points) were found in 56.3% of respondents. Suicidal thoughts in postpartum period were characteristic for 12.1% women. No significant difference of EPDS scores were noticed between planned and unplanned pregnancies, median EPDS 11(0-30) and 10(0-25), p=0.848, respectively. No difference of depressive state risk was found between natural birth, median 11(0-30), emergency C-section, 13(0-22), and planned C-section group, 10.5(0-19), p=0.536. Based on the study data, EPDS scores did not differ significantly between the women whose partner was in the delivery room (median 11(0-29)) and for those whose partner was not for any reason (median 12(0-30)), p=0.838. However, risk for depressive mood was significantly higher in those who had decreased antenatal visits due to pandemic, comparing to the group where antenatal care was not affected, EPDS score 13(0-30) vs. 12(1-18), p=0.004 respectively. Postpartum depressive mood risk did not correlate with the length of postpartum hospital stay, p=0.513. Statistically significant, yet weak, negative correlation was detected between risk for depressive mood and parity, r=-0.254 p<0.001, where higher parity was related to lower risk of depressive signs.

Conclusions

1) Multiparous were at a decreased risk of developing postpartum mood disorders. 2) Fewer antenatal care visits due to pandemic were related to higher risk of depressive mood. 3) Unplanned pregnancy or longer hospital stay during the pandemic did not increase woman's depressive state. 4) Mode of delivery was not associated with postnatal mood changes. 5) The absence of a partner during the childbirth does not increase postpartum depressive mood.

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The evaluation of fears and concerns of pregnant women in Poland caused by COVID-19 pandemic

Authors:

Mateusz Świątek
Students' Scientific Society, Department of Gynecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia in Katowice

Karolina Pędrys
Students' Scientific Society, Department of Gynecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia in Katowice

Agnieszka Wikarek
Students' Scientific Society, Department of Gynecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia in Katowice

Karolina Kozieł
Students' Scientific Society, Department of Gynecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia in Katowice

Michał Skulik
Students' Scientific Society, Department of Gynecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia in Katowice

Tomasz Wikarek
Department of Gynecology and Obstetrics, Faculty of Medical Sciences in Katowice, Medical University of Silesia in Katowice

Introduction

During pregnancy, women often experience anxiety about the well-being of the fetus. Particular concerns arise in the third trimester, which is related to the upcoming delivery date. Any difficulties that prevent access to preventive and

follow-up examinations during this period may additionally increase the sense of fear. During the COVID-19 pandemic, access to basic medical care was difficult for pregnant women. Due to the epidemiological situation, many of them had to change the place of delivery, and family births were impossible. Also, the fear of being infected with COVID-19 and the uncertainty about the impact of this infection on the fetus further increases the feeling of fear and anxiety.

Aim

The main objective of this study was to evaluate the impact of COVID-19 pandemic on pregnancy and childbirth among population of Poland. Identification of the most stressful points for pregnant women during the pandemic was made and try to develop guidelines were done.

Methods

The survey was conducted from November 25, 2020 to December 31, 2020 in the form of an online questionnaire posted on social media in groups associating pregnant women. The questions included in it were addressed to women who were pregnant and gave birth during the COVID-19 pandemic in Poland. The survey also used questions with a five-point Likert scale about the fears and inconveniences related to the circumstances. 2,186 women with a median age of 29 participated in the study.

Results

Among the respondents, 1,656 (75,8%) had not been tested for COVID-19 in the perinatal period, and 481 (22%) had a negative result. 615 (28,1%) patients had a control visit to the gynecologist cancelled due to the pandemic, and 297 (13,6%) changed the place of hospitalization because of this. Women hospitalized during pregnancy responded statistically higher to questions about concerns related to the pandemic (30,9 vs 29,6; p = 0,007). A similar relationship was found in women who underwent caesarean section (30,6 vs 29,5; p = 0,006) or were hospitalized > 7 days (31,8 vs 29,7; p = 0,012). A statistically significant, weak correlation was found between the mean score of questions about concerns and the number of hospitalizations during pregnancy (r = 0,1654; p <0,000).

Conclusions

Pregnant women represent unique group and belong to high-risk population during infectious disease [1]. The lack of researches makes it difficult to determine complications after COVID-19 [2] and this is a cause for fear among pregnant women. Severe stress is a negative factor for the course of pregnancy - the risk of premature birth with all the negative consequences of prematurity. A pandemic situation increases the feeling of uncertainty and is a strong stressor in people's lives. Because of that clear standards of treating pregnant women should be developed. They can not be at epidemiological risk, but should be the most beneficial for pregnant woman at the same time.

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Risk factors and their influence on the maternal and neonatal outcomes after diagnosis of placental abruption

Authors:

Eglė Radzevičiūtė
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Viktorija Tarasevičienė
Department of Obstetrics and Gynaecology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania

Introduction

Risk factors for placental abruption (PA) include smoking, maternal hypertension, advanced maternal age, prior abruption, thrombophilia or multiple pregnancy [1,2]. Mostly PA manifests by vaginal bleeding, abdominal pain and contractions or abnormal fetal heart rate tracings [3]. Maternal complications can include disseminated intravascular coagulopathy (DIC), renal failure or death [2;3]. Fetal complications can include low birthweight, prematurity or perinatal death [2;3]. Yet there is lack of information how this complication impacts Lithuanian women and newborns state after delivery.

Aim

To explore the clinical characteristics and outcomes of placental abruption cases in 2019-2020 at the Department of Obstetrics and Gynecology Kauno Klinikos.

Methods

A retrospective analysis of 141 cases of PA was undertaken at the Department of Obstetrics and Gynecology Kauno Klinikos between December 2020 and January 2021. Data collected from medical records included sociodemographics, maternal and gestational age, parity, risk factors for placental detachment, clinical presentation, delivery complications, maternal and neonatal outcomes. Newborn condition was rated by umbilical artery pH, APGAR scale. Statistical analysis was performed with IBM SPSS Statistics 26.0 using rates (%) to express data and pearson Chi square to assess the homogeneity of categorical data. P level <0.05 was considered to be significant.

Results

The incidence of PA cases in 2019-2020 was 141 and the only one complete PA was found. The most observed cases of PA were up to 37 weeks of gestation (56,7%,p=0,019). The main risk factors for PA could be age up to 35 years (75.2%,p<0.001), multiple births (60.6%), or previous caesarean section (11.3%). Anemia in pregnancy (16.3%), severe preeclampsia (7.8%), polyhydramnios (5%), gestational hypertension (4.3%), prevailed during pregnancy. Bleeding (49.6%), painful concussions (10.6%), or bleeding with abdominal pain (7.8%) were the most common clinical manifestations. In 59(41.8%) women delivery was completed by caesarean section due to life-threatening bleeding (19.9%) or suspected unstable fetal condition (11.3%). A total of 140 newborns were born of which: 73(51.8%) were preterm, 65(46.1%) were low birth weight (<2500g), 61(43.3%) were hypoxic, and 15 were hypotrophic. 9 perinatal deaths and miscarriage of one of the twins at 17 weeks of gestation were found. More than 500ml of bleeding was found in every fourth woman, and more than 1000ml in every seventh. DIC - for 2 (1,4%), HELLP – for 2(1,4%) and acute renal failure for 1(0,7%) woman was found.

Conclusions

1) Placental abruption is a hazardous complication for both mother and fetus which is related to preterm birth, bleeding, DIC, HELLP, renal failure, fetal hypoxia, small for gestational age newborn or even death. 2) No significant risk factors for placental abruption were found during the study. 3) Suspected unstable fetal condition or life-threatening bleeding were the main reasons for emergency caesarean sections.

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Knowledge about human papillomavirus among Kaunas county vocational students

Authors:

Agne Skvarnaviciute
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Ugne Kaunietyte
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Kristina Jariene
Department of Obstetrics and gynecology, Hospital of Lithuanian University of Health Sciences, Kaunas, Lithuania

Joana Celiesiute
Department of Obstetrics and gynecology, Hospital of Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Human papillomavirus (HPV) is the most common sexually transmitted viral infection, moreover, HPV is the main risk factor of cervical cancer. In addition, anal, oral, vulval, vaginal, anal and penal cancers are linked to HPV infection as well. Knowledge about HPV plays a crucial role in the prevention of cancers, while a lack of it could influence the success of the measures taken in the prevention strategies [1].

Aim

To evaluate the knowledge about HPV of Kaunas County vocational school students.

Methods

From November 4 until December 17 in 2020 online questionnaires were sent to 10 vocational schools of Kaunas County that agreed to participate in the study. The study was based on validated original questionnaire [2] and comprised 650 students. Students were reminded three times to answer the questions. Response rate was 30%. Statistical analysis was performed using the data collection and analysis software package SPSS 22.

Results

The mean age of the respondents was 20,3±4,5 years. Only 4.5% (n=29), of students answered correctly the questions about the epidemiology of HPV and all of them were female. Female students more frequently answered questions about HPV epidemiology correctly (25.6% vs 0%, p<0.001). Nearly half (45.5% of the respondents reported having knowledge about HPV, but only 26.5% of all students knew HPV to be the main risk factor for cervical cancer (86.0% of females and 14.0% of males, respectively, p<0.001). More than half (56.5%) of students answered HPV to

be dangerous, 4.0% think that HPV poses no danger, and 39.5% did not know. Female students more frequently responded that HPV is dangerous (64.0% vs 40.3%, p<0.001). The main source of information about HPV was the internet (53.7%) and 36.8% of respondents noted that they did not receive any information. Male respondents more often than female ones reported neither receiving nor searching for any information (53.9% vs 28.8%, p<0,001). 22.2% of respondents answered that they do not wish to receive additional information about HPV. Female students more often than male students reported of a need for further information about HPV (52.5% vs 35.4%, p<0,001). Respondents reported that they would like to receive information from doctors (35.7%) or other qualified healthcare professionals (41.2%), with the least preferred sources of information being friends (2.9%) and parents (8.9%).

Conclusions

Study showed that vocational school students have poor knowledge about HPV, especially males. Almost half of the respondents claimed to know about HPV, but only one fourth knew that HPV was the main risk factor for cervical cancer. Students lack valuable sources of information and would like to get more information from doctors and health professionals. The main source of information about HPV was internet. Therefore more education about HPV is needed at schools and hospitals.

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Predictive value of artificial neural network in uterine cancer diagnostics

Authors:

Kajus Merkevičius
Lithuanian University of Health Sciences, Medical Academy, Faculty of Medicine

Milda Adomaitytė
Lithuanian University of Health Sciences, Medical Academy, Faculty of Medicine

Milda Kuprytė
Lithuanian University of Health Sciences Hospital Kaunas clinics, Department of Pathological anatomy

Arvydas Čižauskas
Lithuanian University of Health Sciences Hospital Kaunas clinics, Department of Pathological anatomy

Introduction

Artificial neural networks (ANN) mimic biological structure of human nervous system and adopt statistical methods to optimize processes to reach the best accuracy [1]. ANN systems gained more clinical attention in early diagnostics of cancer [2]. Rates of uterine endometrioid cancer remain high [3]. Thus, characterizing ANN as a diagnostic tool in early detection of uterine endometrioid cancer is relevant.

Aim

To determine prognostic value of ANN identifying cases with endometrioid cancer.

Methods

Research was approved by Lithuanian University of Health Sciences (LUHS) Bioethics center. Surgical samples after hysterectomies examined at LUHS Hospital Kaunas clinics Department of Pathological anatomy in 2018 were included (except cases with cervical malignancy). Morphology of uterus, cervix was evaluated by light microscopy, and obtained data was included in creating ANN. IBM SPSS 27.0 was used to create ANN and implement Chi-square, Fisher's exact, Mann-Whitney, Shapiro-Wilk tests. Area under the curve (AUC) > 0.5 – diagnostic method was more accurate than random selection, AUC>0.8 – diagnostic method differentiated accurately between cases. Kappa (κ) coefficient was used to evaluate interrater agreement between ANN results and diagnosis of endometrioid cancer by pathologist. Difference between compared groups or relations between variables were considered statistically significant if $p<0.05$.

Results

416 cases were included. Endometrioid carcinoma was diagnosed in 27.16% (n=113) of cases. Cervicitis was diagnosed in 85.84% (n=97) of endometrioid cancer cases compared to 52.15% (n=158) of benign endometrial change cases (p<0.001). Nabothian cysts were detected in 66.37% (n=75) of endometrioid cancer cases compared to 43.56% (n=132) of benign endometrial changes (p<0.001). Females with endometrioid cancer were significantly older (66.0 y. o. (SD=10.24)) vs. 57.11 y. o. (SD=12.35); p <0.001)). Predictive value of ANN was determined by sensitivity (65.6%), specificity (92.4%), and AUC (AUC=0.908). Interrater agreement with the pathologist was moderate (κ=0.594, 95% CI 0.504–0.684).

Conclusions

ANN based on cervical morphological patterns was more accurate than random selection and was capable to differentiate cases with endometrioid cancer. Predictive value of ANN was not sufficient and accordance with pathologist was moderate.

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Obstetricians and gynaecologists' experience in healthcare provision for disabled patients in Lithuania

Authors

Rugilė Kančaitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Kristina Jarienė
Department of Obstetrics and Gynaecology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania

Introduction

A total of 46 million girls and women living in European Union are disabled. This comprises 16% of all European women. Moreover, 58% of all disabled population over 15 years old in EU are women [1]. Disabled women require services of obstetricians and gynaecologists equally as much as they are in need of rehabilitation or treatment of the condition that determined the disability. Just like healthy women, disabled patients should be consulted on family planning, participate in prophylactic cervical and breast cancer screening programs and get help and support regarding their reproductive health. However, women with physical disabilities are less likely to be examined for cervical and breast cancer, as well as get routine exams less often [2,3]. Women with physical or mental disabilities lack information on contraception and family planning [4,5], they are at a higher risk to get insufficient prenatal care, give birth by Caesarean section or undergo preterm delivery and are more likely to be hospitalized while pregnant [6].

Aim

To assess the experience of obstetricians and gynaecologists in healthcare provision for disabled women.

Methods

Anonymous quantitative questionnaire survey [7], adjusted for use in Lithuania by standard procedures of translation and adaptation to Lithuanian language and culture, was conducted. The respondents were invited to participate voluntarily during scientific conferences and clinical rounds. Data provided by 90 obstetricians and gynaecologists working in inpatient, outpatient or both settings, was analyzed. The results were estimated by a statistic data analysis made by Microsoft Excel and IBM SPSS. Results with values of $p < 0.05$ were considered statistically significant.

Results

The average seniority of the respondents was 23.5±1.308 years. Seniority longer than 21 years increased the probability to work with disabled patients by 14 times (OR=14,3, CI=11,3-16,4). Most physicians (86,7%, p<0.001)

stated to have been providing care to disabled patients. The vast majority of responders (94,5%, p<0.00001) acknowledged being glad and willing to consult disabled women on sexual and reproductive health. More than a half of the respondents have encountered communication difficulties (61,1%, p<0.02). More than two thirds of physicians (70.9%) responded that the communication was most often directly complicated by the patient's disability (p≤0.00001). Longer duration of the appointment as well as an additional support person were the main factors mentioned to improve and simplify working with the disabled patients, 63.2% and 58.9%, respectively. 78,9% of physicians would be interested in seminars on healthcare provision for disabled patients (n=71, p<0.00001).

Conclusions

Most of the interviewed obstetricians and gynecologists consult disabled women on sexual and reproductive health, nevertheless short appointment time and lack of helping personnel are the factors that have to be assessed systematically.

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Silencing of MUC16 reduces OVCAR-3 cells adhesion and migration

Authors:

Tautvydas Vaitkus
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Jonas Ulevičius
Department of Obstetrics and Gynaecology,Lithuanian University of Health Sciences, Kaunas Clinics, Kaunas, Lithuania

Aldona Jasukaitiene
Institute for Digestive research, Lithuanian University of Health Sciences, Kaunas, Lithuania

Vaidotas Čėsna
Department of Clinical Surgery, Lithuanian University of Health Sciences, Kaunas Clinics, Kaunas, Lithuania

Artūras Sukovas
Department of Obstetrics and Gynaecology,Lithuanian University of Health Sciences, Kaunas Clinics, Kaunas, Lithuania

Žilvinas Dambrauskas
Department of Clinical Surgery, Institute for Digestive Research, Lithuanian University of Health Sciences, Kaunas Clinics, Kaunas, Lithuania

Antanas Gulbinas
Department of Clinical Surgery, Institute for Digestive Research, Lithuanian University of Health Sciences, Kaunas Clinics, Kaunas, Lithuania

Saulius Paškauskas
Department of Obstetrics and Gynaecology,Lithuanian University of Health Sciences, Kaunas Clinics, Kaunas, Lithuania

Introduction

MUC16 is overexpressed in ovarian carcinomas (1) and it plays an important role in pathogenesis of cancer (2). This gene influence the growth and motility of ovarian cancer cells (3). Modulation of MUC16 is a potential target to treat ovarian cancer. However, the role of MUC16 modulation in ovarian cancer treatment is still not very well understood.

Aim

The goal of our study was to investigate the effect of MUC16 silencing to OVCAR-3 cells viability, adhesion and migration.

Methods

OVCAR-3 cells were seeded in culture plates and cultivated in RPMI 1640 medium with 20% fetal bovine serum, 1% penicillin/streptomycin solution and 0.01 mg/mL bovine insulin for 24 h in an incubator and maintained at a moist temperature of 37 ℃, 5% CO_2 enriched environment (4). 24 hours later MUC16 siRNA transfection and negative control siRNA was performed. Cell viability (Alamar blue assay), adhesion and migration (wound healing area test)

was assessed 48h after transfection. Data were expressed as the mean ± standard deviation of three independent experiments. P<0.05 was considered to indicate a statistically significant difference.

Results

High expression of mRNA MUC16 in OVCAR-3 cells was detected. Silencing of MUC16 RNA reduced MUC16 protein expression in cells by 4.9-fold (*p<0.05*). The viability of OVCAR-3 cells was not significantly changed following MUC16 siRNA incorporation but significantly decreased adhesion and migration of cells.

Conclusions

Silencing of MUC16 RNA reduces MUC16 protein level in OVCAR-3 cells and decreases adhesion and migration of cells. This research was funded by a grant (No. 09.3.3-LMT-K-712-22-0257 (S20182)) from the Research Council of Lithuania.

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ODONTOLOGY SESSION

Effectiveness of a web-based oral health education program among adults in Lithuania

Authors:

Austėja Pauliukaitė
Institute of Dentistry, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Indrė Stankevičienė
Institute of Dentistry, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Lina Stangvaltaitė-Mouhat
Department of Clinical Dentistry, UiT The Arctic University of Norway, Tromsø, Norway; Oral Health Center of Expertise in Eastern Norway, Oslo, Norway

Jolanta Aleksejūnienė
Faculty of Dentistry, University of British Columbia, Vancouver B.C., Canada

Alina Pūrienė
Institute of Dentistry, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Introduction

According to the Global Burden of Disease (GBD) 2015 study, 3,5 billion people worldwide suffer form oral health conditions such as dental caries, periodontitis and edentulism. These oral health conditions are highly preventable. Therefore, there is a need to educate the society and improve its knowledge on oral health conditions and their prevention. Internet is a popular and handy source of information, therefore it is important to investigate if web-based oral health education programs are effective.

Aim

To evaluate the short-term effectiveness of a web-based education program to improve oral health-related knowledge among Lithuanian adults in two age groups.

Methods

An interactive web-based education program was designed, and volunteers aged 18+ years were invited to participate. In order to assess pre-intervention oral health knowledge, a-40 item questionnaire was designed and pre-tested with ten persons who were not included in the main study. Each correct answer was weighted 1 point. Out of 314 volunteers who expressed willingness to participate, 196 (62 %) participants completed pre- and post-intervention questionnaires. There were 100 (51 %) participants in the 18-59 years age group and 96 (49 %) participants in the 60+ years age group. Every two weeks the participants were invited to read one popular scientific article about oral health conditions: dental caries, dental erosions, periodontitis, their etiology and prevention with a total of six articles. Post-intervention knowledge was evaluated using the same questionnaire as for the pre-intervention. For the statistical analyses R Commander 3.6.3. was used. Change in the knowledge was assessed using the Mann Whitney Wilcoxon test stratified by two age groups: 18-59 years and 60+ years. The significance threshold was set at p<0,05.

Results

Majority of the respondents were females (76 %). Pre-intervention median knowledge score in the 18-59 years age group was 21 (range 11-33) which increased significantly to 30 (range 12-40) post-intervention (p<0,05). Pre-intervention median knowledge score in the 60+ years age group was 18 (range 4-29) which increased significantly to 23 (range 5-37) post-intervention (p<0,05). Knowledge of participants from both age groups improved significantly on the following topics: causes of dental caries, periodontitis, dental erosions, main principles of individual oral hygiene, usage of a toothpaste containing fluoride, usage of soft-bristled toothbrushes (p<0,05).

Conclusions

Web-based oral health education program on a short-term effectively improved oral health-related knowledge among adults in Lithuania. There is a need to evaluate these types of interventions on a long-term.

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Self-assembling peptide P_{11}-4 on early carious lesions: a systematic review of randomized controlled trials

Authors:

Gustė Klimaitė
Faculty of Odontology, Lithuanian University of Health Sciences

Arūnas Vasiliauskas
Department of Orthodontics, Faculty of Odontology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Dental caries is a highly prevalent, multifactorial disease caused by cariogenic bacteria that leads to demineralization of the enamel surface. The initial stage of dental caries, also known as white spot lesions (WSL), can be treated using non-invasive methods that lead to remineralization of the damaged area without reducing healthy tooth structures. In recent years, numerous studies researched an innovative biomimetic remineralizing agent self-assembling peptide (SAP) P_{11}-4. The material can form a three-dimensional matrix within demineralized white spot lesions areas, enhancing the attachment of Ca^{2+} and PO_4^{3-} from saliva. This mechanism induces a build-up of new hydroxyapatite crystals, therefore resulting in enamel regeneration.

Aim

This study aims to evaluate the effect of self- assembling peptide P_{11}-4 on the size, activity and appearance of early carious lesions.

Methods

This systematic review adhered to the PRISMA statement. Five electronic research databases were searched including Medline (via PubMed), Cochrane Library, ProQuest, Wiley Online Library and Web of Science from the earliest available indexing year through November 2020. Keywords included "self- assembling peptides", "P_{11}-4", "mineralization", "caries", "carious lesions" and "white spot lesions". Randomized, blinded and nonblinded, controlled clinical trials with a minimum follow-up period of 3 months were selected for this study. Morphometric analysis, Laser Fluorescence (LF) readings and Nyvad criteria were employed to assess the size, activity and appearance of carious lesions, respectively. The research scope excluded in vitro, in situ, animal studies, review articles, editorial letters, case reports and studies where SAP was used to investigate other purposes. The risk of bias was assessed using the Cochrane risk-of-bias tool for randomized trials (RoB 2).

Results

Database search using the provided strategy yielded 196 articles. Additionally, five articles were identified through the use of other sources. After duplicate removal, 130 article abstracts were screened, with 14 articles chosen for the full-text analysis. Ultimately, after applying selection criteria, 6 randomized controlled trials were included in this systematic review. These trials involved a total number of 377 patients with carious lesions. SAP P_{11}-4 was proven to reduce the size of WSL according to morphometric measurements with the highest reduction value of 2.7 (SD 1.7) pixels [1, 2, 3]. Readings of LF demonstrated substantial results in three out of four articles [1, 4, 5, 6] with a reduction up to 18.6 (SD 19.8). Outcomes of the Nyvad criteria highlighted the surface stabilization potential, with approximately 100% of active lesions being arrested post-procedure [1, 4, 6].

Conclusions

Self-assembling peptide P_{11}-4 was proven to be an advantageous, uncomplicated and effective non-invasive treatment for early carious lesions, with significant results in size and caries activity reduction, as well as stabilized surface texture.

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Impact of orthodontic treatment duration on the attitude towards treatment and oral health of adult patients

Authors:

Austėja Mitalauskienė
Lithuanian University of Health Sciences, Faculty of Odontology, Medical Academy

Reda Vaičiūnaitė
Lithuanian University of Health Sciences, Faculty of Odontology, Medical Academy

Arūnas Vasiliauskas
Lithuanian University of Health Sciences, Department of Orthodontics, Faculty of Odontology, Medical Academy

Introduction

Orthodontic treatment is appreciated for its ability to improve a patient's dental occlusion, restore function and provide an aesthetic smile [1]. However, previously conducted studies suggest possible enamel demineralization, increased plaque accumulation, and gingivitis as unwanted treatment effects [2]. Without care, these oral health changes might affect a patient's attitude towards treatment [1]. Therefore, it is essential to understand the association between treatment duration and worsen oral health conditions to consider preventive measures.

Aim

The purpose of this study is to investigate how average and long duration of orthodontic treatment affects the oral health of adult patients and their attitude towards treatment.

Methods

A total of 163 adults treated with fixed orthodontic appliances participated in the study. Patients' consents were obtained electronically. The participants submitted an online survey consisting of 52 questions regarding their periodontal health, oral hygiene habits, difficulties experienced during treatment. The questions were created based

on surveys used in previously conducted studies [3; 4]. The study was approved by the Lithuanian University of Health Sciences Ethics Committee. In the survey, patients were shown pictures of periodontal conditions such as gingival recession, gingivitis, plaque, white spot lesions in order to understand the questions and ensure better confidence in the answers. Statistical calculations were performed using SPSS 26.0 software. The value of p < 0.05 was considered statistically significant. Some of the data was expressed as frequency and percentage.

Results

Out of 163 patients, 149 (91.4%) were females, 14 (8.6%) were males. According to treatment with fixed orthodontic appliances duration, all participants were divided into two groups: group 1 has been receiving treatment for less than a year (41.1%) and group 2 more than a year (58.9%). Patients shared similar answers regarding their oral hygiene habits. 76% of patients in group 1 and 69% in group 2 negatively responded to having increased plaque accumulation and white spot lesions (82% and 70.8% of patients in groups 1 and 2, respectively). Nineteen patients (19.8%) in group 1 indicated to have gingival recessions present during treatment, and only 4 patients in group 2 (5.9%) answered the same (p<0.05). In terms of attitude towards treatment, 61.9% of 163 patients think orthodontic treatment can cause periodontal problems. 95.5% and 89.5% of patients in groups 1 and 2, respectively, feel that it is more challenging to maintain good oral health during orthodontic treatment, and 63% of all patients deny orthodontic treatment being a painful process.

Conclusions

Based on participants' answers, self-reported gingival recessions are more common during orthodontic treatment in the group of patients treated for longer than 12 months, compared to those treated for a shorter period of time. Overall, patients' answers showed a positive approach towards treatment.

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Thermocycling effect on the optical properties of CAD/CAM dental ceramics: CIELab color space analysis

Authors:

Greta Rutkauskaitė
Faculty of Odontology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Aušra Baltrušaitytė
Department of Prosthodontics, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

CAD/CAM dental ceramic materials have highly advanced in the field of colors. One of the most effective methods to evaluate the optical changes, that ceramics might undergo, is by using a spectrophotometer before and after the ceramic thermocycling in different solutions.

Aim

To analyse the most recent literature work in order to compare, evaluate and assess the changes in CAD/CAM dental ceramics optical properties before and after thermocycling with different compounds and solutions.

Methods

Analysis of literature was performed by using the PRISMA protocol. The search was done electronically in ScienceDirect, MEDLINE, Cochrane Library and Wiley Online Library databases. The time period of literature search was between September 10th and 30th, 2020. Articles that were included in the qualitative analysis were in English language, not older than 5 years old. The focus question was developed by the PICO (population (P), intervention (I), control (C), and outcome (O)) study design protocol: How are the color space optical properties (L*, a*, b*) and their difference ΔE of different CAD/CAM dental ceramic materials affected after thermocycling?

Results

Out of 212 articles that were found, after applying the 5-year filter, 103 records were screened and 5 articles were included in the qualitative analysis. Four of the studies reported only slight color changes in CAD/CAM dental ceramic materials before and after thermocycling. One of the studies reported the changes to be more significant, and the variation depended on the type of the CAD/CAM material that was used. The quality assessment was done using CRIS (Checklist for Reporting In-Vitro studies). All of the studies, that were included in this literature review, have used ΔE parameter (which was calculated according to the formulas stated in each article, including L*, a*, b* parameters calculations), as the main criteria, which indicated the color changes of described materials, out of which, CAD/CAM was in all of the reviews. Also, a comparison between CAD/CAM ceramic and other materials was done, in order to evaluate different ceramics reactions to thermocycling in regard to the color changes before and after the procedure.

Conclusions

CAD/CAM dental ceramic materials are highly resistant to color changes when exposed to thermocycling procedures. CAD/CAM ceramic materials ΔE before and after thermocycling is lower in comparison to natural teeth. The thickness of CAD/CAM dental materials has no effect on ΔE and its changes. When CAD/CAM dental ceramic is preshaded, ΔE changes are higher and more noticeable.

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Comparison of external apical root resorption after clear aligner therapy and fixed orthodontic appliances in anterior teeth region: a systematic review and meta-analysis

Authors

Kotryna Jasinskaitė
Faculty of Odontology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Abdulla Varoneckas
Faculty of Odontology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Arūnas Vasiliauskas
Departament of Orthodontics, Hospital of Lithuanian University of Health Sciences Kauno klinikos, Kaunas, Lithuania

Introduction

Clear aligner therapy (CAT) is growing in popularity and has become a promising alternative to fixed orthodontic appliances (FOA). [1,2] Although orthodontic treatment in most cases is highly successful, external apical root resorption (EARR) is inevitable, which is a condition that results in a permanent loss of cementum and dentine of

dental root. [3] While clinical studies and systematic reviews has found that treatment with FOA induces EARR, especially in the anterior teeth region, the data about EARR link to CAT is relatively scarce. [4,5] The aim of this systematic review and meta-analysis was to compare the amount of EARR in anterior teeth detected after orthodontic treatment with FOA or CAT.

Aim

Analyse and compare the amount of external apical root resorption in anterior teeth detected after orthodontic treatment with fixed orthodontic appliances or clear aligners.

Methods

A comprehensive database search was performed in Pubmed, Research Gate, Science Direct online libraries according to PRISMA guidelines. Following keywords were used: "Root resorption", "Clear aligner therapy", "Invisalign". Only clinical trials published less than 5 years ago, written in English, which measured the lengths of teeth/roots or root/crown ratio before and after treatment using CBCT or panoramic x-ray were included. Such article types as case series or reports, systematic reviews, meta-analyses were excluded. Review Manager 5.4.1 was used for statistical analysis. Meta-analysis was performed using standard mean difference and random effects. Cochran Q and I2 tests were used to assess the heterogeneity of the study.

Results

Database search yielded 122 articles and after checking the titles for relevancy, 17 articles were selected. After full-text analysis, 4 articles (all were retrospective) met our inclusion criteria. [6-9] Three of them were included in the quantitative synthesis to compare the amount of EARR for patients treated with CAT and FOA. [6-8] The meta-analysis showed EARR to be significantly lower in CAT (SMD (standard mean difference) =0,75, 95% CI=-0,98, -0,52; $p<0,00001$). However, there was a significant heterogeneity between studies (I2=63%, p=0,004) and individual removal of studies did not modify this outcome. Therefore, subgroup analysis was made on maxillary and mandibular central and lateral incisors to decrease heterogeneity. This, in turn, revealed that EARR was statistically significantly lower ($p<0,001$) in maxillary central incisors (SMD=-0,63, 95% CI=-1,10, -0,16]), maxillary lateral incisors (SMD=0,76, 95% CI=-1,17, -0,34), mandibular central incisors (SMD=-0,46, 95% CI=-0,72, -0,20) and mandibular lateral incisors (SMD=-1,13, 95% CI=-1,41, -0,85) after clear aligner therapy.

Conclusions

Based on present meta-analysis, there is a tendency toward the superiority of clear aligner treatment compared with fixed orthodontic appliances regarding amount of external apical root resorption in anterior teeth region.

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Assessment of the knowledge about diabetes mellitus and oral health among dentistry students, general practice dentists and dental hygienists

Authors:

Austėja Pauliukaitė
Institute of Dentistry, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Giedrius Krukonis
Institute of Dentistry, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Introduction

The incidence of diabetes mellitus has been increasing worldwide. Diabetes is a risk factor for severe periodontal disease and is also associated with dental caries, xerostomia, oral infections. Dental healthcare providers play an

important role in taking care of diabetic patients' oral health. There were some reports about diabetes mellitus knowledge of oral healthcare providers in other countries, but little was known in Lithuania.

Aim

To evaluate and compare the knowledge of dentistry students, general practice dentists and dental hygienists on dentistry care for patients with diabetes mellitus.

Methods

Paper and online questionnaires were concluded. The demographic information of participants including their age, gender, speciality was requested to be filled at first. The questionnaire consisted of 35 questions on the following topics: types and main symptoms of diabetes mellitus, oral complications and their relation with diabetes, dental care of diabetic patients, signs and management of hypoglycemia, usage of glucometer. Total possible scores were 0-35 for knowledge (scores <15, 16-20, 21-25, 26-30 and >31 were considered to indicate poor, moderate, good, very good, excellent knowledge, respectively). A total of 290 respondents were included in the study, 94 were dentistry students, 100 – general practice dentists, 96 – dental hygienists. For the statistical analyses R Commander 3.6.3. was used. The t–test, Mann Whitney Wilcoxon test, Kendall's Tau and Spearman's rank correlation coefficient, chi-squared test were used to analyse the data. The significance threshold was set at $p<0,05$.

Results

Majority of the respondents were females (89,3 %). Dentistry students' knowledge mean score was 26,76±2,52 points, their knowledge was very good. General practice dentists' knowledge mean score was 23,29±4,07 points and dental hygienists' - 24,22±3,60 points which indicates their knowledge as good. Dentistry students' knowledge mean score was significantly higher than general practice dentists' and dental hygienists' ($p<0,05$). Dentistry students had better knowledge on symptoms of diabetes mellitus, link between diabetes mellitus and periodontal disease, dental care of diabetic patients, first symptoms and management of hypoglycemia ($p<0,05$). The main reason for such knowledge differences could be changes in oral health providers' training programs. There was no statistically significant difference between general practice dentists' and dental hygienists' knowledge mean score ($p>0,05$). Older participants' knowledge score was significantly lower than younger ones ($p<0,05$). Majority of the participants did not own glucometers in dental offices (80,3 %).

Conclusions

Dentistry students' knowledge was evaluated as very good, other two groups' – good and dentistry students' knowledge mean score was significantly higher than other two groups'. It is recommended for general practice dentists and dental hygienists to update their knowledge on some aspects of diabetes mellitus.

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Impact of low-level laser therapy on the stability of orthodontic mini-implants: a systematic review and meta-analysis

Authors:

Abdulla Varoneckas
Faculty of Odontology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Kotryna Jasinskaitė
Faculty of Odontology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Arūnas Vasiliauskas
Department of Orthodontics, Hospital of University of Health Sciences Kauno Klinikos, Kaunas, Lithuania

Introduction

Usage of orthodontic mini-implants (OMIs) as anchors has become an essential part of orthodontic treatment. [1,2] Although, occasional failures such as looseness of OMIs have been reported [3] Lately studies on low-level laser therapy (LLLT) showed its positive impact on stability of OMIs.[4,5] The aim of this systematic review and meta-analysis was to estimate the impact of LLLT on the stability of OMIs.

Aim

Review the impact of low-level laser therapy on the stability of orthodontic mini-implants.

Methods

Electronic data base search was carried out according to PRISMA principles by two independent researchers. The following focused question was created using PICOS model: does low-level laser therapy has an effect on the stability of OMIs? PubMed, Research Gate, The Cochrane Library and Wiley Online Library were used to browse the literature with the following keywords: "Laser therapy", "Orthodontic anchorage", "Mini-implants". Only observational studies published less than 5 years ago and written in English were included. To be included, subjects had to be humans, whose treatment required mini-implants as a direct anchorage device for distalization and the follow-up must have been up to 2 months at least. Studies which involved patients with previous orthodontic treatment were excluded. Statistical analysis was conducted with the Review Manager 5.4.1. A meta-analysis was performed by using Standartized mean difference and random effect. Heterogeneity of the studies was assessed using Cochran's Q and I2 tests.

Results

After an initial search in electronic databases, 194 articles were displayed and after checking the titles for relevancy, 26 articles were selected. Lastly, after reading their abstracts and full-text analysis, 7 articles were included in systematic review. [6-12] Six studies were randomized controlled trials and one was quasi-experimental design study [9]. In total, for 115 patients 230 OMIs were inserted. All 7 studies were pooled into meta-analysis and quantitative synthesis was performed comparing OMI stability at the baseline, after 6-7 days, 1 month and 2 months in LLLT and control groups.[6-12] The meta-analysis indicated no significant difference in OMI stability between LLLT and control group at the baseline (SMD (standardized mean difference)=0,09, 95% CI=-0,18, 0,37; p=0,51) and after 6-7 days post-insertion (SMD=-0,01, 95% CI=-0,32, 0,29; p=0,93). Yet, meta-analysis revealed that LLLT statistically increases OMI stability one month (SMD=0,63, 95% CI=0,35, 0,92; p<0,0001) and two months (SMD=0,98, 95% CI=0,71, 1,26; p<0,00001) after OMIs were placed. No significant heterogeneity (I2=0%, p>0,05) was found between respective studies.

Conclusions

Based on present meta-analysis, low-level laser therapy on orthodontic mini-implants increase their secondary stability and, therefore, could be implemented clinically as adjunctive procedure. However, future randomly controlled studies with larger samples are needed to confirm the study results.

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Comparative Study Between the Treatment Outcomes of Maxillary Premolars Extraction and Functional Appliance Associated with Fixed Appliance in Class II Patients - A Systematic Review

Authors:

Rand Bahro
Rand Bahro, Faculty of Odontology, Medical academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Amr Ghali
Amr Ghali, Department of Orthodontics, Faculty of Odontology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Arūnas Vasiliauskas
Dr. Arūnas Vasiliauskas, Department of Orthodontics, Faculty of Odontology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Class II malocclusion is one of the most prevalent malocclusions in the clinical dental practice(1). It often results in functional, skeletal, or dental irregularity (2). Maxillary premolars extraction and functional appliances associated with fixed appliance are possible treatment options of Class II malocclusion but they might have different treatment effects (3). Literature lacks recent reviews which compare the outcomes of both treatments on skeletal, dental and soft tissue analysis

Aim

To compare the results of the skeletal, dental and soft tissue cephalometric analysis after the treatment with two maxillary premolars extraction (PE) or functional appliance associated with fixed appliance (FA) in Class II patients.

Methods

Systematic review was conducted in compliance with PRISMA requirements (4). An electronic search with keywords combinations "Class II malocclusion", "functional appliance", "premolar extraction", "cephalometric" was performed up to January 31, 2020 in PubMed, Cochrane Library, Web of Science and Science Direct databases. The inclusion criteria were formulated according to PICO: studies including Class II growing patients with retrognathic mandible and increased overjet, comparing PE and FA treatment results, and reporting skeletal, dental and soft tissue cephalometric outcomes. Randomised controlled studies (RCT), prospective and retrospective studies published between 2010 and 2020 were considered. Intervention groups of interest which had patients with similar baseline characteristics were extracted from selected publications, their data were grouped and analysed in terms of changes in the cephalometric analysis.

Results

Following an examination of 1256 initially identified article abstracts, full texts of 63 articles were read and assessed for eligibility. Four average quality articles (2 retrospective, 1 prospective and 1 RCT) which fulfilled the criteria were included in the review (119 patients; mean age between 12.11(SD 1.36) to 14.03(SD 2.65)) (5–8). The studies reported reduction in ANB (premolars extraction: -1.27° to -1.41°(SD 1.66°); functional appliances: -0.7°(SD 0.62°) to -1.74°(SD 3.07°)), reduction in 1-NA°(PE: -0.36° (SD 7.82°) to -2.47°; FA: -1.66°(SD 9.75°) to -6.88°(SD 4.15°)), increase in 1-NB°(PE: 2°(SD 5.13°) to 3.5°; FA: 5.13°(SD 8.65°) to 6.07°(SD 4.86°)), lower lip retrusion according to E-Plane (PE: -0.85mm to -1.8mm (SD 1.92mm); FA: -0.02mm (SD 1.99mm) to -0.44mm (SD 1.92mm)).

Conclusions

The outcome of both treatment methods showed no clinically significant difference in skeletal analysis. In dental analysis functional appliances associated with fixed appliances resulted in more retroclined maxillary incisors and proclined mandibular incisors than premolars extraction treatment. Soft tissue analysis showed that maxillary premolars extractions resulted in a more retruded lower lip.

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MAXILLOFACIAL SURGERY SESSION

Comparison of implant site preparation using ultrasonic technique vs. conventional drilling: A systematic review.

Authors:

Rokas Poška
Odontology faculty, Lithuanian University of Health Sciences, Kaunas, Lithuania

Abdulla Varoneckas
Odontology faculty, Lithuanian University of Health Sciences, Kaunas, Lithuania

Gintaras Janužis
Maxillofacial Surgery department, Hospital of Lithuanian University of Health Sciences Kauno Klinikos, Kaunas, Lithuania.

Introduction

Lately, dental implantation has proven to become a routine and highly successful procedure. Among the factors that affect dental implant success rate, the osteotomy site preparation technique is significant. Traditionally, preparation site is performed with standard motor-driven instruments. Nowadays, piezosurgery is used in the field of implantation as an alternative method since its atraumatic concept has proven to reduce mechanical and thermal tissue trauma.[1,2] Therefore, this systematic review was performed to compare implant stability, postoperative pain, marginal bone loss and preparation time between piezoelectric surgery (PS) and standard drilling (SD).

Aim

Compare clinical differences between PS and SD in dental implantation.

Methods

A systematic review was based on the PRISMA guidelines. Electronic search was carried out in PubMed databases using a combination of following keywords: dental Implant, dental implantation, piezosurgery, piezo-electric surgery and ultrasonic. Inclusion criteria were: studies published less than 10 years ago, in English, only observational studies. Studies that involved patients with immediate implantation or grafting before implantations were excluded, as well as with metabolic bone diseases or using bisphosphonate therapy. A comparison of the published results was limited because of the inhomogeneity of the studies.

Results

After an initial search in electronic databases, 186 articles were shown and 9 articles were included in this review. Totally, 601 implants were placed into 280 patients. Success rate of implantation ranged from 95% to 100 % with no significant difference between groups.[3-11] Regarding a crestal bone loss, 3 of 4 articles stated that there were no statistically significant differences between SD and PS.[3,10,11] Mozzati et al., however, claimed that PS showed better preservation of crestal bone after 3 years: bone loss was 0,42 ± 0,14mm and 0,33 ± 0,13mm in SD and PS, respectively (p<0,01).[6] 5 studies measured primary stability and did not find any significant differences.[3-5,8,9] Secondary stability, however, was significantly higher in PS group at 2nd (ISQ values ranged from 70,1 to 70,8 in PS

group and 67,3 to 67,7 in SD) and 3rd months (ISQ values ranged from 71 to 77 and 69,2 to 73,3 in PS and SD respectively).[3-5] All 5 studies that measured the duration of surgeries reported that osteotomy time for PS group was longer than for SD (p<0,05). [3,7,9-11] Pain level on VAS scale, oppositely, was lower in PS group up until 1 week after the procedure (p<0,05). [7,10,11]

Conclusions

In conclusion, piezosurgery can be considered as an alternative to standard drilling. In terms of success rate, crestal bone loss and primary stability, results seem to be very similar in both groups. Piezosurgery, although, seems to be advantageous achieving secondary stability and maintaining lower pain levels during the healing process. However, current studies are not sufficient enough to confirm these findings.

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Comparison of a single-needle and double-needle arthrocentesis in temporomandibular joint disorders

Authors:

Austėja Valaškevičiūtė
Department of Maxillofacial Surgery, Faculty of Odontology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Tautvydas Valiulis
Department of Maxillofacial Surgery, Faculty of Odontology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Jan Pavel Rokicki
Department of Maxillofacial Surgery, Faculty of Odontology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Arthrocentesis is a minimally invasive surgical intervention and has been described as an effective modality in decreasing joint pain and increasing the range of mouth opening of the temporomandibular joint [6]. It was suggested that the use of a single needle might have some advantages with respect to the traditional double-needle approach.

Aim

To compare the efficacy of single-needle and double-needle arthrocentesis.

Methods

An electronic search was carried out according to PRISMA guidelines [1] using an advanced search builder via PubMed and ScienceDirect with keywords: TMJ or Temporomandibular or TMD and Arthrocentesis and single or/and double. After the initial search titles and abstracts were screened and finally, full reports were obtained for all the studies, which met the pre-defined eligibility criteria in regards to PICO focus question: English articles published within 10 years, prospective randomized control trials in which (P) adult patients diagnosed with TMJ disorders were (I) subjected to arthrocentesis using single-needle technique and (C) compared with standard double-needle technique

in regards to relevant (O) outcome measurements: post-operative pain (VAS), maximal mouth opening (MMO), procedure-related parameters (procedure duration (in minutes) and degree of difficulty (in 10-point VAS scale). Data were extracted in the form of variables according to the aim of the review. The risk of bias was assessed using the Cochrane Risk of Bias Tool [2].

Results

A total of 261 publications were found and 15 articles were reviewed fully. The initial exclusion was done by duplication and not relevant titles and abstracts. Finally, 9 articles were included for systematic review in which have had evaluated a total of 512 patients and 791 affected joints. In 4 of the included studies patients underwent arthrocentesis followed by intra-articular injection of 1 mL low-molecular-weight sodium hyaluronate additionally [3-6]. Regular irrigation protocol was used in the remaining 5 studies [7-11]. When comparing pain levels between groups, all patients showed a decrease in pain score level of VAS, but there were no statistically significant differences between the groups [3-11]. In these studies, the MMO significantly increased in each group and there were no significant differences between the groups [3-11]. The observation periods were different, but mostly, all outcome parameters were recorded at baseline and at 1, 3, and 6 months follow-up assessments. Postoperative follow-up of all patients in both groups revealed that no complications were detected [3,5-7,10]. However, 2 articles assessed [3,9] and 3 articles described in discussion [7,10,11] that the single-needle technique can be easier and quicker to perform.

Conclusions

The results showed that there were no differences in efficacy between single and double-needle arthrocentesis in the variables VAS and MMO. However single needle arthrocentesis has relative advantages in terms of being an easier and quicker technique.

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The comparison of dental implant osseointegration among diabetes mellitus patients according to glycated haemoglobin test results executed before and after the dental implantation: A systematic review.

Authors:

Vykintas Pliavga
Faculty of Odontology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Augustė Jasiūnaitė
Faculty of Odontology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Gintaras Janužis
Department of Oral and Maxillofacial Surgery, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Diabetes mellitus (DM) is a disease classified as conditional contraindication for dental implantations. The main criterion for such classification – appropriate glycaemic control which is determined by the rate of glycated haemoglobin (HbA1c). The problem of this research is relevant because there are around 422 million DM patients across the globe [9] and the glycaemic control of 2/3 of the diseased is poor [10,11]. Also, bad glycaemic control could influence the osseointegration of dental implants [12].

Aim

To analyse the connection between DM control and dental implant osseointegration.

Methods

Based on PICO, the focus question was: How does HbA1c level changes affect dental implant osseointegration for DM patients? Study was conducted according to PRISMA statement. Used electronic databases: PubMed, Google Scholar, ResearchGate. Search keywords: *glycated haemoglobin, diabetes, HbA1c*, *dental implants*. The inclusion criteria: human clinical trials, full-text studies about the effect of HbA1c levels on DM patients' dental implants. Studies published before 2009, systematic reviews, case reports were denied.

Results

425 articles were found. Selection criteria were applied and 22 studies were selected for full-text analysis and 8 of them were included. 3 studies suggest that 1 and 2 years after dental implantation, patients with HbA1c levels ranging from ≤6.0% to 10% experience growing marginal bone loss (MBL) when their levels of HbA1c rise. When HbA1c levels are ≤8.0%, MBL (in mm) varies from 0,41 to 0,86, when HbA1c is 8.1%–10% patients experience a more significant MBL – from 0,51 to 1,54. 2 years after the implantation, patients with HbA1c levels of ≤8.0% undergo MBL from 0,46 to 0,98, while patients with HbA1c rate of 8.1%–10% – from 0,59 to 1,92 [1,2,3]. It was established that 3–4 months after the implantation, DM and healthy patient's implant stability quotient's (ISQ) value is similar: healthy patients' levels are 75,7–80,11, while DM patients' – from 73,7 to 80,13 [4,5,6]. Nevertheless, the healing time, which is assessed by ISQ, differ according to levels of HbA1c. Patients with HbA1c rate of ≤8.0% need up to 6,4 weeks to fully heal, while others with HbA1c levels of ≥8.1% need 6,9–12,5 weeks [7,8]. It was discovered that patients', who remained in the same glycaemic control group (glycaemic state was stable) after the implantation, MBL was up to 0,08 (HbA1c% ≤6.0), 0,12 (HbA1c% 6.1–8), 0,38 (HbA1c% 8.1–10) during the 2nd year. In comparison, this loss only consists of around 2,22%-24,68% of the MBL that occurred in the 1st year [1,2,3].

Conclusions

1) As HbA1c levels rise, marginal bone loss increases. When HbA1c rate exceeds 8.0%, the increase of MBL becomes significant. 2) 3-4 months after the dental implantation, DM and healthy patients' implant stability is similar. However, patients with HbA1c rate of >8.0% need more time to reach this stability. 3) The stability of glycaemic control determines better osseointegration.

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The survival rate of dental implants that perforated sinus. Systematic literature review

Authors:

Ringaudas Jonušas
Faculty of Odontology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Gintaras Janužis
Department of Oral and Maxillofacial Surgery, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Some authors state that perforation during implantation in to the maxillary sinus is a complication that have no impact on the survival rate of implants, but perforation can cause other complications [1]. During the first six months after tooth extraction approximately 30% of the maxillary alveolar ridge is lost because of bone resorption [2]. This aggravates dental implantation and sinus perforation becomes possible complication during the procedure. Due to the dissonance in the scientific literature it is important to make systematic literature review because hypothesis arises if perforation in to the maxillary sinus have an effect on the survival rate of dental implants.

Aim

To determine if perforation in to the maxillary sinus have an effect to dental implant survival rate and the occurrence of complications.

Methods

Systematic literature review was constructed according to the PRISMA guidelines. An electronic literature search was conducted using PubMed and Research gate databases. The following keywords were used: maxillary sinus penetration, Schneiderian membrane penetration, maxillary sinus perforation, sinus floor penetration, sinus floor perforation, dental implantation, dental implants. 351 articles were found. Analysed articles had to be written in English and write about implants that perforate sinus. The studies published before the year of 2005, systematic reviews, animal trials and trials were sinus augmentation was used were dismissed. After applying the selection criteria 6 articles were selected. After looking through references of dismissed systematic reviews 1 more article was selected. In the end 7 full text articles were selected.

Results

The total number of placed implants were 809 of which 20 failed. [3-9] In the selected publications implant survival rate fluctuated from 96.3% to 100%. Most of the articles were retrospective studies which have a high risk of bias. [4-9] Implant size, alveolar bone thickness and patient gender had no effect on implant survival rate. Four trials (n=303) wrote about complications that occur after implantation. [3, 4, 5, 7] In three trials (n=220) 13 patients experienced epistaxis. [3, 4, 7] One trial (n=63) wrote that one patient developed sinusitis. [3] In one of the

trials (n=83) 2 patients were diagnosed with peri-implantitis. [5] These complications had no impact to the survival rate of the dental implants.

Conclusions

1) After implant perforates the sinus, the complications that develop are unrelated to the perforation. 2) Implant perforation in the maxillary sinus have no effect on the survival rate of dental implants.

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Influence of pulsed electromagnetic field, low intensity laser irradiation and low intensity pulsed ultrasound on bone density in the treatment of mandibular fractures. Systematic literature review

Authors:

Jonas Zigmantavičius
Faculty of Odontology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Vykintas Pliavga
Faculty of Odontology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Gintaras Janužis
Department of Oral and Maxillofacial Surgery, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Mandibular fractures are statistically the most common, accounting for up to 64.7% of all facial bone injuries [1]. Generally, fractures of the mandible are treated by either closed reduction with intermaxillary fixation or open reduction and fixation with osteosynthesis plates [2]. Closed treatment usually takes a relatively long period of approximately 4-6 weeks of immobilization for a mandibular fracture to heal [2]. Also, during the healing period, patients experience discomfort associated with swelling, bleeding or pain in the affected area [2]. For these reasons, rehabilitation methods are being sought to improve the consolidation and recovery of a fractured bone [3,4]. Therapies, such as pulsed electromagnetic field (PEMF), low-intensity laser irradiation (LILI) or low-intensity ultrasound (LIPUS) procedures are commonly used to shorten the healing period and improve bone regeneration [4,5]. It was therefore decided to review the significance of these therapies.

Aim

To evaluate the influence of pulsed electromagnetic field (PEMF), low-intensity laser irradiation (LILI), and low-intensity ultrasound (LIPUS) on bone density in the treatment of mandibular fractures.

Methods

Systematic review was performed according to the PRISMA statement. Electronic databases used: PubMed, Science Direct, Wiley Online Library, The Cochrane Library. Search keywords: fracture, mandibular, physiotherapy, therapy, laser, ultrasound, electromagnetic. The inclusion criteria: human clinical trials, English language. Studies published before 2011, systematic reviews, case reports were excluded. 401 articles were found. Selection criteria were applied and 11 studies were selected for full-text analysis and 4 of them were included in this review.

Results

Three studies involving from 12 to 32 patients showed a statistically significant (P<0.05) increase in bone density in the fracture zone during the period from the end of the 2nd week to the 4th week after mandibular fracture using PEMF compared with the control group [6-8]. The studies revealed a statistically insignificant (P>0.05) decrease in

bone density at the 2nd week after fracture in the PEMF and control groups [6,7]. One study found a statistically significant (P<0.05) effect of LILI therapy on bone density increase at the 2nd and 4th post-fracture weeks compared with the control group. However, no statistically significant (P>0.05) difference in bone density change between groups over the entire healing period was found when evaluating PEMF and LILI [8]. In a study of 28 patients, the increase in bone density at the 3rd and 5th week was statistically significant (P<0.01) in the fracture zone applying LIPUS therapy compared with the control group [9].

Conclusions

1) The application of PEMF, LILI and LIPUS therapy leads to increased bone density and faster formation of new bone at the mandibular fracture zone. 2) The most effective impact of these therapies was observed from the 2nd to 5th week of the mandibular fracture treatment.

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The influence of fluorine concentration and pH level of substance on titanium corrosion and titanium ions migration.

Authors:

Gediminas Griškonis
Faculty of Odontology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Justas Liutkevičius
Faculty of Odontology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Gintaras Janužis
Department of Oral and Maxillofacial Surgery, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Titanium is a very reactive metal, although its passive oxide film makes it resistant to corrosion even in an acidic environment. Fluoride (F (-)) is used as dental caries prophylaxis agent in toothpastes and mouthrinse. It is one of the few mediators that can damage or disturb protective titanium oxide layer, thus reducing resistance to corrosion. Titanium corrosion or ion migration to soft tissue has a crucial impact on peri-implantitis pathogenesis or development of titanium allergy. Therefore is it very important to understand what factors influence negative fluoride impact.

Aim

To analyse the influence of fluoride and its concentration and pH level of the substance on titanium and its alloys corrosion resistance in scientific literature. To overview recommendations on use of prophylaxis products containing fluoride.

Methods

Search was performed using the PubMed database and PRISMA selection criteria was applied. In the initial stage keywords were used as follows: "fluoride", "titanium", "titanium implants", "titanium corrosion". Then a search filter of publication from 2015 to 2020 was applied. 358 results were found. The consistent study of search results was conducted to estimate their eligibility. Inclusion criteria: English language, published in 2015-2020, studies analysing influence of fluoride and its concentration and pH level of the substance on titanium and its alloys corrosion resistance. Exclusion criteria: case reports, systematic, meta-analysis and pilot studies. Finally, 11 articles were selected for analysis.

Results

11 articles were screened, which examined fluoride concentration and pH level influence on titanium and its alloys corrosion in vitro. 11 research states that titanium and its alloys corrosion resistance decreases when fluoride concentration increases. Titanium ion elution and surface colour change was noticed when 9000ppm NaF solution was used. 8 studies describe the influence of fluorine and pH level on titanium corrosion resistance. 6 articles review the recommendations for use of dental care products containing fluorine. Two articles suggest using fluorine

preparations for prophylaxis of dental decay. Other 4 articles assert that fluorine products should not be recommended for patients with dental titanium implants and restorations.

Conclusions

Fluoride has a significant influence on titanium and its alloys corrosion. As the fluoride concentration increases, less acidity of the medium is required, and as the pH of the medium decreases, less fluoride is sufficient to initiate the development of titanium corrosion. The low pH level of the substance reinforces the negative effect of fluorine on the corrosion resistance of titanium and its alloys. Majority of research says not to use dental prophylaxis products containing fluoride for patients with dental titanium implants and restorations.

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Efficiency of vertical alveolar ridge augmentation using bone ring technique and simultaneous dental implantation. Systematic literature review

Authors:

Jonas Zigmantavičius
Faculty of Odontology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Vykintas Pliavga
Faculty of Odontology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Gintaras Janužis
Department of Oral and Maxillofacial Surgery, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

The loss of teeth initiates the inevitable processes of bone remodeling of the alveolar process [1]. After 3 years, up to 40–60% of bone volume is lost [1,2]. Such bone loss causes aesthetic and functional disorders and it becomes difficult to restore the defect with dental implant restorations. To preserve or increase the bone volume of the alveolar process, bone augmentation procedures are performed: bone block transplantation, distraction osteogenesis, splitting of the alveolar process or guided bone regeneration but the complications rate of these techniques varies from 12.1% to even 47.3% [3,4,5]. In recent years, the possibilities of bone ring alveolar augmentation technique and simultaneous dental implantation to restore single-tooth defects are widely discussed. The advantage of the method includes shortening the total treatment time by performing one-stage vertical ridge augmentation and dental implantation. However, obtaining an autologous bone ring requires a donor site which increases patient discomfort after surgery [6,7]. It was therefore decided to review the effectiveness of this method.

Aim

To review and evaluate the effectiveness of the modern bone ring augmentation and simultaneous implantation method on alveolar bone gain and osseointegration of dental implants.

Methods

A systematic review was performed according to the PRISMA statement. Electronic databases used: PubMed, Science Direct, The Cochrane Library. Search keywords: bone ring, augmentation, dental implant. The inclusion criteria: human clinical trials, English language. Studies published before 2016, systematic reviews, case reports were denied.

Results

392 articles were found. Selection criteria were applied and 10 studies were selected for full-text analysis and 6 of them were included. Studies in which patients underwent vertical alveolar ridge augmentation using the bone ring technique and were simultaneously implanted with 10 to 81 dental implants, implant survival rate ranged between 86.66% and 100% over 6–24 months of follow-up [8–13]. Two studies indicate that using the bone ring technique, vertical alveolar bone gain ranges from 3.69±1.10 mm to 4.3±1.3 mm, assessed after 9–24 months [8,12].

Three studies established marginal bone loss ranging from 0.26±0.86 mm to 0.78±0.23 mm at 6–12 months [8-10]. One study found a statistically significant (P=0.002) increase in bone density at the bone ring – alveolus interface, ranging from 325.28 HU to 420.43 HU at 6 months [10]. Reviewed studies indicate that complications of bone ring augmentation and simultaneous dental implantation include exposure of the augmented bone ring [8,10,13], failure of dental implants [8,9,11,12], or transient numbness of lower lip [10].

Conclusions

Bone ring augmentation and simultaneous dental implant placement could be an alternative method providing a sufficient vertical bone gain, successful osseointegration of dental implants while also reducing the number of surgical interventions needed to restore single-tooth defects.

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Odontogenic and non-odontogenic rhinosinusitis: establishment of symptomatic diagnostic criteria

Authors:

Žygimantas Vaitkus
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Viltė Matusevičiūtė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Regimantas Simuntis
Oral and Maxillofacial surgery departament, Lithuanian University of Health Sciences, Kaunas Clinics, Kaunas, Lithuania

Introduction

Chronic rhinosinusitis of any origin is one of the most frequently occurring diseases affecting 11-27% population in different European regions (1). Up to 30-40% of chronic rhinosinusitis may be of odontogenic origin. Odontogenic rhinosinusitis differs in its pathophysiology and treatment from other types of rhinosinusitis, therefore, failure to accurately identify a dental cause usually leads to treatment failure.

Aim

To compare the main symptoms of chronic odontogenic and non-odontogenic rhinosinusitis looking for the symptoms specific for different rhinosinusitis type.

Methods

151 patients with chronic rhinosinusitis suspected of odontogenic origin consulted by otorhinolaryngologist in the outpatient department of LUHS Hospital Kaunas Clinic during 2019 year, were asked to fill the Sino-Nasal Outcome Test with additional 3 symptoms (purulent discharge, watery secretion, and malodor). Statistical analysis ($\chi 2$) was performed using Microsoft Excel 2019 and SPSS statistics 27. The difference was considered statistically significant when p<0.05.

Results

After clinical and radiological investigation by ORL all patients were consulted by odontologist and divided in two groups: odontogenic (n=116) and non-odontogenic rhinosinusitis group (n=35). The symptoms were assessed and compared between groups. Mostly patients in both groups reported thick nasal discharge (65.5% and 40%), malodor (66.4% and 20%, p=0.01), runny nose (59.5% and 57.1%), sneezing (56% and 48.6%) and need to blow nose (56% and 42.9%). The less common symptoms in both groups were ear fullness (46.6% and 31.4%), decreased sense of smell and taste (35.3% and 45.7%), pus secretion (34.5% and 20%), cough (24.1% and 11.4%), post-nasal discharge (19% and 11.4%), watery secretion (19.8% and 31.4%). Dizziness (12.1% and 8.6%), embarrassment (10.3% and 100%), ear pain (9.5% and 14.3%), nasal blockage (7.8% and 17.1%) , waking up at night (7.8% and 17.1%), lack of good night sleep (7.8% and 8.6%), fatigue (6% and 22.9%), frustration or restlessness (6% and 22.9%), reduced concentration, difficulty falling asleep (5.2% and 4%), sadness (4.3% and 8.6%), reduced productivity (4.3% and 14.3%) and facial pain or pressure (4.3% and 5.7%) were observed even less common, though its relevance to odontogenic rhinosinusitis group was lowest. Waking up tired was an uncommon symptom in both groups but occurred significantly more frequently in group of non-odontogenic rhinosinusitis (6.9% and 28.6%, p=0.02).

Conclusions

1) No statistically significant symptomatic criteria were found between the symptoms of odontogenic and non-odontogenic rhinosinusitis. 2) The only symptom that is more characteristic to odontogenic rhinosinusitis is malodor. 3) The only symptom that is more characteristic to non-odontogenic rhinosinusitis is waking up tired. 4) Clinical trials involving larger groups of patients should be performed to determine a significant difference between the symptoms of odontogenic and non-odontogenic rhinosinusitis.

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NEUROSCIENCES SESSION

Neurosyphilis in interwar period in Lithuania: etiology, symptoms, diagnosis and treatment methods

Authors:

Šarūnas Jukna
Faculty of Medicine, Vilnius University

Eglė Sakalauskaitė-Juodeikienė
Department of Neurology and Neurosurgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University

Introduction

Neurosyphilis was an incurable and in most cases fatal disease until the beginning of the antibiotic era. Approximately 5% of all infected patients with syphilis subsequently developed neurosyphilis. Prior to the antibiotic era, neurosyphilis was one of the most common neuropsychiatric diseases in Europe.

Aim

The aim of this study is to find out how the etiology and clinical symptoms of neurosyphilis was perceived, which diagnostic and treatment methods were used in Lithuania in the interwar period (1920 – 1939).

Methods

A literature review of the first scientific medical journal in Lithuania and the Baltic states Medicina was conducted. Quantitative and qualitative historical – medical analysis of 224 monthly publications of Medicina in the period of 1920 – 1939 was performed. A total of 922 original articles were published, 55 (6.0%) of which were dedicated to the topic of nervous diseases; 3 900 reports were also published, 127 (3.3%) of which were dedicated to the topic of nervous system diseases. The total amount of sources on nervous system diseases was 182 (3.8%). In this work, 13 articles and 20 reports on neurosyphilis were analyzed.

Results

The main cause of neurosyphilis was identified as a consequence of untreated or undertreated syphilis. The most common symptoms of neurosyphilis, as reported by Lithuanian physicians in Medicina, were headache of unknown origin, Argyll-Robertson syndrome, limb paralysis, speech and mental impairment. Wasserman, Pandy and Nonne – Apelt globulin reactions, as well as evaluation of cerebrospinal fluid cytosis were the most commonly used laboratory tests to diagnose the disease [1]. Heavy metal therapy (arsenic, bismuth, mercury salts) and fever therapy (injections of the malaria agent, boiled cow's milk, neobenzinol and pyrifer) were used to treat neurosyphilis in Lithuania in the period of 1920 – 1939. Although salvarsan was the main drug for the treatment of early neurosyphilis, Lithuanian doctors thought that too small amounts of this drug increased the activity of spirochetes and its spread in the patients' organism [2]. Even though since the 1920, malaria therapy became the most popular method in Europe for neurosyphilis treatment, this method was introduced in Lithuania only in 1929, and was not as effective as expected [3]. Jonas Kairiūkštis (1896 - 1957), the pioneer of experimental and clinical pharmacology in Lithuania, has

developed an alternative therapy – neobenzinol, a new drug for inducing heat for patients with general paralysis of insane [4].

Conclusions

In the interwar period, in Lithuania, untreated syphilis was recognized as the main cause of neurosyphilis and the most commonly observed symptom of neurosyphilis was a headache of unknown origin. The most commonly used diagnostic method to identify neurosyphilis was Wasserman reaction. For the treatment of neurosyphilis Lithuanian physicians in most cases used heavy metal and fever therapies.

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Patients with clinically isolated syndrome conversion to multiple sclerosis: predictive paraclinical tests

Authors:

Miglė Malciūtė
Lithuanian University of Health Sciences Faculty of Medicine

Ieva Čelpačenko
Lithuanian University of Health Sciences Faculty of Medicine

Radvilė Stankevičiūtė
Lithuanian University of Health Sciences Faculty of Medicine

Renata Balnytė
Lithuanian University of Health Sciences Department of Neurology

Introduction

Multiple sclerosis (MS) is a chronic autoimmune demyelinating inflammatory disease with a clinical onset which usually manifests as clinically isolated syndrome (CIS) [1]. Approximately 80% of people with CIS convert to MS [2]. Therefore, there is a pressing need to identify the most accurate predictive factors of CIS conversion to MS. Some of which could be magnetic resonance imaging (MRI), cerebrospinal fluid (CSF) and evoked potentials (EP) pathological findings. The problem is of outstanding importance since early MS diagnosis and treatment prevents long-term disability [3].

Aim

The aim of this study was to establish which of the paraclinical tests could have the best predictive value of CIS conversion to MS.

Methods

A retrospective data analysis collected in the Hospital of Lithuanian University of Health Sciences (LUHS) Kaunas Clinics was performed. Eligible patients were adults (aged ≥ 18 years) diagnosed with demyelinating encephalomyelitis with ICD – 10 (International Classification of Diseases Version 10) codes G37.8 (other specified demyelinating diseases of central nervous system), G37.9 (demyelinating disease of central nervous system, unspecified) in the period between January 1st 2015 and January 1st 2020. In clinical practice this diagnosis is called CIS. All analyses were performed using SPSS (Statistical Package for the Social Sciences) version 24.0. Chi Square test was used for comparison between categorical variables. Mann-Witney test was used for comparison between groups. All results were statistically significant when $p < 0,05$.

Results

A total of 169 cases were reviewed, 31 cases were excluded due to insufficient data, 138 cases were included in the study. We found that 49 (n=138) patients converted to MS diagnosis (35.5%), other 89 patients (64.5%) were diagnosed with other diseases than MS. We received only 35% of those who converted to MS due to the short time period of collected data, so further research is needed with longer follow - up periods. A total of 28 female (57.1%) and 21 male (42.9 %) were diagnosed with MS. Unspecified MRI lesions were identified in first time hospitalized patients with CIS who later converted to MS ($\chi2$=4.328, p=0.037, n=31). Patients with CIS pathological CSF findings (leukocytes, IgG), positive oligoclonal bands (OCBs) were related to later MS diagnosis ($\chi2$=10,793, p=0.001, n=36; $\chi2$=34,859, p=<0.001, n=30). We found that lesions detected by Brainstem Auditory Evoked Potential (BAEP) test were also related to later MS diagnosis in patients with CIS ($\chi2$=10,924, p=<0.001, n=17).

Conclusions

The results of our research indicate that MRI lesions, pathological CSF findings including positive OCBs and BAEP test are all possible predictive MS factors in patients diagnosed with CIS. However, positive OCBs are revealed to be the most promising predictive factor of later MS onset.

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Clinical features of early multiple sclerosis

Authors:

Radvilė Stankevičiūtė
Lithuanian University of Health Sciences, faculty of medicine

Ieva Čelpačenko
Lithuanian University of Health Sciences, faculty of medicine

Miglė Malciūtė
Lithuanian University of Health Sciences, faculty of medicine

Renata Balnytė
Lithuanian University of Health Sciences, Neurology department

Introduction

The incidence rates of multiple sclerosis (MS) in Lithuania have been increasing during recent years. [1] Its heterogeneous presentation [2] in combination with multiple conditions which imitate MS symptoms [3] proposes a great diagnostic challenge. On average, MS is diagnosed more than a year after first clinical manifestation. [4] Delayed treatment in MS is associated with higher risk of disability progression [5], therefore establishing a clear view of early MS could aid in a more efficient diagnostic process.

Aim

To establish clinical features which could be prognostic signs of converting to multiple sclerosis in patients with suspected demyelinating disease.

Methods

A retrospective data analysis of patients hospitalized with suspected demyelination ICD – 10 (International Classification of Diseases Version 10) codes G37.8 (other specified demyelinating diseases of central nervous system), G37.9 (demyelinating disease of central nervous system, unspecified) was performed. The data obtained from January 1st 2015 to January 1st 2020 contains sex, age of first symptoms and of disease onset, neurological signs and symptoms, MS risk factors and final diagnosis. All analyses were performed using SPSS (Statistical Package for the Social Sciences) version 24.0. Chi Square test was used for comparison between categorical variables. The association between two quantitative variables was performed through Spearman correlation coefficient. Mann-Whitney U test and independent-samples t-test were used for comparison between groups. All results were statistically significant when $p < 0,05$.

Results

A total of 138 patients were included in the study, 92 being female (64.5%) and 46 male (35.5%). Patients age at hospitalization distributed in such groups: 28 (20.3%) patients aged 18 - 30 (mean 24.89 ±3.725), 58 (42.0%) aged 31 - 50 (mean 40.43 ±6.093), 52 (37.7%) 50 and older (mean 57.83 ±5.498). 49 (35.5%) patients converted to MS, 89 (64.5%) patients were given other diagnoses than MS. Converted to MS patients were more likely to have a

diminished sense of vibration and proprioception compared with the non-converted patients (χ^2=9.033, p=0.003, n=20). No other factors were associated with conversion to MS. Converted females were more likely to have positive Rosolimo's sign than converted males (χ^2=4.451, p=0.035, n=10). Converted to MS patients older than 50 years were more likely to have positive Babinski's reflex (χ^2=6.993, p=0.03, n=13), decreased muscle strength (χ^2=13.481, p=0.001, n=14), ataxia (χ^2=8.135, p= 0.017, n=13), diminished sense of vibration and proprioception (χ^2=7.918, p= 0.019, n=12) compared with younger ones.

Conclusions

Diminished sense of vibration and proprioception could help predicting conversion to MS. When investigating females more emphasis could be made on Rossolimo's sign, whereas in older patients positive Babinski's reflex, decreased muscle strength, ataxia, diminished sense of vibration and proprioception should be taken into consideration.

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Peculiarities of psychiatric care during the COVID-19 pandemic in Lithuania

Authors:

Dominyka Martinėlytė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Agnė Skvarnavičiūtė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Edgaras Diržius
Department of Psychiatry, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

The WHO declared that the COVID-19 outbreak is a public health emergency of international concern [1]. The ways healthcare services are provided have changed drastically. This outbreak is also leading to additional health problems such as anxiety, depressive symptoms [2].

Aim

To assess the workload of psychiatrists, emerging challenges and the state of patients with mental disorders in Lithuania during the COVID-19 pandemic.

Methods

A 35-item multiple choice online questionnaire was purposely developed for this survey by authors based on the aims and objectives of the work and sent to Heads of all Lithuanian Mental Health Departments, members of the Lithuanian Psychiatric association. 101 questionnaires were returned. There are 606 registered psychiatrists with active license in Lithuania. Statistical analysis was performed using the data collection and analysis software package SPSS 22. The difference or relationship was considered statistically significant when the significance of the applied criterion was p <0.05.

Results

Average work experience of the psychiatrists was 20,7 years, child and adolescent psychiatrists (CAAP) – 19,7 years. The majority of the respondents were psychiatrists - 87.1% (n=88), CAAP made up 12.9% of the respondents (n=13). 79.2% (n=80) of the respondents answered that during the COVID-19 pandemic healthcare is provided through a mix of in-person and virtual contact. Mixed care is provided by 89% (n=57) of day care centers and 54.5% (n=18) of hospitals. Only 13.9% (n=14) of the respondents answered that during the COVID–19 pandemic assistance is provided in the usual way. Healthcare is provided in the usual way by 24.2% (n=8) of hospitals. 74.25% (n=75) of the study participants indicated that the number of working hours did not change, 17.8% (n=18) answered that the working hours increased and 6.9% (n=7) answered that they decreased. 54.7% (n=35) of respondents answered that the number of outpatients in the mental health center increased, 62.9% of them reported that change was more than 10% but less than 30%, 29.7% answered that did not change and 15.6% that decreased, 50% of them reported more than 10% but less than 30% change. 64.4% (n=65) of the respondents noticed that patients delayed to seek medical treatment, even if they felt worse. Furthermore, more than half, 56.64% (n=57) answered that they were approached by patients in more severe, neglected conditions. The most common reasons why patients were seeking medical treatment are anxiety 91.1% (n=92) and mood disorders 78.2% (n=79). The study found that CAAP noticed cases of severe reaction to stress (69.3% vs. 37.9%, p=0,030) and suicidal attempts (69.3% vs. 34.1%, p=0,015) more frequently than adult psychiatrists.

Conclusions

During the COVID-19 pandemic patients delayed to seek medical treatment and had more severe conditions, mostly due to anxiety and mood disorders. Although the number of working hours has not changed, the number of new patients has increased more than 10% but less than 30%.

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Information overload impact on the mental health of 5th year medical students of Lithuanian University of Health Sciences: anxiety and depression

Authors:

Andra Krševičiūtė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Ieva Čalkaitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Edgaras Diržius
Department of psychiatry, Hospital of Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Information overload is a condition resulting from an excess amount of information beyond an individual's capacity [1]. Nowadays information overload is a relevant process especially due to increased usage of information providing devices. Information effect on mental health is still under investigation, despite that information overload can potentially increase risks of some conditions for instance anxiety and depression [2]. Medical students face an information-rich environment therefore, this population is suitable to investigate their mental health aspects and its connection with information overload [3].

Aim

To evaluate the connection between the time spent using information providing devices (smartphone, computer, tablet, TV) on anxiety and depression manifestation.

Methods

The study was approved by the Bioethics center of Lithuanian University of Health Sciences (BEC-MF-47). The method of the research was based on a survey-observational study and it was performed at the Lithuanian University of Health Sciences, Faculty of medicine during the period 2021 01 12-2021 01 25. The invitation was sent to all (281) of the Lithuanian University of Health Sciences 5th year medical students via official email M16@stud.lsmu.lt. In the 14-day study 33 voluntaries were asked to follow and register their time spent using devices (smartphone, tablet, computer, TV). To precisely observe the time participants were asked to use the "Screen time" function in their devices or to install the free application "Stay free". For evaluation of participants' anxiety and depression occurrence, they were asked to fill questionnaires. The analysis of results was made using a Patient Health Questionnaire-9 as well as Generalized Anxiety Disorder Scale-7 and SPSS 26.0. Data were evaluated with ANOVA (Analysis of variance). Differences were considered statistically significant when $p < 0,05$.

Results

There were 33 participants overall, 66,7% (n=22) women and 33,3% (n=11) men. Mean age was 23 ($\pm$0,7) years. On average, participants spent 646,3min ($\pm$206,3min) per day using devices. Most participants 42,4% do not experience anxiety (n=14), mild anxiety occurred in 36,4% (n=12), moderate anxiety in 12,1% (n=4), severe anxiety in 9,1% (n=3). Minimal depression established in 24,2% (n=8), mild - 51,5% (n=17), moderate - 18,2% (n=6), moderately severe - 6,1% (n=2). There was a statistically significant difference between total time spent using information providing devices and different anxiety groups ($p=0,04$, $p<0,05$) (mild anxiety - 560,0min ($\pm$179,2), moderate anxiety - 599,3min ($\pm$174,1), severe anxiety - 914,7min ($\pm$356,0), do not experience anxiety - 676,3min per day ($\pm$160,9)). There was no significant difference ($p>0,05$) between the time spent on information providing devices and depression.

Conclusions

The data show that participants who spent more time using devices experienced more anxiety symptoms. There was no significant difference between various screen usage time groups and different levels of depression.

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Congenital ACC syndromes: a review on recent genotype-phenotype discoveries

Authors:

Jagoda Hofman
Students' Scientific Society, Department of Pediatric Neurology, Faculty of Medical Science in Katowice, Medical University of Silesia, Katowice, Poland

Michał Hutny
Students' Scientific Society, Department of Pediatric Neurology, Faculty of Medical Science in Katowice, Medical University of Silesia, Katowice, Poland

Justyna Paprocka
Department of Pediatric Neurology, Faculty of Medical Science in Katowice, Medical University of Silesia, Katowice, Poland

Introduction

Corpus callosum (CC) is the largest structure connecting brain hemispheres. Its transmitting function is executed by axonal fibers passing signals to the opposite part of the cortex. Its morphology and function may become defective or impaired at different stages of development. Depending on the extensity of alterations, this impairment is described as partial agenesis of corpus callosum (pACC) or complete (cACC)[1]. ACC can be an isolated state or part of a syndrome, composed of various neurological pathologies. Its prevalence ranges in general population from 0.02% to even 0.7%[2,3], depending on the report. Different factors contribute to its occurrence, both environmental (as maternal drinking) and genetic – including gene mutations and chromosomal aberrations.

Aim

The aim of this study was to gather the newest research on the genetic background of well-established congenital ACC syndromes, as well as on their presented phenotype.

Methods

Browsing the databases – PubMed, PubMed Central, Medline – was conducted according to search strategy, based on relevant entry terms, which consisted of term „corpus callosum agenesis" combined with titles of associated congenital syndromes ("ACLS; JBTS; 1q43q44 Microdeletion Syndrome; VICIS; MOWS; CAN; CSS; BRWS2; ACCPN; AIC; MOPD1; DBS; FGS; SOD") and the term „genetic background". Filters applied to the results limited them to English literature published in the last 5 years. Online Mendelian Inheritance in Man (OMIM) database was used as the reference.

Results

We identified 177 studies, of which into our review we included 22 describing recent research concerning the genetic background of 9 congenital syndromes (CSS1, CSS3, ACCPN, MOWS, VICIS, AIC, SOD, GDACCF, 1q43q44 Microdeletion Syndrome)[4-25], which were previously linked with the occurrence of ACC. The exact genotype-phenotype links were discovered for some of the mutations, explaining the development of the disease. We also

present differences in symptomatic manifestations between the phenotype of patients with analyzed mutations and the typical clinical image of given syndromes. These results might serve as a basis for planning adequate strategies for preventing further aggravation of symptoms.

Conclusions

The diverse clinical image of patients with ACC poses a significant difficulty in the recognition and diagnosis of this malformation. Due to the newest advances in molecular biology, it is possible to unravel the genetic background for many cases of this condition, broadening our knowledge in this matter. Our review collected and summarised information about the influence of genetic alterations on the clinical image of patient, which might be used to create strategies for earlier detection and prevention.

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The comparison of depressive symptoms among rheumatic diseases patients receiving different treatment

Authors:

Gabrielius Tomas Zdanys
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Juta Zinkevičiūtė
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Robertas Strumila
Clinic of Psychiatry, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Edgaras Dlugauskas
Clinic of Psychiatry, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Dalia Miltinienė
Clinic of Rheumatology, Orthopaedics Traumatology and Reconstructive Surgery, Centre of Rheumatology, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Introduction

Previous studies suggest that one of the possible depression pathophysiological pathways is autoimmune inflammation increasing inflammatory mediators' levels and thus affecting mood (1). The significant evidence of the links between depression and inflammation was provided by investigating animal models as well as patients with various diseases, for example, inflammatory bowel diseases, rheumatic diseases, cancer, cardiovascular diseases or diabetes mellitus (2-4). This study was conducted in the University Hospital Santaros Clinics, Centre of Rheumatology.

Aim

To compare depression symptoms among rheumatic disease (rheumatoid arthritis, psoriatic arthritis or ankylosing spondylitis) patients receiving TNF-α inhibitors or IL-6 inhibitors and those receiving treatment as usual (TAU).

Methods

Instruments: Visual analogue scale (VAS) (5) and Hospital anxiety and depression scale (HADS) (6) . Active rheumatoid arthritis, psoriatic arthritis and ankylosing spondylitis patients not using antidepressants in the age range from 18 to 65 years were included in the study and divided into an experimental group (receiving biological therapy) and control group (receiving TAU). Data were analyzed with statistical software SPSS 23.0

Results

36 patients' data were analyzed. The Shapiro-Wilk test was used to test the normality of the data. The normally distributed data were analyzed with the t-test comparing the means of the experimentative and control group. The data with the non-normal distribution were assessed using Mann-Whitney U test. The effect size was evaluated by calculating Glass's delta. Between the experimental group and the control group, the Visual analogue scale score was

not significantly different (experimental group $45{,}72 \pm 31{,}94$; control group $60{,}00 \pm 18{,}35$, $p > 0.05$, $p = 0{,}31$; rheumatoid arthritis $53{,}41 \pm 27{,}52$, ankylosing spondylitis $35{,}50 \pm 22{,}02$, psoriatic arthritis $74{,}00 \pm 9{,}94$). The mean score of the hospital anxiety and depression scale were significantly different between both groups (experimental group $6{,}67 \pm 3{,}54$, control group $12{,}56 \pm 6{,}24$; $p < 0.05$, $p = 0{,}037$, Glass's delta$=1{,}66$).

Conclusions

Patients treated with biological therapy experienced fewer depression symptoms than patients showing similar disease activity but receiving TAU.

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Visual field defects: associations with traumatic brain injury

Authors:

Milda Vabalaitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania.

Brigita Glebauskienė
Department of Opthalmology, Hospital of Lithuanian University of Health Sciences Kauno klinikos, Kaunas, Lithuania.

Introduction

More than 50 million traumatic brain injuries (TBI) occur worldwide each year and are a common cause of death and disability in various age groups [1]. About 70% of the brain is involved in the processing of visual information [2] so TBI can result in various visual problems. Visual field defects have been shown to have an impact on quality of patient's life [3].

Aim

To determine the association between TBI and visual field defects.

Methods

The retrospective study included individuals ≥ 18 years of age who were treated in the Departments of Ophthalmology and Neurosurgery, Hospital of Lithuanian University of Health Sciences Kauno Klinikos after experiencing TBI during the period of January–March 2019. Age, gender, Glasgow Coma Scale (GCS), visual acuity (VA), full visual field screening using Goldmann Perimetry, radiological findings from case histories were evaluated. Non-corrected VA and the best-corrected VA (BCVA) was evaluated using Landolt rings by Snellen test types. TBI was confirmed by computed tomography (CT) or magnetic resonance imaging (MRI) scans. Methods of statistical analysis such as Mann-Whitney U test, the criterion of independence of Chi-square ($\chi2$), Kramer coefficient were performed using IBM SPSS 23.0 software. Differences were considered statistically significant when $p<0.05$.

Results

The subjects of study were 50 cases (100 eyes) of TBI, 82% (n=41) of patients were men. The mean age was 58.14 (SD 21.96). BCVA median when the visual field was normal was 0.70 (min 0.01, max 1.00), in the presence of a visual defect-0.40 (min 0.01, max 1.00), (p=0.101). Intact visual field was found in 76 eyes (76%), complete hemianopy in 16 (16%) eyes, central scotoma in 1 eye (1%) and concentric visual field narrowing in 8 eyes (8%). In moderate TBI (GCS 9–12), visual field impairments occurred more frequently than in mild TBI (GSC 13–15) (p=0.001). A weak positive correlation was found between concentric narrowing and temporal lobe damage (r=0.295, p=0.037). A strong positive correlation was found between homonymous hemianopia and occipital lobe damage (r=0.821, p<0.001). It was found very weak or not significant correlations between visual field defects and other damaged brain areas: between homonymous hemianopia and frontal, temporal, parietal lobe (r=0.083; 0.009; 0.045; p≥0.5), central scotoma with frontal, temporal, parietal, occipital lobe (r=0.174; 0.147; 0.160; 0.078; p≥0.2), between concentric visual field narrowing and frontal, parietal, occipital lobe (r=0.039; 0.172; 0.157; p≥0.2).

Conclusions

The most common visual field defect in patients with TBI was homonymous hemianopia. It was found the weak positive correlation between visual field concentric narrowing and temporal lobe damage. There was a significant strong correlation between homonymous hemianopia and occipital lobe lesions.

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Neurosonography of hypoxic-ischemic brain injury in newborns with perinatal asphyxia

Authors:

Viktorija Aleksejeva
Faculty of medicine, Riga Stradins University, Riga, Latvia
Natālija Merkla
Radiology department, Children's Clinical University Hospital, Riga, Latvia

Introduction

Hypoxic-ischemic encephalopathy is a significant brain injury due to perinatal asphyxia. The diagnosis is based on neurological and radiological examinations. According to guidelines, neurosonography is the primary method of choice in children with perinatal asphyxia and suspected hypoxic-ischemic injury.

Aim

To evaluate frequency of neurosonography use, findings, difference in results of the first and control neurosonographies and associations with clinical symptoms regarding hypoxic-ischemic injury in patients diagnosed with perinatal asphyxia.

Methods

In this retrospective study 172 patients diagnosed with perinatal asphyxia (ICD-10 P21.0), born ≥37th weeks of gestation between 2015 and 2019 were selected using CCUH database. MS Excel was used for compilation and processing. IBM SPSS Statistic 26.0 was used for data analysis, applying statistical methods, which included descriptive statistics, Pearson Chi-square test, McNemar test.

Results

71.5% (n = 123/172) underwent at least one neurosonography, generally performed on the day of birth. Of the available 105 conclusions of the 1st neurosonography hypoxic-ischemic injury was detected in 42.9% (n = 45/105), while other findings were observed in 57.1% (n = 60/105). 25% (n = 43/172) had a control neurosonography, generally performed on the 8th day of life. Analysing the conclusions of the 34 available control neurosonographies, 41.2% (n = 14/34) had findings corresponding to hypoxic-ischemic injury, while 58.8% (n = 20/34) had other findings. Signs of hypoxic-ischemic brain injury in both first and control neurosonographies were detected in only 4 of the 45 cases. Comparing the 1st neurosonography findings with findings of control neurosonography, a statistically significant association was found (p <0.001). There was no statistically significant association between 1st neurosonography findings and seizures, neonatal reflexes, or changes in muscle tone (p> 0.05). Furthermore, there was no statistically significant association between the finding on the 1st neurosonography and the patients' 1-minute and 5-minute APGAR scores (p > 0.05). The 1st neurosonography showed signs of hypoxic-ischemic brain injury in only 38,2% (n=13/23) of all hypoxic-ischemic encephalopathy cases diagnosed by a neurologist.

Conclusions

In total, 71,5% of patients underwent at least one neurosonography. In less than half of patients with perinatal asphyxia the 1st neurosonography showed signs of hypoxic-ischemic injury. A large proportion of patients retained hypoxic-ischemic injury on the control neurosonography. A statistically significant association between the findings of the 1st and control neurosonography was determined. No statistically significant association between 1st neurosonography findings and clinical symptoms, 1-minute and 5-minute APGAR scores were found.

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Association between maternal depression and six-month-old infants' sleep

Authors:

Kamilė Stankevičiūtė
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Gerda Mekionytė
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Giedrė Vaicenavičienė
Family medicine department,Vilnius University, Lithuania

Emilija Petrauskienė
Faculty of medicine, Vilnius university, Lithuania

Introduction

Sleep problems in early childhood are one of the most prevalent concerns of parents and clinicians, they can persist throughout life and harm maternal well-being. 10-20% of women experience postpartum depression within the first year after giving birth. Mothers' mental health problems, such as depression, can have many negative effects on infants' health, including their sleep problems.

Aim

The objective of this study was to investigate six-month-old infants' sleep patterns and to examine associations between infant sleep problems and maternal depression.

Methods

A cross-sectional study was carried out in Lithuania using an online survey. A survey was completed by 540 mothers. 449 mothers of six-month-old (6months- 6months 30 days) infants were included in the study, those that did not conform to age interval were excluded. Our questionnaire was made of three sections: demographic information, infant's sleep assessment and maternal depression assessment (Edinburgh Postnatal Depression Scale). We used IBM SPSS Statistics v21 (Kruskal-Wallis and Mann-Whitney U tests) for data analysis. Significance level was $p<0.05$.

Results

The mothers' age median was 29 years old [17;41]. 315 (70.16%) of mothers were primiparous. 156 respondents could have possible depression as they have scored 10 or greater on EPDS. It was concluded that 6-month-old infants most commonly sleep 3 times per day (n=280, 62.36%), mean sleep duration during the day was 3h 14min and 9h 14min during the night. Bedtime usually started at 21h (n=167, 37.19%), duration of settling time was 33 minutes, mean of nocturnal awakenings was 2.44. Results show that more depressive mothers' infants slept fewer hours during the day ($p=0.01$) and their settling time took longer ($p<0.01$). Mothers, which stated that their infants' sleep was problematic, were more depressed (mean EPDS – 10.53; $p<0.01$). Mothers, who did not breastfeed or stopped breastfeeding before 4 months, were more depressed as well (accordingly $p<0.01$, $p=0.01$). Mothers, whose infants fell asleep early for nocturnal sleep (before 19h) and slept less during the night, were more likely to be depressed, but results were not statistically significant (accordingly $p=0.06$, $p=0.13$). There were no statistically significant associations between a mother's depressed mood and infant's nocturnal awakenings, offspring's sex, mother's age, and if mother was primiparous or multiparous (accordingly $p=0.94$, $p=0.36$, $p=0.07$, $p=0.07$).

Conclusions

Maternal depression is related to shorter duration of daytime sleep and prolonged settling time to fall asleep in the evening. Maternal reports of infant sleep problems and not breastfeeding are also associated with increased maternal

depression rates. However, there can be bilateral relationships between maternal depression and infant sleep problems: maternal depression can induce sleep problems, likewise, infant sleep problems can contribute to maternal depression. Our suggestion is to solve these issues comprehensively.

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SURGERY SESSION

Ureteroplasty using buccal mucosa graft in ureteral stricture treatment: a literature review

Authors:

Gustas Sasnauskas
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Aivaras Grybas
Department of Urology, Vilnius University Hospital Santaros klinikos, Vilnius, Lithuania

Introduction

Recurrent proximal ureteral stricture is a complex rare disease that is difficult to treat. Post-operative scarring, impaired blood supply to the ureter, stricture-related stones, and chronic infection – all factors make the treatment even more complicated. There are various surgical procedures for ureteral reconstruction, however, most of them are very traumatic and quite often ineffective [1–4]. Buccal mucosa, which is rich of stem cells and has a thick capillary layer, is the optimal tissue source for ureteral reconstruction.

Aim

To evaluate the results of publications on ureteroplasty using buccal mucosa graft in long segment ureteral stricture treatment.

Methods

Cohort studies and clinical case reports from the 1999-2020 period investigating the effectiveness of buccal mucosa graft ureteroplasty (BMGU) were found using MeSH terms in PubMed and Google Scholar research tools: "buccal mucosa", "graft", "reconstruction", "ureter", "stricture". The following aspects have been evaluated in the studies: operation method (open or robot-assisted), operating time (OT), ureteral stricture length (SL), follow-up time, post-operative complications, and effectiveness of the treatment.

Results

Seven existing publications from the 1999-2020 period, including the first-ever published study on BMGU by Naude et al [5], were found and analyzed. Robot-assisted surgery was used in the two largest cohort studies [6,7] with overall 31 patients, while open surgery was used in the other 5 studies [5,8–11] with overall 21 patients. The effectiveness of the treatment was assessed by clinical and/or radiological examinations. Robot-assisted BMGU was performed on strictures of ureteropelvic junction, proximal ureter, or the middle ureter, with SL varying from 2 to 8 cm. OT varied from 136 to 397 min, and there was 25-420 ml blood loss. The median length of stay was 1.5 (1-15) days. BMGU in Lee et al [6] and Zhao et al [7] studies achieved 83.3 % and 95.0 % effectiveness at median follow-ups of 13 and 26 months, respectively. There were 17-20 % postoperative complications and no treatment-related deaths occurred. Open BMGU studies showed similar results: 83.3-100 % of patients treated were stricture-free at a follow-up of 10-85 months, and complications were recorded in 0-33.3 % of cases, SL varied from 3 to 11 cm. OT was 85-201 min,

which is lower than robot-assisted BMGU. Length of stay was a mean of 7.6 (6-11) days, which is longer than in robot-assisted operations [5,8-11].

Conclusions

Due to the rarity of long proximal ureteral strictures, there are only several studies of BMGU. The studies also have some limitations: small sample size, heterogeneity of the stricture etiology and length, and diverse reconstruction techniques. However, the available results are promising, with treatment effectiveness varying from 83.3 % to 100 %, and no recorded major complications. BMGU could be considered as a more safe and effective alternative to the usual ureteral reconstruction methods.

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Long-term outcomes of anastomotic leakage after colon cancer resection: a systematic review

Authors:

Artiomas Širvys
Vilnius University, Faculty of Medicine, Vilnius, Lithuania.

Audrius Dulskas
Department of Abdominal and General Surgery and Oncology, National Cancer Institute, Vilnius, Lithuania

Introduction

Colon cancer is one of the most common types of cancer and when diagnosed at early stages, surgery is the most efficient type of treatment. Anastomotic leak (AL) is one of the most severe complications in colorectal surgery. Thus, it is crucial to understand the impact of AL on long-term outcomes after colon cancer resection and yet only few data and reviews are published on oncologic outcome in patients with AL in colon cancer.

Aim

The purpose of this study was to analyze the impact of AL on long-term outcomes after colon cancer surgery.

Methods

A literature search in Cochrane Library, Embase and PubMed databases was performed from January 2000 to October 2020. Search keywords were "colon cancer", "colon leakage", "anastomotic leak", "mortality", "survival". In our systemic review, we included studies evaluating oncologic impact of AL after colon cancer resection. Exclusion criteria were as follows: studies including rectal cancer and studies including both colon and rectal cancer outcomes. Overall survival, disease free survival, cancer-specific survival, local recurrence and distant recurrence were the outcome measures. Survival analysis in included studies was performed using Cox Regression method, statistical analysis of long-term oncological outcomes assessed comparing patients with AL and patients without AL. Results were considered significant when p-value was less than 0.05.

Results

Review includes 10 studies matching inclusion criteria. Average AL rate was 2.5-6.4%. AL after colon resection had no significant difference on distant recurrence comparing with group of non-AL. Although AL had a significant negative impact on overall survival (OS) (5-year OS was up to 80.8% and 92.1% in leak and non-leak groups respectively), disease-free survival (DFS) (5-year DFS was 52.8-63% and 74.6-88.7% in AL and non-AL group respectively), cancer-specific survival (CSS) (5-year CSS was 51.9-89.6% in AL group compared to 75-90.3% in non-AL group). Also, AL was a negative prognostic factor of local recurrence (up to 16.1% in AL and 11.8% in non-AL group in 5-year follow-up).

Conclusions

Systematic review showed that AL might be a prognostic factor of worse long-term oncologic outcome in patients undergoing colonic resection.

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Transcutaneous electric nerve stimulation reduces acute postoperative pain and not affect the early quality of life following inguinal hernia repair

Authors:

Jovydas Vaitekunas
Faculty of medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Saulius Paskauskas
Dep. of Obstetrics and Gynecology, Lithuanian University of Health Sciences, Kaunas, Lithuania

Audrius Parseliunas
Dep. of General Surgery, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

The postsurgical pain and Quality of life (QoL) currently are the most important objects of clinical investigations in a field of hernia surgery. Acute pain is the most common complaint reported by patients following inguinal hernia repair [1]. Multimodal access to analgesia, using a variety of analgesic medications and techniques, combined with non-pharmacological interventions, is recommended for postoperative pain treatment [2]. Transcutaneous electrical nerve stimulation (TENS) is a safe, noninvasive, no pharmacological analgesic method, used to control different types of pain [3]. The postoperative analgesic benefits of TENS was showed by previous studies following various surgeries [4-9], but how TENS may influence the QoL in first days after surgery have rarely been investigated.

Aim

The aim of the current randomised, double blinded, placebo-controlled trial was to evaluate the effect of TENS on acute pain and early Quality of Life in patients following open inguinal hernia repair.

Methods

80 male patients, admitted to LSMU Kaunas Hospital for elective primary unilateral hernia Lichtenstein repair, were enrolled in this trial. Participants were randomly allocated into two groups. TENS group received local and segmental conventional TENS, using self-adhering electrodes on the first and second postoperative days, twice a day for 30min. In Placebo TENS group the electrodes were placed, but stimulation intensity was set to 0mA. The analgesics were given according to a pre-arranged plan.

The primary outcome was pain intensity before and after TENS treatment. Pain was measured when laying down, standing up from the bed and walking. The100mm visual analogue scale (VAS) was used. The secondary outcome was hernia specific QoL. Carolinas Comfort Scale (CCS) was used for QoL assessment and was admitted on the second postsurgical day. It is reliable and valid questioner for hernia specific QoL evaluation after hernia repair with mesh [10, 11].

Results

There was a significant difference of VAS pain score between the Placebo TENS and TENS groups during all activities following every TENS procedure (p<0.001). No difference was observed between the Placebo TENS and TENS groups in CCS total scores (24.26 ± 11.69 vs 20.15 ± 10.78; p=0.127), as well as sensation (7.96 ± 10.86 vs 5.21 ± 10.06 p=0.168), pain (31.51 ± 14.70 vs 27.14 ± 13.03; p=0.221) and movement (34.59 ± 18.96 vs 29.22 ± 16.57; p=0.306) scores on second postsurgical day.

Conclusions

Transcutaneous Electric Nerve Stimulation reduces acute postoperative pain and not affect the early hernia specific Quality of Life following inguinal hernia repair. We recommend to use TENS as a part of multimodal pain treatment after inguinal hernia surgery.

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Analysis of native septic hip and knee arthritis

Authors:

Karolina Staškevičiūtė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Evaldas Šivickas
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Justinas Stučinskas
Department of Orthopedics and Traumatology, Hospital of Lithuanian University of Health Sciences Kauno klinikos, Kaunas, Lithuania

Introduction

Septic arthritis is a difficult disease for a patient as it is associated with severe complications, sometimes amputations, chronic morbidity and mortality. Thus, prompt differentiation of a bacterial etiology and timely treatment is crucial.

Aim

The aim of this study was to identify native septic arthritis etiology, pathogenesis and outcomes.

Methods

Retrospective review was done to identify all patients treated at the hospital LSMU, Department of Orthopedics and Traumatology from 2018 - 2020 for native septic hip and knee arthritis. We investigated microbiological, laboratory, radiological findings, treatment methods and outcomes. Results were evaluated by using MS excel 2010 and SPSS 22.0.

Results

The study involved 32 patients: 59% (n=19) males and 41% (n=13) females. Majority were treated for coxitis - 63% (n=20) and 37% (n=12) for gonitis. Mean patient age was 60 (SD 15) years. Mean white blood cell (WBC) count in synovial fluid was 71013/μL (SD 75380) and polymorphonuclear cell count was 76% (SD 32). Mean preoperative serum C-reactive protein was 170 mg/l (SD 141) and WBC was 10.5 x10^9/l (SD 10). 69% (n=22) cases were caused by haematogenous pathogen spread, 25% (n=8) – *per continuitatem* and 6% (n=2) by direct inoculation. 59% (n=19) patients had stage IV according to Gächter. Average duration from manifestation of clinical signs to surgical treatment was 50 days (SD 93). 39% (n=12) patients received antibiotic therapy before hospitalization. There have been done 3 arthroscopies, 28 two-stage techniques (18 with cemented spacer, 10 without) and 1 exarticulation. Microbial growth from synovial fluid or synovial membrane tissue, taken during surgery, was negative 28% (n=9) of all cases, but 4 of them received antibiotic therapy before hospitalization. There were 9% (n=2) polymicrobial infections and the rest were monomicrobial. Most common pathogen was *Staph. Aureus* (61%, n=14) and other were *Staph. Epidermidis* (4%, n=1), *Streptococcus spp.* (17%, n=4), *Enterococcus spp.* (9%, n=2), Gram-negative anaerobes (22%, n=5). The most often used empiric antibiotic therapy was Unasyn (38%; n=12) or Unasyn plus Vancomycin (28%; n=9). Average duration between two surgical management stages was 65.3 (SD 29.3) days. After second stage

surgery, 21 % of intraoperative tissue cultures were positive and 75% (3 out of 4 cases) causative pathogen was identical to the previous one. However, there were 6 patients who did not receive II stage surgery. Mortality rate was 13% (n=4) and all patients died within 6 months from the diagnosis.

Conclusions

The most common pathogen of hip and knee native septic arthritis was caused from hematogenous spread of S*taph. Aureus*. Majority patients were treated with II stage surgical technique and long-term antibiotic therapy. After the final intervention there were no repeated surgeries done due to infection. Nevertheless, a high mortality rate was observed within 6 months from the diagnosis.

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Minimally invasive vs open primary linea alba and midline incisional hernia treatment: early follow-up results

Authors:

Matas Pažusis
Lithuanian University of Health Sciences, Medical Academy, Faculty of Medicine, Kaunas, Lithuania

Rūta Maželytė
Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Department of surgery, Kaunas, Lithuania

Linas Venclauskas
Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Department of surgery, Kaunas, Lithuania

Mindaugas Kiudelis
Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Department of surgery, Kaunas, Lithuania

Introduction

The incidence of primary linea alba hernia applies up to 5-10% and midline incisional - 10-20% [1,2]. Minimally invasive primary linea alba and midline incisional hernia treatment gains more and more popularity among treatment options.

Aim

To compare the early results of minimally invasive and open sublay mesh repair of small and medium size primary linea alba and midline incisional ventral hernias.

Methods

The prospective cohort study of patients who underwent for small and medium size of primary and incisional ventral hernia repair in the Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Department of Surgery during 2019-2020 years. The patients were divided into two groups: minimally invasive (TARM, SCOLA) and open mesh repair (sublay) groups. There were documented: demographic and hernia features, operation time, postoperative pain, use of analgesics, length of hospital stay, complications. Postoperative pain was assessed by using Visual Analogue Scale. All patients were invited for follow-up in our institution after 1, 3 and 6 months. Abdominal wall ultrasound was performed to evaluate possible complications: seroma, mesh dislocation, hernia recurrence.

Results

Thirty four patients were included in the study: 21 patients in the minimally invasive group (TARM - 12, SCOLA - 9) and 13 patients were in the open mesh repair group. The groups were comparable in terms of patients characteristics and hernia data. Study included 14 male and 20 female with median of age 56 years. Incisional hernias were for 20 (58.8%) and primary ventral - 14 (41.2%) patients. The time of hernia occurrence was 31.33 (SD 50.1) months in minimally invasive group and 35.1 (SD 46.7) open mesh group. The hernia defect diameter was 4.4 (SD 1.6) cm in the open repair and 3.25 (SD 2.16) cm in the minimally invasive group. The operation time was longer for the minimally invasive surgery group (224.3 (SD 106.2) vs 126.5 (SD 24.8), $p=0.002$). There was lower postoperative pain in minimally invasive group compared with open repair group after 3, 6, 9, 24, 48, 72 hours, ($p<0.05$). Analgesic use was lower in the minimally invasive group (3.6 (SD 2.5) vs 10 (SD 4.7), $p<0.05$) and hospital stay was longer in the open mesh group (3 (SD 1.6) vs 5.7 (SD 1), $p<0.05$). There were no intraoperative complications. Seroma was found for 7 (53.8%) patients in the open mesh group and 7 (33,3%) in the minimally invasive group during follow-up period, ($p>0.05$). One patient (7.7%) had hernia recurrent after open mesh repair surgery. Mesh dislocation was found for 2 (9.5%) patients after minimally invasive hernia repair.

Conclusions

1) Minimally invasive hernia mesh repair operation time is longer compared with open technique. 2) Minimally invasive techniques are associated with significant lower postoperative pain. 3) After minimally invasive hernia mesh repair hospital stay is shorter. 4) The use of analgesics was more common in open mesh repair group. 5) The rate of postoperative wound seroma was less in minimally invasive group.

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Dupuytren's contracture treatment evaluation: effectiveness of limited partial fasciectomy

Authors:

Mantas Fomkinas
Lithuanian University of Health Sciences, Faculty of Medicine

Rokas Paškevičius
Lithuanian University of Health Sciences, Faculty of Medicine
Gediminas Samulėnas
Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Department of Plastic and Reconstructive Surgery

Introduction

Dupuytren's contracture (DC) is a progressing fibroproliferative hand disorder of polygenetic and multifactorial origin [1,2]. DC presents as thickening of the palmar aponeurosis [1]. It results in the development of longitudinal bands and formation of contractures in the digits [1,2]. The prevalence of DC ranges widely from 2 to 42 % [3,4]. Treatment of DC is aimed at excision or fragmentation of the fibrous bands and the residual extension deficit is established as a hallmark of treatment effectiveness [5]. Limited partial fasciectomy is a widely accepted traditional surgical approach [6,7]. Even though recent decade has marked increased interest in minimally invasive methods there is still lack of studies evaluating limited partial fasciectomy in a modern surgery setting.

Aim

Evaluate limited partial fasciectomy effectiveness in treatment of DC by comparing pre- and postoperative extension deficit of the digits and disability of the upper limb.

Methods

A prospective study was performed, including patients admitted to the department of Plastic and Reconstructive Surgery, Hospital of LUHS Kaunas Clinics for limited partial fasciectomy in 2017 – 2019. Diagnosis of DC was based on physical examination. Extension deficit was measured by goniometry, staging of DC was done according to Tubiana classification. Patients with multiple digit contractures were counted as a single case, taking the finger with the most expressed contracture as a reference. Furthermore, Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire was performed. Follow-up examinations were carried out after 6 and 12 months postoperatively. Data was analyzed using IBM SPSS Statistics 23.0. The repeated measures ANOVA with post hoc tests was used to compare means of normally distributed data according to Kolmogorov-Smirnov and Shapiro-Wilk tests. For verification of hypothesis significance level of $p<0.05$ was chosen.

Results

Between 2017 and 2019, 111 patients were enrolled in the study – 94 males (84.68%) and 17 females (15.32%), mean age of 59.45 (SD 11.63). Most patients presented with II stage contractures according Tubiana classification. Average extension deficit preoperatively was 69.38° (SD 34.49) in males, 63.88° (SD 43.09) in females. During the 6 and 12

months follow-up extension deficit was 4.54° (SD 5.84) and 7.44° (SD 8.46) in males, 6.41° (SD 6.96) and 8.94° (SD 0.10) in females respectively. Extension deficit was significantly lower 6 and 12 months after limited partial fasciectomy (p<0.001). Mean preoperative DASH score in males was 14.71 (SD 12.07), in females – 27.01 (SD 26.86) points. During the 6 and 12 months follow-up mean DASH score between males and females was 5.36 (SD 5.67) and 4.10 (SD 4.93) points respectively. DASH results were significantly lower 6 and 12 months after limited partial fasciectomy (p<0.001).

Conclusions

Limited partial fasciectomy has been evaluated to remain an effective method to eliminate DC, providing good functional results at 1 year follow-up.

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Evaluation of chronic leg wounds healing rate

Authors:

Kasparas Budreckis
Faculty of medicine, Lithuanian university of Health sciences, Kaunas, Lithuania

Domantas Rainys
Department of plastic and reconstructive surgery, Kaunas clinics, Kaunas, Lithuania

Introduction

Wounds are characterized as a disruption of normal skin architecture and function [1]. A wound becomes chronic when it fails to proceed through normal phases of healing, which are inflammation, proliferation and maturation [2]. Even though, modern medicine is capable of marvellous things, chronic wounds healing remains a severe and expensive burden for both patients and physicians. Therefore, in this research, a few mathematical formulas have been used to predict wound closure time by measuring wound healing rate [3,4].

Aim

To determine a probable healing time of chronic leg wounds based on known changes in wound size during treatment.

Methods

From 2014 to 2018 a retrospective study has been made in Lithuanian university of health sciences hospital Kaunas clinics, department of plastic and reconstructive surgery, in which we reviewed 48 patients and 60 chronic leg wounds overall. According to the treatment protocol, the follow up was carried out until a complete wound closure but for a maximum of 8 weeks. Analysis was made of the first and the last measurement of the wound and by using already contrived mathematical formulas, we calculated the area, perimeter, healing rate and prognosis – preliminary time in days for a wound to heal [3,4]. All features were statistically evaluated by applying descriptive statistics.

Results

All patients received the same treatment, consisting of atraumatic sterile bandages maintaining a moist wound environment followed by compression therapy. In general, there were 48 patients and 60 chronic leg wounds, of which 15 (25%) were fully closed during hospitalization time and the remaining 45 (75%) wounds have diminished significantly. The mean duration of follow up was 49 ±1.47 days for each patient. Primary average values of wound perimeter and area were 5.85cm±0.45cm and 3.37cm²±0.58cm², ultimate average values were 3.36cm±0.48cm and 1.73 cm²±0.47 cm² respectively. The estimated mean change of wound perimeter is 2.49cm±0.28cm and of wound area is 1.64cm²±0.29cm². The quickest healing wound had a speed of 0.047cm per day and the slowest wound convalesced at 0.0002cm per day. The adjusted mean healing rate of all wounds is 0.0087±0.011cm per day. Unfortunately, we could assess a prognosis for only 45 lesions. We were unable to quantify a prediction for 15 patients, as they had their wounds fully healed in the course of treatment. We calculated a prognosis for wounds that have not been fully healed, which is 147 days, approximately.

Conclusions

1) In average follow up time of 49 days, a provided treatment reduced mean wound perimeter by 42.6% (2.49cm±0.28cm) and wound area by 48.6% (1.64cm²±0.29cm²). 2) Adjusted mean healing rate of wounds is 0.0087cm/day±0.011cm per day. 3) With the mean speed of 0.0087cm per day, the estimated wound closure time is approximately 147 days.

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Significance of persistent prostate-specific antigen on long-term oncological outcomes in men with low-risk prostate cancer who underwent radical prostatectomy

Authors:

Gustas Sasnauskas
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Žilvinas Venclovas
Department of Urology, Hospital of Lithuanian University of Health Sciences Kauno klinikos, Kaunas, Lithuania

Daimantas Milonas
Department of Urology, Hospital of Lithuanian University of Health Sciences Kauno klinikos, Kaunas, Lithuania

Introduction

According to the European Association of Urology (EAU), prostate cancer (PCa) is divided into low-risk, intermediate-risk, and high-risk categories. Low-risk PCa has the best outcome, with 83 % of patients surviving 10 years [1]. Detectable prostate-specific antigen (PSA) in the first few months after radical prostatectomy (RP) is defined as persistent PSA (pPSA). Recent clinical research has highlighted the importance of pPSA for predicting worse oncological outcomes [2–6]. However, whether pPSA could be a significant predictor of oncological outcomes in men with low-risk PCa remains unclear.

Aim

To investigate the significance of pPSA on biochemical relapse-free survival (BFS), metastasis-free survival (MFS), cancer-specific survival (CSS), and overall survival (OS) in low-risk PCa.

Methods

We reviewed data of 338 men with low-risk PCa who underwent RP at LUHS Kaunas Clinics in the 2001-2019 period and had complete PSA and follow-up data. Low-risk PCa was defined as PCa with preoperative PSA ≤10 ng/ml, pathological T stage 1-2, and pathological Gleason score ≤6. pPSA was defined as PSA of ≥0.1 ng/mL at the first measurement within 4 to 12 weeks after RP. Patients who received neoadjuvant and/or adjuvant therapy were excluded. Patients were divided into two groups: with pPSA and without pPSA. Comparison of patients' age, surgical margin (SM), and salvage treatment (ST) between study groups were performed using t and Chi-squared tests. BFS, MFS, CSS, and OS rates were compared using Kaplan-Meier analysis and log-rank test. The difference was considered significant at p<0.05. The study was conducted with permission from LUHS Center of Bioethics (BEC-MF-270).

Results

PSA persistence was detected in 35 of 338 (10.4 %) patients. The mean follow-up of patients was 194.9 mo. (95 % CI 188.57-201.24 mo.). There was no difference between the two groups comparing age (p=0.784) and SM (p=0.814). The group with pPSA more frequently required ST (20.0 % vs 2.6 %, p<0.001), and the mean time until ST was shorter in this group (29.71 ±22.40 mo. vs 88.14 ±35.83 mo., p=0.003). Thirty (8.9 %) patients had a biochemical relapse (11 (31.4 %) in pPSA group vs 19 (6.3 %) in group without pPSA, p<0.001). Ten-year BFS was lower in the pPSA group (64.3 % vs 89.7 %, p<0.001). Two (0.6 %) patients developed metastases (both (0.7%) in group without pPSA). Forty-seven (14.1 %) deaths were recorded (9 (25.7 %) in pPSA group vs 38 (12.7 %) in group without pPSA, p=0.07), 3 (0.9 %) of them were related to PCa (1 (2.9 %) in pPSA group vs 2 (0.7 %) in group without pPSA, p=0.28). Ten-year MFS, CSS, and OS did not significantly differ between the two groups (p=0.757, p=0.262, p=0.113, respectively).

Conclusions

PSA persistence in low-risk PCa was associated with a higher biochemical progression rate, lower 10-year BFS, and more frequent salvage treatment. However, pPSA could not be used as a predictor of MFS, CSS, and OS in low-risk PCa. Further evaluation of PSA persistence in the low-risk PCa group is necessary.

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PUBLIC HEALTH SESSION

Artificial intelligence in healthcare: the perspectives of medical students and health professionals

Authors:

João Bessa
University of Beira Interior, Portugal

Henrique Martins
University of Beira Interior, Portugal

Introduction

When healthcare systems worldwide face unprecedented pressure the growth of information technology use and in particular artificial intelligence (AI) embedded tools promise to improve health and care. However, health professionals remain quite reticent about adopting AI technologies. Such attitude bears the potential to damper its successful implementation since they play a central role in this digital transition.

Aim

That said, this investigation aims to explore the perspectives and expectations of health professionals and medical students on the adoption of AI in healthcare while understanding their vision on the main challenges, concerns and opportunities that accompany this process.

Methods

Base on technology acceptance models and literature review an online survey was designed and applied. It was composed of eight multiple choice questions and seven questions using a seven-point Likert scale, evaluating interest, knowledge, satisfaction and opinions on AI application. A link to the online survey was sent via email to health professionals (HPs) and medical students (MSs) through mailing lists of medical faculties and health associations, intending to collect as many voluntary answers as possible. Preliminary results cover a descriptive analysis of collected answers from 101 HPs and 153 MSs undergoing clinical rotations using IBM SPSS (version 26). MSs were mainly younger than 25 years (83.8%), while HPs were more frequently 46 to 55 years old (30.3%). Both groups had a female gender predominance.

Results

One third of the respondents feels their institution is prepared to adopt more AI-based technologies, even though less than 10% feel supported to use them and less than 15% are satisfied with the current AI applications in the workplace. The top challenges to AI implementation were: technology costs (76%), healthcare-associated bureaucracy (70%) and lack of training (64%). The main concerns associated with liability issues (71%), increased healthcare inequity (59%) and fear of making bad decisions following AI-based recommendations (53%). Staff training (87%) and articulation with other stakeholders (60%) were considered key issues to faster development of adequate solutions. Plus, the vast

majority expects it will take less than 15 years for their institutions to fully integrate AI. These results go along the lines of previously conducted studies on this matter in other countries.

Conclusions

AI use in healthcare is still in its begging, with respondents recognizing lack of support and preparation in the workplace, despite showing interest. There are important challenges that need to be addressed, like healthcare-associated bureaucracy and concerns that need clarification, mainly surrounding liability and inequity. It seems a wise adoption of AI depends on right attitude and education of all stakeholders so that all can come together in leveraging AI's capabilities. Only this way will we be able to make processes more efficient and overall more cost-effective.

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Nurses' attitudes towards interprofessional collaboration in primary health care

Authors:

Monika Tunkulaitė
Lithuanian university of health sciences, Medical Academy, Faculty of Nursing

Aušrinė Kontrimienė
Lithuanian university of health sciences, Department of Family Medicine

Introduction

Interprofessional collaboration (IPC) in primary health care (PHC) can be defined as integrative cooperation between different health professionals with blending complementary competencies and skills [1]. The effectiveness of IPC is related to the beliefs and values of each member of the team; therefore it is necessary to understand attitudes towards shared roles and responsibilities between professional groups [1]. In recent decades nurses have gained more leadership in various fields of IPC, especially in PHC [2]. Therefore, in this study, we will focus on nurses' attitudes on IPC in the PHC context.

Aim

The study aims to assess attitudes towards the IPC of nurses working in six PHC centers in Kaunas city, Lithuania.

Methods

A quantitative one-time self-administered questionnaire survey was conducted at six governmental PHC centers in Kaunas city. The number of nurses working in those institutions was 128. The estimated minimal sample size that reflects the target population was 96. The research instrument consisted of sociodemographic questions and a validated instrument "Collaboration between Physicians and Nurses in PHC Teams" (COPAN) [3]. A Three-factor version of the questionnaire (COPAN-3) was used (Cronbach's alpha (Cα) = 0,886). Statistical data analysis was performed using data acquisition and analysis package program SPSS version 24.0.

Results

There were 126 questionnaires distributed, of which 107 were collected (response rate 84,9%). All the participants were female (100%) with the average age of 50,9 years (SD 12,4) and average work experience of 28,05 (SD=13,4) years. The majority of participants had lower than university level education (82,2%). The questions were assessed by three groups of factors: Synergy between team members (Syn) (Cα=0,897; mean=3,9), Organizational aspects of teamwork (Org) (Cα=0,774; mean=3,2) and Competence of PHC team members (Com)(Cα=0,886; mean=3,2;). The data analysis showed that means of all factors statistically significantly correlated with age (Syn (r=0,3; p=0,007), Org (r=0,2;p=0,04), Com (r=0,4;p=0,001)) and years of work experience (Syn (r=0,2; p=0,04), Org (r=0,2; p=0,034), Com(r=0,4;p=0,001)). Statistically significantly more positive attitudes towards collaboration were found for participants who were >55 years in comparison to those who were <=55 years old (Syn (4,04 vs. 3,8; p=0,01)), Org (3,35 vs. 3,13; p=0,04), Com (3,53 vs. 2,88; p=0,001)). Statistically significantly participants who had >30 years of work experience had more positive attitudes towards collaboration in comparison to those who had <=30 years of work experience (Org (3,38 vs. 3,08; p=0,023)), Com (3,56 vs. 2,83; p=0,001)).

Conclusions

PHC nurses had positive attitudes towards IPC regarding synergy, organizational aspects of teamwork, and PHC team members' competence. The attitudes towards IPC correlated positively with older age and greater work experience. Nurses who were >55 years of age and had >30 years of work experience had more positive attitudes towards IPC.

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Influencing consumer choices through Front-Of-Package labelling: a randomised controlled comparison between the Traffic Light System versus Warning Labels in the UK

Authors:

Vishal Ashokkumar Unadkat
Faculty of Medicine, University of Southampton, Southampton, United Kingdom

Matthew Laughton
Faculty of Medicine, University of Southampton, Southampton, United Kingdom

Mohammed Haris Javed-Akhtar
Faculty of Medicine, Imperial College London, London, United Kingdom

Muhammad Bilal Afzal
Faculty of Medicine, Imperial College London, London, United Kingdom

Hasan Ahmed
Faculty of Medicine, Imperial College London, London, United Kingdom

Neev Trehan
Faculty of Medicine, Imperial College London, London, United Kingdom

Franco Sassi
Centre for Health Economics and Policy Innovation, Imperial College Business School, London, United Kingdom

Introduction

Front-Of-Package (FOP) labels have been shown to nudge consumers towards healthier food choices[1]. Since the UK introduced Traffic Light Labelling (TLL) in 2013, various other interventions, such as Warning Labels (WL), have demonstrated greater efficacy[2,3,4]. Yet, a direct comparison between WLs and TLL has not been conducted in the UK.

Aim

We aimed to (i) compare the effectiveness of WL and TLL in nudging consumers towards healthier choices and (ii) assess consumer opinion about them.

Methods

Participation in the study was voluntary and participants were recruited through surveys disseminated via social media channels. These channels were predominantly populated by undergraduate students aged 18-24. In the first survey, participants (n=76) were presented with various WL designs and selected the label which they believed was most influential. The most popular label was then compared with the TLL system in the next survey. Here, participants (n=110) were randomly assigned to the WL or TLL arm and were asked to make various food and beverage selections, of which only their soft-drink choices would be analysed. Both groups were comparable in age and gender distribution. McNemar's testing assessed whether the presence of a FOP label (either the WL or TLL) had an impact on consumer selection. Absolute Risk Reduction measured the difference in the selection of high-sugar beverages between the two arms. Participants were also asked three questions relating to their opinion of the label, which were

scored on a 5-point Likert scale (1 = negative result, 5 = positive result), and mean scores were analysed using Two-tailed t-tests.

Results

The presence of either TLL or WL reduced high-sugar beverage selection by 10.9% (p<0.01), though there was no significant difference in high-sugar beverage selection between the TLL and WL arm (TLL -10.7% [0.3-21.1] WL -11.3% [-0.6-23.2]). Analysis of opinion questions showed favourable outcomes for the WL arm (mean scores presented). Participants found that WL were significantly better at drawing their attention (TLL 3.19/5, WL 4.05/5, p<0.001) and easier to understand (TLL 3.83/5, WL 4.51/5, p<0.001). Despite this, participants did not feel that one label was more likely to influence them more than the other (TLL 3.54/5, WL 3.52/5, p=0.65).

Conclusions

Our study shows that WL are comparable in efficacy to TLL at nudging consumer behaviour towards healthier choices, which differs from other notable studies in this field[2,3,4]. Participant opinion of the WL was more favourable than of the TLL as they found that it was better at drawing their attention and was easier to understand, though as reflected in the beverage choice, they did not find that WL influenced them more. Our findings merit further investigation in a large-scale, population sample study.

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The impact of economic development on fertility rate: comparative survey analysis

Authors:

Nida Alkevičiūtė-Zenkevičienė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Dominykas Zenkevičius
Department of data and analysis, Ignitis, Vilnius, Lithuania

Introduction

Nowadays, the fertility rate in many countries does not reach the level required to maintain a stable population size. To maintain a stable population size, an average of 2,1 children per woman must be born. In many economically developed countries, this number is lower. The essence of the study is to find out if economic factors influence the decline in the fertility rate.

Aim

To discuss the impact of economic development on fertility rates.

Methods

A comparative survey analysis of articles was conducted by using Pubmed, Google Scholar and Eurostat databases restricted to 2010-2021 using key terms related to fertility rate and economic development. Reserch period: 1960 to 2019. For a broader impression, data from different European, Asian and African countries was analysed.

Results

10 articles were analysed, in which the impact of economic growth on fertility rates is discussed. For example, as the economy develops, the average fertility rate in Europe is declining: 2.7 births per woman in the early 1960s gross domestic product (GDP): 244896M USD to 1.4 in 2005 GDP: 11906B USD to 1,53 in 2019 GDP: 15626B USD. Correspondingly, infant mortality decreases by 6.6 over 1,000 in 1998 to 3.4 in 2019. Reduction in infant mortality reduces the need to have more children. It is observed that in countries where women are increasingly entering the labor market, the mean age of women at birth of the first child is increasing (29.1 in 2000; 29.9 in 2018). Over the last two decades in EU, the average age at first marriage for women has increased (26.1 in 1998, 30.5 in 2018). Nowadays, people tend to get an education, have a stable income and housing before getting married and having children, and as a result the mean age of having first child increases. As the economy develops, there is a clear decline in the number of children born (3.23 children per woman in 1990; 2.49 children per woman in 2015). In the 1960s, men's wage was significantly higher than women's, so they often focused on raising children while men provided financial support for the family. As women's wage began to rise, women tended to be more involved in the labor market and, as a result, had fewer children. In less economically developed countries, where sex education is very low, a high birth rate is clearly visible (Nigeria – 7.18 children per woman, Somalia – 6.17 children per woman). Fertility was significantly lower in women with secondary and tertiary education (incidence rates of 0.589 and 0.508 in 2006 and 2016, respectively), compared to their non-educated counterparts.

Conclusions

As countries develop, birth rates tend to decline. The main reasons for the decrease in the fertility rate are the increasing participation of women in the labor market, the increasing availability of high quality education, and sex

education programs that reduce unplanned pregnancies. The increasing participation of women in the labor market, low infant mortality and higher wages reduce the need to have more children.

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Teamwork challenges in the ophthalmology operating room

Authors:

Adomas Danilevičius
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Rita Urbanavičė
Faculty of Medicine, Institute of Health Sciences, Vilnius university, Vilnius, Lithuania

Viktorija Kielė
Faculty of Medicine, Institute of Health Sciences, Department of Nursing, Vilnius university, Vilnius, Lithuania

Introduction

Effective teamwork is one of the keys to reduce surgical errors. However, no other research analyzing the challenges of the teamwork in the ophthalmology operating room has been published elsewhere.

Aim

The aim of this research was to find out the challenges of teamwork experienced in the ophthalmology operating room, compare them between the private and public surgery centers and identify what changes to the teamwork were brought by Covid-19 pandemic.

Methods

In this qualitative retrospective research 3 surgical teams (1 from the private and 2 from the public surgery centers) with 14 respondents in total (1 man & 13 women; 3 ophthalmologists, 3 anesthesiologists-reanimatologists, 3 operating room nurses, 2 operating room assistants, 3 nurse anesthetists; 2 teams consist of 5 members and 1 team - of 4 members) have been interviewed (semi-structured type) between the November, 2020 and the January, 2021 via phone call or email. The questions were based on the literature review. After consultation with the local bioethics committee the study was approved by each surgery center participating in the study.

Results

The identified teamwork challenges were divided into 6 groups: 1) related to the workload, 2) condition of patients, 3) lack of experience, 4) miscommunication, 5) unexpected cases and 6) administration of the institution. Factors affecting effective teamwork were put into the following categories: 1) hard skills, 2) communication, 3) collaboration and atmosphere, 4) personal qualities and 5) other. Morning meetings were mentioned as the only teamwork strengthening practice. All conferences and training mentioned were only oriented towards hard skills improvement. Compared to the public surgery center, some respondents believe, the private surgery center's administration makes decisions faster and more flexible. For those interviewees, who believe that there is no significant difference between the private and public sectors, effective team functioning was more important than the type of the institution. According to some of the respondents' opinion, Covid-19 pandemic has not affected regular tasks, while others have faced increased workload and the need to adapt to that.

Conclusions

1) The models of teamwork success factors from other healthcare specialties can be applied to the ophthalmology operating room teams only to a limited degree. 2) In order to strengthen teamwork efficiently it is necessary to clarify not only the teamwork success factors but also the challenges of a specific team. 3) The lack of attention towards the strengthening of teamwork is noticed in both: the private and public surgery centers. 4) Some of the challenges faced

by ophthalmology operating room teams in the private and public surgery centers are different. 5) During Covid-19 pandemic teamwork challenges have remained of same difficulty or become tougher.

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The vulnerability of intensive care personnel: how the beginning of the pandemic influenced the psychological well-being of health care workers

Authors:

Miglė Kalinauskaitė
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Gytautė Navikaitė
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Ieva Norkienė
Clinic of Anesthesiology and Intensive Care, Vilnius University, Vilnius, Lithuania

Introduction

The start of COVID-19 resulted in challenges to our health care workers – increased workload, new, often unfamiliar duties, risk of contracting and spreading disease. This has caused hospital staff significant psychological distress. Early studies from China showed that 50,4% of doctors and nurses suffered from depression and 44,6% - from anxiety. It is important to acknowledge the psychological issues of health care workers in order to provide support and prevent burnout.

Aim

The aim of the study was to evaluate the prevalence of stress, anxiety and depression and assess subjective well-being among intensive care personnel in a tertiary hospital during the early days of the COVID-19 pandemic in Lithuania.

Methods

A cross-sectional voluntary anonymous survey of intensive care staff was performed in a university hospital in March 2020. The survey included the Depression, Anxiety, and Stress scale (DASS-21) and the WHO-5 questionnaire for measuring subjective well-being. The same survey was repeated online at the end of March. Statistical analysis was performed using IBM Statistics SPSS 27. Analysis included exploring frequencies, means, calculating independent samples t-test and Pearson's, correlation coefficient when appropriate. A p-value less than 0,05 was considered to show statistical significance.

Results

Out of 75 respondents of the initial survey (81% women; 49% doctors, 48% nurses; mean age 35,5, SD=10,3) 45,2% reported moderate or severe stress, 18,6% - anxiety, 30,1% - depression, according to DASS-21 subscale values. No statistically significant differences between genders, education, family status or work experience were found. However, all DASS-21 values were higher in respondents, who think about leaving medicine (p=0,000, p=0,003, p=0,046). WHO-5 value was 45,4%±15,0 [12;84] - 16,4% lower than the national average, leaving 61% of respondents at risk of clinical depression. WHO-5 values correlated negatively with DASS-21 subscale values (r=-0,45, p=0,000; r=-0,3, p=0,012; r=-0,39, p=0,001, respectively). The group that thinks of leaving medicine reported

statistically significantly worse well-being (WHO-5 score 41% v. 49% on average, p=0.021). When the survey was repeated online, the prevalence of moderate-severe stress had increased to 45,7%, anxiety – 42%, depression - 59,3%.

Conclusions

At the start of the pandemic, stress, anxiety, and depression were prevalent among intensive care staff and the challenges posed by COVID-19 took its toll on the health care workers' subjective well-being. These measures were worse in the group that thinks of leaving medicine. Even though the first wave of the pandemic was mild in comparison, the nature of a new and unknown disease dictates that an already vulnerable population suffers great psychological distress when thrown in front of it.

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Physicians' attitudes towards patients refusing recommended medical treatment

Authors:

Karolina Lubytė
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Asta Čekanauskaitė
The Department of Medical History and Ethics, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Introduction

Discharge against medical advice (DAMA or AMA) – when a patient chooses to leave the hospital and to refuse recommended medical treatment, is a significant healthcare problem. [1] It is associated with over twice the odds of readmission [2] and increased cost of it, excess mortality, and negatively affects both the patient and the healthcare provider. [3]

Aim

This pilot cross-sectional survey research aims to identify the relevance of the DAMA problem in Lithuania, how physicians are dealing with patients refusing recommended medical treatment and what are the main causes of DAMA, which is important for identifying effective measures to reduce adverse consequences caused by this phenomenon.

Methods

The anonymous electronic survey was created by a research group and was conducted at four university hospitals in Vilnius (N75). The questionnaire for physicians included several groups of questions: four clinical cases, where physicians had to choose if they, hypothetically, would perform an intervention to a patient who refuses treatment, reasons for their decisions and if they would refer this patient to psychiatric consultation. Also, respondents were asked about their opinion regarding the main reasons for patients leaving AMA and their emotions in these situations. Data were analyzed using descriptive statistics.

Results

75 physicians completed the survey. 54 (72%) of them were women, the median age was 46 years. Most of the physicians (62, 82,7%) had some experience while dealing with patients who refused treatment. Most commonly noted emotions in these circumstances were: fear (41, 54,7%), anger (29, 38,7%) and disappointment (26, 34,7%). The main reason for the refusal of treatment is the insufficient information regarding treatment options and possible side-effects, stated by 49 (65,3%) physicians. In clinical cases with complicated appendicitis, more than half of the physicians (~51, 68%) would still perform a surgery despite the patients' refusal of intervention. The vast majority of physicians (69, 92%) would try to overpersuade a young woman with breast cancer who refuses surgery and chemotherapy treatment and would refer her to psychiatric consultation because of the doubt on the patient's decision-making capacity. While in the case of Jehovah's Witness who refuses a blood transfusion 43 (57,3%) physicians would not perform an intervention because of respecting a patient's beliefs.

Conclusions

The study revealed that DAMA is a relevant problem in Lithuania and causes distress to physicians. Also, it was noticed that physicians' clinical decisions differ towards patients refusing medical treatment. Insufficient patient awareness was identified as the main reason for refusal of treatment. These findings give us a suggestion of potential gaps in our healthcare system: insufficient communication with patients and a lack of physicians' preparedness for

DAMA situations. Further studies would be needed to deeper analyze the reasons for these gaps and identify possible solutions.

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POSTER SESSION

The dynamics of salivary bacteria presence during orthodontic treatment with fixed appliances and clear aligners: a systematic literature review

Authors:

Austėja Mitalauskienė
Lithuanian University of Health Sciences, Faculty of Odontology, Medical Academy

Reda Vaičiūnaitė
Lithuanian University of Health Sciences, Faculty of Odontology, Medical Academy

Arūnas Vasiliauskas
Lithuanian University of Health Sciences, Department of Orthodontics, Faculty of Odontology, Medical Academy

Introduction

Long orthodontic treatment may negatively affect oral health. The main factor inducing oral pathologies during treatment is the colonization of pathogenic microorganisms in dental plaque [1]. Having increased plaque retention, greater quantities of *Streptococcus mutans* and *Lactobacillus* are measured, which promote dental caries formation [2]. A few previous studies suggest better periodontal health wearing clear aligners than fixed appliances. Therefore, it is important to investigate how salivary bacteria's occurrence changes using both appliances and help choose the most beneficial appliance to maintain good oral health [3; 4].

Aim

To compare pathogenic microorganisms' presence dynamics in saliva during orthodontic treatment with fixed orthodontic appliances and clear aligners.

Methods

A literature review was conducted according to PRISMA guidelines. The electronic data search was performed in PubMed and Cochrane databases. Combinations of keywords „fixed appliances", „clear aligners", „saliva" were utilized, and 218 articles were identified. To identify the main research question, PICO was formulated. The inclusion criteria were: articles written in English, published less than 6 years ago, human trials, studies included patients treated with clear aligners and fixed orthodontic appliances, samples of saliva were collected, presence of *Lactobacillus* and *S.mutans* were measured. After screening the abstracts and removing duplicates, 4 articles were selected for full-text reading. Two remaining articles were selected for the final analysis.

Results

At baseline, no salivary *Lactobacillus* was found in patients treated with clear aligners and fixed appliances. However, *S.mutans* was present in 14 patients (93%) wearing fixed appliances and 13 patients (87%) treated with clear aligners [3]. After 2 weeks, the numbers decreased and after 1 month, *S.mutans* was more commonly found in the group of patients treated with fixed appliances than those treated with clear aligners (93% in group 1 and 80% in group 2, respectively). *Lactobacillus* was identified after 2 weeks in only 7% of patients treated with fixed appliances

and remained unchanged. Patients with clear aligners showed no presence of *Lactobacillus* whenever measured (p>0.05) [3]. Another study did not identify *Lactobacillus* or *S.mutans* in patients' saliva at baseline, but after 3 months, bacteria were present in 8 patients (20%) treated with fixed orthodontic appliances [4]. After 6 months of treatment, 37.5% of patients wearing fixed orthodontic appliances had *S.mutans* present, while 8% of patients treated with clear aligners had it as well. Similarly, *Lactobacillus* was present in only 1 (2.5%) patient treated with clear aligner and 15 (37.5%) patients treated with fixed appliances (p<0.05) [4].

Conclusions

Pathogenic salivary bacteria's presence was more frequent over time in patients treated with fixed orthodontic appliances than those treated with clear aligners

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Trigeminal neuralgia relationship with depression syndrome

Authors:

Gerda Kilinskaitė
Faculty of Odontology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Reda Vaičiūnaitė
Faculty of Odontology, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Gintaras Janužis
Department of Oral and Maxillofacial Surgery, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Trigeminal neuralgia is one of the common cause of facial pain. Research has shown that about 4.3 people per 100,000 people suffer from trigeminal neuralgia (TN) pain each year [1]. Patients with TN are significantly more likely to

experience signs of depression, which negatively affects the quality of life [2]. It is important to evaluate TN and depressive syndrome for more effective treatment and quality of life improvement.

Aim

To evaluate the relationship between TN and depressive syndrome.

Methods

Systematic literature review was performed in PubMed databases published between years 2010 and 2020. The keywords used: trigeminal neuralgia + depressive syndrome. This systematic analysis reporting was adhered to the PRISMA Statement. 25 potentially important articles were identified. After evaluating the titles and summaries of the articles, 2 articles were selected. An additional 3 articles were manually identified by keyword in other databases. After careful analysis of the full text, 5 articles were included in this study.

Results

Clinical studies have revealed that chronic pain as a stressful condition often causes depression and up to 85% of patients with chronic pain suffer from depression. One of the main causes of chronic pain and depression is neuroplastic changes in the brain, which are caused by ongoing molecular mechanisms: decreased monoamine neurotransmitters in the central nervous system, decreased BDNF in the blood, inflammatory factors detected in body (up to 45% of patients with chronic diseases had depression) increased gluten amount in synapses [3]. Facial pain caused by trigeminal neuralgia may be a risk factor for depression. TN can lead to a decrease in neurotransmitters (serotonin and norepinephrine), which is associated with the development of depression and anxiety disorders [2]. 2011 study has shown a statistically significantly higher incidence of depressive syndrome in patients with TN and chronic facial pain compared to patients with only atypical facial pain (p<0.0001). Only 1 of 30 TN patient had no symptoms of depression (3.33%) [4]. Comparing TN patients with healthy control groups, statistically significant data were obtained that patients with TN were more likely to suffer from mental illness - 2.23% of TN patients had depression (p<0.01) [2]. Surgical interventions for the treatment of trigeminal neuralgia revealed that patients with TN who had concomitant depressive syndrome required statistically significantly more procedures (P=0.038). Patients with TN who were depressed also had a higher incidence of surgical complications (P=0.026) [5].

Conclusions

Patients with trigeminal neuralgia are more likely to have depressive syndrome. Depressive syndrome complicates the treatment of TN. Patients with TN and depression require more procedures for treatments and are more likely to have complications after surgery interventions.

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Female doctors' awareness towards cervical cancer screening program in Lithuania

Authors:

Viltė Matusevičiūtė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Žygimantas Vaitkus
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Daiva Vaitkienė
Department of Obstetrics and Gynaecology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania

Introduction

Cervical cancer remains a problem in Lithuania where morbidity and mortality rates are one of the highest among all Baltic countries (1). 63% of the target Lithuanian female population participated in the screening program at least once in the 15 years of the program, while 70% is acceptable and> 85% desirable for the program to be successful (State Health Insurance Fund Data). Lack of information can be one the key reasons for insufficient female participation. Due to their field of practice, physicians are therefore considered one of the main sources of information ensuring women's awareness (2).

Aim

The aim of the study was to understand the cervical cancer screening behaviors and knowledge about screening of female physicians of screen age.

Methods

The female physicians were given a survey of 25 questions about cervical cancer screening. The survey was organized online from 2021 January 1st until March 1st. Eligibility for the study was defined as women attribution to screening age (25-60 years). All participants were divided into two groups: child-mother care physicians (CMC) and other medical doctors (OMD). Statistical analysis was performed using MS Excel 2019 and IBM SPSS statistics 27.0. The difference was considered statistically significant when p<0.05

Results

134 respondents filled questionnaire: 39.6% by CMC and 60.4% by OMD. OMD and CMC physicians (97.5% and 100%) were aware that a PAP test is a screening test for pre-cancerous lesions. A significantly greater proportion of OMD (27.2 % versus 9.4 %) believed that a smear test was part of a full gynaecological examination (p=0.012). Both CMC (98.1%) and OMD (97.5%) were aware of the opportunity to have regular and free cervical cancer check-ups in their primary health care clinic. Significantly greater proportion of CMC rather than OMD (86.8% versus 51.9%, p=<0.001) knew that screening starts at age 25 and screening frequency is 3 years (94,3% versus 66.7%, p=<0.001). There was no significant difference between the sources of information (university studies, colleagues, internet or OB/GYN specialists or GP) about cervical cancer screening program in both groups. While analysing the circumstances of the last taken test between two groups, both CMC and OMD did a smear test during screening program (47.2% versus 32.1%), 30.2% versus 43.6% did on their own request and 22.6% versus 24.4% had a smear test done during OB/GYN consultation while applying for complains.

Conclusions

Both groups are familiar with the screening program but child-mother health care specialists significantly more aware of the participation age and the frequency of testing during the program. All of the information sources about cervical cancer screening program were equally important in both groups. Although both groups were well informed about the possibility to participate in cervical cancer screening program, more than half of respondents had a cervical cancer screening test on their own request or during OB/GYN consultation.

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The relationship of patient satisfaction after coronary angiography with angiography site, complications and anxiety

Authors:

Ernesta Šliuburytė
Faculty of Nursing Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania.

Milda Švagždienė
Department of Cardiothoracic and Vascular Surgery, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Advanced nurse practicioners are providing patient-centered care. It is very important to pay attention not only to the patients physical status but also psychological and spiritual well being (1). Patients undergoing coronary angiography

experience anxiety symptoms, pain, they may have complications. All these events influence patient satisfaction with the procedure. In order to provide better patient-centered care it is important to investigate the relationship of patient satisfaction (2).

Aim

To evaluate patient satisfaction with angiography procedure and to detect its relationship with angiography site, complications and anxiety.

Methods

The study was carried out in Cardiology Clinic, Hospital of Lithuanian University of Health Sciences Kauno Klinikos in 2018-2019. Patients that underwent coronary angiography were interviewed by face-to-face method using Patient Satisfaction Questionnaire and Hospital Anxiety and Depression scale. All patients were divided to groups according to angiography site: group I – transradial path (N=68), group II – transfemoral path (N=50), group III – transradial path was not successful and was switched to transfemoral path (N=18). Statistical analyses were performed to determine significant differences (P<0.05) by Kruskall-Wallis test and Spearman's correlation using the SPSS 22.0 software.

Results

The data of 136 patients were analyzed. Average age was 65.32±12.24 years. There were more men than women (accordingly 82 (60.29%) and 54 (39.71%)). Though the groups did not differ according to the age (group I – 63.09±10.89, group II – 68.84±12.23, group III – 64.00±14.97, P=0.076), group II included significantly less men than group I and group III (accordingly 44%, 73.53%, 55.56%, P=0.005). Satisfaction was evaluated as follow: 1 – very good, 2 – good, 3 – moderate, 4 – poor, 5 – very poor. The average satisfaction with angiography was good (1.54±0.74, P=0.071). Group I was significantly more satisfied than group III (1.44±0.50 vs 1.89±1.13, P=0.015), group II had no significant difference comparing to group I (1.56±0.81, P=0.015). There was no significant correlation between angiography site and satisfaction (r=0.070, P=0.420). The rate of overall complications was 14.71%. The groups did not differ according the rate of complications (group I – 20.59% , group II – 8.82%, group III had none, P=0.073). Patient satisfaction had moderate positive correlation with postprocedural pain (r=0.236, P=0.006) but no significant correlation with overall complications (r=-0.164, P=0.057). The research established that 70.59% of patients felt normal anxiety symptoms (0–7 points), 13.24% – mild anxiety symptoms (8–10 points), 10.29% – moderate (11–14 points) and 5.88% – severe (15–21 points). Anxiety during the angiography had moderate positive correlation with postprocedural pain (r=0.241, P=0.005) and satisfaction (r=0.282, P=0.001).

Conclusions

Satisfaction with angiography increases when patients feel less anxiety during the angiography and less pain after it.

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The Differences of non-ST-segment elevation myocardial infarction During the COVID-19 Pandemic and Before It

Authors:

Karolina Slapšytė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Olivija Gustienė
Department of Cardiology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania

Urtė Lukauskaitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

Acute myocardial infarction (AMI) is one of the most common severe emergent cardiovascular disease. Approximately 50–70% of all AMI patients presented non-ST-segment elevation myocardial infarction (NSTEMI). During the COVID-19 pandemic, the number of primary percutaneous coronary intervention reduced significantly among ST-segment elevation myocardial infarction (STEMI) patients, while less attention has been paid to the management of NSTEMI. [1] The prognosis of patients suffering from AMI directly depends on rapid diagnosis and early treatment. AMI patients may be presenting at later stages during the pandemic due to fear of acquiring coronavirus in healthcare facilities [2].

Aim

Our study aimed to compare logistical delay's outcomes between equal cohorts during the Covid-19 pandemic and before it.

Methods

The study involved 469 patients with NSTEMI diagnosis registered in the database from October to December 2019 (n=273) and from October to December 2020 (n=196) in The Hospital of Lithuanian University of Health Sciences Kauno klinikos The Department of Cardiology. In this study we involved only patients with NSTEMI. Logistical delays, type of intervention, hospital mortality were examined. Statistical calculations were performed using SPSS 22.0 software, z-statistic. Statistically significantly different at P<0.05.

Results

The study involved 110 (40,29%) women and 163 (59,71%) men who presented with NSTEMI in the pre-pandemic era. Also the study involved 68 (34,69%) women and 128(65,31%) men who presented with NSTEMI in the pandemic era. The average age of the women was $71 \pm 12,15$ years and $73 \pm 0,28$ years respectively. And the average age of the men was $66 \pm 11,43$ years and $67 \pm 12,05$ years respectively. The number of patients with pain-to-door time from 24 to 48 hours was larger during pre-pandemic era compared to the pandemic 59 (23,41%) vs. 23 (12,57%) (p=0,00438). The number of percutaneous transluminal coronary angioplasty increased during the pandemic (68,13%, 76,56% respectively; p=0,0466). The number of only coronary angiography decreased in the pandemic era (35,53%, 23,47% respectively; p=0,00512). When pain-to-door time was more than 48 hours the mortality rate was higher (p=0,0444) in the pandemic era.

Conclusions

Patients were treated with percutaneous transluminal coronary angioplasty statistically significant more often during the pandemic compare with previous year. Though the number of only coronary angiography decreased in the pandemic era. The mortality rate was higher when pain-to-door time was more than 48 hours in the pandemic era.

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Impact of hormone replacement therapy for cardiovascular risk factors in postmenopausal women: literature review

Authors:

Leila Varoneckaitė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Eligija Teleišytė
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Diana Žaliaduonytė
Department of Cardiology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania

Introduction

Hormone replacement therapy (HRT) is mostly known for relieving vasomotor symptoms in postmenopausal women, however, more published findings show that it can be beneficial while controlling some cardiovascular risk factors

like carotid intima media (CIM) thickness, coronary artery calcium (CAC), high blood pressure (BP), lipoprotein level changes. Postmenopausal women are at higher risk of cardiovascular disease than their younger counterparts, therefore, HRT might be used as cardiovascular protection.

Aim

Asses impacts of hormone replacement therapy for cardiovascular risk factors in postmenopausal women.

Methods

Electronic search was conducted in the PubMed database using a combination of the following keywords: "hormone replacement therapy", "estrogen replacement therapy", "cardiovascular diseases", "menopause" using PRISMA selection criteria. Inclusion criteria: studies published less than 10 years ago, written in English language. Only observational studies (cross-sectional, case-control and cohort) were assessed. 9 publications out of 531 met the selection criteria and were analysed.

Results

Two studies analysed changes in CIM thickness, one measured pulsatility index (PI). CIM thickness increase was greater after treatment cessation comparing with HRT period (mean [95% CI] difference, 0.006 [0.002-0.009] mm/y; $p=0.002$) [1]. Although, recent results from the Kronos Early Estrogen Prevention study in early postmenopausal women did not find a difference in CIM thickness on HRT compared to placebo [2]. PI reduction SS (p=0,003) after 16 weeks using HRT [3]. In one study SS 41% reduction of CAC, which is characteristic of atherosclerosis, score was observed in HRT users compared with non-users, independent of physical activity (PA) [4]. In two studies HRT was associated with higher odds of having high BP. One of them found that women with normal baseline BP were 32% more likely to have a new diagnosis of hypertension or start using antihypertensive drugs who used HRT compared to placebo [5]. Other associated increased odds for having high BP for women who used HRT for a longer period of time. However, this relationship decreases with age [6]. Third study results differed and the odds of being on antihypertensive drugs were 2.289 times greater for women not using HRT compared to HRT users [7]. Lipoprotein levels were SS higher in the HRT users [2, 9]. Two studies showed that low density cholesterol values were sustained [8] at 4 years and decreased after treatment cessation [2], however, other study found that LDL levels were SS higher in HRT group [9]. High density cholesterol was observed after 4 years of treatment, but after 3 years after trial completion it returned to pretreatment level [2], while other studies did not show any changes.

Conclusions

HRT seems to be increasing CIM thickness, although it proved to reduce CAC, which is the main pathognomonic of atherosclerosis. HRT impact on BP and lipoprotein levels seems to be debatable. Further investigation is needed.

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Comprehensive approach to the possibilities of dance to respond to the multidimensional component of neurologic diseases: scoping review

Authors:

Milda Šeduikienė
Medicine Faculty, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction

The increase in various treatment cases shows the growing need to use the possibilities of dance neurotherapy more effectively. A comprehensive characterization approach proposed in this paper is to disclose potential of dance neurotherapy.

Aim

To conduct scoping review of publications about using of new methods of dance intervention and their benefit in alleviation of the symptoms of nervous system disorders (Parkinson's disease, traumatic brain injury, multiple sclerosis).

Methods

Publication searches were carried out in *Medline (Pubmed)* database. A scoping review was conducted in accordance to PRISMA-ScR recommendations. The publications of full text written in English were selected and all types of dance were included. Meta-analyses were not included.

Keywords: dance neurotherapy, brain activation, genetically determined dance aptitude, aesthetic experience.

Results

20 selected articles were reviewed. A comprehensive approach to investigate the dance neurotherapy encompasses four aspects. 1) The impact of tango, samba, pasodoble, ballet and other dance forms are employed in alleviation of the symptoms of Parkinson's disease [1], traumatic brain injury [2], multiple sclerosis [3] etc. 2) The impact of aesthetic experience of dance may become as a central aspect of patient healing [4]. 3) The impact of special means, such as anodal transcranial direct current stimulation, along with dance intervention may alleviate the effects symptoms [5]. 4) Genetically determined differences among individuals in dance aptitude may lead to an understanding of the neurobiological basis of dancing and improve neurotherapy results [6].

Conclusions

A comprehensive approach to the dance neurotherapy as well as scoping review of articles helped to disclose the feasibility of using the intervention of dance to alleviate the symptoms of nervous system disorders (Parkinson's disease, traumatic brain injury, multiple sclerosis) more effectively.

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Minimaly invasive gastric cancer surgery: a literature review

Authors:

Gustas Sasnauskas
Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Augustinas Baušys
Department of general and abdominal surgery and oncology, National Cancer Institute, Vilnius, Lithuania

Introduction

Gastric cancer remains one of the most common cancers worldwide [1]. Surgical treatment is the only potentially curative treatment option for it. Historically open gastrectomy was considered as the gold standard approach. However, in the last two decades, the development of minimally invasive surgery has led to large scale clinical trials being carried out in Asia, and later in the Western world. These trials have shown promising results.

Aim

To evaluate the results of clinical trials comparing short-term and long-term outcomes between minimally invasive gastric cancer surgery (MIGCS) and open gastric cancer surgery (OGCS).

Methods

Articles comparing minimally invasive gastric cancer treatment to open surgical treatment were found using MeSH terms in PubMed, Google Scholar, Scopus, and Web of Science research tools: "minimally invasive surgery", "gastric cancer", "clinical trial". The following aspects have been evaluated in the studies: short-term outcomes of the treatment (operation time, lymph node yield, post-operative morbidity), and long-term outcomes (disease-free survival, cancer-specific survival, and overall survival).

Results

Overall, 16 randomized clinical trials, which evaluated short-term, long-term, or both outcomes, have been analyzed. Reviewed articles were published in the 2013-2021 period. 10 studies compared postoperative morbidity between MIGCS and OGCS groups. 6 trials with overall 3458 patients found no difference in post-operative morbidity between MIGCS and OGCS groups [2–7], and 4 trials with overall 2725 patients discovered lower morbidity in the MIGCS group [8–11]. Lymph node yield, which was compared in 4 studies with overall 2159 patients, did not differ between the MIGCS and OGCS groups [2,8,12,13]. 4 studies with overall 1695 patients evaluated operation time between the two groups, which was significantly longer in the MIGCS group [2,5,6,14]. Long-term results were published by 8 studies with overall 4371 patients. 3-year and 5-year disease-free survival did not differ between MIGCS and OGCS groups [12,15,16]. 5-year cancer-specific survival was also the same in the two groups [11,17]. There was no difference in overall survival, which was calculated at 1 year [2], 3 years [12,15], or 5 years [11,14,16,17] after surgery.

Conclusions

Major trials mostly from Asia have proved that MIGCS is non-inferior to open surgery in the number of lymph nodes extracted, disease-specific, cancer-specific, and overall survival, making it a safe alternative. What is more, some trials concluded the superiority of MIGCS in terms of postoperative morbidity. The main disadvantages of using this method are a longer operating time and a steep learning curve. The Western population, with fewer gastric cancer cases, is slower to adopt this method and requires more clinical research to be done in the local setting.

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Blast injuries of the hand and wrist: a 6-year experience

Authors

Rokas Paškevičius
Faculty of Medicine, Lithuanian University of Health Sciences

Mantas Kievišas
Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Department of Plastic and Reconstructive Surgery

Introduction

Reckless use of fireworks, self-made bombs or careless behavior with military grade explosives can lead to debilitating hand and wrist structural injuries and burns.

Aim

To review and analyze common patterns, demographic data and results of blast hand and wrist trauma.

Methods

A retrospective study was conducted on patients treated in all Lithuanian hospitals and separately in Kaunas clinics. Demographic data was investigated in both all Lithuanian hospitals and Kaunas clinics but the more in-depth analysis on injured hand structures (bones, joints, tendons, arteries, nerves, skin) and treatment (wound dressing, primary sutures, fasciocutaneus wound covering, cross finger flaps) was performed only on patients treated in Kaunas clinics. Data from all Lithuanian hospitals were provided by the Lithuanian Institute of Hygiene [1]. Kaunas clinics data about the extent of injuries was obtained from physical and virtual patient medical histories provided by the department of statistics and archive of Kaunas clinics. Analysis was performed using SPSS 22.0 software package. Normality of data was checked by the Shapiro-Wilk and Kolmogorov-Smirnov test. Quantitative data were expressed as mean and interval (min-max values).

Results

From 1st January 2014 to 31st December 2019 a total of 387 patients suffered blast hand injuries in all Lithuania and Kaunas clinics combined. The most common cause of blast trauma was firework explosion in hand (78.81% of all blast related injuries). Throughout the years 143 of these patients were hospitalized in all Lithuanian hospitals, most of them in 2018 (n=50). 20.28% (n=29) of all hospitalized patients were children (<18 years). It was calculated that in whole country 26.61% (n=103) of all blast trauma patients were injured in the New Year period (from 31st December to 2nd of January). 53 blast hand trauma patients were treated in in the Kaunas clinics department of Plastic and reconstructive surgery. 16.98% (n=9) patients suffered only a various degree hand and wrist burns, 7.55% (n=4) had only hand and wrist injuries and 75.47% (n=40) suffered both burns and injuries. When analyzing soft-tissue coverage, in 30 cases (56.60%) fasciocutaneus wound covering was performed, 11 patients (20.75%) were treated with primary wound suture, 2 patients (3,77%) received treatment by performing cross finger flaps and 10 patients (18.87%) were treated only by wound dressings. Single surgical intervention was enough for 44 (83.02%) of all

patients, 7 (13.21%) patients needed second surgery and 2 (3.77%) needed 3 or more additional operations. The most common reasons for additional surgeries were wound debridement, scar tissue release and deepening of interdigital space.

Conclusions

Blast injuries to the hand and wrist are usually caused by firework explosions. Most of these patients suffered not only structural damage but burns as well. More than half of injured patients were treated by fasciocutaneus wound covering which in most cases was the only procedure necessary.

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Hyperbaric oxygen therapy in the treatment of diabetic foot syndrome

Authors

Zuzanna Chilimoniuk
Student Research Group at the Chair and Department of Family Medicine, Medical University of Lublin, Poland

Maciej Dobosz
Student Research Group at the Chair and Department of Family Medicine, Medical University of Lublin, Poland

Aleksandra Chałupnik
Student Research Group at the Chair and Department of Family Medicine, Medical University of Lublin, Poland

Piotr Więsyk
Student Research Group at the Chair and Department of Family Medicine, Medical University of Lublin, Poland

Aleksandra Borkowska
Student Research Group at the Chair and Department of Family Medicine, Medical University of Lublin, Poland

Grzegorz Mizerski
Chair and Department of Family Medicine, Lublin, Poland

Introduction

Diabetic foot syndrome (DFS) is one of the chronic complications of diabetes mellitus, causing significant morbidity and mortality. Damage to the vascular and nervous systems of the foot affects the blood supply to tissues and metabolic processes, and thus increases their susceptibility to infections and gangrene development. It is estimated that the annual incidence of diabetic foot ulcers (DFU) or necrosis in patients with diabetes is 2-5%. The lifetime risk of developing the condition is 25%. In addition to conventional basic therapy, there are adjuvant therapy methods such as hyperbaric oxygen therapy (HBOT).

Aim

The aim of the study is to present the current state of knowledge on the use of hyperbaric oxygen therapy in the treatment of diabetic foot syndrome.

Methods

The analyzed data is based on a systematic review from 2011-2021 on PubMed platform with the following key words combination: (hyperbaric oxygen therapy) AND (diabetic foot). The search criteria were: clinical trial and randomized controlled trial publications. The most appropriate articles regarding the topic of this work have been chosen. The overall number of reviewed articles was 8.

Results

Analysed studies assed the efficacy of adjuvant, systemic HBOT in healing of diabetic foot ulcers and also in the risk of amputation of the affected limb. Wound size reduction in the HBOT groups was greater than in the control groups and in each study varied from 30% to 42.4% versus 18,1% ± 6.5% in the control. The amputation rate was 5% for the HBOT group and 11% for the routine care group. However, Fedorko's study did not demonstrate an advantage of HBOT combined with wound care compared with wound care alone in reducing indications for amputations. Another randomized controlled trial showed that HBOT, supplemented with either lipoic acid or its R+ enantiomer had a better healing effect than HBOT alone in the treatment of chronic leg wound. Additionally, Irawan's team study proved that patients with DFU Wagner 3-4 may benefit from this therapy by decreasing HbA1c levels and leukocyte count. Another study showed no significant relationship between HBOT and improved health-related quality of life. However, in the same study HBOT was related to fewer participants reporting mobility problems, pain or discomfort.

Conclusions

Diabetic foot syndrome is a major health concern for the growing population of diabetic patients worldwide. The use of HBOT as a form of adjuvant treatment in the combined therapy of the DFU appears as safe and effective method in wound healing. Additionally, this therapy also reduces the risk of amputation of the affected limb and improves the hematological and biochemical conditions by reducing glycemic and inflammatory levels. HBOT plays an important role in the enhancement of wound healing for diabetic foot ulcers.

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The impact of cannabis on lipid metabolism - benefit or harm?

Authors

Mihaela Popova
Faculty of Pharmacy, Medical University of Plovdiv

Merlin Esad
Faculty of Pharmacy, Medical University of Plovdiv

Anelia Bivolarska
Department of Medical biochemistry, Faculty of Pharmacy, Medical University of Plovdiv

Introduction

Cannabis (*Cannabis sativa*) is the most widely used illicit drug in the world (1). Excessive use is associated with many adverse health effects (2). Cannabis increases appetite and leads to increased caloric intake, which leads to weight gain (3). Due to the effects of cannabinoids contained in cannabis on adipose tissue and glucose homeostasis, it is important to study the relationship between cannabis and socially significant diseases such as diabetes and obesity (4).

Aim

The aim of the review is to monitor the effects of cannabinoids contained in cannabis (*Cannabis sativa*) and to investigate their impact on lipid metabolism.

Methods

The methods are not mentioned because our article is a review article.

Results

Cannabinoids affect the endocannabinoid system, which consists of two G-protein-coupled receptors (CB_1 and CB_2), endogenous endocannabinoid ligands, and several enzymes. The endocannabinoid system has a role in the regulation of a number of processes and is involved in various pathophysiological conditions (5). CB_1 receptor signalling in adipose tissue is associated with stimulation of lipoprotein lipase activity, meaning that CB_1 modulators contribute to fat accumulation (6). Cannabidiol (CBD) exhibits antiadipogenic effects by blocking CB_1 receptors and has affinity for various receptors such as the G-protein coupled receptor (GPR55) and the peroxisome proliferating receptor PPARɣ (7). On the other hand Δ^9-tetrahydrocannabinol activates CB_1 receptors located in the limbic part and the hypothalamus, thus increasing appetite and showing orexigenic effects (8). Cannabis use increases levels of the 'hunger hormone' ghrelin, which plays a major role in appetite and food intake and inhibits insulin secretion (9). Also a research observed reduced levels of leptin, which has opposite effects - suppresses appetite and increases energy expenditure (10). It also increases levels of low-density lipoprotein (LDL) and total cholesterol without altering high-density lipoprotein (HDL) and triglycerides levels (11).

Conclusions

A number of factors influence the research - socio-economic status, the ratio of cannabinoids in the studied cannabis, the method of measurement and use, alcohol intake and others. Most studies show that cannabis directs lipid metabolism in the anabolic direction. Its use leads to increased caloric intake, increased appetite, decreased leptin levels and a higher atherogenic risk.

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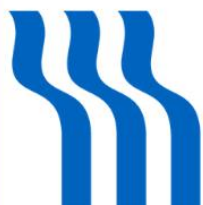
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