INTERNATIONAL MEDICAL CONGRESS OF SILESIA

Conference organized online and in Katowice

May 17th–19th 2023

ABSTRACTS' BOOK

Students' Scientific Association SUM

STUDENTS' SCIENTIFIC ASSOCIATION OF MEDICAL UNIVERSITY OF SILESIA

PTSS Polskie Towarzystwo Studentów Stomatologii Zabrze

POLISH ASSOCIATION OF DENTAL STUDENTS BRANCH ZABRZE

SAMORZĄD DOKTORANTÓW Śląskiego Uniwersytetu Medycznego w Katowicach

DOCTORAL STUDENTS' GOVERNMENT OF MEDICAL UNIVERSITY OF SILESIA

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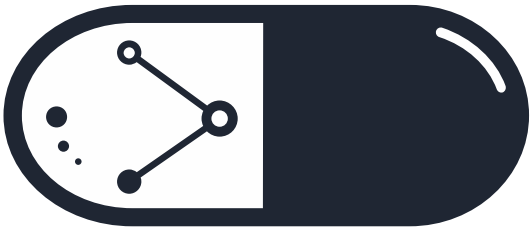

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Polskie Towarzystwo Medycyny Ratunkowej

Polish Society for Emergency Medicine

PIEBM

Polski Instytut
Evidence Based Medicine

PATRONAT

PTA
Polskie Towarzystwo
Alergologiczne

POLSKIE
LEKARSKIE
TOWARZYSTWO
RADIOLOGICZNE
1925

PTNT Polskie Towarzystwo Nadciśnienia Tętniczego

Fizjoterapia Polska

PSI Polskie Stowarzyszenie Implantologiczne

Sekcja Młodych Neurologów
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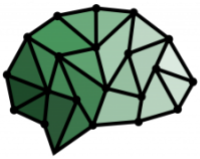

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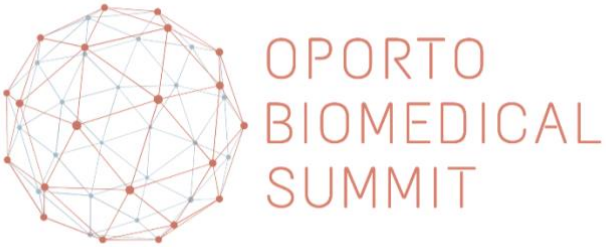
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Dear Students,

I have a great pleasure to invite you to the International Medical Congress of Silesia 2023 - “SIMC 2023” organized by the Medical University of Silesia. This year is very special for our University as we celebrate 75th Anniversary of our Alma Mater.

This annual event has become our long- standing tradition and a continuation of the International and Interfaculty Conference of Students of Medical Universities, organized by the Student Scientific Society of our University since 2006.

The aim of the Conference is to initiate and to promote the scientific development of students as well as to facilitate exchange of experience and create a forum for scientific discussion.

It is also an unique opportunity for young scientists to present their achievements in front of international audience. I am proud that our Silesian region can host this splendid event.

The popularity and prestige of the conference is evidenced by the fact that this edition received as many as 270 abstracts; 24 sessions and seven workshops will be held. It is worth mentioning that, as of this year, SIMC is funded by the Ministry of Education under the 'Excellent Science' program.

I would like to express my appreciation to the Organizing Committee. It is thanks to your hard work and creativity that this event is held at highest standards, when it comes not only to presented papers and discussions but also the professional organization. I am convinced that the scientific program and the accompanying events will meet the expectations of attendees. I am very happy that so many of you have found time and energy to take part in our event.

Finally, I wish all participants many scientific achievements and persistence in pursuit of chosen life and professional goals. I hope this could be a prelude of your scientific careers during exciting period of medical studies. I wish you all a fruitful and productive time during the SIMC 2023 Conference!

Rector

Of The Medical University of Silesia

Tomasz SZCZEPAŃSKI, MD, PhD, Professor of Medicine

Dear Colleagues

It is a great honor and pleasure to invite you to participate in a very special event which is an INTERNATIONAL MEDICAL CONGRESS of SILESIA (SIMC), organized by Student's Scientific Society of Medical University of Silesia.

Last year we had a great time together, so this year I do hope to see you all again in May. We will have the opportunity to continue the good traditions of student scientific meetings.

I strongly encourage you to support this conference actively. Medicine and science are, and always should be a passion. The SIMC conference is a great opportunity to exchange your scientific experience and compete in the scientific field. It does not really matter if you win as the success consists of going from failure to failure without loss of enthusiasm.

I do believe that you will find the meeting enjoyable and fruitful as the organizers did spare no effort to make it so. Sincerely

The Head of

Students' Scientific Association

Of the Medical University of Silesia in Katowice

Michał HOLECKI, MD, PhD, Proffesor of Medicine

Dear Participants!

69 years ago, in December, in Zabrze, the First Conference organized by Students' Scientific Society of the Medical University of Silesia was held. Throughout the years our Conference grew up worldwide in numbers of presented papers and was transferred to the grounds of University Campus in Katowice-Ligota. Nowadays it is one of the largest Students Conferences in Poland and Central Europe.

This year, due to epidemic situation, The Congress will be held online for the very first time. It will be a wonderful opportunity not only to present your research to broader audience but also to meet our colleagues from all over the world.

As the Board of the Students' Scientific Society of the Medical University of Silesia we are deeply honored to organize the International Medical Congress of Silesia 2023 (SIMC 2023). This year almost 270 papers were submitted and arranged between 24 scientific sessions. All the participants have once again put their confidence in us and decided to share with others the results of many months of hard work. However, we cannot meet face to face in the halls of the Medical University of Silesia in Katowice, we hope the online version of SIMC 2023 will respond to all your needs and allow further development of our Congress. We are extremely proud of the growing popularity of sessions aimed at doctoral students. This was possible thanks to the continuing friendship and cooperation with the Doctoral Students' Self-Government.

The purpose of the Conference, despite alterations both in its location as well as form, has remained unchanged since 1954. We work relentlessly through the year to make this event not only an occasion for new scientific experiences, but also a fascinating adventure and preparation for future educational challenges.

We would like to extend our sincere thanks to the Rector of the Medical University of Silesia in Katowice Prof. Tomasz Szczepański PhD, MD, Vice-Rector for Science and International Relations Prof. Katarzyna Mizia-Stec PhD, MD, Vice-Rector for Academic Affairs Prof. Jerzy Stojko PhD, MD, Curator of the Students' Scientific Society Prof. Michał Holecki , PhD, MD, Chancellor of SUM, Ireneusz Ryszkiel, PhD, MD and the administrative staff, for all assistance and support in overcoming organizational difficulties. We also thank Ministry of Science and Education for financial support.

We express our gratitude to Prof. Michał Holecki, MD, PhD for giving an honorary lecture for the participants of our Conference. We sincerely thank the Members of the Scientific Committees of individual sessions. Every year, they devote a lot of time to share their knowledge and experience.

We extend our gratitude to the Members of Doctoral Students' Self-Government who supported us and took responsibility for the organization of doctoral sessions. Our thanks are due also to all the volunteers, who have done their best to make this remarkable event happen.

Most of all, we would like to thank all the participants of this year's edition for your creative work, ambitions, and ingenuity in the conducted research. You are the very essence of the Congress!

We wish you to endure discussions, exceptional lectures, and good luck during presentation!

The Board of Students' Scientific Association

Of the Medical University of Silesia

Dear Participants and Colleagues,

On behalf of the Doctoral Students' Self-Government, we would like to express our thanks for the possibility of participation in the International Medical Congress of Silesia (SIMC) 2023, beside the Students' Scientific Association of the Medical University of Silesia.

We believe profoundly that continuing agreement between students and PhD candidates paves the way for beneficial cooperation, based on exchanging views and experiences in order to develop friendship and, most important, mutual respect.

We are convinced that the subjects and specific issues addressed during this Conference are found among issues currently facing us young researchers. Sessions that have been prepared for you will not only be an opportunity to present your research results but also to exchange opinions and provide an inspirational experience for every participant. We extend our sincere gratitude to the Rector of the Medical University of Silesia in Katowice Prof. Tomasz Szczepański, MD, PhD, the Director of the Doctoral School Prof. Agata Stanek, MD, PhD, the Chancellor of SUM, Ireneusz Ryszkiel, MD and all of the workshops' organizers and administrative staff for their help and support.

We sincerely thank all of the members of the Scientific Committees for the time they devoted, valuable comments and exchange of experiences. In addition to the words of appreciation, we invite you to familiarize yourself with the subjects of papers presented at each session, in particular by the PhD candidates, who are always willing to share the knowledge they gained through continuous scientific research.

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

CONFERENCE'S PLAN

Wednesday, 17th May 2023

9:30 – 13:00	Session of Neonatology and Pediatrics
	Session of Surgery
	Session of Dentistry
	Session of Systematic Reviews and Meta-analyses
13:00 – 14:00	The Opening Ceremony
14:00 – 17:00	Session of Internal Medicine
	Session of Experimental Medicine
	Session of Physiotherapy
	Session of Systematic Reviews and Meta-analyses II
	Session of Basic Science, Biotechnology and Biomedical Engineering

Thursday, 18th May 2023

9:00 – 12:30	Session of Invasive Cardiology and Cardiac Surgery
	Session of Neurology and Neurosurgery
	Session of Anesthesiology, Emergency Medicine and Intensive Care
	Session of Dietetics and Nutrition
	Session of Psychiatry and Sexology
13:30 – 16:30	Session of Clinical Medicine
	Session of Public Health and Health Care
	Session of Public Health and Health Care II
	Session of Orthopedics and Traumatology
	High School Students' Session

Friday, 19th May 2023

9:00 – 12:00	Session of Non-invasive Cardiology
	Session of Oncology, Nuclear Medicine and Radiotherapy
	Session of Gynecology and Obstetrics
	Session of Pharmacy and Clinical Pharmacology
13:00 – 15:30	Session of Radiology
16:15 – 17:30	The closing ceremony:
	Honorary lecture: Dr Ali Jawaid, MD, PhD: "'Epigenetic Basis of Neuropsychiatric Disorders: Many Lives, One Master"
	Curator Lecture: prof. Michał Holecki: "Kidney and Eye – two brothers"
	Awards annoucement

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SESSION
OF ANESTHESIOLOGY, EMERGENCY MEDICINE AND INTENSIVE CARE

Polskie Towarzystwo Medycyny Ratunkowej

Polish Society for Emergency Medicine

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Outcomes of atrial fibrillation treatment in the Emergency Department - 3 years of a single-center experience

Hanna Cholerzyńska[1], Wiktoria Zasada[1]

1. Department of Emergency Medicine, Students' Scientific Circle of Emergency Medicine, Faculty of Medicine, Poznan University of Medical Sciences

Work's tutor: Tomasz Kłosiewicz, MSc, MD, PhD

Background: Atrial fibrillation (AF) is the most common arrhythmia presenting to the Emergency Departments (ED), vastly increasing mainly due to the society's lifestyle leading to numerous comorbidities. The management depends on many factors and is still not unified.

The aim: The aim of this study was to compare different AF management strategies in the ED and to evaluate their influence on the length of stay (LOS) in the ED and their safety.

Materials and methods: We analysed medical records over 3 years of data collection, including age, primary AF diagnosis, an attempt to restore sinus rhythm, complications and length of stay. Patients were divided into 3 groups according to the received treatment method: only pharmacological cardioversion (MED), only electrical cardioversion (SH), and patients who received medications followed by electrical cardioversion (COMB).

Results: There were 637 individuals who were included in the analysis with a median age of 71. Restoration of sinus rhythm and LOS were as follows: MED: 64.09%, 181 min.; COMB: 86.62%, 268 min.; SH: 92.40%, 180 min. The difference between MED and SH strategy, as well as MED and COMB, was statistically significant ($p = 0.0002$ and $p = 0.0001$). The total number of complications was 21, with a rate of 3,29%. The majority of them followed a drug administration and the most common complication was bradycardia.

Conclusions: Electrical cardioversion is a safe and the most effective treatment strategy in sinus rhythm restoration. It is also associated with shortened LOS and decreased medical costs.

Keywords: atrial fibrillation; electric countershock; rhythm control; emergency department; length of stay

Polish perspective on e-scooter-related injuries - a 3-year observational study in two emergency centers

Wiktoria Zasada[1], Hanna Cholerzyńska[1]

1. Department of Emergency Medicine, Students' Scientific Circle of Emergency Medicine, Faculty of Medicine, Poznan University of Medical Sciences

Work's tutor: Tomasz Kłosiewicz, MSc, MD, PhD

Background: The widespread adoption of electric scooters (e-scooters) as a mode of transportation has led to a notable upsurge in e-scooter-related injuries globally. Variations in e-scooter regulations across countries contribute to differences in injury patterns.

The aim: This study aimed to investigate the burden of e-scooter-related injuries on emergency departments (EDs) in Poland and delineate the epidemiological and clinical features of these injuries.

Materials and methods: Medical records of patients who presented to two EDs: in Poznań and Bydgoszcz, Poland, with e-scooter-related injuries were collected and retrospectively analyzed. The details of these ED visits were examined.

Results: During the study period, a total of 414 patients were admitted to EDs due to e-scooter injuries. The majority of patients were males (64.73%) with a median age of 27 years. Most of the admissions occurred in the afternoon and at night (72.13%), and during the summer season (46.95%). Falls were the most frequent mechanism of injury (73.91%), with the head, upper and lower extremities being the most commonly injured locations (35.99%, 29.71%, and 21.01%, respectively). Twelve victims (2.90%) confirmed alcohol consumption.

Conclusions: The study findings demonstrate a significant impact of e-scooter-related injuries on EDs in Poland. Understanding the characteristics and identifying the patterns of e-scooter-related ED visits is essential for the development of effective injury prevention strategies. Enforcing regulations mandating helmet use, speed limits, and designated lanes for e-scooters could substantially reduce the incidence and severity of e-scooter-related injuries.

Keywords: electric scooter, emergency department, injury pattern, trauma

The predictive role of blood gas lactate in emergency department in patient with severe dyspnea

Szymon Gawęda[1], Paulina Kluszczyk[1], Daria Syguła[1], Mikołaj Rycerski[1], Anna Danel[1]Szymon Szmigiel[1]

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

Work's tutor: dr hab. n. med. Szymon Skoczyński

Background: Dyspnea can occur in the course of many diseases and is one of the most significant symptoms reported by the patients on admission to the emergency department (ED). Assessment of clinical as well as biochemical markers of dyspnea have to be done to evaluate if a patient is in a life-threatening condition. Blood gas (BG) test should be performed to choose adequate management.

The aim: The aim of our retrospective analysis was to assess prognosis in patients with dyspnea admitted to the ED of a multi-specialty teaching hospital during three consecutive months 01.09.2022-30.11.2022. We focused on investigating whether specific parameters of BG have predictive value in terms of prognosis in patients at risk of respiratory failure admitted to the hospital.

Materials and methods: The research was based on medical files obtained from 437 assessed patients admitted to the ED who were found to be at risk of respiratory failure development. The BG was performed in 108 patients. Three groups of data were distinguished - arterial blood gas (ABG), venous blood gas (VBG) and mixed, which included both ABG and VBG. The major endpoint of our study was the total mortality of the patients in the ED and the ward into which the patient was transferred.

Results: 38 out of 108 patients died: 15 out of 35 ABG group (42,9%), 17 out of 62 VBG group (27,4%). In each group lactate based on univariate analysis was a risk factor for death. For ABG Lactate OR 1.58 (1.013- 2.470), for VBG and ABG/VBG lactate adjusted to BE OR 1.41 (1.109-1.791) and 1.39 (1.070- 1.792) respectively. In each group pH, pO2, pCO2 were found not predictive factors for death ($p > 0,05$).

Conclusions: Both arterial and venous blood gas lactate levels can be predictive of future mortality in patients with dyspnea at ED. Blood gas testing should be considered as part of the standard procedure for dyspneic patient assessment at the triage performed at the ED.

Keywords: blood gas, lactate, emergency department, dyspnea,

What blood pressure and vasoactive agents tell us about capillary refill time. A prospective analysis

Fabian Wesołek[1], Robert Latacz[1], Wiktoria Staniszewska[1]

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

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

Background: A common hemodynamic approach to manage critically-ill patients is to achieve mean arterial pressure (MAP) above 65 mmHg. This is based on the assumption that such a macrohemodynamic goal would sustain time blood flow to vital organs by increasing perfusion pressure above the lower limit of autoregulation curves. At the same time, capillary refill time (CRT), a marker of skin blood flow, has emerged as a relevant resuscitation endpoint in septic shock. An altered CRT is associated with organ perfusion derangement. Little is known about relationship between MAP and CRT, especially in patient receiving vasoactive agents.

The aim: To explore the relationship between MAP and CRT in critically-ill patients receiving vasoactive agents.

Materials and methods: This was a prospective observational study (NCT05674084) conducted in the intensive care unit (ICU) of tertiary hospital between Nov. 2022 and May 2023. Stabilized, critically-ill patients with arterial catheter undergoing vasopressor support wre eligible for inclusion. CRT was measured by using the standardized technique. Values of MAP and doses of vasoactive drugs (defined as norepinephrine equivalent, NEE) were measured simultaneously. Then, by using correlation and non-parametric tests we assessed the relationship between MAP and CRT (1) and doses of vasoactive agents and CRT (2).

Results: There were 150 independent MAP-CRT records (median CRT=1.7 sec, median MAP=81 mmHg). There was no correlation between MAP an CRT (r=0.09, p=0.25). There was no correlation between the NEE and CRT (r=0.06, p=0.5). In case of MAP <65 mmHg (n=13), only 2 CRT values (<3sec) suggested impaired peripheral perfusion.

Conclusions: In critically-ill patients undergoing vasoactive support, CRT values could not be explained either by MAP or doses of vasoactive agents. Assessment od peripheral perfusion carries an independent information regarding the hemodynamic status.

Keywords: CRT, MAP, critically-ill

Assessment of fluid volume and sodium count in ICU patients with sepsis: single centre retrospective study

Jakub Rudzki[1], Dominika Kaźmierczak[1]

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

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

Background: When facing sepsis, main focus lays on volume resuscitation meanwhile other fluids may constitute substantial volume of total fluid administration.

The aim: The aim of our study was to assess fluid volume used in sepsis patients in intensive care unit (ICU) considering main fluid sources and sodium burden.

Materials and methods: In our study a total of 29 sepsis patients were included. Demographic and clinical data was assessed. We recorded total administered fluid volume during patients' stay and counted daily fluid volume accounting intravenous and enteral nutrition, drugs, drugs solvents and sodium load.

Results: Patients' age was 64 (IQR 50-71) and the median SOFA score was 10 (IQR 8-12). Length of stay in ICU was 8 days
(IQR 5-14). Fluid volume administered in the whole group was 965.4L for a total of 367 days of stay. The median daily fluid volume was 2.59L (IQR 2.3-2.9). Intravenous fluids consisted 62% (IQR 52-76) of all administered fluid volume, of which drugs with their own solvents were 17% and catecholamines 2%. Enteral fluids accounted for 38% of total fluid volume. The median sodium count of stay was 42g, giving 5.13g of sodium per day in ICU.

Conclusions: Intravenous fluids accounted for the biggest volume of all administered fluids. Drugs with their own solvents played substantial part in total fluid volume. Daily sodium count in our group exceeded the WHO recommendations of daily sodium intake.

Keywords: sepsis, fluid creep, fluid therapy

Pulmonary hypertension modifies course of hospitalization of critically ill patients with COPD exacerbation

Jan Herzyk[1], Mateusz Gołdyn[1], Dawid Wilczek[1]

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

Work's tutor: lek. Agnieszka Wiórek, prof. dr hab. n. med. Łukasz Krzych

Background: Exacerbation of chronic obstructive pulmonary disease (COPD) resulting in respiratory failure is a common cause of admission to the intensive care unit (ICU) and often requires invasive mechanical ventilation (MV). Severe COPD often leads to pulmonary hypertension (COPD-PH), which may respond well to treatment with enterally administered sildenafil.

The aim: 1) To characterize patients with exacerbated COPD focusing on the dynamics of respiratory and metabolic compensation while on implemented MV.

2) To assess potential outcome differentiation between patients with or without the addition of sildenafil in the treatment protocol.

Materials and methods: This retrospective study covered 107 COPD patients hospitalized in the ICU from 01.2018 to 07.2022 due to COPD exacerbation requiring invasive mechanical ventilation. The MV duration, arterial blood gas (ABG) tests, respiratory parameters through ICU stay, and ICU mortality were analyzed using descriptive statistics, between-group differences, and correlation coefficients.

Results: Median MV time was 144 hours (IQR 90-264). Patients receiving sildenafil (n=60/56%) tended towards longer MV time, although of borderline significance (p=0.07). The mean PaCO2 correlated with the mean ABG HCO3- concentration, reflecting the metabolic compensation mechanisms (r=0.66, p<0.01) with a stronger correlation in the subgroups of patients requiring sildenafil (R=0.74, p<0.01). pH compensation differed between deceased patients (Me: 7.34; IQR: 7.31-7.38) and survivors(Me: 7.40; IQR: 7.37-7.42), p<0.001. Patients in need of sildenafil had lower mean PaCO2 (Me: 45.5; IQR 39.8-51.6 vs. Me: 48.9; IQR 44.6- 54.2; p=0.027) and higher mean PaO2 (Me: 82.8; IQR 75.1-95.1 vs. 73.2; IQR 69.9-85.7).

Conclusions: Sildenafil may have a favorable effect on gas exchange and ABG compensation in patients with COPD-PH. Sildenafil should be considered in all critically ill patients requiring mechanical ventilation due to exacerbation of chronic respiratory disorder.

Keywords: sildenafil, pulmonary hypertension, critically ill, chronic obstructive pulmonary disease, COPD

Is my patient asleep? Assessment of the depth of anesthesia using the measurement of the processed EEG signal

Julia Lipina[1], Aleksandra Boral[1], Zofia Kosztyła[1], Adrian Bobrzyk[1]

1. Student Scientific Association of Anesthesiology and Intensive Care, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Work's tutor: Dr n. med. Maria Damps

Background: Measuring the depth of anesthesia with additional monitoring is not routinely used during anesthesia and sedation. The incidence of both unintended return of consciousness during operation and excessively deep anesthesia is estimated at about 0.5% of performed anesthesia procedures. Inadequate depth of anesthesia may contribute to the occurrence of post-traumatic stress and delirium after anesthesia, especially in younger patients.

The aim: The aim of our study was to assess the depth of anesthesia in randomly selected pediatric patients using the method of processed EEG signals.

Materials and methods: The study was conducted in the operating theater of the Upper Silesian Children's Health Center in Katowice in February – March 2023, in patients over 8 years of age anesthetized for elective procedures. Measurements were made at fixed hours, once for a given patient. The results were included in the anesthesia records, along with sex, age, body weight, drug dose per kg body weight, time of procedure and time elapsed since induction, and the MAC value. The results were collected in the EXCEL sheet and calculations were made using the STATISTICA program.

Results: Seventy patients were included in the study, the mean age was 12.7 years (SD 3.3), the mean TREATON value was 50.1 (SD 5.6), and the MAC value measured at the same time was 0.8 (SD 0.2); the average measurement time from induction was 29.5 minutes (SD 26.8). The recorded TREATON value was always within the range adequate to the desired depth of anesthesia. No statistically significant correlation was found between the value of anesthesia depth measurement and the experience of the anesthesiologist, the dose of administered drugs, the patient's age, the moment of measurement, the type of procedure, and the MAC value.

Conclusions: The clinical assessment of the adequacy of the depth of anesthesia based on the MAC value and hemodynamic parameters is consistent with the measurement of the processed EEG signal indicating the correct value of the depth of anesthesia.

Keywords: depth of anesthesia, processed EEG signal, pediatric patients

Diagnostic accuracy of presepsin in predicting the risk of death in patients with sepsis

Kwiatkowska Magdalena[1], Marczyk Katarzyna[1], Maślanka Sebastian[1], Mika Jolanta[1]

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

Work's tutor: Michał Pluta, MD, PhD; Piotr Czempik, MD, PhD; prof. Łukasz Krzych, MD, PhD

Background: Presepsin may pay a role in diagnostics, treatment monitoring and prognosis assessment of patients with sepsis.

The aim: The aim of the study was to assess the diagnostic accuracy of presepsin in predicting the risk of death and positive results of microbiological tests (MBT) in patients with suspected sepsis.

Materials and methods: The study included 86 patients admitted to the Intensive Care Unit (ICU) with suspected sepsis. Demographic and clinical data were collected. Upon admission to the ICU, inflammatory markers were measured, including presepsin (preS), C-reactive protein (CRP), procalcitonin (PCT), and interleukin-6 (IL-6), and microbiological samples were collected. The primary endpoints were death before discharge from the ICU and a positive result on MBT.

Results: Before discharge from the ICU, 30 patients (34.9%) died. There was no significant difference in inflammatory marker values between patients who survived and those who died ($p>0.05$ for all). A positive result on MBT was obtained in 42 patients (49%) upon admission to the ICU. In patients with a positive result on MBT, the values of inflammatory markers were significantly higher: pre-S 12 vs. 6 ng/mL, CRP 238 vs. 137 mg/L, PCT 13.1 vs. 1.7 ng/mL, IL-6 323 vs. 70 pg/mL ($p<0.001$ for all). Pre-S accurately predicted a positive result on MBT (AUC=0.71, 95%CI 0.60-0.80, $p<0.001$), but did not predict the risk of death in this group (AUC=0.51, $p=0.9$).

Conclusions: Presepsin upon admission to the Intensive Care Unit did not predict the risk of death, but it did predict a positive result on microbiological testing.

Keywords: sepsis, inflammatory markers

Hematologic system dysregulation in sepsis patients with anemia - a retrospective cohort study

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

Background: Sepsis can affect various organ systems. Hematologic system dysregulation in sepsis may involve red blood cells (RBCs) and hemostasis.

The aim: The aim of our study was to analyze the impact of sepsis on RBC indices and coagulation parameters and their association with presence of sepsis and sepsis outcome in anemic critically ill patients.

Materials and methods: We performed a retrospective cohort study covering consecutive patients admitted to a 10-bed mixed ICU in years 2020–2021.

Results: We found significant differences between sepsis and non-sepsis patients for the following parameters: RDW ($p = 0.02$), INR ($p < 0.01$), aPTT ($p < 0.01$), D-dimers ($p < 0.01$), fibrinogen ($p = 0.02$), platelets ($p = 0.04$). International normalized ratio was the only parameter with adequate sepsis predictive value (AUROC = 0.70; 95% CI 0.63–0.76; $p < 0.01$), with an optimal cut-off value of >1.21. Combination of INR with fibrinogen and a severity of disease score improved INR's predictive value (AUROC 0.74–0.77). Combination of INR with a severity of disease score was an adequate ICU mortality predictor in septic patients (AUROC 0.70–0.75).

Conclusions: Sepsis significantly affects RDW and most coagulation parameters. Increased INR can be used for sepsis screening, whereas combination of INR with a severity of disease score can be a predictor of short-term mortality in sepsis patients.

Keywords: anemia, coagulopathy, critical illness, outcome, red blood cell distribution width, sepsis

SESSION
OF BASIC SCIENCE, BIOTECHNOLOGY AND BIOMEDICAL ENGINEERING

Silesian Branch of the Polish Physiological Society

Oddział Śląski Polskiego Towarzystwa Fizjologicznego

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Neuroprotective effect of UPR inhibitor in Parkinson's Disease cellular model

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Work's tutor: Natalia Siwecka, MD; Wioletta Rozpędek-Kamińska, PhD; Grzegorz Galita, MSc; Dariusz Pytel, PhD; Professor J. Alan Diehl, PhD; Professor Ireneusz Majsterek, PhD

Background: Accumulation of α-synuclein in Parkinson's disease (PD) triggers activation of the Unfolded Protein Response (UPR) signaling pathway. PERK, the primary UPR sensor, is activated during Endoplasmic Reticulum (ER) stress to restore cellular proteostasis, eventually inducing apoptosis and neurodegeneration. Thus, inhibitors of the PERK-dependent UPR pathway are a perfect target for development of new therapeutic strategies against PD.

The aim: To evaluate the effectiveness of the selected small-molecule PERK inhibitor LDN-0060609 (LDN) against PD in vitro.

Materials and methods: The cytotoxicity analysis of LDN was defined by the colorimetric MTT assay. The experiment was conducted on DI TNC1 cell line exposed to LDN (0.75 μM to 50 μM + 0.5 mM) or with 1 μL DMSO (solvent), and the incubation lasted 3, 16, 24 and 48 h. Positive control comprised untreated cells, whereas cells exposed to 50% ethanol served as a negative control. The effect of LDN on DI TNC1 cells apoptosis was measured by flow cytometry. Cells were treated with media containing 1 μM DMSO or with LDN at 6μM and 50μM and incubated for 24h. Cells exposed to 1 μM staurosporine were used as a positive control, and untreated cells as a negative control.

Results: Cytotoxicity analysis revealed no significant impairment of viability of DI TNC1 cells upon treatment with LDN, while flow cytometry - no significant induction of apoptosis by LDN in any used concentration and incubation time.

Conclusions: We may assume that targeting PERK-dependent UPR pathway via small-molecule inhibitors may contribute to development of a novel treatment strategy against Parkinson's disease, that would provide neuroprotection and have no cytotoxic effect.

This work was supported by the Medical University of Lodz, Poland (grant no. 503/5-108-05/503-51-001-19-00) and by the National Science Centre, Poland (grant no. 2021/43/O/NZ5/02068 and 2016/21/B/NZ5/01411).

Keywords: UPR, PERK inhibitor, Parkinson's Disease, cytotoxicity, apoptosis.

Cardiovascular implications of long term fluoropyrimidines administration in a rat model

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Work's tutor: Prof. Krzysztof Gil, MD, PhD, Michał Jurczyk, MD, Kamil Skowron, MD, PhD

Background: Although 5-fluorouracil (5-FU) is used to treat various cancers, it is also confirmed to be one of the most cardiotoxic chemotherapeutic agent. The mechanism of this side effect is multifactorial and clinically results in vasospasm, arrhythmia, and direct myocardial injury.

The aim: The study aimed to explore the pathophysiological consequences of 5-FU-induced cardiotoxicity in an animal model. It was assessed using magnetic resonance imaging (MRI) and analyzing blood serum samples.

Materials and methods: The study included 18 male Wistar rats that were divided randomly: the experimental group was administered 4 doses of 5-FU at a dose of 150mg/kg, and the control group received 0,9% NaCl. The MRI measurements were conducted 3 days after the last dose of 5-FU and the blood samples were taken 4 days after the last dose of 5-FU.

Results: The EF (ejection fraction) gradually decreased with subsequent doses of 5-FU (74.9 vs. 74.7 vs. 71.8, $p>0.05$) before 5-FU, after one dose of 5-FU, and after four doses of 5-FU, respectively. Similar changes were observed in PER (peak ejection rate) (7.26 vs. 6.79 vs. 6.49, $p>0.05$). However, PFR (peak filling rate) was not affected (7.94 vs. 8.11 vs. 8.02, $p>0.05$). What is more, subsequent doses also caused a significant increase in TNI (troponin I) concentration (0 vs. 5.26 vs 11.92, $p=0.02$).

Conclusions: The results of the presented study confirmed that the chemotherapy regimen based on 5-FU has a negative impact on the cardiac muscle. It manifested as a gradual dysfunction of the myocardium which was reflected in the decrease of EF and PER. Moreover, the analysis of blood samples revealed a significant increase in TNI concentration which also proves the cardiotoxic effect of 5-FU.

Keywords: 5-fluorouracil, ejection fraction, peak ejection rate, magnetic resonance imaging, cardiotoxicity

Fabry disease monitoring using the Fiber Evanescent Wave Spectroscopy

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Background: Fabry disease (FD) is an ultrarare genetic disease coupled with an X-chromosome. The absence or decreased activity of the lysosomal enzyme α-galactosidase A (α-Gal A) in patients suffering from FD causes the accumulation of undigested sphingolipids in a variety of cells in the body, in particular the heart, kidneys, and nervous system in large amounts. As a result, the cells of the affected organs are damaged, and then the function is disturbed. All complications resulting from the occurrence of FD are non-specific, which makes it impossible to make an appropriate diagnosis based on the clinical picture.

The aim: Searching for new diagnostic methods in medicine.

Materials and methods: Traditional diagnostics of Fabry disease is based on the determination of the concentration of α-Gal A and the detection of mutations in the GLA gene located on the X-chromosome, responsible for the activity of α-Gal A. Currently, the only classical FD biomarker measured in plasma is Lyso-Gb3 or the deacylated form of Gb3.

Results: Vibrational spectroscopy could be a well-promised cheap method for FD biomarker diagnostics. We present the results of studies of human urine samples examined with Fiber Evanescent Wave Spectroscopy (FEWS) in the "fingerprint" spectral region. Vibrational modes at 1047 cm-1 and 1076 cm-1 associated with νs(C – O) are derived from monomer units of sugar and glycogen in glycosphingolipid and Lyso-Gb3 molecules which serve as biomarkers of the FD.

Conclusions: Several mathematical operations were carried out for the detailed analysis of the obtained results: the basic statistical analysis with the Kruskall-Wallis calculations, Welch's t-test, and Hedges' g–function; multivariate analysis using principal component analysis; the machine learning to build prediction models. Preliminary results allow for making promising predictions for further research.

Keywords: Fabry disease, IR-spectroscopy, Fiber Evanescent Wave Spectroscopy, biomarker.

Analysis of drug release from spheres whose degradation depends on MPM in a 3D model of neoplastic invasion

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Work's tutor: Anna Florczak Ph.D , Kamil Kucharczyk Ph. D, Hanna Dams-Kozłowska Ph. D

Background: Metalloproteinases (MMPs) are a group of proteolytic enzymes that affect the processes of remodeling extracellular matrix components and play an important role in the development of tumors forming metastasis. Increased expression of individual MMPs in tumors is observed, which is the basis for linking them with clinical prognosis. Spider silk is a material with a wide potential application in biomedicine. The use of genetic engineering techniques enables the functionalization of silk, through its chemical modification.

The aim: In our project, we want to create a 3D model of the tumor microenvironment to create a targeted drug delivery system using biodegradable and bioengineered spider silk proteins functionalized to recognize and be cleaved by metalloproteinases, which overexpression is observed in the vast types of cancers.

Materials and methods: We used two breast cancer cell lines (MCF7 and MDA-MB-231) to optimize a method of forming a 3D model of the tumor microenvironment. A live cell analysis instrument was implemented to control the formation of spheroids, invasion test, and spheres incorporation. The drug nanocarrier system is based on bioengineered spider silk proteins MS2MMP2.9MS2 produced in the bacterial expression system. The silk spheres were produced by the salt precipitation method. The morphology and size of the nanoparticles were assessed using scanning electron microscopy (SEM) .

Results: We optimized the formation protocol of the 3D spheroid models which mimic the tumor microenvironment and 3D tumor invasion model. We also proved successful incorporation of silk spheres and showed increased activity of MMP 2 and 9 in the tumor microenvironment

Conclusions: We optimized a 3D model of the tumor microenvironment, based on the formation of spheroids. We also designed a nanosystem formed on biodegradable silk spheres, recognizable and cut by metalloproteinases 2 and 9.

Keywords: silk spheres, 3D tumor model, tumor microenvironment

Can SPIONs affect the phenotype of circulating cancer cells during their capture in the human body?

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Work's tutor: dr hab. prof. UJ Joanna Dulińska-Litewka, dr hab. prof. UJ Anna Karewicz

Background: Breast cancer is the leading cause of cancer death among women aged 20–59 years old and the second leading cause of death among women aged 60 years or older. A common cause of breast cancer mortality is metastasis to lymph nodes, bone, liver, or brain; therefore, more effective early treatment of breast cancer is crucial to the survival of breast cancer patients.

The aim: The use of functionalized superparamagnetic iron oxide nanoparticles (SPION) as a tool for safe, targeted cancer therapy.

Materials and methods: The obtained SPIONs were characterized physiochemically, magnetically, and visualized using STEM and then used for biological tests using breast cancer T47D and MCF-7 cell lines. The cytotoxicity of SPIONs was examined by the MTT and LDH assay, their influence on cell proliferation by a Crystal Violet Assay. The expression and/or activity of selected proteins was verified using Western Blot while the MMPs activity was tested by zymography.

Results: The cell viability decreases with an increasing concentration of SPIONs (given as a concentration of iron in the sample), without notable differences between the cell lines. Observed changes in the cell viability were small, thus the SPIONs were non-cytotoxic towards the cell lines. The epithelial-mesenchymal transition (EMT) plays a key role in the invasion and metastasis, therefore an analysis of the selected EMT proteins such as N-cad, E-cad, β-catenin, SNAIL, SLUG, Vimentin, Twist or ZEB was conducted. Cells treated with SPIONs showed reduced expression of transcription factors, including SNAIL and TWIST, and a ca. 15% increase in the expression of E-cad, indicating the antiproliferative effect of SPIONs.

Conclusions: The prepared SPIONs do not significantly change the phenotype of the cell, thus indicating the possibility of using properly modified SPIONs to capture circulating cancer cells.

Keywords: SPION, cancer, circulating cancer cells

Effect of α-lipoic acid on retinal function and inflammatory process in early stages of Diabetic Retinopathy

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Work's tutor: dr hab. n. med. Marita Pietrucha-Dutczak, mgr farm. Daniel Jamrozik

Background: Diabetic Retinopathy (DR) is a common ocular complication of diabetes, as it's estimated that one third of patients with diabetes will develop DR. Complications of this disease may lead to visual impairment, including blindness, and cause emotional distress, reduce patient's quality of life and generate huge costs of treatment. Nowadays, DR treatment methods are invasive and applied at the sight-threatening stages of DR. Therefore, it is important to understand the mechanisms leading to the development of this ocular dysfunction, especially considering early stages of DR. This pathology was traditionally defined as vascular disease, but there is accumulating evidence that neurodegeneration also occurs in diabetic retina, probably prior to visible microvascular damage.

The aim: The aim of these study was to examine basic mechanisms underlying the development and progression of DR and to establish whether α-lipoic acid (α-LA), a natural antioxidant, affects the survival and function of retinal neurons, especially retinal ganglion cells.

Materials and methods: Diabetes in mice was induced by intraperitoneal administration of streptozocin. After diabetes had developed, α-LA was injected twice a week. At the end of experiment animals were euthanized, retinas and optic nerves were collected and processed for western blot analysis and immunohistochemistry. During the experiment the retinal function was tested by electroretinography.

Results: We observed higher amplitudes of oscillatory potentials in mice supplemented with α-LA than in diabetes mice. Moreover, α-LA decreased the expression of pro-inflammatory cytokines.

Conclusions: Functional alteration in retina precedes the structural changes. Additionally, α-LA reduces local inflammation and inhibits the development of DR. Knowledge about the supplementation of α-LA in the patients undergoing electroretinography may be crucial to obtain reliable results.

Keywords: Diabetic Retinopathy, alpha-lipoic acid, retinal ganglion cells, electroretinography, diabetes

Protective effects of 2,4-dinitrophenol against okadaic acid-induced neurotoxicity in SH-SY5Y cells

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Work's tutor: Dr. Susana Cardoso (BSc, PhD)

Background: Alzheimer's disease (AD), the leading cause of dementia worldwide, still remains an unsolved issue despite significant global attention. Understanding and controlling mitochondrial function can play a significant role in controlling or limiting the development of AD due to their central role in the disease's pathogenesis. In this perspective, emerging evidence suggests that low doses of 2,4-dinitrophenol (DNP), a mitochondrial uncoupler, initiates a bioenergetic signal leading to coordinated responses that allow mitochondrial metabolic adaptations and cell protection.

The aim: Following this rational, our working hypothesis postulates that DNP, by directly targeting mitochondria, will prevent and/or revert AD-related neuronal defects in an in vitro model of the disease.

Materials and methods: To achieve our goal, retinoic-acid induced differentiated SH-SY5Y cells were exposed to okadaic acid (5nM) and/or with DNP (20μM). MTT assay was used to evaluate cells viability; aconitase and citrate synthase activities were determined to evaluate mitochondrial oxidative status and content, respectively, reactive oxygen species (ROS) production levels were assessed fluorometrically; mitochondrial bioenergetics was evaluated in a Seahorse apparatus and western blot analysis was used to assess the protein content of AD-related neuropathological hallmarks, mitochondrial markers and mitochondrial dynamics.

Results: Our results demonstrated that DNP is able to rescue OA-induced loss of cells viability and to improve outcomes associated with OA-induced mitochondrial dysfunction namely increased mitochondrial ROS levels production, decreased aconitase and citrate synthase activities and impaired oxygen consumption rate. More, DNP decreased AD-associated neurotoxic effects and reestablished mitochondrial dynamics.

Conclusions: Overall, these results indicate that DNP is able to target multiple disease pathways and support the use of DNP as a possible therapeutic agent to revert and/or ameliorate AD-related mechanisms of disease.

Keywords: Alzheimer's disease ; 2,4-dinitrophenol ; mitochondrial dysfunction; okadaic acid

The enteric nervous system and pain perception in an activity-based anorexia animal model

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Work's tutor: Kamil Skowron, MD, PhD

Background: Anorexia nervosa (AN) is an eating disorder characterized by distinct etiopathogenetic concepts that are gradually linked together to unravel the dominant pathophysiological pathways underlying the disease. This seems particularly important given the persistently high mortality rate among patients despite up-to-date treatment. Excessive food restrictions, often accompanied by over-exercise, undertaken to lose weight, lead to the development of numerous complications.

The aim: The biological concept of neurohormonal dysfunction in AN seems incomplete without demonstrating or excluding the role of the enteric nervous system (ENS). Therefore, we aimed to conduct a preliminary assessment of the ENS structure and address the unresolved issue of mechanical and thermal pain sensitivity in AN.

Materials and methods: Using an animal model of activity-based anorexia (ABA), we performed hematoxylin-eosin, as well as immunohistochemical staining on tissue samples from the small intestine with anti-ChAT, anti-NOS, anti-PGP 9.5, anti-c-fos, and anti-TH antibodies. In addition, to assess the pain thresholds, Von Frey and hot plate tests have been conducted.

Results: Histopathological analysis in the ABA group revealed a decreased mucosa and intestinal wall thickness, along with worse organization in all of its layers. In the immunohistochemical examination, a lower density of cholinergic and nitrergic nerve fibers, as well as reduced neuronal activity in the myenteric plexus have been observed. As for pain perception, the tests depicted that in ABA animals the threshold for mechanical stimulus decreases, with a reduction in latency time of 7.47 seconds ($p=0.001$), while for thermal increases, since a latency time increased by 17.42 seconds ($p=0.013$).

Conclusions: In this way, we have significantly supplemented the background of AN with potentially observable nervous system changes. Such structural and functional damage to the ENS may be responsible for a number of gastrointestinal issues that worsen the course of the disease.

Keywords: anorexia nervosa, activity-based anorexia, enteric nervous system, gut-brain axis, pain perception

Bioinformatic analysis of repetitive sequences in completed genomes of SARS-CoV-2 strains

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Background: Though most patients recover from COVID-19 after 10-14 days, some cases of persistent SARS-CoV-2 infection and prolonged detection of viral RNA in seemingly recovered people have been described. Long-term COVID-19 may also provoke myocarditis, diabetes and cancer. Those pathogenic effects, inter alia, have been attributed to rapid mutations, and reverse transcription and integration of viral genome into the genomes of virus-infected cells.

The aim: To provide evidence of SARS-CoV-2 ability to mutate and to be integrated into the human genome we analyzed its repetitive sequences in silico.

Materials and methods: Complete genome sequences of Wuhan strain of SARS-CoV-2 (Wuhan-Hu-1) and variants of concern, including B.1.17 (Alpha), B.1.351 (Beta), P.1 (Gamma), B.1.617.2 (Delta), and B.1.1.529 (Omicron), were retrieved from GISAID, NCBI and ENA databases. Mreps and Simple Sequence Repeat Identification Tool (SSRIT) were used to detect short sequence repeats (SSR). Percentage, relative density (RD), and relative abundance (RA) of SSRs were calculated. RepeatExplorer2 was used to characterize transposons.

Results: SSR percentage varied from 1.3% in Gamma strain to 1.5% in Wuhan-Hu-1. Diversity of SSRs ranged from 36 in Gamma strain to 41 in Wuhan-Hu-1. The values of RD and RA were 15.12 and 4.68 in Wuhan-Hu-1 strain, respectively. The most abundant types of motifs were trimeric and hexameric repeats, for Wuhan-Hu-1 strain the figures were 50% and 48%, respectively. There were no tetramers and pentamers across the analyzed SARS-CoV-2 genomes. LINE1 and LTR sequences were identified in the Wuhan-Hu-1 reference genome.

Conclusions: SSR signature of SARS-CoV-2 genomes was the evidence of their high mutability. LINE1 and LTR sequences detection in the Wuhan-Hu-1 genome confirmed the ability of SARS-CoV-2 to integrated into the human genome.

Keywords: SARS-CoV-2, genome, short sequence repeat, transposon

SESSION
OF SURGERY

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Self-locking polymeric clips are a safe option for appendiceal stump closure in laparoscopic appendectomy

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Background: Acute appendicitis is the most common surgical disease, and appendectomy is the treatment of choice in the majority of cases. Closure of the appendix stump is a crucial step to avoid major postoperative complications. There are various approaches, but the ideal one has yet to be established.

The aim: To evaluate the effectiveness of appendiceal stump closure with self-locking clips and endoloops.

Materials and methods: A retrospective study of a prospectively maintained database of patients with acute appendicitis was carried out. Patient demographic data and surgical features, such as length of hospital stay, postoperative outcomes, and the cost of appendix stump closure, were documented. Patients were separated into two groups based on the method used to close the appendix stump: clips, if it was closed with self-locking polymeric clips, and loops, if Vicryl or PDS loops were used. Pearson's Chi-squared test, Wilcoxon rank sum (Mann-Whitney U) test, and Fisher's exact test were used in the statistical software package R version 4.2.1.

Results: The study enrolled 515 patients from June 2016 to April 2021. There were no significant differences between the two patient groups in terms of demographics (p-value in comparison of groups' sex > 0.99, age p-value 0.16), postoperative complications (p-value > 0.99), histological results (p-value 0.27), or duration of hospital stays (p-value 0.18). However, the cost of operation differs significantly when various appendiceal stump closures are used. One stump closure with self-locking clips costs 7.69€, Vicryl loops 91.35€, PDS loops 96.51€, and stapler 514.50€ in laparoscopic appendectomy.

Conclusions: Self-locking polymeric clips can be used to close the appendiceal stump safely and effectively. There were no significant differences in post-operative time (30 days) or complication rates between the two groups (clips and loops). As a result, this might be a way for decreasing expenses while maintaining good post-operative outcomes after laparoscopic appendectomy.

Keywords: Appendectomy, Acute appendicitis, Surgery, Management

Micropulse laser therapy in chronic idiopatic Central Serous Chorioretinopathy of 38-years old patient

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Work's tutor: dr n. med. Sebastian Sirek

Background: Central Serous Chrioretinopathy (CSC) is an affliction characterized by idiopathic serous elevation of sensory retinal layer in proximity of retinal macula. In most cases, the phenomenon occurs unilaterally, mainly in young males, with greater susceptibility to stress. Settling the optimal CSC treatment strategy is problematic, due to a wide range of symptoms, various clinical courses and overall thin knowledge of CSC's pathophysiology, accompanied by lack of classification system consensus. Nowadays, there has been an increase usage of micropulse laser in CSC treatment, which enables a targeted act on retinal pigment epithelium, without damaging proximal photoreceptors.

The aim: Evaluation of micropulse laser therapy in chronic CSC.

Materials and methods: Patient – 38 years old, had been treated for recurrent CSC of right eye since over a dozen of months, until then treated locally with eye drops and per os medication. Vision acuity, intraocular pressure, central retinal thickness measured with Optical Coherence Tomography (OCT) and fluorescein angiography (FA) tests were performed.

Results: At the time of diagnosis, the results consisted of: vision acuity 5/8, intraocular pressure 19mmHg and OCT's central retinal thickness of 530µm. FA findings confirmed diagnosis and qualified the patient to retinal micropulse laserotherapy. During control FA test, patient's clinical condition improvement was observed, with vision acuity 5/5 and intraocular pressure 17mmHg. Additionally, central retinal thickness in OCT was lowered to 299 µm.

Conclusions: Micropulse laser usage, makes it possible to acquire sustainable clinical effect in patients with recurrent Central Serous Chorioretinopathy.

Keywords: micropulse laser, central serous chorioretinopathy, retinal macula

Pancreatic solid pseudopapillary neoplasms - clinicopathological characteristics

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

Background: Pancreatic solid pseudopapillary neoplasms (SPNs) are rare tumours with predominance in young women. The etiopathogenesis of SPN is unclear. These tumours are of low malignant potential, become considerably large before causing symptoms and are associated with good prognosis. SPNs are frequently located in the pancreatic head or tail and are often misdiagnosed.

The aim: This study aimed to present and analyse clinicopathological features of SPNs.

Materials and methods: We retrospectively reviewed 24 patients' clinical data who underwent pancreatectomy in the Department of Digestive Tract Surgery in Katowice between 2014-2023 and were diagnosed with SPNs and excluded 2 patients because of the uncertain histopathology results.

Results: Mean age of the patients with SPN was 34 years (SD 11.09). There was significant predominance of females (95.45%).
Fourteen patients were asymptomatic (63.64%), 8 presented with symptoms (36.36%). Sixteen patients had comorbidities (72.73%).
Patients underwent different procedures: pancreatectomies (distal 50%, central 13.64%, proximal 27.27%), tumour enucleation of pancreatic uncinate (4.55%) and duodenum-preserving pancreatic head resection (4.55%).
Tumours in our study were localised in various parts of the pancreas (head 27.27%, neck 9.09%, body 36.36%, tail 22.73%, uncinate processus 4.55%). Median size of tumours was 3.6 cm (IQR=4.43).
Histopathology showed features like perineural invasion in 72.7% of cases, pseudocapsule (54.5%), haemorrhage (45.5%), vascular invasion (40.9%), mucosal metaplasia (40.9%), necrosis (31.8%), calcification in the capsule (31.8%). Ki67 didn't exceed 7%. In one case metastasis to a lymph node (4.55%) has been found.
Clinical suspicion agreed with histopathological results only in 10 cases (45.45%).

Conclusions: SPN most often occurs in young females. Majority of cases are asymptomatic accidental findings. The final diagnosis of SNP can be based just on analysis of histopathological examination results.

Keywords: solid pseudopapillary neoplasm

Analysis of early postoperative outcomes following surgical treatment of mucinous cystic neoplasms

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

Background: Mucinous cystic neoplasms (MCN) are rarely occurring, potentially malignant neoplasms that show better prognosis than pancreatic ductal adenocarcinoma.

The aim: Retrospective analysis of patients undergoing surgery for MCN of pancreas, including the types and frequency of early postoperative outcomes.

Materials and methods: In our analysis, we included 43 patients that underwent surgery in Department of Digestive Tract Surgery between 2014 and 2022. The clinical data was collected through retrospective analysis of patients' medical history. We collected pre- and postoperative data concerning patients' comorbidities, clinical symptoms, type and length of surgery, intraoperative blood loss, biochemical and peripheral blood investigations, the prevalence and types of complications following the surgery in patients, as well as the results of histopathological examinations of the removed specimens.

Results: Women comprised all analyzed patients. 23 (53%) patients experienced clinical symptoms, with abdominal pain being the most common symptom in 20/43 (47%) patients. The most common surgical treatment was distal pancreatectomy in 41/43 patients, with 29/43 (67%) surgeries performed with simultaneous splenectomy. The median cyst diameter was 6 cm (IQR:3.75); the most common localization of lesions was in the tail of pancreas. 22/43 (51%) patients had postoperative complications recorded; the most common complications included postoperative pancreatic fistula (POPF) (18/43, 42%) and intraabdominal fluid collection (11/43, 26%). 9 in 18 (50%) of POPFs were classified as biochemical leak, however, the remaining 9 (50%) were clinically relevant type B fistulas. Histopathological examinations revealed high grade dysplasia in 24 (56%) specimens.

Conclusions: Postoperative complications following MCN surgery are common, however, one of the most frequent is clinically irrelevant POPF characterized as biochemical leak. High grade dysplasia was detected in most examined MCNs.

Keywords: mucinous cystic neoplasm, MCN

Correlation between time from diagnosis to surgery and survival in laryngeal cancer

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Work's tutor: doc. Evaldas Padervinskis

Background: One-third of all head and neck malignancies are laryngeal cancers, which may be a significant cause of morbidity and mortality. Patients are predominantly men with a current or previous tobacco smoking history. Typically, treatment options depend on the disease's stage. The focus of laryngeal cancer management over the past few decades has been on preserving laryngeal function without compromising survival, but surgery remains the primary treatment method. According to the literature, treatment should preferably begin within 30 days of the diagnosis.

The aim: To evaluate the correlation between time from diagnosis to surgery and laryngeal cancer survival.

Materials and methods: The research data was obtained retrospectively. We selected patients who were treated in department of Otorhinolaryngology, Lithuanian University of Health Sciences, Kaunas Clinics from larynx cancer with surgery in 2019-2021. Information about deaths was obtained from Institute of Hygiene. The data was analyzed using IBM SPSS 29.0. A p-value of 0.05 or lower was considered statistically significant.

Results: There were total of 161 patients. Male to female ratio was 19:1. The mean age was 63 (Ī8,50) years old. The mean hospitalization time was 16,68 (Ī16,82) days. The mean time from diagnosis to the surgery was 66,16 (Ī110,21) days. 21,7% (n=35) of the patients died and 78,3% (n=126) of the patients survived. 69 (42,9%) patients underwent surgery within 30 days of being diagnosed, while 92 (57,1%) patients waited longer. However, there was no statistically significant difference in survival between the groups treated within 30 days and those treated later (p=0,122).

Conclusions: There is no statistically significant difference in survival between those who received laryngeal cancer surgery within 30 days and those who were treated later.

Keywords: larynx cancer, laryngeal cancer, survival.

WHO Surgical Safety checklist completion at Gauhati Medical College and Hospital: A closed loop clinical audit

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Work's tutor: Prof Dr. Nae won Hailowng, Prof Dr. Purujit Choudhury

Background: The Surgical Safety Checklist (SSC) was introduced by the World Health Organization (WHO) in 2007, with an aim to increase patient safety, improve outcome, and lower complications. It consists of the three stages: sign-in (done before anesthesia is administered), time-out (done before skin incision), and sign-out (done just after skin closure or before the patient exits the operating room).

The aim: The aim of this audit was to assess the proper adherence to the WHO SSC during all surgeries in Surgical Unit 1 of General Surgery Department of a tertiary care institute in India from October 2022 to January 2023.

Materials and methods: This prospective observational study was conducted among 100 patients undergoing elective and emergency surgeries in Surgical Unit 1, Department of General Surgery. A postgraduate trainee noted the implementation of items from the modified WHO SSC and compliance was noted before and after the educational intervention. Completeness rate of Sign-in, Time-out, and Sign-out domains was computed with SPSS 20.0 package.

Results: During the period of 4 months (Oct-Jan) data was collected for the implementation of the checklist among 100 patients. Pre intervention data was collected for 56 cases and post intervention for 44 cases.

We observed that pre intervention sign in was 75% and post intervention is rose to 83%. Pre-intervention time-out was 64% and post intervention rose to 82%. And finally pre-intervention sign-out was 53% and post intervention rose to 74%. As we can clearly see pre intervention compliance was highest in sign-in.

Conclusions: Initially, the quality of completion was found to be sub-optimal but after the interdepartmental intervention significant improvement was noted. Heavy workload and long hours in a relatively understaffed and busy Surgical Unit was postulated to be the cause of low adherence to the checklist. However, post intervention, nearly hundred percent adherence to the checklist is seen with smooth and effective functioning of the surgical team.

Keywords: Closed-loop audit, surgery, patient, safety

Pancreatic serous cystic neoplasm – clinicopathological characteristics

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Background: The pancreatic serous cystic neoplasm (SCN) is classified as a tumour with rare malignant transformation potential. It is often found accidentally; therefore, asymptomatic SCN requires only regular check-ups. However, surgery is recommended in symptomatic, rapidly growing or suspected malignancy lesions.

The aim: A retrospective analysis of the clinical and pathological characteristics of SCNs was performed.

Materials and methods: A retrospective analysis was created based on medical records of 60 patients undergoing surgery for SCN in the Department of Digestive Tract Surgery between August 2014 and May 2022.

Results: The analysed group comprised 53 women (88.3%) and 7 (11.7%) men. The average age was 59Ī13.1 years, and the mean body mass index (BMI) was 26.6Ī3.9.
Most patients (n=44, 73.3%) were asymptomatic at hospital admission. However, upper abdominal pain was the most commonly reported symptom (n=16; 26.7%).
SCN was located in the pancreatic head (n=13, 21.7%), body (n=29, 48.3%), and tail (n=18, 30.0%). The types of surgeries were as follows: distal pancreatectomy (n=50, 83.3%), pancreatoduodenectomy 8 (13.3%), and total pancreatectomy 2 (3.3%) with R0 resections in all patients. The average surgical time was 265 Ī108.2min, and the average length of postoperative hospital stay was 12 Ī8.8 days. In 22 (36.7%) patients, postoperative complications occurred. The most common complication was pancreatic fistula (n=8; 36.4%), including 6 (75.0%) type B and 2(25.0%) type C, followed by intraabdominal fluid collection or abscess (n=6; 27.3%) and wound suppuration (n=6; 27.3%). The average tumour diameter was 4Ī2.6 (0.9-12.0) cm. Cystadenocarcinoma was not reported in any case.

Conclusions: SCN is typically an average 4 cm asymptomatic benign lesion, mainly in women. The most frequent tumour location is the pancreatic body. Surgery for SCN is associated with low mortality but substantial morbidity risk and usually involves distal pancreatectomy.

Keywords: Pancreatic cystic neoplasm (SCN), clinicopathological features, pancreatic surgery

Should age be a limit? Outcomes in geriatric patients undergoing pancreatoduodenectomy for pancreatic cancer

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Background: Pancreatic ductal adenocarcinoma (PDAC) is a cancer with one of the highest mortality rates. Patients over 70 years account for more than 50% of all PDAC patients. According to some opinions, advanced age may be a risk factor in this group of patients and is considered a contraindication to pancreatoduodenectomy (PD).

The aim: Comparison of the surgical outcomes of patients aged ≥ 70 years and younger, with a focus on postoperative complications, duration of hospitalization after surgery, and 30-day mortality.

Materials and methods: 136 patients with PDAC undergoing PD between 2016 and 2022 were included in the analysis. Clinical data from the patient's medical records were retrospectively analyzed including anthropometric data, comorbidities, medications used, laboratory and histopathological results, type and duration of surgery, and postoperative complications.

Results: Median patients' age was 64 years (IQR = 9) and those patients ≥ 70 years old accounted for 20.9% (28/134). Postoperative complications occurred in 23.9% of patients (32/134) and the most common were intra-abdominal fluid collections (16/134, 11.9%). The 30-day mortality was 3.7% (5/134). Patients in the older groups had significantly higher American Society of Anesthesiologists (ASA) (p=0.0002) and Charlson Comorbidity index (CCI) (p=0.001) scores than younger. Despite this, rates of postoperative complications, intensive care unit hospitalization, length of postoperative hospitalization, and 30-day mortality were similar in both compared groups.

Conclusions: Although PD is a procedure with a high risk of postoperative complications and patients aged ≥ 70 years old have more co-occurring diseases, there was no increased risk of postoperative complications or higher mortality in this group of patients, compared to younger patients. The decision about qualification for PD is multifactorial and age should not be considered the only factor during qualification for this type of treatment.

Keywords: pancreatoduodenectomy, geriatric patients, pancreatic cancer, postoperative complications

Pancreatic neuroendocrine tumours – surgical treatment

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Background: Pancreatic neuroendocrine tumours (PNET) constitute 30% of gastrointestinal neuroendocrine tumours. The morbidity is increasing. 60-90% of PNET are hormonally inactive tumours, so their symptomatology is poor. The preferred treatment for PNET is surgical resection.

The aim: Retrospective analysis of clinical data and early surgical outcome of patients with undergoing surgery for PNET who underwent surgical treatment.

Materials and methods: The study included 65 adult patients (31 men and 34 women) with PNET, who were surgically treated in the Department of Digestive Tract Surgery in Katowice between June 2018 and December 2022. The duration of the surgery, length of hospital stay and surgical complications were analyzed.

Results: The mean age of patients was 59±13.7 (24-79) years. Most tumours we single n=59 (90.77%). The localization of tumours were: pancreatic body and tail n=30 (46,15%), body n=6 (9.23%), tail n=11 (16.92%), head n=16 (24.61%), isthmus n=2 (3.08%). 33 (50.77%) tumours were hormonally active which inludes: insulinoma n=14 (21.54%), glucagonoma n=2 (3.08%), somatostatinoma n=2 (3.08%) and both insulinoma and glucagonoma n=3 (4.62%). The average diameter of tumours was 2.43±1.39 (0.5-6.5) cm. The surgical procedures were: distal pancreatectomy n=44 (67.69%), subtotal pancreatectomy n=4 (6.15%), local enucleation of the tumour n=5 (7.69%), Whipple's pancreatoduodenectomy n=4 (6.15%), Traverso's pancreatoduodenectomy n=8 (12.31%). Early postoperative complications rates were 30.76% (20/65), postoperative pancreatic fistula (POPF) was the most frequent n=10 (15.38%), including type A n=6 (9.23%) and type B n=4 (6.15%).

Conclusions: Insulinoma most often was diagnosed. Body and tail of pancreas were the most common localization of tumours. The majority of surgery was distal pancreatomy. The most frequent complication was not clinically relevant POPF type A.

Keywords: pancreatic NET, neuroendocrine tumour, surgical treatment

Choledochal cysts – surgical treatment in adults

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Background: Choledochal cysts (CCs) are congenital cystic dilatations of the biliary tree. They are uncommon biliary lesions characterized by dilation of the extrahepatic and/or intrahepatic biliary tree.

The aim: The aim of this study is to evaluate surgical treatment and its outcome of in patients undergoing surgery for CCs in the Department of Digestive Tract Surgery of Medical University of Silesia in Katowice.

Materials and methods: In this single-centre study, the medical records of patients undergoing surgery for CCs between 2004 and 2022 were retrospectively analysed. The study evaluates clinical presentation, diagnosis, treatment and postoperative outcomes.

Results: There were 13 patients, including 11 (84.62%) women and 2 (15.38%) men in the average age 44 years (22-65 years). The presentation included abdominal pain (69.23%), cholelithiasis (53.85%), jaundice (30.77%), pancreatitis (23.08%), nausea and vomiting (15.38%). 4 patients were asymptomatic (31%). The cysts were classified using the Todani classification: I: 7; III:2; IV: 1 and V: 1. The patients underwent complete excision of the cyst and Roux-en-Y hepaticojejunostomy with cholecystectomy (n= 9); cyst excision and end-to-end anastomosis of common biliary duct with cholecystectomy (n= 1); intrahepatic cyst excision with cholecystectomy (n=1); pancreaticoduodenectomy (n= 1); The postoperative complications were observed in 5 (38.46%) patients: postoperative stenosis of bile ducts leading to jaundice(n=2), wound suppuration (n=2), intraabdominal fluid collection (n=1), pneumonia and respiratory failure (n=1), bleeding and anaemia (n=1), hepaticojejunostomy anastomotic leak followed by peritonitis (n=1). Five patients had to be readmitted to the hospital. There was no operative mortality.

Conclusions: The majority of evaluated CCs were symptomatic Todani's type I cysts reported in women in average age at presentation of 44 years. Surgical cyst excision with Roux-en-Y hepaticojejunostomy and cholecystectomy was the treatment of choice in most patients.

Keywords: choledochal cysts, surgical treatment, biliary lesions, Roux-en-Y hepaticojejunostomy

Evaluation of risk and outcome of endovascular treatment of carotid arteries subocclusion as an alternative to surgical treatment

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Background: Carotid artery subocclusions pose therapeutic problems, one of the recognized methods of their treatment is percutaneous angioplasty with carotid artery stenting (CAS). However, the safety and efficacy of this method in such advanced lesions is still a matter of debate.

The aim: Evaluation of risk and outcome of endovascular treatment of carotid artery subocclusion.

Materials and methods: A single-centre prospective study was conducted in a group of 29 patients who were subsequently treated endovascularly for carotid artery stenosis. All procedures were performed in a typical way - the performance of percutaneus angioplasty with the CAS using brain neuroprotection. Patients who had an internal carotid artery (ICA) stenosis of 95% or more were analyzed. The obtained data were supplemented and compared with clinical and imaging data: doppler ultrasound and results of intraoperative angiogram analysis.

Results: The study involved 8 patients (4-men, 4-women), aged 68.8. In 7 (87.5%) patients, the occlusion occurred in the left ICA. Associated symptoms (stroke, headache, tinnitus) were observed in 6 (75%) patients. The average width of the stent used was 7.5 mm, length 35 mm. The average width of ICA after surgery was 4.88 mm.

Conclusions: Endovascular treatment of carotid artery subocclusion may be one of the therapeutic options. However, it requires operator's extensive experience and constant monitoring of the patients in peri- and postoperative period.

Keywords: carotid subocclusion, endovascular treatment, CAS

Pancreatic postinflammatory cysts - surgical treatment

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Background: Pancreatic postinflammatory cysts (PPCs) are usually complications of acute (AP) or chronic pancreatitis (CP). In their management, different types of surgery are used.

The aim: The aim of this study is comparison of indications, quantities and outcomes of different types of surgical treatment for PPCs in the period 2012-2022.

Materials and methods: We performed a retrospective analysis of 18 patients (14 men, 4 women) undergoing surgery for PPC, the Department of Digestive Tract Surgery, between January 2012 and December 2022. The mean age of patients was 46Ī12 (27-70). We collected data about risk factors, cyst size, type and complications of treatment.

Results: PPC was most often a complication of AP (n=14, 77,78%), followed by CP (n=1, 5,56%), uncertain (AP and CP overlapped) (n=3, 16,67%). Most common cyst localization was the pancreatic tail and body (n=6, 33.33%). The largest cyst size in computed tomography (CT) was 150 IQR 61 (100-300) mm. The most common treatment was Roux-Y pancreatocystojejunostomy (n=13, 72.22%) followed by marsupialization (3, 16.67%) and external surgical drainage (n=2, 11.11%). Duration of hospitalization was the longest in patients treated by marsupialization followed by external surgical drainage and pancreatocystojejunostomy ((27 IQR 24),(22 IQR 16), (8 IQR 2) days respectively. Complications occurred in 3 (16.67%) patients, all following pancreatocystojejunostomy. In-hospital mortality was 0%.

Conclusions: Roux-Y pancreatocystojejunostomy was the most common type of surgery, and it was associated with the shortest duration of hospitalization. The postoperative morbidity and mortality rate was low.

Keywords: pancreatic pseudocyst, acute pancreatitis, chronic pancreatitis

The results of surgical treatment and long-term survival of patients with ampullary adenocarcinoma

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Background: Ampullary cancer (AC) is a rare neoplasm, accounting for 2-5% of all gastrointestinal cancers. Most malignant ampullary tumors are adenocarcinomas. Treatment of choice in resectable tumors is pancreatoduodenectomy (PD).

The aim: To analyze the outcomes of surgical treatment of ampullary adenocarcinoma, including postoperative complications, 30-day mortality, R0 resections rate and long-term survival.

Materials and methods: Out of 389 patients undergoing PD or total pancreatectomy (TP) between 2016 and 2021, 102 patients (42, 41.2% women and 60, 58.8% men) were diagnosed with ampullary adenocarcinoma. Clinical data, including the perioperative course and histopathological findings, were obtained retrospectively by analyzing the patients' medical records. Patients or family members were interviewed to assess overall and disease-free survival. The Kaplan-Meier method was used for survival analysis.

Results: The most common surgery was PD with different types of digestive tract continuity reconstruction: Traverso (71.6%), Whipple (23.5%) or Flautner (1%). TP was performed in 4 patients (3.9%). Surgical complications occurred in 40 (39.2%) patients, the most common was postoperative pancreatic fistula (POPF) (n=11, 10.8%). In-hospital mortality was 7.8% (n=8), the predominant cause was biliary peritonitis and sepsis secondary to hepatico-jejunal anastomosis leakage (n=3). In 4 (3.9%) patients, distant metastases were diagnosed intraoperatively. The R0 resection rate was 87.3% (n=89). Overall survival was 63.9% (63/97, median 28.5 months, IQR=45).

Conclusions: PD allowed radical tumor resection in most patients with AC. The most common early postoperative complication was POPF. Most patients survived more than 2 years after resection.

Keywords: ampullary cancer, surgery, pancreaticoduodenectomy, complications, survival

Impact of abdominal wall thickness and visceral fat in assessing surgical difficulties-correlational research

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Background: Laparoscopic surgery in obese patients poses additional challenges. It is well known that a high body mass index (BMI) is one of the predicting factors of intraoperative surgical difficulty in abdominal surgery. However, there is a scarcity of research that investigates the influence of adipose tissue distribution on the level of intraoperative difficulties.

The aim: To recognize the patient's anthropometric factors including adipose tissue distribution, which may correlate with the intraoperative difficulty in bariatric surgery.

Materials and methods: We performed prospective correlational research among bariatric patients. The following predictor variables were gathered in the database: Age, gender, BMI, and waist-hip ratio (WHR). Ultrasonography measurements of abdominal wall thickness were performed. The percentage of adipose tissue and Visceral Fat Rating (VFR) were gathered from Tanita's measurements. The outcome variable -the difficulty of surgery was assessed using operative time in relation to the median operating time for the surgeon.

Results: 56 consecutive bariatric patients were included. 21 (37.5%) patients were classified as a group of patients with intraoperative difficulties and 35 (62.5%) were stratified as a group of patients without intraoperative difficulties. There were no statistically significant differences between the two groups in age, BMI, gender, type of obesity, percentage of adipose tissue, and WHR. The abdominal wall fat thickness measurement was significantly lower (22.27 [IQR 11.73, 35.27] vs. 41.57 [IQR 19.77, 55.29], p = 0.028). and VFR was significantly higher (20.75 (SD 7.93) vs.15.76 (SD 6.81), p = 0.019) in patients with intraoperative difficulties compared to patients without intraoperative difficulties.

Conclusions: According to our study, body fat distribution and high visceral obesity rate can be considered more adequate predicting factors for intraoperative difficulties than BMI in the bariatric population.

Keywords: Bariatric Surgery, preoperative variables, BMI, intraoperative technical difficulties, LSG

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Laboratory parameters as a prediction factor for fatal outcome among patients infected with COVID-19

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Background: Since the declaration of COVID-19 as a pandemic, extensive research has been conducted around the world to identify individuals at greatest risk of developing a critical illness. Abnormal levels of laboratory parameters are usually characteristic of a more severe course of the disease. Careful monitoring of these laboratory parameters could help identify patients with a predisposition to greater mortality.

The aim: The aim of this study was to investigate the profile of laboratory parameters in SARS-CoV-2 patients to identify parameters associated with a higher risk of mortality.

Materials and methods: The study was conducted retrospectively by analyzing medical records of 410 patients hospitalized with Covid-19 infection from October 2020 to January 2021. Information about clinical characteristics, as well as laboratory parameters was collected. The collected data was analyzed by descriptive statistics, ROC curves and Cox proportional hazard regression.

Results: Troponin T was found to be the best predictor of mortality with a high specificity of 95.20% and sensitivity of 94.70% (AUC: 0.972). D-dimers also showed high sensitivity and specificity - specificity 85.70%, sensitivity 94.70% (AUC: 0.919). C-reactive protein was found to have a high sensitivity of 94.70%, but a slightly lower specificity of 66.70% (AUC: 0.857). It was found that the level of d-dimers above 1.19 mg/L increases the risk of mortality by 2.9 times, the level of ferritin above 648.13 ng/mL - by 2.6 times, the level of AST above 52 U/L - by 5.8 times, the level of lactate dehydrogenase above 444.5 U/L - 3.5 times, creatinine level above 106.2 umol/L - by 3.2 times, C-reactive protein level above 58.2 mg/L - by 3.2 times, troponin T level above 26.05 pg/mL - by 4.4 times, glucose level above 8.21 mmol/L - by 4.5 times.

Conclusions: By determining the laboratory parameters on admission, it is possible to identify patients of the risk group who have a higher risk of a fatal outcome, which in turn will allow timely prevention of disease progression.

Keywords: mortality, laboratory parameters on admission, SARS-CoV-2

Analysis of the clinical efficacy of omalizumab, benralizumab and mepolizumab in asthma treatment

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Background: Effective biological treatments are used to treat asthma, including monoclonal antibodies: benralizumab against the IL-5 receptor, mepolizumab against IL-5 and omalizumab against IgE. In prior clinical trials, response rates were: 82-83% for omalizumab and 76-77% for mepolizumab.

The aim: Retrospective, single-centre real-life analysis of the effectiveness of biological therapy with omalizumab, benralizumab, mepolizumab in the treatment of severe eosinophilic and/or allergic bronchial asthma

Materials and methods: The effectiveness of bronchial asthma treatment in patients qualified for biological therapy at the Department of Pneumonology of SUM was assessed. Treatment effectiveness criteria include improvement in life quality (AQLQ) and asthma control (ACQ) by at least 0.5 points, reduced exacerbations with a clinical response at least good based on GETE.

Results: 135 patients were qualified for analysis (57 men and 78 women), aged 24 to 84 years old (mean age 54.9). 32 patients (23.7%) were treated with omalizumab, 39 (28.9%) with benralizumab and 64 (47.4%) with mepolizumab. As a result of biological treatment, quality of life and asthma control were improved with a mean AQLQ increase of 1.35 and a mean ACQ reduction of 1.25 with a decrease in exacerbations for omalizumab (100% patients), benralizumab (89% patients), mepolizumab (89% patients). Lack of clinical response was noted in 10 patients (7.4%) of whom 4 were treated with omalizumab (13%), 2 with benralizumab (5%) and 4 with mepolizumab (6%). The reasons for therapy failure include: no improvement of AQLQ, ACQ or GETE parametres and increased presence of exacerbations requiring glucocorticosteroid use.

Conclusions: Biological therapy is effective in the treatment of severe asthma under real-life observation conditions. The efficacy rate was higher than in randomised controlled clinical trials.

Keywords: biological therapy, severe asthma, biologics

Screening gastroscopy in low to moderate cancer prevalence area: a willingness survey

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Background: Esophagogastroduodenoscopy (EGD) mass screening is performed only in high-incidence gastric and esophageal cancer regions such as South Korea and Japan. Poland is considered a moderate gastric cancer (GC) and low esophageal cancer (EC) prevalence area. One-time EGD in searching for precancerous conditions such as atrophic gastritis, and Barrett's esophagus was shown to be potentially effective in low to moderate GC and EC areas. A potential obstacle to the EGD mass screening could be the willingness to undergo this examination.

The aim: The study aimed to assess the potential willingness to undergo one-time screening EGD in searching for precancerous conditions in the moderate upper gastrointestinal cancer risk population.

Materials and methods: A random sample of 304 individuals completed a simple online questionnaire. The data collected were: age, sex, history of EGD, willingness to undergo screening EGD, and the acceptable ratio of the potential benefits and harms of one-time screening EGD.

Results: The majority were willing to undergo screening EGD (266, 85,5%), 209 (68.8%) were female, and 162 (53.3%) had not previously undergone EGD. The median acceptable ratio of potential benefits resulting from detecting a precancerous condition to harms (risk of complications) was 10 (IQR 1–325). Median values were 100 (IQR 10–10000, n=35), 10 (IQR 1–100, n=69), 10 (IQR 5,5–1000, n=60),
10 (IQR 1–100, n=37), 10 (IQR 1–5500, n=28), and 10 (IQR 1–100, n=14) for age intervals 40–44, 45–49, 50–54, 55–59, 60–64, and 65–69 years, respectively. The results showed that individuals who have not undergone EGD before are less willing to undergo EGD vs individuals who have already undergone EGD (n= 162; 38/124 vs n= 142; 6/136, not willing/willing, respectively, $p < 0.001$).

Conclusions: In the age groups of 45–69, the recently reported ratio of potential benefits and harms was 2.8–4.7 times higher than the acceptable ratio in our study. The EGD mass screening could be potentially accepted in individuals between 45 and 69 years of age.

Keywords: EGD, mass-screening, gastric cancer, esophageal cancer

Is metabolic acidosis a risk factor for worse long-term prognosis in patients after kidney transplantation?

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Background: Metabolic acidosis(MA) frequently occurs in patients after kidney transplantation(KTx).Results of both experimental and clinical studies suggest that MA may contribute to faster progression of chronic kidney disease.

The aim: The aim of this clinical study was to examine the relationship between MA and both mortality and renal outcomes in patients after KTx.

Materials and methods: Blood HCO3- was measured in 486 patients(290male;196female) aged 48.2 Ī 12.0 years at least one year after KTx and subsequently were observed during 11 years. MA was defined as the blood HCO3- concentration lower than 22 mmol/L. The endpoints in Kaplan-Meier survival curves analysis were death, initiation of dialysis therapy (DT) or retransplantation(re-KTx) as well as cumulative endpoint of the study i.e. death or initiation of DT. Differences in survival curves were analyzed with log-rank test and were consider as significant when $p<0.05$. Relative risks(RR) were presented with 95% CI.

Results: MA was diagnosed in 57(12%) patients being long-term after KTx. The Kaplan-Meier curves analysis have shown that patients with MA reach endpoints of follow-up earlier ($p=0.002$ for death and $p<0.001$ for dialysis or re-KTx and cumulative endpoint). In patients with MA the risks of starting DT or re-KTx was significantly higher than in patients without MA[RR=2.00(1.42-2.82),$p<0.001$]. In patients with MA the risks of death was significantly higher than in patients without MA[RR=1.61 (1.01-2.55), $p=0.04$]. Risk of cumulative endpoint of the study(death and initiation of DT or re-KTx) was also higher in patients with MA[RR=1.83 (1.49-2.23), $p<0.001$].

Conclusions: 1.MA is an important risk factor for increased mortality and progression of graft failure in kidney transplant patients. 2.The prospective interventional studies with correction of MA in patients prone to allograft nephropathy progression will provide information whether treatment of MA improves the survival of both patients and transplanted kidneys.

Keywords: metabolic acidosis, kidney transplantation, chronic kidney disease,allograft nephropathy progression

The appropriateness of red blood cell transfusions - a retrospective study in a large teaching hospital

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Background: In hemodynamically stable patients, both anemia and red blood cell (RBC) transfusion may be detrimental, hence a decision regarding RBC transfusion should be based on thorough risk–benefit assessment. According to hematology and transfusion medicine organizations, RBC transfusion is indicated when recommended hemoglobin (Hb) triggers are met and symptoms of anemia are present.

The aim: To assess the appropriateness of RBC transfusions in non-bleeding patients at our institution.

Materials and methods: We performed a retrospective analysis of all RBC transfusions performed between January 2022 and July 2022. The appropriateness of RBC transfusions was based on the most recent Association for the Advancement of Blood and Biotherapies (AABB) guidelines and some additional criteria.

Results: The overall incidence of RBC transfusions at our institution was 10.2 per 1000 patient-days. There were 216 (26.1%) RBC units appropriately transfused and 612 (73.9%) RBC units that were transfused with no clear indications. The incidence of appropriate and inappropriate RBC transfusions were 2.6 and 7.5 per 1000 patient-days, respectively. The most frequent clinical situations when RBC transfusion was classified as appropriate were: Hb < 70 g/L plus cognitive problems/headache/dizziness (10.1%), Hb < 60 g/L (5.4%), and Hb < 70 g/L plus dyspnea despite oxygen therapy (4.3%). The most frequent cause of inappropriate RBC transfusions were: no Hb determination pre-RBC transfusion (n = 317) - among these RBC transfused as a second unit in a single-transfusion episode (n = 260), absence of anemia sings/symptoms pre-transfusion (n = 179), and Hb concentration ≥80 g/L (n = 80).

Conclusions: Red blood cell transfusions were evaluated as inappropriate mainly due to multiple-unit transfusion episodes, absence of anemia signs and/or symptoms pre-transfusion, and liberal transfusion triggers. There is still the need to educate physicians on appropriate indications for RBC transfusion in non-bleeding patients.

Keywords: anemia, hemoglobin, indication, patient blood management, red blood cell, transfusion

Retrospective analysis of risk factors and clinical course of alimentary tract polyps in children hospitalised at the Department of Paediatrics, Medical University of Silesia in Katowice - single centre study

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Background: Polyps are defined as protuberances into the lumen above the surrounding alimentary tract mucosa. They may occur sporadically or as part of other syndromes (e.g. FAP). Gastrointestinal polyps are often asymptomatic but may be a cause of bleeding, abdominal pain and anaemia. Moreover, they are found among the paediatric population, even in 1-year-old children.

The aim: The aim of the study was to analyse risk factors and clinical picture of gastrointestinal polyps in children.

Materials and methods: The analysis included 40 patients hospitalised in the Department of Gastroenterology of the Medical University of Silesia in Katowice, between 2014 and 2023 due to gastrointestinal polyps. The analysis included a description of the clinical picture (symptoms, results of laboratory tests), and endoscopic examination including histopathological evaluations. The study group consisted of 19 girls and 21 boys, who were 9.65 ± 4.8 (range: 1-18 years old). Statistical analysis was performed using Statistica 12.0 software. A p-value <0.05 was considered significant.

Results: There were 40 children admitted with polyps to the Gastroenterology Unit during the 9-years observation period. The most common symptoms are abdominal pain (present in 19/40 patients) and rectal bleeding (17/20). The endoscopic examinations revealed that the most common localisation of polyps was the rectum (49%), stomach (19%) and oesophagus (19%). Other localisations were the sigmoid colon (5%), descending colon (5%), transverse colon (5%), and ileocecal valve (2%). Nearly 50% of polyps in the study were the size of 5-9 mm, and 24% of polyps were 10 mm and more. In our study group 25% of polyps were hyperplastic, 11% were tubular adenomas, 7% were juvenile, and 5% inflammatory polyps.

Conclusions: The polyps should be considered in the differential diagnosis of gastrointestinal bleeding and abdominal pain in the paediatric population.

Keywords: polyps, gastroenterology, gastrointestinal haemorrhage, anaemia

Latvian patient outcomes following pulmonary endarterectomy in Riga and Vienna: 2013-2022 longitudinal study

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Background: Chronic thromboembolic pulmonary hypertension (CTEPH) is a life-threatening condition that develops following acute pulmonary embolism. The formation of chronic thromboembolic lesions within the pulmonary arteries leads to progressive pulmonary hypertension and right heart failure. While medical therapy can be effective, pulmonary endarterectomy (PE) is a technically challenging operation. It remains the first-line treatment, but requires experienced specialists.

The aim: The aim of this study is to assess the long-term outcomes of Latvian patients following PE performed in Riga and in expert center in Vienna. We also aim to highlight the importance of international cooperation and multidisciplinary management to improve outcomes for CTEPH patients. With the latest guidelines emphasizing the role of PE in the treatment of CTEPH, our study aims to contribute to the growing body of knowledge and support efforts to improve access to expert care for affected patients.

Materials and methods: Medical histories of 13 patients with PE performed were analysed. Follow-up visits were done to analyse pre and post results of patient heart catheterisation, functional, and hemodynamic tests

Results: Our study analyzed 13 patients (7 males, 6 females) with mean age of 49 Ī 22 years. Mean mPAP at operation was 61.31 Ī 14.41 mmHg, PVR was 10.98 Ī 3.86 WU and mean 6-minute walk test were 267.38 Ī 58.01 m. PE was performed for all patients. Post-operative mPAP decreased on average by 28.67 Ī 18.64 mmHg in patients operated in VUH, and by 7.75 Ī 26.32 mmHg in patients operated in PSCUH, while PVR reduction were 5.67 Ī 5.66 in VUH and 3.71 Ī 5.97 in PSCUH, respectively. Survival rates were similar in both groups, with patient 1, 3, 5, 8-year survival rates at 77%, 77%, 72%, and 57%.

Conclusions: In small populations, it is possible to provide high-quality treatment for CTPH in cooperation with experienced centres at European level. In Latvia, it is necessary to strengthen cooperation with VUH in order to ensure the availability of quality PEA.

Keywords: Chronic thromboembolic pulmonary hypertension, pulmonary endarterectomy

The assessment of association between blood pressure and intraocular pressure in patients with glaucoma

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Background: Glaucoma is a leading cause of blindness worldwide, and both high blood pressure (BP) and intraocular pressure (IOP) have been identified as risk factors for the development and progression of glaucoma. While BP and IOP are distinct physiological measurements, there is evidence to suggest that they may be interrelated in glaucoma pathophysiology.

The aim: The aim of this study is to compare the BP and IOP measurements in patients with glaucoma with these values in healthy students to evaluate the potential relationship between said variables in those two groups.

Materials and methods: A research group consisted of 17 patients (12 women nad 5 men, 34 eyes in total) with glaucoma, aged 43-82. A control group consisted of 25 students (14 women, 11 men, 50 eyes in total) of Medical University of Silesia in Katowice, aged 23-29.
Each person from both groups underwent a blood pressure test and an intraocular pressure of both eyes.

Results: According to our study the average BP was 126,8/83 mmHg and 132,8/80 mmHg respectively for women and men in the control group and 156,6/83 and 150,2/73 mmHg in the research group. Average IOP of the left eye was 18 in a control group and 18 in a research group. Average IOP of the right eye was 17,5 in a student's group and 18,9 in patients with glaucoma.

Conclusions: Taking into consideration the collected data we cannot definitely sate a correlation between BP and IOP in our study group.

Keywords: blood pressure, intraocular pressure, glaucoma, bp, iop

Molecular characterization of Clostridioides difficile strains isolated from faecal stool samples obtained fromin pulmonological patients suffering from antibiotic-associated diarrhea – AAD

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Background: Clostridoides difficile is Gram - positive, spore - forming, anaerobic bacillus which has been the most frequently identified health care–associated infection in Poland for the last few years. In our country - Toxigenic strains of C. difficile ribotype 027 (RT 027) are dominant. The main reason for the development of C. difficile infection (CDI) is the use of antibiotics older age (> 65) and long-term hospitalization. All these factors are present in patients with pulmonary diseases can cause a much more severe course of CDI.

The aim: The aim of this study was to identified C. difficile strains genes encoding GDH (gluD), toxin A/B (tcdA & tcdB) and binary toxin genes (ctdA /ctdB) and gene (ermB) encoding MLSB resistance mechanism.

Materials and methods: Stool samples were collected from 56 pulmonological patients with suspected CDI and cultured using CDIF-chromID and CLO selective media (bioMérieux, Marcy L'Etoile, France) and after anaerobic incubation, growing colonies were identified by using the VITEK2 Compact System (bioMérieux, Marcy L'Etoile, France). Multiplex PCR (mPCR) was performed for detection of genes encoding GDH (gluD), toxin A (tcdA) & toxin B (tcdB) and binary toxin genes (ctdA /ctdB) were detected. To determine the presence of gene (ermB) encoding C.difficile MLS B resistance mechanism, additional PCR was performed.

Results: In all strains gluD- encoding GDH, tcdA/tcdB- encoding toxin A/B genes were detected. The 36/56 of C. difficile strains contain genes of binary toxin cdtA/cdtB and the MLSB resistance gene was identified in 23/56 strains.

Conclusions: All of the C. difficile strains identified were toxin-producing and as many as 36 out of 56 produced binary toxin. It may suggest that those patients were infected with hypervirulent RT027 strain which is responsible for the critical course of CDI. It also confirms the fact that this C. difficile ribotype is dominant in Poland. Most of these strains are multidrugs resistant (for example MLSB) which we confirm in further research.

Keywords: Clostridioides, MLSB resistance, Ribotype027, Multidrugs resistance, CDI, Clostridioides difficile

SESSION
OF DIETETICS AND NUTRITION

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Frequency of consumption of selected foods by people with acne vulgaris

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Background: Acne is a well-known disease entity, affecting adolescents during puberty, but also adults. Factors determining the onset of acne may include genetic predisposition, as well as diet. The Western diet is rich in processed foods with low nutrient density, resulting in a diet that does not provide many of the essential minerals the body needs to function properly.

The aim: The aim of the study was to evaluate the dietary behavior of people with acne vulgaris and assess the severity of acne lesions after consuming selected products.

Materials and methods: The study was conducted via an online, proprietary survey, a link to which was inserted in groups of people struggling with acne on Facebook. 60 people (55 women and 5 men) participated in the survey. The survey was conducted from October 2022 to January 2023.

Results: More than half of those surveyed said their parents had acne. Nearly 91% of the women surveyed said that acne lesions worsen before menstruation. Only 3.3% of the respondents were under the care of a nutritionist, and they were most often treated by a dermatologist. The most common group of products consumed by the respondents were milk and milk products and wheat bread. The least frequently consumed products were: raisins, cornflakes, alcohol, and sodas. Respondents indicated that products such as candy, fast food, salty snacks, sodas, spicy condiments and sweeteners exacerbated acne lesions the most. In contrast, they noticed no change after consuming groats, white rice and pasta made from white flour.

Conclusions: It is important to further educate patients about the effects of diet on skin conditions. It is recommended to limit the following products: dairy products, processed products, products with high GI, and spicy condiments.

Keywords: acne vulgaris, acne, eating behavior

Students' knowledge of selected diet-related diseases and their prevention

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Background: Some of diet-related diseases belong to a group of civilization diseases. They are conditioned by increasing in technological processes and many exogenous factors.

The aim: This study aimed to assess Polish students' knowledge on causes and prevention of selected diet-related diseases.

Materials and methods: The study group consisted of students of Polish universities (N=400). Students were divided into 3 major groups: medical (47.5%; N=190), humanities (27.75%; N=111) and others (24.75%; N=99). As a research tool, an original, anonymous questionnaire was used, which was made available to respondents on-line by Google Form. The study questionnaire included 28 closed questions on four diet-related diseases: obesity, diabetes, hypertension and cancer. For each correct answer, the respondent could get 1 point (total 28 points). The knowledge level of the respondents was scaled as: insufficient ≤ 13 points, sufficient 14-16 points, quite good 17-19 points, good 20-21 points, above good 22-24 points, very good 25-27 points, excellent 28 points. The obtained results were interpreted using MS Excel and Statistica 13.3 programs.

Results: Among all 400 students, the level of knowledge on diet-related diseases was insufficient (X=11.47 points; Me=11 points). Only 49.5% (N=198) of the respondents knew that all four diseases belong to diet-related diseases (including only 64.7% (N=123) of medical, 37.8% (N=42) of humanities and 33.3% (N=33) others (p=0.00001)). As the factors responsible to the greatest extent for the risk of diet-related diseases - only 21.5% (N=86) of respondents answered correctly, indicating exogenous factors (including only 31.6% (N=60) medical, 15.3% (N=17) humanities and 9.1% (N=9) others (p<0.00001)).

Conclusions: Despite the fact that students' knowledge of diet-related diseases was poor, significant differences were found in students' knowledge depending on their field of study. Thus, it is necessary to increase the quality of education in the field of diet-related diseases.

Keywords: students, knowledge, diet-related diseases, prevention

Nutrition myths or scientific facts regarding the knowledge of high school students

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Background: The study explores the prevalence of nutrition myths and stereotypes in society, as well as how a lack of reliable and up-to-date food and nutrition information can lead to inappropriate eating patterns and potentially detrimental health impacts.

The aim: The aim of this paper is to determine if young people are aware of current dietary recommendations or scientific studies on the impact of food on the human body.

Materials and methods: The primary research was conducted using online questionnaires that comprised twenty single-choice questions that highlighted three key questions with the most incorrect answers. The questionnaires were answered by 591 students ranging in age from 14 to 20, with 109 (18.44%) females, 478 (80.88%) males, and 4 (0.68%) refused to divulge their gender.

Results: The questions with the most inaccurate responses were: "Drinking chlorophyll benefits the human body" with 406 (68,70%) wrong answers, "Himalayan salt is healthier than regular salt" with 346 (58,54%) wrong answers, and "Coffee leaches magnesium and dehydrates the organism" with 322 (54,48%) wrong answers.

Conclusions: The incorrect responses imply that students understanding of food and nutrition is out of date and insufficient which could be the outcome of poor nutritional school education and the adoption of unhealthy eating patterns at home. The ability to develop healthy eating habits and comprehend nutrition information is acquired through proper education, as misleading information spread by social media figures can be harmful to young people.

Keywords: myths, nutrition, coffee, salt, chlorophyll, knowledge

Selected lifestyle elements of healthcare specialists working in a shift system

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Background: Irregularity of the work performed, resulting from the specificity of shift work, may contribute to unfavorable changes in the health and behavioral dimension due to a circadian rhythm disorder.

The aim: Analysis of selected lifestyle elements of health care workers and examining the relationship between these aspects and the body weight of the respondents.

Materials and methods: The study involved 185 health care professionals working in shifts (103 with normal and 82 with abnormal body weight). The research tool was an original, anonymous questionnaire. The first part was the metric, and the second part concerned eating behavior and lifestyle. Pearson's chi2, Student's t-test and U-Mann-Whitney's were used to examine the relationship. $P<0.05$ was considered statistically significant.

Results: Most of the respondents admitted that they consume 1-2 snacks during the day, including N=88; 85.4% normal and N=51; 62.2% (p=0.001) with abnormal body weight. Rare consumption of fast-food products declared N=50; 48.5% normal and N=44; 53.7% (p=0.01) abnormal body weight. The largest part of the respondents stated that they do not consume energy drinks in this with normal weight N=38; 36.9% and abnormal weight N=49; 59.7% (p=0.001) of people and do not use psychoactive substances, respectively N=81; 78.6% and N=78; 95.1%, (p=0.02) people. The largest percentage of employees admitted that they spend their free time passively - using electronic devices, including N=38; 36.9% of people with normal and N=33; 40.2% (p=0.001) with abnormal body weight. A significant number of people indicated the excess of duties as the leading stress factor in the workplace - N=111; 26.9% of people.

Conclusions: The lifestyle of healthcare professionals needs to be monitored and awareness of mistakes made through the process of comprehensive education in order to correct them. Many statistically significant correlation between the examined features were found and the body weight of the respondents.

Keywords: lifestyle elements, healthcare specialists, shift system

Assessment of nutritional status of nursing home residents in the Silesian province using the MNA questionnaire

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Background: The percentage of elderly people in the world's population is growing rapidly. Their nutritional status indicates many health-threatening deficiencies. Proper nutrition is important in maintaining health especially among the elderly. The nutritional status of the elderly residing in nursing homes should be monitored to eliminate the consequences of malnutrition, sarcopenia and disorders in the normal functioning of the body. The Mini Nutritional Assessment (MNA) is used to screen for nutritional status. According to ESPEN, it is the most effective tool for screening and assessing the risk of malnutrition in the elderly. A useful indicator for assessing nutritional status is BMI.

The aim: The aim of the study was to assess the nutritional status of nursing home residents based on the MNA scale and BMI.

Materials and methods: The analysis of nutritional status covered 102 people, including 55 (53.9%) women and 47 (46.1%) men. The study was conducted in 4 different cities located in the Silesian province. Age, gender, body height and body weight were taken into account. The Mini Nutritional Assessment scale was used for diagnosis. The obtained results were processed in Microsoft Excel, while statistical analysis was performed in IBM SPSS 29.

Results: The mean age of the subjects was 73.96 years ĪĪ12.65 ($p>0.05$). The mean score of the patient's final evaluation score was 23.69 points ĪĪ2,91; K=23.77 points ĪĪ2,71, M=23.60 points ĪĪ3,15($p>0.05$). This score indicates a borderline between normal nutritional status and at risk of malnutrition. The mean BMI was 27.14 kg/m2 ĪĪ5,42, K=28.06 kg/m2 ĪĪ5,73, M=26.06 kg/m2 ĪĪ4,86. Underweight was found in 3 (2.9%) subjects, normal weight in 35 (34.3%), overweight occurred in 41 (40.2%) subjects, and obesity in 23 (22.5%) ($p>0.05$).

Conclusions: The results of mean age, BMI and final patient assessment are not statistically differentiated by gender. No statistically significant correlation was shown between age and BMI. Higher BMI is associated with higher patient assessment scores.

Keywords: nutritional status assessment, MNA, BMI, normal nutritional status

Community nutrition versus individualization of diet therapy in Care and Treatment Facility

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Background: Nutrition for the elderly has a key role in sustaining patients' well-being. In long-term care facilities diet planning should take into account not only group needs but also the problems resulting from the ageing process, chronic illnesses and co-morbidities.

The aim: The analysis of community nutrition menus in a nursing home and the impact of patients' feeding on their health status.

Materials and methods: The observational studies were performed at the Care and Treatment Facility in Bytom in March-April of 2023. Direct nutritional interviews were conducted in 1/3 of the 60 residents. The interview was supplemented with information from the patients' medical records. The second part of the study was the assessment of the menus over a 3-months period, which were qualitatively measured using Starzynska's point analysis.

Results: The assessment of the menus showed 13.7 points in average. The most frequently recorded mistake in the menus in the Facility was the lack of dietary fibers. It was low presence of raw vegetables, fruits, lack of legumes and coarse grouts. In the terms of co-morbidities most patients suffer from cardiovascular diseases 90,5%, 81% had nervous system problems, 62% suffered metabolic disorders. The most common diseases among patients were hypertension 47,6%, atherosclerosis 42,9%, heart failure and dementia both 42,9% and diabetes 38,1%. The Department does not fully individualize the patient's diet, nor does the diet fully meet the assumptions of the Pyramid of Health.

Conclusions: Rational nutrition, taking into account the Pyramid of Health for the elderly, is a key element in supporting the maintenance of adequate physical condition. The menu offered by the Facility should be improved due to the risk of malnutrition and aggravation of symptoms of co-morbidities and the multi-disease nature of residents in the Facility. What is more, the results were presented to the staff of the facility to improve nutritional care for residents.

Keywords: diet, nursing home, nutrition, long-term care, community nutrition, analysis

Evaluation of iron intake by women aged 19-50

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Background: Adequate dietary iron supply is particularly important in women for the prevention of microcytic anemia. For this purpose, the daily diet should include products rich in iron, such as liver, eggs, spinach, pumpkin seeds.

The aim: The aim of the study was to assess the dietary iron intake of Polish women aged 19-50.

Materials and methods: The study involved 101 women aged 19-50. A proprietary questionnaire was used, which included closed-ended and short-answer questions. The results were compiled on the basis of the IRONIC-FFQ - IRON Intake Calculation - Food Frequency Questionnaire developed by Glabska D., Guzek D., Slzak J., Wlodarek D in 2017. The obtained results were processed in Microsoft Excel 2023.

Results: Adequate dietary intake of iron has been found. The recommended daily intake is 18 mg/day. The average daily iron supply in the women studied was 33.58 mg. 92% of the iron consumed was non-heme iron from plant products, which is absorbed in 2-20%, heme iron accounted for 8%, which is absorbed in 5-35%.

Conclusions: Adequate dietary iron supply can protect women from microcytic anemia. However, the predominance of non-heme iron in the diet may be responsible for poor intestinal absorption.

Keywords: iron, females, heme iron, nonheme iron

Plant adaptogens as natural antioxidants and potential anti-aging agents

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Background: Adaptogens are plant-derived substances, that enhance the body's resistance to harmful factors, such as stress, polluted environment, or pathogens. They prevent or reverse stress-induced changes, without causing side effects or interfering with physiological processes. They are commonly used to improve the condition of people suffering from chronic diseases caused by stress.

The aim: The aim of the study was to evaluate the antioxidant capacity of selected adaptogen water extracts (infusions) and the effect of these extracts on the activity of skin enzymes such as elastase and collagenase.

Materials and methods: Total phenols, phenolic acids and flavonoids content, as well as antioxidant properties using ABTS, DPPH and FRAP methods, were investigated in infusions obtained from Ocimum sanctum, Gynostemma pentaphyllum and Tinospora cordifolia herbs and Astragalus membranaceus, Codonopsis pilosula and Asparagus racemosus roots. Additionally, the effect of the extracts on the activity of elastase and collagenase was examined.

Results: The highest content of phenols and phenolic acids was examined in O. sanctum water extract. This extract showed the strongest antioxidant activity. The highest content of flavonoids was found in the infusion obtained from G. pentaphyllum. The infusion from T. cordifolia was revealed to be a good inhibitor of skin enzymes.

Conclusions: The obtained results indicate that the best anti-aging parameters are possessed by the infusions of O. sanctum (antioxidant activity) and T. cordifolia (inhibition of elastase and collagenase activity). Confirmation of the results acquired in the in the course of the experiment requires further studies, including also in vivo models.

Keywords: adaptogens, phenols, flavonoids, elastase, collagenase, phenolic acids

From green to brown - antioxidant potential of coffee depending on the roasting degree

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Background: Coffee drinks are consumed daily around the world and are known for their health-enhancing properties. Coffee beans are a source rich in antioxidant compounds such as chlorogenic acid, caffeic acid and others, however, the content of these beneficial compounds may change due to the degree of roasting of the coffee.

The aim: The aim of this study was to investigate how the content of phenolic compounds in the brews and antioxidant potential changes depending on the coffee roasting degree as well as on the brewing method.

Materials and methods: The examined coffee beans (Coffea arabica L.) were roasted for a time between 0 minutes, for green coffee and 8 minutes 20 seconds for the darkest roast. The study was conducted on five samples of coffee diversified by the roasting level, starting from green coffee to a very dark roast. The coffee was extracted with two different methods: immersion and pressure (espresso machine). In both brewing methods 10 grams of coffee yielded 100 ml of infusion. Assays such as content of total phenols, total phenolic acids and antioxidative potential using DPPH and FRAP method were performed.

Results: Stronger antioxidant activity and higher total phenols and total phenolic acids was shown by brews made by the immersion method than by the pressure technique. The strongest antioxidant activity, both in DPPH and FRAP method, was shown by infusions of medium-roasted coffees, while the weakest was observed in very dark roasted coffee. The highest amount of total phenolic acids and total phenols was identified in medium-roasted coffees, and the lowest amount in brews from the darkest coffee. The lowest total phenolic acid content was recorded in infusions from the darkest coffee.

Conclusions: The results obtained may indicate that the consumption of immersion brews from medium-roasted coffees is likely to have particularly beneficial antioxidant and health-promoting effects on the human body.

Keywords: antioxidants, coffee, roasting, brews, immersion method, pressure method

Eating behavior and lifestyle changes of newly recruited soldiers in Poland

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Background: Lifestyle, including diet, is fundamental in shaping a healthy and strong body. In addition to uniforms and equipment, it is the military's diet that plays an important role in the proper functioning of the army and military operations.

The aim: The aim of the study was to compare diet and lifestyle among recently recruited soldiers in the period before and after joining the army.

Materials and methods: The study used an original questionnaire, filling it was voluntary and anonymous. Respondents were newly recruited soldiers in Poland. There were 10 women and 39 men. The research was carried from December 2022 to January 2023.

Results: There was no statistically meaningful change in the amount of meals consumed per day. Both before and after joining the military, the largest number of respondents consumed 3 meals per day (42.9%/40.8%). Their time gaps between meals were 3-4 hours.
Respondents most often ate their meals in a canteen (57%, N=28). An increased frequency of snacking between meals after joining the military was declared by 6 people. Soldiers whose physical activity was more than 300 minutes per week were most likely to snack (N=12). After being recruited into the army, a reduced consumption of vegetables and fruit was observed among 33% (N=16) of soldiers, a reduction in salty snacks (16%, N=8) and unsweetened dairy products (N=7). More frequent consumption of energy drinks was reported by 16% of respondents (N=8) and 10% (N=5) started consuming them when they joined the army. 2 people did not consume water at all after joining the military and 17 consumed insufficient amounts of water below 2l. The number of people drinking sweetened drinks several times a week increased by 4. Only 1 person gave up on them.

Conclusions: The subjective assessment of the respondents showed that eating habits deteriorated after joining the military. There was minimal deterioration in dietary intake.

Keywords: nutrition, the military, eating behavior, lifestyle

Use of dietary supplements in the era of the COVID-19 pandemic in Poland

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Background: There has been a growing interest in dietary supplements in Poland for several years. In the era of the covid-19 pandemic, demand for them has increased, mainly to strengthen the immune system. The most commonly consumed supplements included vitamin D and C, magnesium, zinc, selenium, curcumin and probiotics.

The aim: The aim of the study was to evaluate the use of dietary supplements in the era of the COVID-19 pandemic.

Materials and methods: Material: the study group consisted of 189 subjects (79% women and 21% men) aged between 18 and 65 years.
Method: the study used a self-administered, anonymous questionnaire, which was posted on a social networking site from November 2021 to May 2022.
Statistical analysis: results were processed in Excel, Statistica 13, Cramer's V coefficient, Chi2 test was used.

Results: More than half of the women (62.4%) and men (55%) surveyed used dietary supplements during the study period. After the first wave of coronavirus in Poland, there was an increase in supplementation by respondents. By far the largest number of respondents (81.58%) used supplements in the second wave of the pandemic in Poland (autumn 2020). The most frequently used supplements were vit.D (78.8%), vit C (48.3%), magnesium (52.7%) and, among herbs, ginger (34.4% of total respondents).

Conclusions: Women consumed supplements more frequently, showing increased health care during the COVID-19 pandemic. Immune-boosting dietary supplements, including vitamin D, vitamin C, B vitamins, iron, and magnesium, were most popular among respondents during the pandemic.

Keywords: dietary supplements, covid-19 pandemic

Assessment of nutritional knowledge in adults with hypothyroidism

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

Background: Hypothyroidism mainly occurs in women [1, 6, 7, 9, 10, 14]. It is caused by a deficiency of thyroid hormones, i.e. triiodothyronine (T3) and thyroxine (T4), or impaired secretion of TSH from the pituitary gland [3, 10, 13].

The aim: The aim of the study was to assess the nutritional knowledge of adults suffering from hypothyroidism.

Materials and methods: The study included 26 patients over 18 years of age. with hypothyroidism with possible concomitant diseases. The tool of the study was an anonymous survey, which was distributed on online forums associating adult patients with hypothyroidism. Completing the questionnaire was tantamount to agreeing to participate in the study. MS Excel and Statistica 13.1 were used for statistical analysis.
The study began in December 2022 by April 2023

Results: It was shown that mainly women aged 19-50 suffered from hypothyroidism. It was found that it is recommended to eat 4-5 meals a day every 3-4 hours (80%). More than half of the respondents (61.5%) correctly indicated what the carbohydrates should be limited and beneficial high-fiber products and fats (73%), not recommended heat treatment of food (over 50%) in nutrition. Only 38% of people had a knowledge of vologenic substances, and 69% of those surveyed knew about the thyroid effects of goitrogens.

Conclusions: Respondents had a lot of knowledge in the field of nutrition in hypothyroidism, but they need additional information on vologenic substances, as well as elimination and restrictive diets in hypothyroidism.

Keywords: thyroid gland, thyroid disease, hypothyroidism

The state of knowledge of secondary school students about healthy eating

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Background: In modern society, erroneous ways of eating are entrenched. According to the available information, the nutrition model has changed over the last decades. In the 1970s and 1980s, there was no clear pattern of proper nutrition. The 1990s were a veritable explosion of all kinds of fast-food street food and high-sugar processed snacks. In recent years, we have seen a significant increase in the incidence of diet-dependent diseases. Nutrition is one of the environmental factors affecting health. Raising children's and young people's awareness of health-promoting behaviors, including nutrition education, can help reduce the incidence of chronic non-communicable diseases in the future.

The aim: The aim of the study was to assess the state of knowledge of secondary school youth from the Żywiec district on the rules of proper nutrition.

Materials and methods: The research material was collected at the turn of February and March 2023. An online questionnaire (Google Forms) based on a validated KOMPAN questionnaire was used to carry out the study. It consisted of 6 sections, mainly with single-choice questions. The study involved 134 secondary school students from Żywiec county aged 14-22 years, including 80 (59.7%) women and 54 (40.3%) men.

Results: Among the respondents, 58.9% gave an incorrect answer to the question 'Cereal products are enough to eat once a day' believing them to be true, while 46.3% of respondents are convinced that 'Eating moldy bread can cause Salmonella sticks infection' which is not true. As many as 54.5% of people mistakenly believe that 'Protein should be the main source of energy in a proper diet'.

Conclusions: The results of studies show that some young people in the period of childbirth do not have enough knowledge about the rules of proper nutrition, which may result in the development of diet-dependent diseases in the future. The partial lack of basic nutrition knowledge among young people points to the need to intensify efforts towards nutrition education.

Keywords: nutrition, knowledge, consumption, diet, youth

SESSION
OF PHARMACY
AND CLINICAL PHARMACOLOGY

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Establishing the relationship between antiradical activity and water solubility of S-quinazolines

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Work's tutor: Olga Viktorivna Afanasenko, Pharm.D., Associate professor

Background: The pathogenesis of neurodegenerative diseases remains largely unknown, however, imbalances in antioxidant defense and hyperproduction of reactive oxygen species (ROS) are typically present in these patients. This fact became the basis for further study and development of effective antioxidants.

The aim: Investigate the antiradical activity (ARA) of sulfur-containing quinazolines and establish the relationship between their structure and activity through QSAR (quantitative structure-activity relationship) modeling.

Materials and methods: The research examined sulfur-containing quinazoline derivatives with laboratory codes (4-SH-Quin, NKC-135, NKC-153, NKC-187, NKC-150, NKC-112, and NC-109), synthesized at Zaporizhzhia State Medical University. The ARA was determined using the DPPH (2,2-diphenyl-1-picrylhydrazyl) assay, the results were in percent DPPH inhibition. Water solubility was assessed using the SwissADME, which includes various calculation methods (ESOL, Ali, SILICOS-IT), the results were in logarithmic values. All statistical analyses were performed using Microsoft Office Excel v2211, with a significance level of $p<0.05$.

Results: The results of the DPPH test showed that all the studied compounds exhibit ARA, and their values are in the range of 15.7–90.1 %. Statistical analysis was also performed between water solubility and ARA. The values of the coefficients of correlation (R) and determination (R2) were -0.57 and 0.3293 for Ali; -0.77 and 0.5923 for ESOL; -0.97 and 0.9429 for SILICOS-IT. The study showed that compounds with lower solubility values have higher ARA values. The R and R2 values of the SILICOS-IT method are almost close to the maximum value of 1, which indicates its perspective for use.

Conclusions: Studies showed that low water solubility enhances ARA. Optimal water solubility is critical to achieving optimal bioavailability as well as high ARA. Establishing a quantitative relationship can help achieve this balance and allow the development of quinazolines with enhanced antioxidant potential.

Keywords: Antiradical activity, QSAR, Quinazoline, SwissADME, Water solubility

Analysis of the molecular structure of O-propargyl derivatives of galangin and kaempferol

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Background: Galangin and kaempferol are two flavonoids that show significant therapeutic potential in many fields of medicine. Galangin, isolated from the rhizome of Alpinia officinarum, shows, among others, antiviral activity against the EV-A71 virus and antibacterial activity against S. aureus strains. In addition, it has potential in the treatment of chronic diseases, including cancer and osteoporosis. Kaempferol, on the other hand, is a flavonoid found naturally in many plants, and studies have shown that it has potential in the treatment of heart disease, diabetes and cancer. Despite the potentially wide application of these compounds, little research has been devoted to analyzing and describing the actions of their organic derivatives. The probable cause is the lack of a precise analysis of the structure of galangin and kaempferol.

The aim: The aim of our research is to analyze and describe the molecular structure of galangin and kaempferol and their O-propargyl derivatives.

Materials and methods: Molecular structures were analyzed by spectroscopic methods: NMR, HMBC, HSQC, COSY which were acquired on the Bruker Avance 600 spectrometer (Brucker Analytische Messtechnik GmbH, Rheinstetten, Germany).

Results: The complete molecular structures of galangin and kaempferol and their O-propargyl derivatives are described by spectroscopy methods. The NMR analysis show that obtained derivatives of galangin and kaempferol contain two and three propargyl groups respectively. In addition, the analysis of structures was supplemented by the DFT calculation method. The calculated NMR spectra allow to described all carbon atom in the structure of O-propargyl derivatives of galangin and kaempferol.

Conclusions: The NMR technique is useful technique to describe the structure of newly synthesized derivatives.

Keywords: Galangin, Kaempferol, Spectroscopy, Molecular Structure

Effects of tamoxifen therapy of female rats on the expression of neurotransmitters in hippocampal formation

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Work's tutor: Prof. Dr. Susana Isabel Sá (PhD)

Background: Breast cancer is one of the most prevalent cancers in Portugal and Europe, presenting a high rate of morbidity and mortality. Tamoxifen (TAM) is a modulating agent of estrogen receptors (ERs) that has been used for the last years to treat ER-positive breast cancer and to prevent its development. Although being the best therapeutic approach for the pathology, TAM is associated with adverse side effects, including decreased cognitive performance. Studies have shown that increased levels of steroid hormones in female rats promote structural and physiologic variations in the hippocampal formation (HF), leading to improvements in learning and memory. Considering that this mechanism depends on ERs activation and knowing that TAM is a selective modulator of these receptors, enhancing or inhibiting their action, long-term therapies with this drug may hinder the action of steroid hormones on cognitive processes.

The aim: This study aimed to investigate the effects of long-term therapy with TAM on HF-dependent learning and memory mechanisms, as well as its impact on the biochemical plasticity of the HF.

Materials and methods: Young adult (3-month old) female Wistar rats were subjected to a daily dose of 50µl of TAM (5mg/kg/d; p.o.) for three months. Solid and liquid consumption, body weight and estrous cycle were monitored regularly. At the end of the treatment, the animals were anesthetized and sacrificed by intracardiac perfusion with paraformaldehyde. The brains were removed, weighted and sectioned. The sections containing the areas of interest were selected randomly, in a 1/12 sampling, and processed by immunohistochemistry to detect the expression of Calbindin (CB), Calretinin (CR), Neuropeptide Y (NPY) and Parvalbumine (PV) in the HF.

Results: The results showed that administration of TAM induces changes in neuropeptide expression in the hippocampal formation, namely CB, CR, NPY and PV.

Conclusions: Further studies are needed to improve the definition of long-term therapeutic strategies.

Keywords: tamoxifen, breast cancer, estrogen receptor, cognition, hippocampus

Impact of the new ciprofloxacin hybrid compounds on breast cancer cells viability

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Work's tutor: prof. dr. hab. n. farm. Artur Beberok

Background: Breast cancer is the most commonly diagnosed cancer and the leading cause of cancer-related death in females. Triple-negative breast cancer (TNBC) lacks estrogen and progesterone receptors and is characterized by the highest rates of metastatic disease and the poorest overall survival of all breast cancer subtypes. Currently, chemotherapy is the primary established systemic treatment for patients with TNBC. However, the resistance to conventional anti-cancer drugs, the lack of effective targeted therapies encourage intensive research to develop additional and better systemic treatment options for patients with TNBC

The aim: The aim of the study was to determine the effect of the new ciprofloxacin and 1,2,3-triazole hybrid compounds on the viability of breast cancer cells.

Materials and methods: MDA-MB-231 and MCF-7 breast cancer cells were used as an experimental model. Cell viability was determined by WST-1 colorimetric assay. The new ciprofloxacin and 1,2,3-triazole hybrid compounds (HC1, HC2, HC3, HC4) were obtained by chemical synthesis at the Department of Organic Chemistry of the Faculty of Pharmaceutical Sciences in Sosnowiec, SUM.

Results: All the studied compounds, except the compound HC1, exerted high cytotoxic potential in the studied range of concentrations (0-200 ĶM). Moreover, it could be pointed that MCF-7 cells (estrogen-dependent) were more sensitive to the anticancer activity of all the tested substances. In the case of both studied experimental panels the compound HC4 (with p-nitrobenzyl azide substituent) revealed the highest cytotoxic activity.

Conclusions: The obtained results revealed high cytotoxic activity of the new ciprofloxacin and 1,2,3-triazole hybrid compounds. Moreover, the study consist the basis for further in vitro and in vivo studies with the use of the studied compounds as a new treatment strategy for breast cancer.

Keywords: breast cancer, ciprofloxacin, 1,2,3-triazole, hybrid compounds

The use of in silico tools to predict the hepatotoxicity of selected drugs

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Background: Hepatotoxicity is one of the most frequently observed adverse effects resulting from exposure to a xenobiotic. In pharmaceutical research and development it is one of the major reasons for drug withdrawals, clinical failures, and discontinuation of drug candidates. The development of faster and cheaper methods to assess hepatotoxicity that are both more sustainable and more informative is critically needed. The computational methods for predicting drug target interactions and toxicity are often used in discovering a new drug. Several in silico models for potential use in predicting human hepatotoxicity from molecular structure have been described.

The aim: The aim of the study was to predict the hepatotoxicity of selected drugs using in silico tools.

Materials and methods: Publicly available programs for predicting the toxicity of chemical molecules and programs for predicting molecular drug targets were used in the work: ToxProxII, STITCH, SuperTarget, Matador, Dinies, SuperPred,Pharmmapper, SwissTargetPrediction. The sdf and mol structures for the tested molecules were obtained from Drugbank or PubChem server.

Results: Using in silico tools, the hepatotoxicity potential of selected NSAIDs, statins, antibiotics, antiplatelet, antidiabetic drugs and immunosuppressants was investigated. The obtained results allow us to predict the mechanism of hepatotoxicity related to the transport of the drug into the liver cells, biotransformation of the drug, mitochondrial dysfunction or bile metabolism.

Conclusions: The use of in silico tools allows to effectively predict the toxicity of drugs towards hepatocytes and the analysis of its target points allows to determine the probable mechanism of toxicity.

Keywords: In Silico , Computational Toxicology, Organ toxicity, Hepatotoxicity, Liver toxicity

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Difference in the bioelectrical activity of the muscles between the exercise on a crane and a squat

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Background: Weakening of skeletal muscles bioelectrical activity is often a clinical problem. The disorder may affect individual muscles or entire groups. Reduced bioelectrical activity of muscles undermines daily functioning, impedes proper training or leads to body static disfunctions. According to current knowledge, it seems that in the physiotherapy of people with reduced muscle bioelectric activity, multi-joint exercises such as crane exercises and squats are a helpful method.

The aim: The purpose of this study is to evaluate whether there is a difference in skeletal muscle bioelectrical activity between performing crane exercises and doing squats.

Materials and methods: The research group included 15 patients between the ages of 18 and 35. The test took place at the Institute of Physiotherapy of the Jagiellonian University CM from November 2022 to April 2023. Recruitment to the group was done randomly. The study was divided into three parts (A-C). The part A contained the interview to exclude patients with diseases which are connected with muscles activity. The part B included an EMG of rectus femoris, vastus lateralis and medial vastus muscle during crane excercises with the load equal to 60% of the body weight. The part C was a similar EMG while doing squats. All tests were performed using the Ultium measuring device. The results were tabulated and analyzed.

Results: Preliminary studies have shown greater muscle bioelectric activity during squats than crane exercises.

Conclusions: Performing squats is more effective than exercising on a crane in terms of increasing the bioelectrical activity of quadriceps femoris. The subject of the study needs further research.

Keywords: crane excercises, squats, bioelectrical activity, skeletal muscles

Assessment of premature and full-term infants based on the ICF-CY

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Background: The international classification of functioning, disability and health is an essential framework for physiotherapists who assess the level of functioning of adults as well as children. The framework of ICF is a standard for framing, describing, measuring and classifying functioning and disability. This framework allows one to determine the level of functioning and activity of full-term and preterm infants. It is based on four main domains regarding body control.

The aim: The aim of this study is to evaluate the level of functioning for preterm infants in comparison to full-term newborns and to identify significant differences in the four domains of spontaneous activity – posture control, motor skills, dexterity and self-care.

Materials and methods: Five pre-term and five full-term babies were evaluated in terms of four domains of spontaneous activity recommended by ICF.

Results: Preterm babies acquired a lower sum of points in the spontaneous activity assessment which leads to a lower score in the global activity index and the level of functioning for each of four domains.

Conclusions: It is suggested that there is a connection between preterm birth, pregnancy complications and lower level of functioning. Pregnancy complications can affect the child's growth and development. Therefore, it is recommended for young mothers to receive routine antenatal health care to support the child's growth and to achieve higher scores of activities. Children born prematurely show a lower degree of activity and functioning, which makes it necessary for them to be included in the prevention and observation programme focused on motor development.

Keywords: paediatrician, premature babies, full-term newborn, ICF-CY, activity index

How do the type of grip and shoulder position affect the activation level of selected shoulder girdle muscles

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Background: Thanks to scientific advances, strength training has been undergoing rapid, transformative changes in recent years. An increasing number of scientific studies are making it possible to determine more precisely which types of exercise are best suited to this type of activity. Modern EMG technology makes it possible to provide a definitive answer to the question of which exercises lead to the greatest activation of the shoulder girdle muscles, which is undoubtedly important information when planning strength training.

The aim: To test whether the technique of performing a pull-down using a grip lat influences the activation level of individual shoulder girdle muscles:
- biceps brachii,
- latissimus dorsi muscle,
- trapezius.

Materials and methods: grip lat pull down, 20 kg weight, men and women 18 - 25 years of age.
1. Type and width of grip on barbell = pronated grip / supinated grip, wide grip/close grip.
2. Shoulder position= angle between shoulder and rib cage.
3. Determination of starting and finishing positions:

Initial position: Arms set at an appropriate angle for the attempt, hands clasped on the bar in the chosen position.
End position: Bar drawn to chest at sternum height.

Results: There was greater activation of the biceps brachii muscle in both wide shoulder and close shoulder positions.

Conclusions:
1. Contrary to popular beliefs in the world of sport that a wide shoulder position increases the activation of the latissimus dorsi muscle, the study found no significant differences in the work of this muscle in a positions of 0º and 45º.
2. None of the tested positions were shown to have a significant effect on the degree of trapezius activation.
3. It was found that in both wide and close shoulder positions, the activation of the biceps brachii muscle was greater in the supinated grip than the pronated grip, which is particularly seen in the 0º position.

Keywords: grip lat pull down, adductors, flexors, internal rotators of the upper limb, pronated grip, supinate

The influence of external and internal focus on learning motor skills in children with mental disabilities

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Background: Focus of attention (FOA) refers to where the performer pays attention when performing a particular movement. Focusing on the inside of the body while performing the movement is called "Internal FOA", and focusing on the outside of the body is called "External FOA". When teaching new motor skills, we can evoke either internal FOA or external FOA in a child with appropriately communicated instructions, which can affect the child's learning process.

The aim: The aim of the study was to determine whether internal or external focus of attention affects the learning of motor skills in children with mild intellectual disabilities

Materials and methods: The study involved students from one of Krakow's Special School Complexes, aged 8 to 13, with mild intellectual disabilities and without extensive floorball experience. The participants were randomly divided into two groups. The first group was instructed on the rules of floorball with an emphasis on wrist movement and hand position when hitting the ball with the stick (internal FOA group), while the second group was also instructed on the rules of floorball, but with an emphasis on focusing on the exact spot of the stick (coloured - coded) with which to hit the ball (outer FOA group). Then each group had to perform two movement tasks: to shoot at the goal and to guide the ball in a slalom. Accuracy of shots on goal and the time in which the participant covered the slalom were assessed. The collected results were analysed.

Results: An initial analysis of the results showed that children in the External FOA group performed better than children in the Internal FOA group. However, work is still in progress on a thorough analysis of all correlations resulting from the collected data.

Conclusions: Our research shows that instructions that elicit external attention can improve motor learning in children with mild intellectual disabilities, which may improve the effectiveness of their motor activities and exercises.

Keywords: Focus of attention, intellectual disabilities, pediatrics, motor skills, floorball

Gait disorders and their impact on everyday life of patients with Parkinson's disease - preliminary reports

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Background: Gait disturbances are one of the most common disorders in Parkinson's disease (PD). The co-occurring problem of freezing of gait (FOG) affects balance disorders, increasing the risk of falls, which results in reduced physical activity of patients.

The aim: The aim of the study was to assess whether gait disturbances associated with Parkinson's disease affect the daily functioning of patients.

Materials and methods: 32 respondents diagnosed with PD took part in the study (F=11; M=21). Group A consisted of patients on the II° scale Hoehn &Yahr (n=13); group B- III° H&Y (n=19). The tool used for the study was the FOG-Q supplemented with the author's questionnaire, the Baecke questionnaire and the PDQ-39.

Results: FOG occurs in 59% of respondents, 82% of them also fall. The average FOG-Q score of group B is 76,4% higher than in group A. Respondents with FOG scored lower on average in Baecke (n=2,55) compared to those without FOG (n=3,13). In the PDQ-39, group A with FOG scored an average of 3 times more than patients in group A without FOG. In group B, there was no difference in average number of points obtained in the PDQ-39 depending on the presence of FOG.

Conclusions: FOG affects the quality of life of patients in the second stage of PD. The duration of episodes of FOG depends on the severity of the disease. Less physical activity affects the increase in the limitation of patients' independence resulting from gait disorders, regardless of the stage of the disease.

Keywords: Parkinson's disease, gait, FOG, quality of life, physical activity

Manual therapy of selected facial muscles as an effective method of reducing the appearance of facial wrinkles

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Work's tutor: PhD Katarzyna Kubasiak

Background: Aesthetic physiotherapy involves individually selected working techniques and treatments to improve the appearance of the face and body. Modern therapy methods are used in working with postural asymmetry, muscle imbalance and have reference in reducing the appearance of facial wrinkles.

The aim: The aim of this study is to evaluate the effectiveness of trigger point therapy, fascial-muscular therapy, and deep tissue massage applied to decrease the appearance of transverse forehead wrinkles and frown lines, and to eliminate discomfort associated with excessive muscle tension.

Materials and methods: The patients gave their consent to participate in the study. Four women with an age range of 43-55 years participated in the study. After completing the author's questionnaire, the respondents underwent trigger point therapy, musculo-fascial therapy and deep tissue massage of selected facial muscles. Patients evaluated the effects by completing a self-administered questionnaire about the applied therapy, based on the VAS scale, which, among other things, assessed the patients' subjective satisfaction with their appearance before and after the treatment. Changes in facial appearance in photographs taken before and after therapy were assessed.

Results: Patients showed reduced visibility of forehead wrinkles and frown lines.

Conclusions: Aesthetic physiotherapy may be beneficial in reducing the appearance of facial wrinkles, which requires further evaluation in a larger study group, also using available objective assessment techniques. The results of the study may suggest that aesthetic physiotherapy is an effective method for improving facial appearance. However, it is worth remembering that each patient is different and requires an individual approach, so it is important to investigate and diagnose the problem thoroughly. Further studies should be carried out on a larger group of patients to obtain more detailed and objective information on the effectiveness of aesthetic physiotherapy.

Keywords: physiotherapy, wrinkles, facial muscles, aesthetic physiotherapy

The hidden costs of being a musician - the assessment of the frequency and determinants of pain

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Background: Music has accompanied humanity for many centuries. The experience of music is just the end result of many hours of hard work. Achieving success requires a lot of time spent practising. Each instrument requires a specific position from the musician in order to produce melodious sounds. It's often related to pain disorders that impact negatively their careers and activities of daily living.

The aim: Assessment of the frequency of pain in a group of musicians and its selected determinants.

Materials and methods: The study included 281 systematically playing instrumentalists: 132 females (46,98%) and 149 males (53,02%). The average respondent age was 27,72 years. The research tool was the questionnaire adressing basic sociodemographic and related to instrument playing variables, as well as its consequences for health.

Results: 66,90% of all respondents experienced pain. On a scale from 1 to 10 the avarege intensity of pain was 5,05 points. The most common affected areas were cervical (26,60%) and lumbar (19,15%) regions of spine. The gender was a differentiating factor (p=0,0000) - pain occured in 81,06% females and 54,36% males. The intensity of pain was not corelated with age, years invested and average weekly time commited to playing (r<0,3). The 42,35% of respondents does not engage in a regular physical activity and 27,76% does it only once a week. The knowledge of ergonomics and declared frequency of physical activity didn't have impact on intensity of pain.

Conclusions: The occurance of pain among musicians is very common. The presence is individual, not related to years of practice and weekly load of playing. Important part of prevention should be an increase of physical activity.

Keywords: physiotherapy, pain, musicians, instruments

Music - friend or enemy of fast reactions?

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

Background: There is a common phenomenon of listening to music in headphones during everyday activities. In addition to aesthetic and emotional sensations, this can have a direct impact on behavior and reactions including the speed of reaction - which can have various consequences.

The aim: It was decided to examine the impact of listening to music through headphones on the speed of simple reaction and reaction with choice.

Materials and methods: 50 people were examined, they were students of physiotherapy, Silesian Medical University. Music preferences, time and frequency of listening to music were examined in a survey. The experiment consisted of three stages, each stage was carried out at weekly intervals: I- examination of the simple reaction time (Ditrich stick grip test) and choice reaction time (cross apparatus- test 30s) - without sound stimulation; II –same as first but with favorite music at different volume levels; III – same as second but with disliked music.

Results: The cross apparatus recorded learning effect between repeated attempts in each individual case (p=0.0000). The simple reaction time in attempts without music was better than in attempts with favorite as well as disliked music (p=0.0002). There were no such differences in choice reaction time in attempts without music and with favorite music. Choice reaction time in attempts without music was much worse than the one with unliked music (p=0.0000). Response time of men was better than that of women.

Conclusions: Sound stimulating, regardless of music preferences, reduces the time of simple reaction. Paradoxically, listening to dislike music can have a positive impact on the choice reaction time, which may indicate the mechanism of increasing concentration by suppressing negative stimuli. A simple reaction time and choice reaction time are completely different qualitatively abilities. The experiment inspires to further research in this direction, which could have a great importance in terms hearing hygiene and safety.

Keywords: Hand-eye coordination, music, simple reaction, choice reaction.

The impact of weather and circadian rhythm on the functioning of people with Parkinson's disease

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Background: Weather's affected our functioning for ages. Even Hippocrates stressed its impact on functional condition of humans. Meteoropathy (oversensitivity to weather conditions changes) symptoms can especially affect patients suffering from chronic diseases including those with Parkinson's disease (PD). The intensification of motor and non-motor symptoms re the circadian rhythm and weather changes in PD is yet to be thoroughly examined.

The aim: Research on weather and circadian rhythm impact on well-being of patients with Parkinson's disease and PD symptoms.

Materials and methods: The sample consisted of 63 patients with diagnosed PD – 20 men and 43 women (x=67,30 years ±8,73). On average, subjects have been diagnosed for 6,33 years (±5,58). On a Hoehn and Yahr scale 30,16% of respondents were patients in stage 1; 12,70% patients in stage 2; 15,87% patients in stage 3; 33,33% patients in stage 4 and 7,94% patients in stage 5 of PD. The study was conducted in a survey research comprised of basic socio-demographic questions, questions about PD symptoms and the impact of weather and circadian rhythm on those symptoms.

Results: 63% of respondents stated weather impacts the intensity of experienced PD symptoms. Respondents linked the worsening of their functional condition with barometric pressure changes (40%), sudden temperature changes (21%) and cold weather (23%). Negative symptoms intensifying with weather changes include rigidness (35%), motor retardation (30%), sleep disorders (27%), and mood swings (33%). The respondents listed sunny weather (79%) and moderate temperatures (52%) as factors positively impacting their well-being. Weather's impact on symptoms variability changes significantly as PD progresses (r=0,307).

Conclusions: Weather significantly impacts the intensity of experienced symptoms in most people with PD. Its impact on experienced symptoms is stronger as PD progresses. It may be an important premise for the planning of activity and possible alteration of treatment of patients with PD.

Keywords: weather, Parkinson's disease, Biometeorology

Disorders of the musculoskeletal system occurring in dentist based on a survey

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Work's tutor: dr n. o zdr. Grzegorz Onik

Background: Work-related musculoskeletal disorders are frequently resulting from repetitive injuries and tissues overuse. Long-lasting sitting or standing may lead to low back and neck pain, in particular in dentist who maintain forced working position. As dentists perform various manual manoeuvres during job carpal tunnel syndrome may occur.

The aim: Study aim was assessment of quality of life and musculoskeletal disorders in dentists.

Materials and methods: Study included 85 people (68 females and 17 males) with a mean age 36.91 years ± 11.01 years. Mean body mass index of participants was 24.09 kg/m2 ± 3.87 kg/m2. Mean work work experience of the study group was 12.16 years ± 11.00 years. Study was based on survey including: self-prepared questionnaire, WHOQOL-BREF, Neck Disability Index, Oswestry Disability Index and Boston Carpal Tunnel Syndrome Questionnaire. The survey was distributed by website.

Results: In female dentists neck disorders discovered with NDI were aggravated in comparison to males (9,01±6,34 vs. 5,82 ± 5,52; p = 0,02). ODI and BCTQ results didn't differ between males and females. Quality of life did not differ between males and females. Lateralization was a factor determining the somatic and environmental domains in quality of life.

Conclusions: In dentists occupationally determined quality of life didn't differ between sexes. In females neck disorders are more significant than in males. Dentists who took part in the study didn't present symptoms of carpal tunnel syndrome.

Keywords: dentists, carpal, tunnel syndrome (CTS), questionnaire, dysfunction

The problem of kinesiophobia in overweight and obese people

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Work's tutor: Dr hab n. o zdr. Andrzej Knapik, prof. SUM

Background: Overweight and obesity are a global health problem. The World Health Organisation (WHO) estimates that approximately 1.6 billion adults are overweight and 400 million people are obese. An important part of fight against excess body weight is physical activity. Kinesiophobia, defined as a fear of movement, can affect physical activity. The presence of kinesiophobia in individuals with a BMI above normal may cause an passivity to movement and hinder weight reducing.

The aim: The aim of this study was to assess the prevalence of kinesiophobia, its severity and its association with physical activity among people struggling with overweight and obesity.

Materials and methods: 105 subjects were studied, including 36 men (x=46 years ĪĪ 12.88) and 69 women (x=45 years ĪĪ 14.11). 58 % of the respondents were found to be overweight, 30% were found to be first degree obese and 11% were found to be second degree obese. The research tool was a self-administred survey that included questions on basic socio-demographic data, the Tampa Kinesiophobia Scale (TSK) and the SEWL Physical Activity Questionnaire.

Results: In the study group, the mean TSK score was 37 points (Ī8.93). In qualitative terms, where the result was above 37 points, the problem of kinesiophobia occurred in 54% of respondents. The SEWL index in the study group was low and amounted to x=7.91 (Ī1.23). Significantly lower level of kinesiophobia was observed in people practicing sports than people who do not practice sports (p=0,0015).

Conclusions: Among people with excessive body weight, the problem of kinesiophobia is universal - applies to more than half of the respondents. Physical activity is associated with the level of kinesiophobia, as people declaring practicing sports showed less fear of movement. The health aspects require psychological interventions to reduce kinesiophobia, which would help to increase the level of physical activity of people who are overweight or obese.

Keywords: Kinesiophobia, overweight, obesity, physical activity

Active Rehab Foundation's impact on spinal cord injury patients' quality of life

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Background: Spinal cord injury (SCI) affects many people in Poland yearly, causing limitations in daily functioning that can reduce the quality of life. The Active Rehabilitation Foundation (FAR) supports individuals with SCI to achieve the highest mobility possible.

The aim: The study aimed to assess the quality of life of individuals with SCI who received support from FAR. The analysis considered the impact of physical activity on independence, the height of the spinal cord injury, and the educational activities of FAR to improve the physical, psychological, social, and environmental well-being of individuals with SCI.

Materials and methods: The study included 54 beneficiaries of FAR aged 17 to 61 years old. The research tools used were proprietary and WHOQOL-Bref questionnaires, and responses were collected electronically and during FAR camps.

Results: Respondents' overall assessment of the quality of life was an average of 3.65 ī 0.89, and health status was 3.20 ī 0.96. Physically active individuals rated their quality of life significantly higher than non-exercisers, and those with paraplegia rated their quality of life significantly higher than those with tetraplegia. In addition, 79.26% of the respondents reported increased knowledge and awareness after attending educational lectures during FAR camps.

Conclusions: The study found an average quality of life among individuals with SCI, with physically active individuals reporting higher quality of life than non-exercisers. Respondents with paraplegia rated their quality of life significantly higher than those with tetraplegia. Educational lectures during FAR camps improved the knowledge and awareness of individuals with SCI.

Keywords: Active Rehabilitation Foundation, spinal cord injury, quality of life

Performance in activities of daily living before and after rehabilitation in a group of elderly patients

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Work's tutor: dr n. med. Edyta Matusik

Background: Disability among elderly patients is a complex and highly dynamic process, with important chances for recovery and frequent transitions between states of disability. In this group of patients the maintenance or restoration of the ability to independent performance of activities of daily living such as walking, dressing or using a toilet is crucial.

The aim: The study aimed to assess the influence of complex rehabilitation on performance in activities of daily living in older persons.

Materials and methods: The study was conducted among 57 patients: 43 women and 14 men, aged 65 or older, the mean age was 77±6. The participants were assessed using the Barthel Index of independence, before and after a complex, ambulatory rehabilitation, between March 2021 and December 2022. The Student's t-test for dependent groups was used for the analysis.

Results: The conducted analysis showed that the average Barthel Scale score after rehabilitation was significantly higher than the initial score: 72.11 vs 62.54 points ($p < 0.001$). In between the ten variables addressed in the Barthel Scale, seven increased: help needed with feeding: 7.45 to 8.07 ($p < 0.01$), help needed with transfers 7.10 to 10.35 ($p < 0.001$), help needed with grooming 3.86 to 4.39 ($p < 0.05$), help needed with toilet use 6.22 to 7.19 ($p < 0.001$), help needed with bathing 1.49 to 2.98 ($p < 0.001$), help needed with walking 8.77 to 10.18 ($p < 0.001$) and help needed with dressing 7.37 to 8.07 ($p < 0.05$). There were no significant changes in help needed with climbing stairs, faecal incontinence and urinary incontinence.

Conclusions: Rehabilitation in a group of elderly patients is effective and can decrease dependency on other people.

Keywords: Barthel Scale; rehabilitation; elderly patients

SESSION
OF ONCOLOGY,
NUCLEAR MEDICINE
AND RADIOTHERAPY

Polskie Towarzystwo Radioterapii Onkologicznej

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Protein-mineral nanoplates with high cytotoxicity on colon cancer cell culture

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Background: Cytochrome c (cytC) is mitochondrial haemoproteid, which has a key role in the intrinsic pathway of apoptosis. This genetically programmed cell death is intracellular cascade of irreversible biochemical reactions, which causes minimal damage to surrounding tissues (unlike necrosis). However, in tumor cells, apoptosis is blocked due to the inability of their mitochondria to release cytC. Therefore, the apoptosis can be initiated by the introduction of exogenous cytC, using the capability of cancer cells to phagocytize extracellular colloid particles with submicron size in contrast to normal cells (apart from these of immune csystem). We use the mineral montmorillonite (MM) which is permitted in the human medicine and is suitable as drug carrier because of its large adsorption capacity determined by the half-micrometer size and 1-nanometer thickness of its monoplates.

The aim: To investigate the cytotoxicity of cytC-MM nanoparticles on colon cancer cell culture and their physicochemical properties as a function of cytC concentration.

Materials and methods: In our study we employed microelectrophoresis, static and electric light scattering to determine the electrophoretic mobility, mass increment of MM monoplates at cytC adsorption, adsorbed/free ratio, number of adsorbed cytC globules per one MM monoplate, concentration of cytC-MM composite particles. Additionally, the cytotoxic effect of cytC-MM was measured on colon cancer cell culture.

Results: Separately, CytC solution and MM suspension had no cytotoxicity on the cancer cells. On the contrary, the composite cytC-MM nanoparticles killed 97% of the cells after 96 h treatment. It seems interesting, that the cytotoxicity depended nonlinearly on the concentration of cytC in the cytC-MM suspension, but linearly on the logarithm of this concentration.

Conclusions: Our in vitro experiments demonstrate that cytC-MM composite nanoplates have potential application in anticancer treatment of superficial neoplasms of the skin and the gastro-intestinal system.

Keywords: Cytochrome c, Cancer, Apoptosis; Cytotoxicity; Nanoparticles; Montmorillonite

Harmonization of cytogenetic and molecular methods to track a rare but clinically important aneuploidy

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Work's tutor: dr hab. n. med. Monika Lejman

Background: Hypodiploidy is one of the most unfavorable genetic prognostic factors in B-cell precursor acute lymphoblastic leukemia (BCP ALL). Such patients are early high-risk and require intensified treatment to achieve remission.

The aim: To present various genetic diagnostic methods for identifying patients with BCP ALL and hypodiploidy

Materials and methods: A total of 250 patients with newly diagnosed BCP ALL, treated in Polish pediatric hematology centers, were included in the study. GTG band staining and FISH (fluorescent in situ hybridization) tests were performed using molecular probes *BCR/ABL1*, *KMT2A*, *ETV6/RUNX1*, *TCF3* (Vysis, Abbott Molecular, Illinois, USA). Incidence of *IKZF1*^{plus} status was performed using CytoScan HD array (ThermoFisher) without rearrangements *BCR::ABL1*, *KMT2A*, *ETV6::RUNX1* and *TCF3*.

Results: Hypodiploid karyotype were identified in three patients. The first patient had a somatic karyotype indicating an abnormal hypodiploid clone 35, X,-Y,-2,-3,-?4,-?10,-12,-13,-15,-16,-17,-?20[9]/46,XY[4]. A microarray test confirmed this result: arr[GRCh37](2-4,7,12,13,15-17,20)x1[0.3]. The second patient had two abnormal clones, hypo- and hyperdiploid 26,X,+?X,+14,+21[7]/52,XX,+X,+?X,+14,+14,+21,+21[13]/46,XX[36]. The microarray test indicated only a hyperdiploid clone but not a typical arr[GRCh37](X)x4,(1-13)x2 hmz,(14)x3,(15-20)x2 hmz,(21)x4,(22)x2 hmz. The third patient had 65~67<3n>,XX,+1,-3,+4,-5,+6,-7,+8,-9,+10,-13,+14,-15,-16,-17,-18,-19,-20,+21,+22,+mar1,+mar2[14]/46,XX[1].ish der(?)t(X;?)(wcpX+),der(?)t(X;?)(wcpX+)[4]. In this case, the microarray test revealed a masked hypodiploid clone arr[GRCh37](X)x1~2 hmz,(1)x2~3,(3)x1~2 hmz,(4)x2~3,(7)x1~2 hmz,(8)x2~3 hmz,(9,13,15-20)x1~2 hmz, (21,22)x2~3. Sequencing of TP53 was performed. The first and third patient had a pathogenic mutation TP53(NM_001276760.2):c.799C>T (p.Arg267Ter).

Conclusions: The harmonization of different diagnostic methods has made it possible to identify genetic prognostic factors that determine further clinical management.

Keywords: hypodiploidy, genetic prognostic factors, BCP ALL

Hiperbaric oxygen therapy (HBOT) as a complementary strategy in glioma treatment - in vitro study

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Work's tutor: dr n. med. Anna Bielecka-Wajdman

Background: Hypoxia is a hallmark of glioma (GBM) that is the most aggressive cancer of the central nervous system. Intratumor hypoxia favours its malignant phenotype manifested by radio/chemio resistance, inhibition of immunological anti-glioma response, stimulation of cells migration, support of glioma stem cells and pathological angiogenesis. In consequence, hypoxia seems to be an attractive target for non invasive support for GBM therapy. However, up to now, an influence of HBOT on GBM is still controversial.

The aim: This in vitro study aimed to assess the potential effect of HBOT on hypoxia-induced malignant features of three human GBM cell lines.

Materials and methods: Experiments were conducted on three human GBM cell lines (1) commercial T98G, (2) de novo patient derived HROG02 and (3) HROG17 recurrent glioma cell line. Cells were cultured in hypoxic conditions (HypoxyLab) that reflected intratumor hypoxia (2.5%) and then were placed in hyperbaric oxygen chamber or exposed to ionizing radiation (10Gy). Some cellular parameters were analyzed: mitochondrial activity/cell vitality (MTT), membrane integrity (PI), mitotic potential (Hoechst staining), mitochondrial membrane potential (Mitotracker), cell migration (wound healing assay), HIF 1 alfa expression and MMP-2,9,14 expression (PCR).

Results: We observed delayed and prolonged over time anti-glioma effect of HBOT for most of the tested parameters. However, the potency of HBOT on the studied glioma cell lines was different and it also was dependent on the number of sessions and the time point when the analyzes were performed (time elapsed since the last incubation in hiperbaric chamber).

Conclusions: HBOT needs further research because as non invasive therapy may become an important part of GBM treatment reducing its invasive potential and thereby, improving effects of standard therapy applied nowadays.

Keywords: HBOT, glioma, hypoxia, hiperbaric chamber, complementary therapy

Extra-nodal head and neck non-Hodgkin lymphoma - a retrospective analysis of clinical outcome

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Work's tutor: dr n. med. Karolina Chromik, prof dr. hab. n. med Grzegorz Helbig

Background: Head and neck area remains a common location of extra-nodal non-Hodgkin lymphomas but their clinical characteristics and prognosis is not well established.

The aim: The aim of the study was to provide data on clinical outcome of patients who were diagnosed with lymphomas of head and neck area.

Materials and methods: Retrospective single-center observational study of 33 patients with H&N lymphomas treated in the Department of Hematology and Bone Marrow Transplantation in Katowice in years 2018-2022.

Results: Twenty one male and twelve female at median age at diagnosis of 65 years (range 29-89) were included in this analysis. Histologically, the following lymphomas were diagnosed: diffuse large B-cell lymphoma (DLBCL, n=14), mantle cell lymphoma (MCL, n=6), marginal zone lymphoma (MZL, n=5), follicular lymphoma (FL, n=3), peripheral T-cell lympho-ma (PTCL-NOS, n=1), Burkitt's lymphoma (BL, n=1), plasmablastic lymphoma (PBL, n=1), small lymphocytic lymphoma (SLL, n=1) and primary cutaneous follicular lymphoma (PCFCL, n=1). Main locations of lymphomas were as follows: tonsils (40%), nose and sinus area (18%), salivary glands (18%), tongue (15%), and orbit (9%). Chemotherapy +/- anti-CD 20 antibody as a first-line treatment was administered in 31 patients and 2 patients did not require any therapy. Additionally, 4 patients received radiotherapy. After first-line treatment, twenty-one patients achieved complete response (CR), 4 - partial remission (PR), 6 presented with progressive disease (PD). 3 patients required autologous hematopoietic stem cell transplantation.

Conclusions: Among the analyzed patients, extra-nodal H&N lymphomas remain a heterogeneous group with a variable clinical manifestation, with aggressive DLBCL being the most common histological type.

Keywords: head and neck, lymphomas, extra-nodal localization, chemotheraphy

Clinical prognostic factors for hepatocellular carcinoma

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Background: Hepatocellular carcinoma (HCC) is the most common type of primary liver cancer and is associated with a high mortality rate. The prognosis of HCC is influenced by various clinical factors. Understanding the clinical prognostic factors of HCC is crucial for determining treatment and predicting patient outcomes.

The aim: To prove that clinical and laboratory indicators, such as age, gender, AFP level, tumor spread, number of nodes, NLR, PLR, ANRI, APRI, and ALRI, can be used as prognostic factors for predicting overall survival(OS) of HCC patients.

Materials and methods: Retrospectively, clinical data of HCC patients as well as laboratory indicators (AFP,NLR,PLR,ANRI,ALRI,APRI) and impact on overall survival were analysed.

Results: This study included 56 patients diagnosed with HCC who were treated with one of the local therapy methods - transarterial chemoembolization or surgical resection. Using Cox regression model was found that pre-therapy AFP(p=0.003), NLR(p=0.031), number of nodules(p=0.035), age(p=0.041), APRI(p=0.034), and type of therapy(p=0.032) influenced 1-year OS in HCC patients. Using Kaplan-Meier method was found that the mOS in patients with T1 HCC was 71 month(95% CI 41.8-100.2), T2 - 32 months(95% CI 21.6-42.4), T3 - 9 months(95% CI 6.7-11.3) and T4 - 10 months(95% CI 6.9-13.0)(p<0.05). The mOS for patients with solitary HCC was 40 months(95% CI 15.0-64.9), for patients with multifocal HCC, it was 10 months (95% CI 2.9-17.1)(p<0.05). Patients with preoperative AFP <107 IU/ml had an mOS of 32 months(95% CI 20.0-43.9), but patients with preoperative AFP levels ≥107 IU/ml had an mOS of 6 months(95% CI 0.0-12.8) (p<0.01). Patients with NLR ≤1.81 had an mOS of 48 months(95% CI 26.5-69.5), while patients with NLR >1.81 had an mOS of 11 months (95% CI 8.2-13.8)(p=0.02).

Conclusions: Pre-therapy AFP, NLR, number of nodules, age, APRI, and type of therapy are prognostic indicators that influence 1-year overall survival in patients with HCC and can be used for predicting the survival of HCC patients.

Keywords: hepatocellular carcinoma, prognostic factors.

Postoperative chemoradiotherapy in sigmoid colon and sigmoid-rectal fold cancers patients

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Background: The management of majority of colorectal cancers (CRC) does not include radiotherapy, except for rectal cancer. Neo- or adjuvant chemotherapy is the standard of care in majority of the patients requiring additional treatment. However, the improving technology might reduce the treatment toxicity, and facilitate the use of radiotherapy in other CRCs.

The aim: The aim of this study was to present the institutional experience with adjuvant chemoradiotherapy (CRT) of sigmoid colon and sigmoid-rectal fold cancer patients, and assess the clinical outcomes and toxicity.

Materials and methods: We retrospectively included all patients with sigmoid colon or sigmoid-rectal fold adenocarcinoma treated between 2013 – 2015 with adjuvant CRT. Patients diagnosed with other subtype of CRC, metastatic disease, or treated with palliative intent were excluded from the study.

Results: 58 patients (25 female) in a median age of 64 years (IQR=72-58) were included in the study. The majority presented with clinical stage T3N0M0 (74%) and histopathological grade G2 (71%). The 5-year overall survival was 79%. The disease progression was showed in 33% of the patients in the 5-year observation. The liver was the most frequent site of metastases. The margin R1 was positive in 9% of them, R2 in 2%. Nobody had local recurrences. The only grade 4 adverse effect (AE) was neutropenia in 1 patient (2%). There were four grade 3 AEs, 7% of them with diarrhoea and nausea respectively. The most common grade 2 AEs included diarrhoea (19% of patients) and neutropenia (7%). 47% of patients did not develop any adverse effects. In total, 24 of them developed slight or medium AEs (21% had only grade 1 AEs).

Conclusions: Our findings suggest that postoperative CRT could be a viable option for selected advanced sigmoid and sigmo-rectal cancer patients. Both clinical outcomes and toxicity are promising, and the rate of serious AEs is relatively low. Prospective randomised trials are necessary to assess clinical benefits of adjuvant CRT compared to the standard of care.

Keywords: Adjuvant chemoradiotherapy, Colorectal cancer, Sigmoid-rectal fold cancer, Clinical outcomes

SESSION
OF ORTHOPEDICS
AND TRAUMATOLOGY

Oddział Śląski
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Effect of restricted blood flow on the bioelectrical activity of the quadriceps femoris during squat exercise

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Work's tutor: MD. Grzegorz Frankowski

Background: Abnormalities in the bioelectrical activity of skeletal muscles can result from systemic diseases or accompany overload or injury. This means that the stated problem is often encountered in physiotherapy practice. Reduced bioelectrical activity of muscles undermines daily functioning or leads to body static disfunctions. Current medical knowledge allows us to conclude that a helpful method of rehabilitation in the described condition can be training with restricted blood flow.

The aim: The purpose of this study was to examine how restricted blood flow training affects the bioelectrical activity of the quadriceps femoris during the squat exercise

Materials and methods: The research group included 15 patients between the ages of 18 and 35. The test took place at the Institute of Physiotherapy of the Jagiellonian University CM from November 2022 to April 2023. Recruitment to the group was done randomly. The study was divided into three parts (A-C). The part A contained the interview to exclude patients with diseases which are connected with muscles activity. The part B included an EMG of rectus femoris, vastus lateralis and medial vastus muscle during squat exercise in three series (30-15-15 repetitions). The part C was a similar EMG while doing squats with restricted blood flow. All tests were performed using the Ultium measuring device. The results were tabulated and analyzed.

Results: Preliminary studies have shown that training with restricted blood flow increases the bioelectric activity of the quadriceps muscle compared to the regular squats.

Conclusions: Performing squats with restricted blood flow is more effective than with normal blood flow in terms of increasing the bioelectrical activity of quadriceps femoris. The subject of the study needs further research.

Keywords: restricted blood flow, skeletal muscles, bioelectrical activity

Evaluation of gait parameters in patients after tarsal sinus blockade of the symptomatic flat-valgus foot

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Work's tutor: dr hab. n. med. Piotr Morasiewicz, prof. UO

Background: Flat-valgus foot is a common deformity of the skeletal system in children. When there is no discomfort due to flat-valgus foot, treatment is not required. Symptomatic flat-valgus foot can cause pain, problems with wearing footwear, limping, limitation of physical activity and gait disturbance. In the case of failure of conservative treatment, various surgical techniques are used to treat symptomatic flat-valgus foot, such as screws locked in the calcaneus, tendon extensions, tendon transfers, removable implants inserted into the tarsal sinus, osteotomies of the talus or calcaneus and arthrodeses. In available publications there are no studies which evaluate the use of the Spherus screw in the treatment of symptomatic flat-valgus foot.

The aim: Analysis of selected gait parameters in patients after treatment of flat-valgus foot with the tarsal sinus blockade using the Spherus screw.

Materials and methods: A study was conducted on a sample of 23 children after surgical correction of symptomatic flat-valgus foot. In the study, the G-SENSOR (BTS Bioengineering) device was used to assess gait in children, using the WALK protocol. During the study, measurement of the following parameters was carried out: stride length, duration of the gait cycle, duration of the transfer phase, duration of the single and double support phases.

Results: No statistically significant differences were observed in the comparison of selected gait parameters, except stride length differences (%) 48.84Ī3.74 vs. 51.15Ī3.74 ($p<0.05$), between operated limb compared to the healthy limb.

Conclusions: The results obtained in the study indicate the effectiveness of flat-valgus foot correction using the Spherus screw. The correct gait parameters of the operated limb were recorded.

Keywords: flat-valgus foot, gait parameters, tarsal sinus blockade, Spherus screw, G-Sensor, wearable sensors

The analysis of the number of Kirschner wires in relation to the Gartland score scale within children

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Work's tutor: dr hab. n. med. Ryszard Tomaszewski

Background: Supracondylar humerus fracture is a condition located in the distal part of the humerus just above the elbow joint. This type of fracture can co-occur with the fracture of the radius and/or ulna, which is called a floating elbow. Gartland classification is a clinically useful system used to classify the severity of supracondylar humerus fracture and to predict future neurovascular complications.

The aim: The aim of this study is to find correlation between the number of Kirschner wires and the severity of the fracture determined by Gartland score scale, within patients, who had supracondylar fracture of humerus alone, as well as within a group of patients suffering from the floating elbow.

Materials and methods: The retrospective study involves a group of over 400 paediatric patients that have been suffering from supracondylar fracture of humerus and have been hospitalized in Trauma and Orthopedic Surgery Department at Silesian Children Health Centre in Katowice since 2004. Most patients were treated with either closed or open reposition, using various amount of Kirschner wires. A group of 16 patients had an additional fracture of forearm bones, which is an injury of a floating elbow. Main results of the work for Spearman's rank correlation were obtained using cor.test function from the stats R package.

Results: There is a statistically significant correlation (p-value<0.05 for the Spearman's coefficient) between the number of Kirchner wires and Gartland scale within patients with supracondylar fracture, however this type of correlation cannot be proven to exist within patients with floating elbow. Kirscher wires are used in higher amount within patients with floating elbow than in general, especially when the Gartland score scale is 2 or 3.

Conclusions: The higher Gartland scale is, the more Kirscher wires need to be used for the stabilization of supracondylar fracture of humerus in general and within patients without additional fracture of forearm bones.

Keywords: suprascondylar humerus fracture, injuries, floating elbow

Evaluation of the change in CRP value in the first 4 days after hip and knee replacement surgery as a risk factor

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Background: Infection after hip and knee replacement surgery is a serious postoperative complication. Therefore, the results of the CRP test are important in postoperative monitoring and detection of infection risk.

The aim: An attempt was made to evaluate CRP values for the next 4 days after surgery in patients undergoing total hip and knee replacement.

Materials and methods: The clinical material includes 100 patients who underwent cementless total hip arthroplasty and cemented CR knee one with a minimum follow-up period of 6 months. The age of the patients was range from 39-78 years. All patients received standard antibiotic prophylaxis for 24 hours after surgery. All patients underwent a CRP test on the day of admission and for the next 4 days after surgery. Wound healing was assessed based on data collected during routine check-ups. The minimum period of postoperative observation was 6 months after the procedure. The Shapiro Wilk test (assessment of normal distribution), Student's T, Wilcoxon's and Mann Whithney's tests were used for data analysis. The critical value was $p<0.05$.

Results: The conducted statistical analysis showed no significant differences in the CRP values between men and women between the respective measurement days (Student's T and Mann-Whithney's U; $p> 0.05$). On average, the CRP value between the preoperative examination (3.7 ± 2.75) and on the first day after the procedure (85.4 ± 42.4) increased significantly by 23.1 times. On the second day CRP (184.2 ± 66.1) increased by 2.2 times compared to the first day, on the third day (178.3 ± 58.4) it decreased compared to the second day by 3.3%, and on the fourth day (145.2 ± 48.9) it decreased by 18.5% compared to day 3. All recorded changes between the compared test results were statistically significant (Wilcoxon test; $p<0.05$).

Conclusions: CRP monitoring in the first four days after total hip and knee arthroplasty, regardless of gender, is a valuable indicator of the risk of developing postoperative infection in the first 6 months after surgery.

Keywords: Total Knee Arthroplasty, Total Hip Arthroplasty, CRP, Recovery Time

Analysis of ACL surgical treatment and postoperative outcome: retrospective study

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Work's tutor: Paweł Kosior MD

Background: The Anterior Cruciate Ligament (ACL) is located behind the kneecap (patella) and connects the thigh bone (femur) to the shin bone (tibia). Stabilizing the knee joint is the primary responsibility of the ACL. The ACL is the most injured ligament of the four located in the knee.

The aim: The aim of the study was to analyze the methods of surgical fixation of ACL rupture and to evaluate the treatment outcome in order to understand the different methods of treatment in restoring the correct morphology and to analyze the mechanism of anterior cruciate ligament (ACL) injuries.

Materials and methods: A retrospective review of documentation was performed to extract patients with ACL injury treated at the Department of Orthopedics and Traumatology of the Upper Silesian Medical Center in Katowice between 2021-2022. Operation technique, early outcomes, symptoms, and injury details were assessed. The Knee injury and Osteoarthritis Outcome Score (KOOS) was used to evaluate patients' condition in later follow-up (1 to 2 years).

Results: The study group consisted of 25 cases of 25 adult patients, men (56%) and women (44%). The mean age was 34,4 years. Instability (n=17, 68%) and pain (n=16, 64%) were the most common symptoms of the ACL injury. All patients underwent surgery (n=25, 100%) Out of 25 ACL injuries 88% (n=22) were surgically treated using hamstring, 8% (n=2) by internal bracing and 4% (n=1) with rectus femoris. 20 cases (80%) were associated with medial meniscus, 9 (36%) with lateral meniscus and 3 (12%) with MCL injury. Improvement was seen among 92% of patients. 13 (52%) patients were evaluated by The Knee injury and Osteoarthritis Outcome Score (KOOS).

Conclusions: Most often ACL's injury occurs with meniscus damage. Surgical treatment is a safe and effective method for ACL injuries significantly improving patients' condition

Keywords: anterior cruciate ligament reconstruction anatomy rehabilitation review

SESSION
OF GYNECOLOGY
AND OBSTETRICS

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Prevalence of STIs among Pregnant women in peri-urban health centers Blantyre Malawi

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Work's tutor: Dr. Roselyn Chipojola PhD

Background: STIs remain a problem of public health importance. Pregnant women have increased risk of contracting STIs, which have potential to cause significant maternal and neonatal morbidity. STIs are associated with adverse pregnant outcomes: spontaneous abortions, stillbirths, prematurity, low birth-weight, endometritis and various sequelae in the surviving neonates.

The aim: Tdetermine STIs prevalence among pregnant women visiting antenatal care clinic in peri-urban health centers in Blantyre, Malawi and to ascertain factors contributing to the determined prevalence. Estimated prevalence would alarm and cause provision of timely interventions and management before the STIs cause the complications in many women.Although a good number of studies have been done regarding the impact or prevalence of STIs in context of pregnant women, there is still limited statistical data clearly demonstrating STIs prevalence among pregnant women in our local setting hence we determined carrying out this research and fill existing gap.

Materials and methods: Quantitative and qualitative research carried out in 3 peri-urban health centers Blantyre, Malawi. Pregnant women age range 14-43 in all trimesters target population. Secondary data of number of women N=5700 visited ANC January-June 2022 diagnosed with STIs during antenatal clinic. Primary data obtained from pregnant women N=91 using convenience non-probability sampling using qestionnaires and Microsoft excel for analysis.

Results: Overall STI prevalence =33.4%. Prevalence from 3 health centers: 43.8%,27.5% , 26.01%. Young maternal-age multiparity, unemployment, immunosuppression contributed to high prevalence. Infections highest in 2nd trimester 41% comparing 3rd 36% and 1st 23%trimesters.

Conclusions: There's high STIs prevalence 33.4% among pregnant women, if left unattended to,significant increase in maternal and neonatal morbidity and poor pregnancy outcomes may occur. Public health intervention programs should be strengthened promoting sexual-reproductive health of pregnant women.

Keywords: STIs, pregnant women, prevalence, Blantyre Malawi

Opinion about motherhood among Polish women with Turner Syndrome

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Work's tutor: prof. dr hab. n. med. Aneta Gawlik

Background: Turner syndrome (TS) is a genetic condition caused by the complete or partial lack of one of the X chromosomes. It occurs in 1 in 2000 - 2500 live-born girls. Characteristics of the disease include short stature and congenital gonadal dysgenesis resulting in infertility in most cases. Only 2% of TS patients are able to become pregnant spontaneously. Currently, research on fertility preservation in patients with TS is underway, but due to premature ovarian failure at a young age, these procedures should be performed as early as possible.

The aim: The aim of the study is to obtain opinions on motherhood among adult women with TS and to determine the need for research into the preservation of ovarian tissues in teenage TS patients in order to use them for assisted reproductive techniques in adulthood.

Materials and methods: In the period from November to December 2022, adult Polish women with TS were contacted via the Messenger application. A 15-question anonymous survey was conducted on women with Turner Syndrome's views on having children. Participation in the survey was voluntary and free of charge.

Results: A total of 58 women with TS answered the questions. The classic 45X0 dominated the responses regarding the karyotype in the study. 16/58 (27.59%) of the respondents declared that they menstruated spontaneously. 38/58 (65.52%) declared a desire to have children. 36/58 (62.07%) women - replied "Yes" in answer - to the question ,, If your eggs/ovarian tissues were preserved as a child in order to use them in adulthood, would you take advantage of this opportunity?". None of the women surveyed had their oocytes preserved as teenagers or adults.

Conclusions: Most women with TS, given the opportunity to use oocytes saved in their teenage years, would take advantage of this option. Therefore, further research is needed on the procedure of ovarian retrieval in a group of pediatric patients.

Keywords: Turner syndrome, Infertility, Ovarian tissues, Cryopreservation

The knowledge about nutrition and supplementation during pregnancy among Polish women

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

Background: Nowadays, the topic of nutrition and supplementation is popular. Also, pregnant women would like to change their diet to a healthier one to ensure the proper development of the fetus.

The aim: The point of our research was to assess women's knowledge about nutrition and supplementation during pregnancy.

Materials and methods: The online survey used original questions about basic demographic data, as well as a test checking the knowledge about the main talking point. The number of 173 questionnaires was obtained. The data were statistically analyzed using the "Statistica 13" program.

Results: Women under the age of 30 obtained better results in the knowledge test about nutrition and supplementation than women over the age of 30 ($p<0.05$). A statistical difference was found between test scores and time since last delivery ($p<0.05$). No correlation was observed between test results and place of residence. A strong correlation was observed between vitamin D supplementation and age, education, participation in antenatal classes, conversation with a physician, number of pregnancies, and time since last delivery ($p<0.05$). There was also a correlation between iodine supplementation and age, participation in antenatal classes, time since last delivery ($p<0.05$). Only 19% of respondents had spoken to a physician about nutrition and supplementation during pregnancy. Women's main sources of information were the Internet (59.54%), their own beliefs (51.45%), and other women's knowledge (37%). 22% of women declared a physician as a source of information, 15% chose prenatal classes as a source of information.

Conclusions: There is a need for better education on nutrition and supplementation during pregnancy through classes at a birthing school or talking to a gynecologist.

Keywords: pregnancy, nutrition, supplementation

The issue of dysmenorrhea among young women in Poland

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

Background: Dysmenorrhea is one of the most common problems that women struggle with. It is defined as recurrent abdominal cramping pain. According to the WHO, it affects 17 to 83% of young women. Studies show that patients have reduced quality of life, worse mood and sleep problems compared to healthy women.

The aim: The purpose of the study was to check how the diagnosis of this disorder looks like in Poland. Moreover, researchers wanted to emphasize that dysmenorrhea is the most common gynecologic complaint among adolescent and young females and is the leading cause of recurrent short-term school or work absenteeism.

Materials and methods: Study was conducted via internet poll. Participants had to respond to 36 questions. The VAS and MDQ scales were used in the form. Data was collected during the first quarter of 2023. Process of designing the survey was supervised by the Department of Gynecological Endocrinology, SUM.

Results: 364 women took part in the study, between 16 and 48 years old. Our research showed that 78% of participants have to cope with dysmenorrhea. This problem was significantly more common in patients with a positive family history ($p<0.001$), and less frequently in the group using hormonal contraception ($p=0.014$). Almost 60% of women rate pain as at least 8 in NRS scale and 98% of participants require medication to reduce symptoms. Only 31.9% of them who sought medical attention received help. Nearly 50% of women claim that dysmenorrhea affects their quality of life and interferes with daily activities but barely 33% of them have contacted the doctor and sought help.

Conclusions: Despite its high prevalence, dysmenorrhea is often underdiagnosed, inadequately treated, and normalized even by patients themselves, who may accept the symptoms as an inevitable response to menstruation. Women should more often see the doctors because dysmenorrhea may be caused by serious disease. We should raise awareness among Polish society about this gynecological disorder especially doctors to avoid disregarding and un-diagnosis.

Keywords: dysmenorrhea, treatment, women's health, menstruation

The causal link breast-feeding and intelligence in non-trivial - a Mendelian Randomization study

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Background: The association between being breast-fed as baby (BBB) and positive health-related and other outcomes such as intelligence is well known. Nevertheless, confounding variables make deriving conclusions from observational studies more difficult.

The aim: We hypothesized that maternal factors such as her intelligence itself could influence the likelihood of BBB. To test this hypothesis, we utilized Mendelian Randomization (MR) as a method less prone to some of possible confounders.

Materials and methods: We used MR to assess the impact of genetically-determined intelligence as a proxy for mother's intelligence on the likelihood of BBB. The source for genetic correlations of intelligence was meta-analysis by Savage et al. UKBiobank was the source of genetic correlations for BBB. Variants associated with reproduction, personality traits and mental disorders were excluded. Inverse-variance-weighted mean method was used for primary analysis. Secondary analyses were conducted by weighted median, mode, and MR-Egger methods. Sensitivity analyses were performed by leaving out random 30% of the variants.

Results: Data regarding genetic determinants of intelligence levels were available for 269867 participants, while summary statistics for BBB were available for 227321 cases and 92087 controls. Primary analysis showed that genetically-determined intelligence correlated with BBB ($p<0,001$), and secondary analyses yielded similar results (median $p<0,001$; MR-Egger $p=0,001$; Mode $p=0,094$]. MR-Egger intercept test did not yield a statistically significant result ($p>0,05$). Nevertheless, some degree of heterogeneity between variants was observed.

Conclusions: Genes associated with intelligence appears to have an impact on the likelihood of being breast-fed as a baby. This indicates that the association and causal connection between breast-feeding and intelligence is non-trivial and likely non-unidirectional. Further research is needed to derive more conclusive data.

Keywords: breastfeeding, Mendelian, randomization, intelligence

Sexual dysfunction in women caused by pain during penetration

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Background: Pain during intercourse or dyspareunia is a fairly common phenomenon that occurs in women during intercourse after intercourse and even before sexual initiation. Making it impossible for a woman to achieve sexual satisfaction, and causing reluctance to have sex.

The aim: The purpose of the study is to discover possible causes affecting pain at penetration.

Materials and methods: The research included 172 women between the ages of 18 and >43 living in villages, small or large cities. Respondents who had intercourse in the last 6 months are not pregnant, and have not suffered from genital and urinary infections in the last 6 months. Diagnostic survey was a research method. An author's questionnaire was a proprietary research tool.

Results: Only 11.1% of the women interviewed responded that they had never experienced pain during sexual intercourse in their lives. 76.8% of respondents experienced soreness after their first sexual intercourse. They consider dependence on the phase of sexual arousal the position they assume or little/insufficient vaginal lubrication to be the most common cause of the resulting pain. The vast majority of women, despite visiting a specialist acknowledged that the discomfort has not stopped, although it occurs less frequently. 100% of the women surveyed who responded that they did not feel good enough in their relationship and who had depressive disorders overlapped with the occurrence of pain during intercourse.

Conclusions: Pain during intercourse, is a very important and overlooked problem occurring in society. Only a small number of women surveyed from rural areas, small towns or large cities have never experienced such disorders in their lives. The research found that a major influence on pain during intercourseis adequate vaginal lubrication. The relation in the relationship between a man and a woman has a definite impact on their sexual intercourse and the occurrence of pain in women's intimate areas.

Keywords: pain, intercourse, dyspareunia

Complete blood count parameters as prognostic markers of ovarian cancer recurrence

Natalia Kwiatkowska, Alicja Kamińska

Work's tutor: dr n. med. Mikołaj Zaborowski

Background: Although significant efforts have been made in the treatment of ovarian cancer (OC), it is still the leading cause of death among all gynecological malignancies. Multiple biomarkers can estimate the prognosis of the disease. In this context, attention is being paid to the role of peripheral blood components, including platelets, lymphocytes, and neutrophils as they may play a protumoral role in early metastases in in vitro studies. Thrombocytosis has been reported in ovarian cancer patients, however, its predictive potential, especially in combination with other parameters, remains unclear.

The aim: We aimed to determine the relationship between the neutrophils, lymphocytes, and platelets and the prognosis of OC among patients treated at the Department of Gynecology, Obstetrics, and Gynecologic Oncology.

Materials and methods: We collected patients' data treated in our clinic between 2013 and 2022 and randomly selected 100 cases for analysis. The survival analysis was performed using the Kaplan-Meyer method and a double-sided Mantel–Cox (Log-Rank) test on patient groups with normal and high platelets, lymphocytes, and neutrophil counts. The disease recurrence hazard was estimated with the Cox proportional-hazards model applied with single and multiple factors. Further, the differences between FIGO stages I/II and III/IV were investigated with the U-Mann-Whitney test.

Results: We demonstrated decreased progression-free survival (PFS) in OC patients with elevated total platelets and neutrophil count at the time of diagnosis (Cox multiple regression p=0.0006; p=0.02, respectively). Patients with high platelets had shorter PFS than those with normal values (log-rank test, p=0.0004). Patients with more advanced disease (FIGO III/IV) had higher platelets than those with malignancy confined to the pelvis (FIGO I/II, Mann Whitney test, p=0.0008).

Conclusions: Collectively, platelet and neutrophil count can serve as indicators of an increased risk of disease progression and more advanced disease.

Keywords: ovarian cancer, survival analysis, peripheral blood components

The effects of physical activity on the women's well-being during the pregnancy and delivery

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Background: Physical exercise has a direct impact on the women's well-being, comfort, physiological adaptation during pregnancy and delivery.

The aim: To evaluate the possible influence of physical exercise before conception and during pregnancy on the women's subjective well-being during pregnancy and delivery.

Materials and methods: An original questionnaire about sports experiences before and during pregnancy was created. The questionnaire was distributed in a third-level hospital, the Hospital of Lithuanian University of Health Sciences Kaunas Clinics, in the Clinic of Obstetrics and Gynecology for women after delivery. Altogether 108 women participated in the study. For data comparison, women were divided into two groups according to physical activity experience: active and inactive before and during pregnancy. Research data were systematized using "Excel Microsoft 365", data analysis was performed using "IBM; SPSS 27".
The permission of the Bioethics Center of the Lithuanian University of Health Sciences was granted, no. BEC-MF-301 (2022-03-07).

Results: Before pregnancy 1,9% (n = 2) of women did sports professionally, 40,7% (n = 44) were physically active, 57,4% (n = 63) did not do sports. During pregnancy 41,7% (n = 45) exercised regularly, 58,3% (n = 63) did not.
A large proportion of women (82,2 %) who were physically active during pregnancy rated their state of well-being during pregnancy as "good" or better in comparison of women who did not exercise (58,7 %, p = 0,028). Half of women (55,5 %) who were physically inactive during pregnancy evaluated their state of well-being during delivery just as "moderate" and below in comparison to physically active women (35,5 %, p = 0,033).

Conclusions: Physical activity during pregnancy significantly improves women's subjective well-being during pregnancy and delivery, though about a half of participants were not physically active neither before or during the pregnancy.

Keywords: Pregnancy, Childbirth, Physical activity

Knowledge of fertility recovery after pregnancy among women in Poland

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Background: Breastfeeding (BF) is considered a postpartum contraceptive method. The duration of such infertility depends on the frequency of feeding the child and the personal characteristics of the woman. WHO recognizes lactational infertility as an ecological method of family planning.

The aim: Assessing pregnant and postpartum women's knowledge of contraception and the sources of women's knowledge on this topic.

Materials and methods: The study involved 102 women who completed the online questionnaire. The inclusion criterion for the study was: being pregnant or having given birth in the past. The questionnaire consisted of original questions and a standardized questionnaire-Rosenberg Self-Esteem Scale (SES).

Results: There was a positive correlation between the education of the women and their knowledge on the topic of fertility return after the pregnancy, p=0.002. Women with higher education (69,6%) stated mostly that postpartum mothers need to implement double contraception and that BF ceases ovulation hence fertility only when certain conditions are met, whereas respondents possessing education equal or lower than secondary education stated that BF does not influence ovulation and fertility. However, the majority of respondents (88.4%) agreed that breastfeeding mothers should also use another form of fertility regulation method to avoid unwanted pregnancy. 92.8% of respondents, said that women who breastfeed are still capable of the conception. Only 27,5% of surveyed women took birthing classes from which as little as 15% had the opportunity to learn about lactational infertility. In 75,4% cases there was no conversation about the return of the fertility with their doctor.

Conclusions: Education affects knowledge of lactational infertility. Typically, the topic is not addressed in birthing school or during doctor's visits. More attention should be paid to educating women on this topic.

Keywords: fertility, ovulation, breastfeeding, contraception, lactational infertility

Awareness of Polish women of vaginal and urinary tract infections and their complications

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Background: Vaginal and urinary tract infections are some of the most common conditions affecting women.

The aim: The aim of the study is to assess the awareness of women in Poland about intimate infections, and to investigate whether educating woman by gynaecologists in outpatient clinics and/or through social media results in a more efficient treatment.

Materials and methods: 80 women were included in the study. The responses were obtained through a Google form. The questionnaire included the author's questions and a standardized Pelvic Floor Impact Questionnaire - Short Form 7 (PFIQ-7).

Results: Despite the fact that the vaginal infections are very common (once every few years (32.%), once a year (24.6%) or more than once a year (18.5)), the majority of women responders admit to treating infections themselves with over-the-counter medications without consulting a doctor. Moreover, 26.2% of female respondents said that they never visit their GP during an ongoing infection, while 25.1% of them would make the appointment sporadically. When asked about the correlation between a history of infection and the effect on fertility, as many as 46.2% have admitted that they believe there is no correlation at all. In addition, 66.2% revealed they were not vaccinated against HPV. We made an assumption that the direct cause is an insufficient amount of information provided to women. Considering that, 87.2% admitted that they would be willing to get a vaccine if a physician or a social media medical platform would encourage them to do so.

Conclusions: Participants' knowledge of infections, prevention and treatment is not sufficient. Medical education has a positive impact on women's awareness of infections. Gynaecologist involvement is crucial for women's intimate and reproductive health, faster diagnosis and fewer complications.

Keywords: infection, HPV vaccine, vaginitis, urinary tract infections

Impact of hysterectomy on pelvic floor function

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

Background: Hysterectomy is one of the most common major surgical procedures in women. The effects of hysterectomy on pelvic floor and sexual function are uncertain

The aim: The study aimed to determine the impact of hysterectomy on pelvic floor muscles.

Materials and methods: We performed a prospective clinical cohort study. In all, 81 women participated in the study. The study group consists of 50 women who have undergone hysterectomy, the control group, are 31 women who have not undergone hysterectomy.
All participants answered the validated questionnaires EPIQ (Epidemiology of Prolapse and Incontinence Questionnaire). All participants were treated at the Gynecologic Oncology Clinic of the National Cancer Institute, Maria Skłodowska-Curie Institute in Krakow.

Results: The research showed that after a hysterectomy, women have an average of 41.37% lower coefficient indicating the likelihood of overactive bladder, 46.15% lower coefficient for anal incontinence, and 50% lower coefficient for stress urinary incontinence. The frequency of overactive bladder, which could be diagnosed by questionnaire, was 20% in the control group compared to 6.7% in the study group. The incidence of anal incontinence was 26.7% in the control group and 23.3% in the study group, while stress urinary incontinence occurred in 36.7% of the control group and 26.7% of the study group.

Conclusions: In our study, we showed that having a hysterectomy performed by trained specialists significantly reduces the severity of symptoms associated with pelvic floor muscle dysfunction. Further research in this direction is needed.

Keywords: EPIQ, hysterectomy, pelvic floor muscles, fecal incontinence, overactive bladder

Knowledge and attitudes of Polish society towards in vitro fertilisation as method of infertility treatment

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Background: The infertility was recognised by WHO as a disease of the male or female reproductive system. Around 10-15% of couples experience infertility. Incapability of having offspring may cause serious mental disorders. Interference in the physiological process of child conception is also a topic discussed in religious communities due to the moral and ethical dilemmas.

The aim: Assessment of knowledge and attitudes towards in vitro fertilisation of different social and religious groups.

Materials and methods: Interview survey was conducted among 341 woman and men between 15-80 years old. The scientific tool was a questionnaire form prepared by the authors. The respondents replied via Facebook and in a traditional way – the printed version of the questionnaire in the Silesian and Lesser Poland Voivodships. The main criterion for including the answers in the survey was filling in the questionnaire in 100 %.

Results: The in vitro fertilisation method (IVF) is supported by 82% of the respondents. Half of the respondents (53%) has knowledge on a good level (is familiar with the main assumptions and the procedure course of IVF), 41% represent an average level of knowledge (understands only the main assumptions of this method), 6 % does not have any knowledge about the topic. 32% of the respondents correctly assess the prevalence of infertility. The group of young people (under 35 years old) supports IVF in 82 %. At the same time, less than half of them plans to have children. Among the group between 36-59 years old, 86% support the in vitro fertilisation method. People who claim belonging to the Catholic Church accept the method of artificial fertilisation (in vitro) in 77%. Almost everyone who does not belong to any religious community, support IVF.

Conclusions: Society approves the method of in vitro fertilisation (IVF) regardless of age. Opinion about the in vitro fertilisation depends on the level of knowledge and belonging to a religious group.

Keywords: invitro, fertilisation, social groups, religion

SESSION OF NONINVASIVE CARDIOLOGY

PTNT Polskie Towarzystwo Nadciśnienia Tętniczego

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Ecg in the differentiation of right ventricular dilatation with and without pulmonary hypertension

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Background: Chronic overload of right ventricle (RV) results in its different adaptation when it is volumetric (leads to dilatation) than pressure (leads to hypertrophy). However, little is known which ECG patterns are associated with different underlying mechanisms.

The aim: We aimed to assess whether chronic setting of a RV pressure and volume overload result in different ECG patterns.

Materials and methods: Initially, we analysed 176 patients with pulmonary arterial hypertension (PAH) without structural defect and 25 with isolated tricuspid regurgitation (iTR) diagnosed between 2008 and 2021 who underwent right heart catheterization and had normal pulmonary artery wedge pressure. Then we analysed all recommended criteria for presence of right ventricular hypertrophy and ones that are recognized to be associated with RV dilatation. We matched 25 patients with PAH to patients with iTR in terms of presence of severe tricuspid regurgitation, RV dilatation and age.

Results: We found that following criteria of RVH were more frequently met in PAH than in iTR: RV1 >6mm [7 (28.00% vs 1(4.00%);p=0.02], R:SV1 >1[13(52.00%) vs 5(20.00%);p=0.005], max RV1,2 + max SI, aVL –SV1>6mm [22 (88.00%) vs 9 (36.00%); p<0.001], PII > 0,25 mV [17 (68.00%) vs 6 (24.00%); p=0.002], S>R in I [18 (72.00%) vs 8 (32.00%); p=0.005] and presence of SI and QIII [13 (52.00%) vs 6 (24.00%); p=0.04].

Conclusions: RV hypertrophy criteria are rarely met in iTR as compared to PAH. Criteria based either on S wave depths or R to S ratio are more prevalent in PAH patients with right ventricle dilatation.

Keywords: ecg, pulmonary hypertension, right ventricular hypertrophy, tricuspid regurgitation

Correlation between the relative expression level of miR-10b particles and advanced atherosclerotic lesions

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Work's tutor: Dr n. med. Michał Kowara, Prof. dr hab. n. med. Agnieszka Cudnoch-Jędrzejewska

Background: Atherosclerosis is a chronic arterial disease and the leading cause of vascular death worldwide. There are two phenotypes of atherosclerotic plaque - stable and unstable. One of the important clinical manifestations of stable atherosclerotic plaque is chronic coronary syndrome.

The aim: This research aims to investigate the correlation between advanced atherosclerotic lesions and miR-10b, small non-coding strands of RNA that down-regulate the expression of KLF4 - a factor that inhibits atherogenesis.

Materials and methods: Using a case-control, retrospective study, the study compared eight patients with advanced atherosclerotic lesions and eight patients without advanced atherosclerotic lesions and analysed the relative expression level of miR-10b particles in both groups.

Results: The results have shown that in the group of patients with advanced atherosclerotic lesions, the expression level of the miR-10b particles is 0,138 (SD - 0,086), whereas in patients with coronary atherosclerosis, but without advanced lesions, it is 0,061 (SD - 0,041), leading to a probability of 0,044.

Conclusions: In conclusion, the relatively higher expression of miR-10b particle was found to be present in patients with advanced atherosclerotic lesions of chronic coronary syndrome. Therefore this study suggests the role of miR-10b during atherogenesis. Further studies are needed to establish causal relationships and develop preventative measures.

Keywords: atherosclerosis, advanced atherosclerotic lesions, miR-10b, chronic coronary syndrome, KLF4

Lipoprotein(a) levels and Parkinson's disease – a two-sample Mendelian Randomization study

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Work's tutor: dr n. med. Mateusz Lejawa

Background: The association between lipoprotein(a) [Lp(a)] and coronary artery disease is well known, but the physiological function of Lp(a) is not well elucidated. It remains uncertain what types of adverse events therapies aimed at reducing Lp(a) may induce. Although several Mendelian randomization studies concerning the associations of lipid parameters and Parkinson's disease [PD] were conducted, Lp(a) was rarely included. As genetic factors have a clear impact on Lp(a) levels, we applied MR approach as a tool to determine the impact of Lp(a) on the risk of PD onset.

The aim: To assess the impact of Lp(a) levels on the incidence of PD.

Materials and methods: We conducted a two-sample MR study. UK Biobank was the source of correlations for Lp(a) levels and FinnGen was used as the source of genetic correlations for PD. Only variants in the LPA gene region were utilized. Inverse-variance-weighted mean method was used for primary analysis. Secondary analyses were conducted by weighted median, mode, and MR-Egger methods. Sensitivity analyses were performed by leaving out random 30% of the variants.

Results: Data regarding genetic determinants of Lp(a) levels were available for 318922 participants, while summary statistics for PD were available for 3767 cases and 338732 controls. Primary analysis showed that Lp(a) levels do not correlate with PD [p=0.612]. Secondary analyses did not yield differing results [median p=0.915; mode p=0.817; MR-Egger p=0.866]. Chosen variants did not show horizontal pleiotropy as shown by MR-Egger intercept test [p=0.889]. Sensitivity analyses did not result in statistically significant findings [leave-30%-out analysis IVM p-values: 0.061-0.978].

Conclusions: Lp(a) levels determined by genetic background are not correlated with the of PD development. This indicates that Lp(a) level likely have no causal role in PD onset. This suggests that treatments aimed at reducing Lp(a) levels will likely not increase the risk of developing PD.

Keywords: Parkinson, Mendelian, randomization, lipoprotein, a

Vascular stiffness and endothelial function in patients with coronary artery disease and diabetes

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Work's tutor: dr hab. n. med. Andrzej Tomasik

Background: Vascular endothelial function plays a key role in the pathogenesis of many cardiovascular diseases, such as peripheral artery disease, coronary artery disease and stroke. Impairment of endothelial function occurs in patients with diabetes, so diabetes and cardiovascular diseases may have the common denominator. Thus it is important to explore and compare parameters that describe vascular parameters in those groups of patients.

The aim: The aim of the study was to compare vascular function in group of 50 patients with angiographically defined coronary artery disease who suffer from diabetes (group 1, 29 patients, aged 68,9Ī7,5) and without diabetes (group 2, 21 patients, aged 66,0Ī7,0).

Materials and methods: Endothelial vasoreactivity (lnRHI) was measured with EndoPAT device (Itamar Medical, Israel), central (cfPWV) and peripheral (crPWV) pulse vave velocity and vascular age by applanation tonometry (Complior, Alam Medical, France). Ankle brachial index (ABI) was measured with WatchBP Office ABI device (Microlife, Switzerland). Concentration of soluble suppression of tumorigenesis-2 (sST2) was measured by Aspect Reader (Critical Diagnostics, USA).

Results: LnRHI, left and right-sided ABI, crPWV were comparable between the groups. Group 1 had significantly higher values of cfPWV (10,8Ī2,1 m/s vs. 9,9Ī2,7 m/s, P<0,05), higher sST2 levels (22,2Ī6,6 vs. 34,7Ī27,7 ng/ml and P<0,05, and higher value of mean vascular age 61,3Ī15,4 vs 70,0Ī12,3 at P<0,05).

Conclusions: Coronary artery disease patients with diabetes have significantly higher central arterial stiffness and vascular age. It may result from increased fibrotic processes as evidenced by elevated sST2. Our results suggest differential impact of diabetes on central and peripheral vascular bed and may explain the increased cardiovascular risk in this specific group of patients.

Keywords: Vascular stiffness, endothelial vasoreactivity, CAD, diabetes

Does multimorbidity influence on early effectiveness of pulmonary arterial hypertension treatment?

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Work's tutor: prof. dr hab. n. med. Katarzyna Mizia- Stec

Background: Pulmonary arterial hypertension (PAH) is a progressive obliterative vasculopathy characterized by remodelling of pulmonary capillaries that can be treated by specific therapy.Comorbidities make the PAH diagnosis difficult and probably influence an effectiveness of treatment.

The aim: The aim of the study was to assess an influence of comorbidities on effectiveness of early treatment among patients suffering from PAH.

Materials and methods: Retrospective analysis of 45 patients (age:55Ī14.7years;22.2%M) hospitalized in a 3rd-degree reference cardiology center between 2012-2023 was performed. Exclusion criteria included:beginning of treatment before the first hospitalization, absence of the 2nd clinic control, 2nd control after longer than 6 months.The following parameters were analysed: form of therapy, WHO class, NTproBNP, 6-minute walk test (6MWT) and echocardiography markers of PAH.Patients were divided into subgroups: subgroup with 2 or more comorbidities: diabetes mellitus, systemic hypertension, coronary artery disease, chronic kidney disease, chronic obstructive pulmonary disease (CoM subgroup)-16 pts(age:64.9Ī9.4;25%M); subgroup with 0 or 1 comorbidity-29 pts(age:49.6Ī14.3;20.7%M).

Results: Initially monotherapy was administrated in 43.8%pts of CoM group and 48.3%pts of second group. Among monotherapy endothelin receptor blockers were more often choosen in CoM group and phosphodiesterase inhibitors in 2nd group.
50%pts in CoM group, 24.1% in 2nd group was classified as WHO class IV.
Average NTproBNP value was 2859.3 in CoM group and 2026 in 2nd group.
Medium 6MWT distance was 283.9m in CoM group, 343m in 2nd group.
TAPSE above a norm appeared in 81.2% of CoM group, 57.1% in 2nd group.
Among 56.3% pts with CoM and 55.2%pts of 2nd group WHO class was improved during control visit.

Conclusions: Based on above results it is impossible to define an unequivocal marker which reveals a significant difference between these groups. Compared parameters suggest that multimorbidity not impact on early effectiveness of treatment.

Keywords: PAH, comorbidities, TAPSE, NT-proBNP, 6MWT, WHO class

Echocardiographic criteria suggestive of PH and clinical characteristic predisposing to the PH phenotype in patients with HFpEF

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Background: Heart failure with preserved ejection fraction (HFpEF) is characterized by LV diastolic dysfunction. Impaired diastolic function induces pulmonary congestion and leads to postcapillary pulmonary hypertension (PH) being an important contributor to clinical worsening and increased mortality.

The aim: Assessment of clinical characteristics predisposing to echocardiographic sign of PH in patients with HFpEF.

Materials and methods: A retrospective analysis of 63 patients (pts) with HFpEF was performed. The study group was divided according to tricuspid regurgitation velocity (TRV): TRV≥2.8 m/s (n=15, 23.8%) and TRV<2.8 m/s (n=48, 76.2%). Clinical characteristics, symptoms, TTE parameters and laboratory tests were analyzed.

Results: Subgroup with TRV≥2.8m/s was characterized by more exaggerated HF symptoms (p=0.06) with significant percentage of fatigue (p=0.03), ankle swelling (p<0.01) and tendency to dyspnea (p=0.09) compared to the group with TRV<2.8m/s. Four (26.7%) pts had 1 additional TTE sign suggestive of PH, 5 (33%) pts had 2 signs, 2 (13.3%) pts had ≥3 additional TTE signs. Baseline characteristics showed that the frequency of hypertension, diabetes, coronary artery disease, dyslipidemia and chronic kidney disease was comparable in both groups, however the group with TRV≥2.8m/s tended to have a higher incidence of atrial fibrillation (AF) (p=0.08). Patients who had TRV≥2.8m/s had greater LVMI (p=0.06), LA area (p<0.001) and E/A ratio (p<0.001) with borderline difference in LVEF (p=0.07).

Conclusions: About 25% of HFpEF pts present an echocardiographic features of PH that is associated with more advanced heart failure symptoms, more exaggerated LV diastolic dysfunction and is not reflected in the classic comorbidities, with the exception of AF.

Keywords: echocardiography, pulmonary hypertension, HFpEF,

Exercise LUS in asymptomatic severe aortic stenosis – a preliminary study

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Work's tutor: Prof. dr hab. Katarzyna Mizia-Stec

Background: Pulmonary congestion caused by exercise can be evaluated by lung ultrasonography (LUS) and is an independent predictor of outcome in patients with HFpEF. In asymptomatic severe aortic stenosis (AS) an exercise-induced pulmonary congestion may be a tool to verify its clinical significance.

The aim: We aimed to evaluate pulmonary congestion by transthoracic echocardiography (TTE) and B-lines in LUS before and after exercise in patients with asymptomatic severe AS.

Materials and methods: Eight patients with asymptomatic severe AS (mean AVA 0,86±0,22; PG mean 43,88±16,5mmHg) and LVEF≥50% underwent TTE and LUS (8-zone method) assessment before and after a 6-minute walk test (6MWT). Baseline and post-exercise vital parameters, TTE data (E wave, A wave, e' wave, E/A ratio, E/e' ratio, TAPSE, RVSP, RVSP/TAPSE), sum of B-lines in all zones and number of zones with ≥3 B-lines were analysed.

Results: Baseline characteristics revealed no dyspnea and fatigue in all subjects. Baseline LUS evaluation showed that each patient had ≥1 B-line with a median of 8.5 B-lines. Furthermore, 6 (75%) patients presented with at least one zone with ≥3 B-lines and 2 (25%) patients had no zone with ≥3 B-lines; median number of zones with ≥3 B-lines equalled 1. Mean 6MWT distance was 375 metres. After exercise there was a significant increase in heart rate ($p=0.03$), systolic blood pressure ($p=0.02$); dyspnea ($p=0.03$) and fatigue ($p=0.01$) assessed by the Borg scale; 2 (25%) patients presented with severe fatigue/dyspnea. Post-exercise LUS compared to baseline values showed a statistical increase in the sum of B-lines in all zones ($p<0.001$) and the number of zones with ≥3 B-lines ($p=0.04$). Lower TAPSE was observed after 6MWT ($p=0.04$). After exercise 2 (25%) patients presented no symptoms but had an increase in the number of B-lines.

Conclusions: Exercise LUS reveals pulmonary congestion in patients with asymptomatic severe AS thus it seems to be an additional diagnostic option for this group. This preliminary observation needs further evaluation.

Keywords: aortic stenosis, LUS, pulmonary congestion, B-lines

CMR use in the diagnosis of acute myocarditis – one-center observational retrospective study

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Background: Diagnosis of acute myocarditis is complex, hence the diagnosis is often made based on a deficient panel of tests and examinations. CMR is recognized as recommended diagnostic method with some advantages and limitations.

The aim: The aim of the study was to evaluate CMR use in the in-hospital diagnosis of acute myocarditis and refer CMR results to the degree of myocardial damage.

Materials and methods: This is a retrospective, single center observational study of consecutive 90 patients (F/M:18/72, mean age: 38.7 Ī 14,2 years) hospitalized between 2015 and 2022 with a clinical diagnosis of acute myocarditis. The patients with contraindications to CMR . Taking into regard the CMR use the study population was divided into: CMR (+) and CMR (-) groups.
To specifically determine the amount of LGE, ROI mass and ROI % were calculated.

Results: Among the 90 patients diagnosed with acute myocarditis the CMR The patients diagnosed by CMR were characterized by lower heart rate, lower TnT, CK-MB and CPR levels as well as smaller LV volumes .
In the CMR (+) group, the edema was revealed in 29 and LGE in 39 of patients, which allowed for diagnosis based on Lake Louise Criteria in 29 cases.
The presence of edema correlated negatively with TnT levels and positively with the number of LGE occupied segments.

Conclusions: Regardless the fact that real-life CMR use in the diagnosis of acute myocarditis is limited and refers to the patients with diagnostic doubts due to a less pronounced clinical course, CMR was essential for diagnosis. In patients with mild clinical course of disease the markers of inflammation and myocardial damage correspond to the edema in CMR but are not related to the LGE presence and amount.

Keywords: LGE, CMR, acute myocarditis

CHA^2DS^2-VASc score in patients with ischemic stroke as a predictor of atrial fibrillation or recurrent stroke

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Background: The CHA^2DS^2-VASc score is commonly used to assess the risk of an ischemic stroke in patients with non-valvular atrial fibrillation (AF). Embolic stroke of undetermined source (ESUS) is frequent (30-40%) and it is suggested that AF may be a cause of it. Therefore, the search of AF is crucial in these patients.

The aim: To find out the predictive value of CHA^2DS^2-VASc score and other indices (clinical and electrocardiographic- atrial ectopy, BMI, AHI, NIHHS, HRV and others) in the prediction of higher risk of AF finding or recurrent ischemic stroke during the follow-up after ESUS.

Materials and methods: A cohort of 90 consecutive patients (52% M; age: 59.38Ī13 years) with embolic stroke (ESUS) was prospectively observed for at least 2 years. The CHA2DS2-VASc score was calculated for each patient, and the new scores were created by adding new points for the presence or pathological value of e.g. PAC, EAT, ESVEA, AHI, NIHHS score, BMI. All these parameters were also analyzed separately. The primary endpoint was the confirmation of AF or recurrent ischemic stroke during the follow-up.

Results: During the follow-up, AF/recurrent stroke was observed in 14 patients. Univariate Cox analysis revealed the risk of primary end-point was higher for CHA2DS2-VASc with score>2: HR=3,97 [95% CI: 0.89-17.8, p=0.06] as well for score>3: HR=4.7, p=0.04. The risk was also higher for NIHHS≥4: HR=1.97, p=0.23 and for the presence of EAT in Holter recording: HR=2,37 [95% CI: 0.92-6.1, p=0.07).

Conclusions: Higher CHA^2-DS^2-VASc scores, as well as stroke damage (NIHHS), and the presence of ectopic atrial arrhythmias, were found to be associated with a higher risk of AF occurrence or recurrent stroke. Further analyses for others parameters are continued.

Keywords: CHA2DS2-VASc, ischemic stroke, atrial fibrillation

Machine learning-driven heart failure risk assessment in diabetic patients: exploring the influence of MAFLD

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Background: Patients with diabetes and metabolic-associated fatty liver disease (MAFLD) may have an increased risk of developing heart failure (HF). Accurate prediction of HF in this population could aid in personalized cardiovascular disease prevention.

The aim: This study aims to develop and evaluate machine learning (ML) models to predict HF risk in diabetic patients with and without MAFLD based on a comprehensive variety of clinical and laboratory parameters.

Materials and methods: In this cross-sectional study, we enrolled 1735 diabetic patients, of which 991 (57%) were diagnosed with MAFLD and 317 (18%) were diagnosed with HF. We analyzed a set of 52 parameters across different categories, such as demographic, diabetic complications, comorbidities and laboratory results. The most discriminative features were identified using the $\chi 2$ test and Monte Carlo approach, separately for all patients, and for patients with and without MAFLD. Multiple logistic regression (MLR) models were developed for each group, and their performance was evaluated in terms of sensitivity, specificity, percentage of correctly classified patients, and area under the receiver operating characteristic (ROC) curve.

Results: Three sets of the most discriminative predictors were identified for each group. For all patients, the ML model achieved a sensitivity of 0.80, specificity of 0.70, and correctly classified 71.99% of patients. For the subgroup with MAFLD, the ML model achieved a sensitivity of 0.70, specificity of 0.74, and correctly classified 73.06% of patients. For the subgroup without MAFLD, the ML model achieved a sensitivity of 0.85, specificity of 0.70, and correctly classified 72.72% of patients. The area under the ROC curve indicated a good performance in identifying HF for each model, and decision curve analysis supported their clinical utility.

Conclusions: By incorporating MAFLD status, ML models provide a more accurate assessment of HF risk in diabetic patients, potentially enabling more individualized management and targeted interventions.

Keywords: machine learning, diabetes mellitus, heart failure, metabolic-associated fatty liver disease

Echocardiography markers of left ventricle hypertrophy and concentric remodelling – limitations in diagnostic

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Work's tutor: Prof. Katarzyna Mizia-Stec, MD, PhD

Background: Left ventricle hypertrophy (LVH) is a relevant sign associated with increased risk of sudden cardiac death. Some typical causes of LVH including hypertrophic cardiomyopathy(HCM), cardiac amyloidosis(CA), Fabry's disease(FD) require specific approach and are associated with an inauspicious prognosis. Echocardiography remains the first-step baseline diagnostic method.

The aim: The aim of the study was to compare echocardiography parameters of LV remodelling among patients(pts) with increased LV wall thickness and the final diagnosis of HCM, CA or FD.

Materials and methods: Retrospective one-center analysis of 86pts (age:55.4Ī15.7; 59.5%M) with increased LV wall thickness in echocardiography, hospitalized between 2010-2022 was performed. Inclusion criteria: thickness of IVS above 10mm in male and 9mm in female as a baseline finding; the final diagnosis of HCM, CA or FD. The study population was divided into three subgroups regarding the final diagnosis: HCM(66pts,age:55.6Ī14.8; 62,5%M), CA(13pts,age:62Ī16.1; 46.2%M) and FD(7pts,age:40.4Ī12.5; 57.1%M). The following echocardiography parameters: LVMI, RWT and the type of LV remodeling were analyzed.

Results: Increased LVMI occurred in 89.5%pts with HCM, 90.9%pts with CA and all of pts with FD. RWT exceeding normal range among 92.4%pts with HCM, 92.3% with CA and 57.1%pts with FD. Concentric hypertrophy was diagnosed in 84.2%pts with HCM, 75%pts with CA and 57.1%pts with FD.
Eccentric hypertrophy was observed in 5.3%pts with HCM, 8.3%pts with CA, 42.9%pts with FD. Additional evaluation showed the abnormal IVS/PWT index in 79.7%pts with HCM, 23.1% with CA and 28.6% with FD and the increased left atrium(LA) area in 71.7%pts with HCM, 63.6%pts with CA and 57.1%pts with FD.

Conclusions: Although cardiac hypertrophy is a typical sign it does not occur in all subjects with HCM, CA, FD. More detailed analysis including the form of hypertrophy (concentric, eccentric, symmetrical, asymmetrical) as well as LA remodeling are more characteristic for the specific diseases as HCM, CA, FD.

Keywords: Echocardiography, cardiac amyloidosis, Fabry's disease, hypertrophy cardiomyopathy, remodeling

Limitation of use the electrography criteria of left ventricular hypertrophy in differentiation between hypert

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Background: Left ventricular hypertrophy (LVH) is a common pathology and should be differentiated using non-invasive and invasive methods. ECG is a first choice method for clinical evaluation of patients with LVH.

The aim: Aim of the study was to compare LVH ECG criteria among patients with echocardiography features of cardiac hypertrophy in regards to the final clinical differential diagnosis (HCM, CA or FD).

Materials and methods: Retrospective analysis of overall 91 patients (pts) (age:55.7Ī15.9; 58.4% M) with features of cardiac hypertrophy in echocardiographic examination, hospitalized in a tertiary reference cardiology centre between 2010-2022 was performed. Based on the final clinical diagnosis the population was divided into three subgroups: 71pts with hypertrophic cardiomyopathy (HCM, age:56Ī15.2; 60.9% M), 13pts with cardiac amyloidosis (CA, age:62Ī16.1; 46.2%M) and 7pts with Fabry Disease (FD, age:40.4Ī12.5; 57.1%M). Multiple ECG records were evaluated and the presence and frequency of 8 different LVH criteria were verified.

Results: Among the study population LVH criteria were present in 67.6% with HCM, 53.8% pts with CA and 57.1% FD. Analysis of the number of LVH ECG criteria revealed: none of LVH ECG criteria: in 32.4%pts of HCM, in 46.2%pts with CA, in 42.9% pts with FD. 1 LVH ECG criterion in 21.1% pts with HCM, 46.2% pts with CA and 14.3% pts with FD. Between 2-4 criteria in 33.8% pts with HCM, 7.7% pts with CA and 42.9% pts with FD. Between 5-7 criteria in 12.7% pts with HCM and no pts with CA or FD. ($p>0.05$) No patient fulfilled 8 LVH ECG criteria. The most common criterion in the whole population was V6>V5; Cornell index in HCM; V6>V5 in CA; Sokolow-Lyon, Cornell index and Rmax+Smax in FD.

Conclusions: Regardless of LVH diagnosed by echocardiography the LVH ECG criteria are not present in all subjects. Mismatch between TTE and ECG findings especially is present in CA and FD that may be indirect suggestion for suspicion of these diseases.This lack of LVH ECG criteria did not exclude these diagnoses.

Keywords: ECG, Fabry's disease, cardiac amyloidosis, hypertrophic cardiomyopathy, left ventricular hypertrophy

Fascicular Arrhythmia - clinicopathological characteristics

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Work's tutor: dr n. med. Michał Orszulak

Background: Fascicular arrhythmias origin from specialized cardiac conduction system and include ventricular arrhythmias: premature complexes, tachycardia. Premature fasicular complexes (PFC) are commonly narrow and therefore may easily mimic supraventricular extrasystoles, especially on standard 3-derivation Holter recording.

The aim: The aim of the study was to characterize clinicopathological features of patients with PFC recorded during standard ECG holter monitoring.

Materials and methods: 16000 ECG Holter records were retrospectively analysed in search of fascicular arrhythmia. Finally, 51 patients with PFC (49% males; 63Ī 16 years, LVEF 48.9 ± 12.7%) were included into analysis.

Results: The median of PFC was 1383 beats/24hours (Q1= 430; Q3 10449 beats/24hours). Mean QRS width was 106 ± 24ms and mean PFC QRS width was 119 ± 18ms. The coupling interval PFC-QRS was 566 ± 125ms. Multiplications of PFC were observed in 32 (63%) patients: pairs in 27 (53%) subjects, nsVT in 24 (47%) patients. In 28 (55%) patients the number of PFC was >1000/24hours and in 14 (27%) patients the number of PFC was >10000/24hours. Frequent PFC were more common in men (59% vs 25%; p=0.049). Patients with frequent PFC had wider native QRS (113 ± 25 vs 96 ± 18ms; p<0.05) and wider ectopic fascicular QRS (122 ± 17 vs 115 ± 18ms; p<0.05). So far, no significant differences with regard to clinical characteristics (like LVEF or associated co-morbidities) were observed between frequent PFC and non-frequent PFC subjects.

Conclusions: The increased number of PFC in Holter ECG record does not seem to be related with any important clinical pathology. However, taking into account the size of the study group, conclusions should be treated as preliminary which encourages further analysis of a wider sample.

Keywords: Fascicular Arrhythmia, narrow QRS ventricular arrhythmia

Chronic kidney disease and echocardiographic indices of aortic stenosis

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Background: Aortic stenosis (AS) is a condition with rising prevalence especially in older population. Chronic kidney disease (CKD) may cause a progression of AS. Aortic-valve calcification appears to progress more rapidly in patients with advanced renal disease than those with normal renal function.

The aim: The aim of the study is to demonstrate the relationship between the degree of CKD and echocardiographic indices of AS.

Materials and methods: The retrospective cohort study included 98 patients with AS and eGFR < 60ml/min/1.73m2 hospitalized at the tertiary reference centre between 2017-2022 Analysis involved clinical characteristics, laboratory tests, and results of imaging methods.

Results: Division of the study population according to the eGFR revealed: 49 (50%) patients with eGFR 45-60 ml/min/1.73m2 (CKD classified as 3a), 33 (33.7%) patients with eGFR 30-45 ml/min/1.73m2 (CKD classified as 3b), 12(12,3%) patients with eGFR 15-30 ml/min/1.73m2 (CKD classified as 4) and 4 (4,1%) patients with eGFR <15 ml/min/1.73m2 (CKD classified as 5).
Based on echocardiographic examination (LVEF, P mean) the study population was divided into moderate AS – 36 (36.7%) patients, and severe AS - 62 (63.3%) patients.
Analysis of AS hemodynamic subtypes of severe AS revealed the following subgroups: high gradient subgroup (23N, 37%), normal flow - low gradient subgroup (28N, 45%) and low flow – low gradient subgroup (11N, 18%).

Frequency of the CKD stages was similar in high gradient and normal flow – low gradient subgroups whereas in the low flow - low gradient subgroup more patients suffered from CKD in stage 3a and 3b (p= 0,039) .
Mean eGFR was lower in the normal flow - low gradient than low flow - low gradient subgroup (40.76±9,4 vs 49.5±10,2 ml/min/1.73m2, p = 0.015).

Conclusions: Degree of CKD is similar in patients with moderate and severe AS. Hemodynamic phenotype of severe AS may be associated with the stage of kidney impairment, however, this is a preliminary observation and needs further evaluation.

Keywords: CKD, chronic kindey disease, aoric valve stenosis

Preclinical history of patients with HCM reflecting the course of the diagnostic process

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Background: Hypertrophic cardiomyopathy (HCM) is a relatively common, genetic heart disease, associated with a high risk of sudden cardiac death (SCD). Early diagnosis is crucial for the long-term prognosis.

The aim: To analyze a preclinical history of HCM patients and the course of the diagnostic process prior to the HCM diagnosis.

Materials and methods: The study was a single-centre retrospective cohort analysis of 85 HCM patients (pts; meanage 63.9 Ī 12.9 years; men/women: 43/42) hospitalized at tertiary cardiology centre, between 01.01.2013 - 31.12.2022. We analyzed only the hospitalization when HCM was diagnosed, types of referrals to the hospital (planned/urgent) and the reason for hospitalization, analysis involved the family history.

Results: Mean age at the time of HCM diagnosis was 50.8 years. Analysis revealed planned hospitalizations: from a general practitioner (GP)- 14 (16.9%) pts, from a specialist clinic- 55 (66.3%) pts. Unplanned hospitalizations: patient reported by himself- 1 (1.2%) pts, transferred by an ambulance- 3 (3.6%) pts, transferred for diagnostics from other hospital- 10 (12.1%) pts. Causes of hospitalization were as follows: symptoms: dyspnea on exertion- 44 (51.8%) pts, dyspnea at rest- 13 (15.3%) pts, angina pain- 28 (32.9%) pts, heart palpitations- 28 (32.9%) pts, vertigo– 18 (21.2%) pts, syncope- 26 (30.6%) pts, systolic murmur- 27 (31.8%) pts. Comorbidities: hypertension - 48 (56.5%) pts, atrial fibrillation - 28 (32.9%) pts, other supraventricular arrhythmia- 21 (24.7%) pts, ventricular arrhythmia- 37 (43.5%) pts, heart failure- 38 (44.7%) pts.The patients' family history was positive in the following cases: history of SCD at a young age- 15 (17.7%) pts, HCM in the family- 11 (13%) pts.

Conclusions: The diagnosis of HCM is often made at an advanced age, mainly due to overt clinical presentation of comorbidities or exacerbation of HCM. Efficient screening is a main goal for early diagnosis.

Keywords: HCM, diagnosis, symptoms, hypertrophic cardiomyopathy

SESSION
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Shockwave intravascular-lithotripsy as a new treatment method for underexpanded stents

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Background: Sufficient stent expansion is the main factor contributing to percutaneous coronary intervention (PCI) outcomes, with stent underexpansion being the most potent predictor of cardiac adverse events.

The aim: We aimed to evaluate the safety and efficacy of intravascular lithotripsy (IVL) in stent underexpansion due to heavy calcification.

Materials and methods: This registry including patients with IVL therapy to treat stent underexpansion from November 2019 to September 2022. Angiographic and intracoronary imaging data were collected. The primary efficacy endpoint was device success (technical success with a final percentage diameter stenosis <20%). The secondary endpoint was device-oriented composite endpoint (DOCE) (defined as a composite of cardiac death, target lesion revascularization, or target vessel myocardial infarction).

Results: Seventy patients were included, the mean age was 68Ī6.2 years and 66% were male. The median time since last PCI of target lesion was 12.0 (IQR4.0-54.0) months. Adjuvant treatment with non-compliant balloon dilatations pre- and post-IVL was performed in 72.3% and 76.8% of patients, respectively, and additional stenting was performed in 22.4%. Device success was achieved in above 70% of cases. Minimum lumen diameter (MLD) increased from 1.1(0.7-1.4) mm to 2.6 (2.3-3.1) mm ($p<0.001$) and area stenosis at MLD decreased by 82.6 (72.4-90.8)% to 21.5 (11.1-37.2)% ($p<0.001$). DOCE occurred in one patient caused by cardiac death.

Conclusions: Coronary IVL is safe and effective in increasing lumen and stent dimensions in underexpanded stents secondary to heavily calcified lesions.

Keywords: underexpanded stent, intravascular lithotripsy, calcified lesions

CHA2DS2-VASc score and others risk factors-predictors of adequate ICD intervention (post-infarction patients)

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Background: It is important to define indicators that could allow to estimate the higher risk of adequate ICD intervention e.g. in patients with the history of myocardial infarction (MI).

The aim: Analysis of the importance of potential risk factors or their combinations in the population of patients after MI with ICD implanted in primary or secondary prevention.

Materials and methods: The study population consisted of 155 patients with ICD followed-up for at least 2 years. The end of observation was the occurrence of appropriate ICD intervention or the last ambulatory visit when no interventions were found. Population consisted of two subgroups: with ICD implanted as primary prevention (30 patients, age: 59±8 years, 10% females, p-ICD) and ICD implanted as secondary prevention (125 patients, age: 63±9 years, 10% females, s-ICD). We analyzed various parameters and scores which may be associated with higher risk of VT/VF occurrence, such as CHA2DS2-VASc scale>3 (patients after MI with one/two additional diseases or aged >75 years), HR ≥70 bpm, presence of dyskinesis in echocardiography, previous smoking and others not included in this summary.

Results: Patients with CHA2DS2-VASc score>3 had lower number of adequate ICD interventions during the follow-up: 19 vs 63 pts (p=0.08). Univariate Cox analysis revealed the risk of adequate ICD was lower for CHA2DS2-VASc with score>3: HR=0.77 [95% CI: 0.57-0.96; p=0.31]. The risk was lower in patients with HR ≥70 bpm: HR=0.62 [95% CI: 0.37-0.03, p=0.06], higher for the presence of dyskinesis: HR=1.36 [95% CI: 0.83-2.22, p=0.22] and higher for previous smokers: HR=1.13 [95% CI: 0.71-1.81, p=0.61].

Conclusions: Higher CHA2-DS2-VASc scores as well as higher HR were found not to be associated with a high risk of the ICD interventions, but the presence of dyskinesis and previous smoking were associated with higher risk. Further analyses in subgroups are continued.

Keywords: CHA2DS2-VASc, ICD, risk factors

Aortic valve neocuspidization with glutaraldehyde-treated autologous pericardium (Ozaki Procedure) in Georgia

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Work's tutor: Prof. PhD, MD. - Zviad Bakhutashvili. Chief of Cardiac surgery at G.Chapidze Emergency Heart Center.

Background: Surgical aortic valve (AV) interventions for Rheumatic and infective Valve Disease, especially in adult and children, have proven problematic with graft failure, relapse, and poor compliance with anticoagulation. A novel technique involving neocuspidization of the aortic annulus using autologous pericardium to construct new AV leaflets (the Ozaki procedure) has shown promising outcomes in young adult and children.

The aim: The aim of this study is to reveal and prove the effectiveness of this novel technique for aortic valve surgery in Georgian during last 5 years.

Materials and methods: Demographic Data: N=101; Age-57.7 Ī 9.3; Pahtology: Total: 101; (Stenosis-63; Regurgitation-7; Stenoregurgitation -31;) Tricuspid AV-73; Bicuspid AV-26; Unicuspid AV-2; Types of Surgical Intervention:Only AVNeo-56; AVNeo+CABG-24; AVNeo + Asc.Ao+ CABG -8; AVNeo+MVPL- 11; AVNeo+CABG+MVPL-2;

Results: Postoperative Data: EF(%)56.8±2.5; Mean grad.(mm hg)-5.3±2.6;NYHA-1.1;P/o. Blood loss (ml)- 410;REDO-2(in 13months);Mean Follow-up(month)- 28.0(63-2);Hospital mortality-2.15 %(2).
Based on our results:AVNeo is good choice especially for:Patients with narrow annulus;Female patients with child-bearing age.No anticoagulation;No gradient and regurgitation.It's Reproducible procedure;Optimized cross clamp time;Lack of immune response.Method of choice in patients with bacterial endocarditis.The best in patients with small aortic root,No clicking noise.

Conclusions: Ozaki's Procedure could be the golden standart treatment method in younger patients with narrow aortic ring. AVNeo is a safe and effective method for an infective aortic valve replacement with good short and midterm results.AVNeo also could be considered for aortic root abscesses as an alternative to allograft; low gradient is a positive point in the recovery of stressed myocardium.No necessity to use warfarin makes patient's postoperative life safer and better and cuts off the hospital days.The advantage of AVNeo is no sewing cuff, which makes redo operation easier.

Keywords: Avneo; Aortic Valve; Ozaki procedure; Anticoagualtion;Ascending aorta replacement.

Avoiding injury during catheter radiofrequency ablation – anatomical implications

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Work's tutor: dr n. med. Agata Krawczyk-Ożóg, prof. dr hab. n. med. Krzysztof Bartuś, dr hab. n. med. Radosław Litwinowicz

Background: The mitral isthmus is located in lateral, postero-inferior wall of left atrium. It is bounded by mitral annulus and inferior pulmonary vein. This localization is used for the invasive treatment of the atrial arrythmias. However, the precise vasculature localization in this region is yet not fully described.

The aim: The aim of this study was to evaluate the left circumflex artery localization within mitral part of coronary sulcus or mitral isthmus region for prevention of fatal ischemic complications.

Materials and methods: Cardiac structures and vessels was segmented and visualized 105 (age: 63Ī10, 45.0% females) angio- CT scans. Mitral annulus posterior part was divided into 12 sections: 4 on each mitral annulus posterior part. Localization of left coronary artery was evaluated. Results were statistically analyzed.

Results: The left circumflex artery was located in mitral isthmus in 27.6% cases. In 54.3% cases, it was located within coronary sulcus. In 18.1% it was located superficially to coronary sulcus. The end of the left circumflex artery route was observed most commonly in the level of the last P1 zone and first P2 zone (25.7% and 23.8% respectively) and least commonly in last P2 and first P3 zone (1.0% each).

Conclusions: Classic anatomical description of the left circumflex artery localization is insufficient to deliver crucial morphometrical relations between cardiac structures. In over 25% cases, left circumflex artery is located within coronary sulcus. Therefore, great caution should be maintained during ablation procedures within this region, due to risk of left coronary artery thermal damage.

Keywords: left coronary artery, atrial fibrillation, mitral anulus, mitral isthmus ablation

Is anatomical predisposition for coronary artery injury during a tricuspid valve repair sex related?

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Background: Iatrogenic right coronary artery occlusion is a complication that may occur during tricuspid valve repair or replacement. There is a lack of information about certain anatomical predispositions and the prevention of this fatal complication.

The aim: The aim of this study was to evaluate the presence of narrow distances between the tricuspid annulus and right coronary artery and to evaluate sex differences in this region.

Materials and methods: Heart structures and vessels were segmented from 107 (62.1Ī9.4 age, 56% female) computed tomography scans and further analyzed. The tricuspid annulus was divided into septal and free wall part. The free wall part was divided into 12 zones. Distance between the tricuspid annulus and the right coronary artery was measured at the beginning and the end of each zone. Tricuspid valve parameters were assessed and compared between sexes.

Results: The mean diameters [long (M: 44.6Ī7.3mm, F:41.2Ī5.9mm) and short (M:43.8Ī6mm, F:39.4Ī6.4mm)], area (M:1527.3Ī306.77mm2, F:1279.2Ī275.1mm2) and perimeter (M:139.5Ī13.7mm, F:127.2Ī13.4mm) of the tricuspid annulus were significantly larger in males than in females (P<0.05). There were no statistically important differences in distance between the right coronary artery and the right coronary sulcus. The shortest mean distance was measured at the beginning of the 10th zone (4.5Ī2.8mm).

Conclusions: While sex impact on heart size and tricuspid diameters is significant, there were no differences in distances between the right coronary artery and right atrioventricular coronary sulcus. Similar anatomical distances between those structures prove that representatives from both sexes are equally anatomically predisposed to the right coronary artery occlusion during procedures in this region. Preoperational, computed tomography-based evaluation of mutual relations of the tricuspid annulus and right coronary artery may help avoid fatal ischemic complications.

Keywords: right coronary artery iatrogenic occlusion, tricuspid valve repair, tricuspid valve replacement

Quality of life in patients with a leadless versus transvenous pacemaker

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Background: The transvenous pacemaker (PM) is a well-accepted life-saving device for advanced atrioventricular block and sick sinus syndrome but is associated with short- and long-term complications related with leads and pulse generator. Leadless pacemakers (LPM) are an answer to these complications. LPM is smaller in size, it's lack of transvenous leads and no pulse generator in subclavian region thus contributes to better cosmetic effects. Little is known about quality of life (QoL) in patients with LPM.

The aim: The aim of our study was to compare QoL of patients with LPM versus PM.

Materials and methods: All consecutive patients who have had pacemaker implanted between January 2016 and March 2022 were included in the study. A cohort of PM patients was matched to LPM subjects by sex, age and indications for the device. All patients were requested to fulfill two standardized questionnaires to assess QoL: 36-Item Short Form Health Survey(SF-36) and Minnesota Living with Heart Failure Questionnaire (MLHFQ) 6 months after device implantation.

Results: Radiation dose (18.95 vs 107.5 mGy, P ≤0.001) and hospitalization time (1 vs 7, P ≤0.001)) were significantly shorter in the group of transvenous PMs vs LPM. Patients with leadless pacemaker(n=31) and transvenous pacemaker (n=31) did not differ regarding baseline characteristics. In the post-implantation period in the LPM group one patient suffered from a fistula between common iliac artery and femoral vein and one patient had pericardial effusion during the follow-up. There were no statistically significant differences between leadless and transvenous PM subgroups, both for mental and physical QoL assessed in SF-36 and MLHFQ(all P=NS). The median MLHFQ total score was 33.5(0-88) for LMP and 21(3-68) for PM group(P=0.8). The median total score for the SF-36 questionnaire was 54(8-140) vs 35(14-105) for LPM and PM, respectively(P=0.86).

Conclusions: Quality of life after device implantation does not differ significantly between a group of patients with leadless and conventional pacemaker.

Keywords: quality of life, leadles pacemaker, transvenous pacemaker

Influence of atrial fibrillation risk factors and their modification on rePVI efficacy

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Background: Pulmonary veins isolation (PVI), as one of the most effective methods of atrial fibrillation (AF) treatment, is a precutaneous catheter ablation, in which arrhythmogenic foci in pulmonary veins are being eliminated. AF risk factors can have an impact on efficacy of the procedure. Recurrent AF may be an indication for rePVI.

The aim: The aim of the study was to evaluate an impact of the presence and modification of AF risk factors on rePVI efficacy.

Materials and methods: In a single center retrospective study involving 5-year observation (2017-2022), 75 AF patients undergoing PVI and rePVI (36 males (48%); mean age at PVI: 57.47Ī10.6 years; mean time between: AF recurrence: 9.1Ī9 months, ablations: 26.2Ī17.36 months) were analysed for: obesity, arterial hypertension (AH), diabetes, hyperlipidemia. Follow-up data revealing the AF recurrence after rePVI were obtained from 43 (57.3%) patients. Based on the follow-up data and the rePVI efficacy the study group was divided into: successful and unsuccessful subgroups.

Results: Recurrence of AF after rePVI was observed in 30 out of 43 patients (69.8%).
Unsuccessful subgroup was characterized by higher percentage of patients with BMI>30 kg/m2 before PVI (40% vs 30.8%), but lower during rePVI (40% vs 46.2%). In each subgroup 25% of obese patients reduced BMI<30kg/m2.
AH was present in 66.7% vs 69.3% (unsuccessful vs successful) at baseline and in 73.3% vs 76.9% during rePVI. However, percentage of patients with well-controlled AH was higher in successful than in unsuccessful subgroup at baseline (77.8% vs 55%) and during rePVI (90% vs 68%).
Successful subgroup did not show neither greater amount of well-controlled diabetes and lipid disorders nor higher percentage of improvement of them than unsuccessful subgroup.

Conclusions: Baseline control of AF risk factors seems to be better protection from recurrence of AF after rePVI than their reduction between ablations. Improvement of AF risk factors is a rare phenomenon after unsuccessful PVI.

Keywords: atrial fibrillation, pulmonary veins isolation, rePVI, atrial fibrillation risk factors

Intravascular lithotripsy and rotational atherectomy for treatment of broad spectrum of coronary artery diseases

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Background: Intravascular lithotripsy (IVL) using a shockwave balloon represents a new method of treatment of heavily calcified coronary lesions paving way for successful stent expansion, while rotational atherectomy (rotablation) represents an old and established technique.

The aim: The aim of the study was to compare the population of patients subject to IVL and rotablation and evaluate the procedural efficacy of both techniques of coronary debulking.

Materials and methods: The research was a retrospective, case-control study from a single tertiary reference cardiology care center. The study compared patients with chronic and acute coronary syndromes treated with IVL and rotablation in terms of baseline and procedural characteristics, as well as treatment effects.

Results: A total of 30 patients were included in the study (n=18 [60%] treated with IVL and n=12 [40%] after rotablation; median age 68 [66; 77] years, 66.7% men). Patients subject to IVL were younger (66 vs. 76 years, P=0.005), had similar gender (P=0.429) and primary diagnosis distribution (P=0.165), had comparable left ventricular ejection fraction (p=0.892) and peak troponin level (P=0.865), had greater prevalence of peripheral artery disease (77.8% vs. 33.3%, P=0.015), shorter time of procedure (87.5 [70; 112.5) vs. 120 (95; 150) minutes, P=0.008), required smaller number of stents (median of 1 [1; 2) vs. 2 [2; 3], P=0.027) and less frequently was performed via femoral approach (44.4% vs. 83.3%, P=0.032) in comparison to IVL. Both treatment modalities led to 100% success rate with no in-hospital mortality and a trend towards higher rate of femoral hematoma in case of rotablation (25% vs. 5.9%, p=0.141).

Conclusions: IVL is related with less extensive revascularization and shorter procedural time. IVL and rotablation are complementary techniques, characterized by high success rate and low number of complications in experienced centers.

Keywords: intravascular lithotripsy, shockwave balloon, rotablation

Comparison of two techniques for the treatment of calcified coronary artery lesions

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Background: Rotational atherectomy (RA) and orbital atherectomy (OA) are plaque modification techniques applied prior to stent implantation in severely calcified coronary artery lesions. Moreover, both atherectomy devices use rapidly rotating burr, whereas they differ in many aspects.

The aim: The study aimed to retrospectively compare older technique - RA and novel- OA according to patients' clinical profile, procedural as well periprocedural characteristics and complications.

Materials and methods: We reviewed the data of 125 consecutive procedures from a high-volume center, comparing the outcomes of 100 RA procedures from our center's first five years of RA usage with the outcomes of the first 25 OA procedures.

Results: There was no significant difference in procedural success rate between OA and RA group (96% vs 82%; p=0.1175). RA patients had higher Euroscore II (2,25; 4-3,85 vs 1,16; 0,85-2,06; p =0.0017), more often prior PCI (percutaneous coronary intervention) (74% vs 48%; p=0.0120) and ACS (acute coronary syndrome)(63% vs 24%; p=0.0005). In the OA group hypertension (96% vs 78%; p=0.0378), hyperlipidemia (72% vs 42%; p=0.0072), and dialysis (8% vs 1%; p=0.0072) were more frequent. OA procedures were characterized by a higher number of implanted stents (1,56Ī0,71 vs 1,18Ī0,77; p=0.0430), all stents length (38; 26-64 vs 26; 18-38; p=0.0031), procedure duration (90; 70-120 vs 120; 120-120; p=0.0009) and more often LAD (left anterior descending artery) was treated (72% vs 43%; p=0.0003). However, RA was associated with larger contrast volumes (250; 200-310 vs 140; 100-150; p=0.0000), higher radiation (2409; 1506-3866; vs 847; 365-909; p=0.0000). There were no significant differences in periprocedural complications.

Conclusions: RA and OA revealed comparable success rate and safety. The patients in both groups had several comorbidities, however, OA was used in longer lesions. Moreover, lower radiation and contrast use in OA may be associated with better longer follow-up outcomes and should be evaluated in further studies.

Keywords: orbital atherectomy, rotational atherectomy, percutaneous coronary intervention

Results of transcatheter closure of Patent Ductus Arteriosus in neonates and infants less than 6 kilograms

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Background: Mechanical closure of Patent Ductus Arteriosus (PDA) is still needed in considerable number of both preterm and term neonates and infants as the effectiveness of pharmacological PDA ligation is suboptimal. The development of interventional cardiology allows for percutaneous closure of PDA even in <1kg neonates, however, Amplatzer Piccolo Occluder is the only labelled device in patients <6kg.

The aim: To analyse results of transcatheter PDA closure in neonates and infants <6kg.

Materials and methods: Retrospective analysis of all neonates and infants <6kg who underwent transcatheter PDA closure in two tertiary centres in years 2001-2023 (Gdansk, Zabrze). Medical records, procedure results and one-month follow-up were analysed. Procedures were performed under both fluoroscopy and echocardiography guidance.

Results: There were 47 children (34 female), of whom 50% were born prematurely, 40% had significant comorbidities, 7 patients with genetic syndrome. At the time of PDA closure median patients' age was 65 days (range: 4-218) and median weight was 4.9 kg (range: 1.3-5.9). PDA of type A (conical) was present in majority of patients (70.5%), median PDA narrowest diameter was 2.4 mm (range: 1.1-5). Amplatzer Piccolo in 35, Amplatzer Duct Occluder I in 5, Amplatzer Duct Occluder II in 2, Amplatzer Vascular Plug in 4 and coil in 1 patient were applied with 97.9% success rate. There were 3 major complications (6.4%): left pulmonary artery obstruction needing urgent surgery, iliac artery occlusion, device embolisation with percutaneus removal and surgical PDA closure. Insignificant residual shunt was present in 2 patients after a month, 1 patient died after 30 days due to infection and comorbidities.

Conclusions: PDA transcatheter closure in children <6 kg is technically possible with high success rate and acceptable number of complications - comparable to surgery. However, there is no suitable device in this group of patients and application of off-label devices is necessary in considerable number of patients.

Keywords: PDA transcatheter closure, neonates and infants, PDA occluder

Transcatheter aortic valve implantation: short-term outcomes and functional improvement

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Background: Aortic stenosis (AS) is the most common acquired valvular defect worldwide and affects more than 5% of the population over 65 years of age. Due to the population ageing, AS will appear more frequently. European Society of Cardiology recommends TAVI as a treatment option for AS in older (≥75 years of age) or high-risk patients.

The aim: The aim of this study was to analyze the short-term results of TAVI and functional improvement in a consecutive group of 354 patients who underwent the procedure between 2020 and 2022.

Materials and methods: A total of 354 patients who underwent TAVI at the Institute of Heart Diseases, University Hospital in Wrocław between 2020 and 2022 were enrolled in this study. The evaluation included procedural aspects of TAVI (characteristics of the procedure) and 3-month follow-up results.

Results: Mean age of the analyzed group of patients was 78.7 Ī 8.1 years. The successful procedure, defined as effective prosthesis delivery and implantation with reduction of transvalvular gradient, was observed in 320 patients (90.4%). Death at 3-month follow-up was reported in five patients (1.7%). In the perioperative period, 10 cases of stroke/transient central nervous system ischaemia (2.8%), three cases of acute coronary syndrome (0.9%), six cases of development of acute heart failure (1.7%) and 39 cases of conduction disturbances requiring permanent cardiac pacing (11%) were observed. In 152 patients it was possible to assess physical performance, of which 122 (80.3%) patients showed functional improvement in the 6-minute walk test (6MWT), while the mean distance extension for the whole group was 50.77 m.

Conclusions: TAVI, in the elderly population studied, is an effective and safe procedure that improves physical capacity and significantly reduces the severity of heart failure symptoms.

Keywords: TAVI, aortic stenosis, 6MWT

Balloon aortic valvuloplasty among patients with severe aortic valve stenosis

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Background: An alternative method of treatment the aortic valve stenosis (AVS) is a balloon aortic valvuloplasty (BAV), often used as a bridge to transcatheter aortic valve implantation (TAVI) or as palliative therapy in patients for whom other treatments for AVS are contraindicated.

The aim: The aim of the study was to evaluate the effectiveness of BAV.

Materials and methods: This retrospective study covered 136 patients [median age 81 (72; 85) years, 41.9% men] who underwent BAV in the First Department of Cardiology, Medical University of Silesia, between 2010 and 2022. Exclusion criteria: lack of data about the procedure, age <18 years. Primary endpoint was a reduction of mean pressure gradient (Pmean) ≥10mmHg in transthoracic echocardiography (TTE).

Results: The population was characterized by mean EuroSCORE II of 9.06±7,99. In TTE mean aortic valve area calculated using the velocity time integral (AVA VTI) was 0.68±0.25, Pmean was 45.1 ±22.5 mmHg, left ventricular ejection fraction (LVEF) was 47% (34; 55). BAV procedure was performed as: a bridge therapy to TAVI (n=42, 31.6%), palliative procedure (n=49, 36.8%), prognostic procedure during qualification for TAVI (n=33, 24.8%). Percutaneous coronary intervention was performed in 16 patients (14 prior to (10.3%) and 2 during BAV (1.5%). The analysis revealed that 60 patients underwent a successful BAV (a reduction of Pmean ≥10mmHg). Patients with successful BAV had lower heart rate (P=0.025), lower aortic valve insufficiency jet (median 5 vs. 6 mm, P=0.015), greater initial Pmean (33.8 vs. 31.6 mmHg, P<0.001), less frequently had low-gradient AVS (1.7% vs.22.2%, P=0.001). In 12 out of 13 patients with low-gradient AVS BAV was unsuccessful (p = 0.001). Adverse events were reported in 23 patients (16.9%), including 19 deaths (14.0%).

Conclusions: BAV is an effective method with an acceptable rate of adverse events that should be considered as a temporary solution. High-risk patients with severe low-gradient AVS should be referred for prompt destination therapy, including TAVI.

Keywords: aortic valve stenosis, aortic valve repair, balloon aortic valvuloplasty

SESSION
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AND PEDIATRICS

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Analysis of the prevalence and clinical picture of lactose and fructose intolerance in children.

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Background: Lactose and fructose intolerance includes gastrointestinal symptoms that occur after consumption of these saccharides. They may present as abdominal pain, diarrhea, constipation, abdominal distention and vomiting.The hydrogen breath test (HBT) is helpful in diagnosis.

The aim: The aim was to analyze the prevalence and clinical picture of lactose and fructose intolerance in patients hospitalized at the Department of Pediatrics and the Paediatric Gastroenterology Outpatient Clinic, Medical University of Silesia

Materials and methods: Retrospective analysis involved 207 children aged from 3.5 to 17.5 years (mean age 9.88 ± 4.68) with diagnosed lactose/fructose intolerance (based on clinical picture and/or HBT) from 2019 to 2023. In analysis, we included age, gender, symptoms, clinical picture, nutritional status and comorbidities.

Results: The study group was represented by 107 (51.7%) females and 100 (48.3%) males. Among participants 89/207 (43%) of them were diagnosed with fructose malabsorption, 65/207 (31.4%) of them with lactose intolerance and 48/207 (23.19%) with both fructose and lactose intolerance. SIBO was confirmed in 10/207 (4.83%) children: 5/207 (2.42%) patients with single diagnosis, 2/207 with related lactose intolerance and 3/207 with related fructose intolerance. 21/207 (10.14%) patients had short stature. Almost 10% of patients were underweight compared to 13.04% of patients overweight or obese. The most common symptoms were abdominal pain (81%), diarrhea (30.44%) and constipation (21.26%).Celiac disease occurred in 13 (6.28%) patients, IBD (1.45%) in 3 patients and IBS only in 5 (2.41%) patients. 35 (16.9%) patients had food allergies.

Conclusions: Lactose and fructose dietary intolerance can cause unexplained gastrointestinal symptoms. They must be considered in the differential diagnosis of abdominal pain, diarrhea, constipation and/or vomiting.

Keywords: malabsorption, children, carbohydrate intolerance

Glaucoma secondary to Sturge-Weber Syndrome in children – surgical treatment outcomes

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Work's tutor: lek. Agnieszka Tronina, dr hab. n. med. Erita Filipek

Background: Sturge-Weber Syndrome is a rare type of phakomatosis and usually arises from sporadic mutations. Glaucoma is the most common ocular manifestation of this disease and it's management can be challenging.

The aim: Therefore, we would like to present our own experience regarding efficiency of surgical treatment of glaucoma in children with SWS.

Materials and methods: The study group included 26 children with confirmed diagnosis of SWS and a mean diagnostic evaluation age of 26 months (±47) of which 14 were diagnosed with glaucoma. Measurements in group of patients that underwent surgical procedure were taken before surgery, 6 (±3) days, 15(±9) weeks and 12(±3) months after surgery. The results were statistically analyzed at the assumed significance level α=0.05.

Results: The mean value of intraocular pressure at the time of the first examination was 15mmHg(Ī9.5) in non affected eyes, and 33mmHg(Ī11) in eyes with glaucoma. Six patients with glaucoma were not qualified for the surgery and were treated only with anti-glaucoma drugs. Six patients underwent trabeculectomy, while 2 underwent cyclocryotherapy and transscleral cyclophotocoagulation (TSCPC). During the first control after trabeculectomy mean intraocular pressure (IOP) was 16mmHg (Ī4.8), and 15(Ī9) weeks after was 18mmHg (Ī2.8). 28% of patients after trabeculectomy (all of which were treated with trabeculectomy without mitomycin C) in a period of not more than 6 months required additional treatment. In patients who underwent TSCPC or cyclocryotherapy the mean IOP was 23mmHg (Ī3.5) after 6(Ī3) days and after 12 months 24mmHg (Ī2.6). In this group all of patients required subsequent additional treatment. Eyes with glaucoma in 93% had associated eyelid hemangioma.

Conclusions: The best results were observed in patients who underwent trabeculectomy with mitomycin C both in terms of lowering intraocular pressure and reducing the use of anti-glaucoma drugs. Procedures such as TSCPC or cyclophotocoagulation were less successful, however, these procedures are less invasive.

Keywords: ophthalmology, Sturge-Weber Syndrome, glaucoma, surgery

Whether CamAPS FX technology will provide improved glycemic outcomes in comparison to their previous therapy?

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Background: Newly introduced in Poland CamAPS FX is a smartphone application to manage glucose levels in people with type 1 diabetes, using an advanced adaptive hybrid closed-loop approach. This app receives glucose data from compatible CGM- dexcom G6 and connects to a compatible insulin pump. This technology seems to be a promising tool in the treatment of type 1 diabetes, but will it provide improved glycemic outcomes?

The aim: The aim of the study was to evaluate the difference in maintaining appropriate glycemic metrics in patients with type 1 diabetes (T1D) who have just begun therapy with CamAPS FX technology in comparison to their previous sensor-augmented pump therapy.

Materials and methods: Database from sensor - augmented insulin pump (SAP) included 14-days records of 14 patients (mean age 14,64 $\pm$ 3,56 years) with T1D duration 3,8 $\pm$ 2,8 years and were compared to first two-weeks records of using CamAPS. The impact of initiating CamAPS FX was evaluated by comparing the outcomes of previous sensor - augmented insulin pump (SAP) therapy and two weeks after CamAPS FX was enabled for the first time.

Results: During two weeks of using CamAPS FX technology patients achieved extended time in range, which increased from 65,79% to 75,79% ($p < 0.05$).

Conclusions: Due to the time of the study, it can be concluded that after transition from SAP to CamAPS FX patients have initially gained better glycemic outcomes. However, taking into consideration the obtained results, it can be considered as a promising technology in the treatment of diabetes.

Keywords: T1D, CamAPS, SAP,

Cerebellar mutism after resection of midline cerebellar or intraventricular posterior fossa tumors in children

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Background: Cerebellar mutism syndrome (CMS) is defined as a complex neurological disorder with reversible speechlessness being the most significant symptom that develops following various cerebellar injuries, most commonly subsequent to resection of midline posterior fossa tumors in children. CMS is characterized by an early onset after surgery and a tendency to resolve on its own within weeks or months but with long-term linguistic sequelae.

The aim: Our study was aimed to determine the frequency, types of clinical manifestation and risk factors of CMS after resection of midline cerebellar or intraventricular posterior fossa tumors in children based on our center's experience.

Materials and methods: We conducted a retrospective study of the medical records of patients who underwent fourth ventricle or cerebellar vermis tumor resection surgery in the Department of Pediatric Neurosurgery in Katowice in 2002-2021. Clinical documentation, imaging studies and follow-up records were analyzed

Results: The study group consisted of 161 patients (45.3% girls), aged on average 8.2 years (SD 4.9 years), of which 12.4% (n=20) displayed CMS after surgery. The initial follow-up occurred on average 11.6 days (SD 4.9 days) after surgical intervention, with the final follow-up happening on average 50.4 months afterwards. The most common tumor type was medulloblastoma (34.2%; n=55). The most common location was the fourth ventricle (84.5%; n=136), followed by cerebellar vermis (26.7%; n=43) and cerebellar hemisphere (18.0%; n=29).

Conclusions: CMS is a serious complication of surgical treatment of posterior fossa tumors in children. Increasing awareness of CMS is important to deliver optimal care, including early logopedic rehabilitation to minimize long-term consequences. CMS should be considered as a potential side effect when planning intervention within the fourth ventricle and cerebellar.

Keywords: Cerebellar mutism, CMS, posterior fossa, fourth ventricle, cerebellar vermis

Reasons for vaccine refusal in pediatric population in Latvia

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Background: World Health Organization in 2019 declared "vaccine hesitancy" as one of the Top-10 biggest health threats in the world. WHO has recommended European region to provide 95% children immunization rates. According to SPKC in 2021 several vaccines didn't reach this level in Latvia: HPV, MMR, rotavirus and chickenpox vaccines.

The aim: Determine the main reasons for vaccine refusal in Latvia.

Materials and methods: Research data was collected in two ways: primary data by telephone interviews with child provider, secondary data from children's medical documentation in the practice of a general practitioner/pediatrician. Data were obtained on the vaccination status of children: vaccines received, not administrated, reasons for vaccination refusal, can GP/pediatrician influence parents' views on vaccination etc. Data were analysed using descriptive statistical methods and IBM SPSS.

Results: 171 children and 69 respondent data were analyzed. In medical records 64 (37.4%) vaccine refusals were registered, in 62.6% of children no refusal were recorded, but they didn't receive one or more vaccines. 15 "zero doses" children were registered. High rates of non-vaccinated children were observed for pneumococcal 76.2%, chickenpox 88.5%, HPV 91.4% vaccines. The most common reasons for refusing vaccination were side effects 23 times, safety aspect of vaccines (new vaccine, formulation, etc.)18 times, child will recover from disease by himself 17 times. Parents with secondary professional education more often refused all vaccines ($p=0.013$). Parents' opinion on vaccination can be influenced by their child's GP/pediatrician (65%), slightly less often informative materials produced by medical professionals(55.1%).

Conclusions: The most common reasons for vaccine refusal in Latvia are fear of side effects, vaccine safety, belief that children will recover from disease. Medical professionals and specialist made informative materials can influence respondents' opinions on the need for immunization.

Keywords: Vaccination, immunization, vaccine hesitancy, Latvia

Gender, ILAR subtype and immunogenic findings as risk factors for uveitis in JIA patients in Latvia

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Work's tutor: prof. Dr. med. Valda Staņēviča

Background: Juvenile idiopathic arthritis (JIA) is the most common rheumatic disease in paediatric population (incidence 1 in 1000 children). The most common extraarticular complication of JIA is uveitis. It can be asymptomatic, or lead to gradual vision loss. There are various non-modifiable risk factors, which are apparent early at JIA diagnosis, that can predispose JIA patient to developing uveitis.

The aim: To evaluate gender, ILAR sub-type and immunogenetic findings as early indicators of increased uveitis risk in Latvian JIA patients.

Materials and methods: The study was performed by gathering data from patient histories, available in the online database of Children's Clinical University Hospital. The study included patients that were hospitalized at least once at Children's Clinical University Hospital, to receive treatment for JIA, in the last five years (2017-2022). The fallowing information was recorded: uveitis status; patient's gender, ILAR subtype; rheumatic factor (RF), anti-nuclear antibodies (ANA); anti-cyclic citrullinated peptide (anti-CCP); HLA-B27.

Results: A total of 546 patients were included in the study. Out of them, 5,1% of patients (n=28) had uveitis. Among uveitis patients, 64,3% were girls and 35,7% – boys. Uveitis was recorded among children with oligoarthritis, seronegative polyarthritis, and undifferentiated arthritis, whith more than half of them being oligoarthritis patients (53,6%). Most of the uveitis patients were ANA positive (73,1%) and almost all of them were HLA-B27 negative (89,3%). All uveitis patients were RF negative.

Conclusions: There were statistically significant correlations found between ILAR subtypes and uveitis. Due to the small amount of uveitis patients in the study, other findings showed only trends, without statistically significant results.

Keywords: Juvenile idiopathic arthritis (JIA), uveitis, gender, ILAR subtype, immunogenicity

Antenatal corticosteroid treatment of ELBW/VLBW infants - a multicenter study in Podkarpackie province

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Work's tutor: Witold Błaż MD, PhD

Background: Antenatal corticosteroid therapy (ACT) is recommended for women at risk of preterm birth from 24 weeks to 34 weeks of gestation, unless there are contraindications. The latest analysis shows that ACT reduce the risk of perinatal and neonatal death. Antenatal corticosteroids treatment is also likely to reduce the risk of intraventricular hemorrhage (IVH) and may lead to a reduction in developmental delay in childhood.

The aim: Describe the frequency of antenatal steroid treatment and its impact on the occurrence of intraventricular hemorrhage and mortality of preterm infants treated in all 3rd level centers in Podkarpackie province, Poland.

Materials and methods: The retrospective, observational, multicenter study included 282 preterm newborns from the population of 403 infants who were born at ≤28 weeks of gestation or/and had a birth weight ≤1000g. Patients hospitalized from 2016 to 2020 in 3rd level centers were included. This study also enrolled infants treated in these centers who were transported after delivery in lower referral centers.

Results: In the study group, 174 patients (62%) received a full course of ACT and 68 (24%) received an incomplete course. The frequency of ACT used in patients depended on the center where the delivery occurred. The percentage of antenatal corticosteroid therapy was significantly lower in premature infants who were delivered in lower referral level centers ($p<.0001$). Among newborns from lower referral centers, the percentage of ACT received was at 14% and 34% for the full and partial courses, respectively. The absence of therapy increase the incidence of IVH ($p<.0001$) and severe grade of IVH ($p<.0001$). Administration of ACT was associated with decreased mortality in preterm infants during the first hospitalization ($p=0.0004$).

Conclusions: Increased use of antenatal corticosteroid therapy may reduce the incidence of IVH and mortality of preterm infants during the first hospitalization, especially in those delivered in lower referral level centers.

Keywords: epidemiology, premature infant, neuroprotection,

Biological therapy in children with IBD- single centre study

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Work's tutor: Dr hab. n. med. Sabina Więcek

Background: The introduction of biological treatment (BT) of IBD creates new possibilities to induce clinical remission and prevent the appearance of complications of IBD.

The aim: The aim of this study was to determine the effectiveness and complications of BT among paediatric patients with IBD.

Materials and methods: The analysis included 66 patients, aged from 4 months to 18 years old (mean age: 12,3) hospitalised in 2010-2023 in Department of Paediatrics in Katowice. The following data was evaluated: age, sex, BMI, symptoms, laboratory and imaging test results, previous treatment, indications for BT, course and complications of the therapy.

Results: The study group was represented by 39/66 (59%) children with CD and 27/66 (41%) with UC (F/M 31/35). The average time from the diagnosis to the initiation of BT was 1,4 Ī 1,1 years. The most common indications were severe exacerbations in 38/66 (57,8%) and perianal fistulas in 10/39 (25,6%). Most common medications was Infliximab, Adalimumab and Vedolizumab. 13/66 patients required biologic drug changes. Complications occurred in 27/66 (40,9%) children: anaphylactic reaction in 17/66 (25,8%) patients, infections 5/66 (7.6%), leukopenia 4/66 (6.1%) and elevated liver enzymes 4/66 (6.1%). The mean score of PCDAI and PUCAI before and after BT was 50,3 compared to 16,7 and 59,9 compared to 18,2, respectively.

Conclusions: Biological treatment proves to be an invaluable therapy in IBD, which helped to obtain induction and maintain remission. Complications do occur, however rare, they can be severe. Further investigation is needed to determine the long-lasting effects on the remission in paediatrics patients.

Keywords: biological treatment, IBD, children

Characteristics of rotavirus infections in the region of Silesia between June 2019 and August 2022, in terms of mandatory vaccination

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Background: Rotavirus is the leading cause of acute diarrhea in children in the first years of life. In the last 3 years, two factors emerged that may affect the morbidity and severity of RV infections: mandatory rotavirus vaccination for children born after 31.12.2020, and pandemic restrictions in 2020 and 2021.

The aim: The purpose of the study was to assess the impact of mandatory vaccination and pandemic restrictions on the morbidity and severity of rotavirus-induced AEG in children.

Materials and methods: We evaluated children diagnosed with AEG caused by rotavirus between June 2019 and August 2022. We included only patients with laboratory-confirmed RV infection. The information regarding dehydration, month of illness, laboratory tests upon admission were obtained from medical documents. Vaccine impact on rotavirus course of infection was also assessed.

Results: Analyzes of the collected medical data of patients showed that the age on the day of admission to the ward was significantly higher after the introduction of compulsory vaccinations (M = 3 years 7 months) compared to the period before introduction of compulsory vaccinations (M = 1 year 7 months). Similar significant differences were noted for the length of hospitalization. After the introduction of compulsory vaccinations (M = 4.97), the length of required hospitalization decreased significantly compared to the period before vaccination (M = 6.42).
In the months in which pandemic restrictions such as social distancing, the order to wear masks, lockdown, and widespread hand sanitizing were mandatory, the number of infections was lower than in the months before the pandemic, and after the return to normality.

Conclusions: Based on the results, we can conclude that compulsory vaccinations have a positive effect on the morbidity in the affected group and the overall length of hospitalization. However, more research is needed to evaluate the efficacy of vaccine. An additional conclusion is the positive effect of pandemic restrictions on the number of RV infections.

Keywords: Rotavirus, mandatory vaccination, gastroenteritis

Comparison between the quality of life of children with congenital adrenal hyperplasia and healthy ones

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Background: Congenital adrenal hyperplasia (CAH) is a genetic disorder characterized by impaired synthesis of steroid hormones in the adrenal cortex. The patients require life-long glucocorticoid, and in some cases also mineralocorticoid substitution, frequent endocrinologist appointments, or hospitalisations due to hormonal imbalance.

The aim: The aim of the study was to assess whether the quality of life of children with CAH differs from that of healthy children.

Materials and methods: Eleven patients, ten with classical CAH and one with non-classical CAH, aged between 5-18 (mean age 12.91Ī3.65 years) were included in the study. Three of the patients required additional fludrocortisone substitution, six underwent reconstructive genitoplasty. The control group consisted of healthy children, without any chronic condition, aged between 5-18 (mean age 12.27Ī2.61 years). Using the Pediatric Quality of Life index (PedsQL) children and their parents evaluated dimensions of physical, emotional, social and school functioning.

Results: The difference between the CAH group and the control group in the total mean score of PedsQL (1334.1±246.0 vs.1245.4±175.2, p>0.05) and the difference between their parents' scores (1247.7±251.9 vs.1247.7±107.5, p>0.05) are not statistically significant. In the parents' evaluation children with CAH scored lower than healthy children in physical functioning (400.0±57.0 vs. 445.5±53.4, p=0.03) and emotional functioning (234.1±73.5 vs. 288.6±51.7, p=0.03). Parents of children with CAH graded the emotional functioning worse than the children themselves did (234.1±73.6 vs 284.1±60.5, p=0.048). No correlation was found between PedsQL score and patient's BMI Z-score, or hydrocortisone dosage.

Conclusions: Children with CAH report a similar quality of life compared to their peers. However, there is a difference in parents' and children's perception of the disorder's impact on a child's quality of life (especially in the emotional and the physical aspects). It is important to take both perspectives into account.

Keywords: Congenital adrenal hyperplasia, CAH, Quality of life, Pediatrics, glucocorticoid substitution

Sinusitis complications in different stages of its development among pediatric patients

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Background: Sinusitis is a common condition in the pediatric population, but only about 3% of cases develop varying in severity complications, requiring a differentiated approach. What's more, in the pediatric population, there are changes as patients age due to the development of individual sinuses.

The aim: The purpose of this paper is to present an analysis of patients treated for sinusitis complications and additionally to characterize this group, with an age breakdown of patients before and after the onset of frontal and sieve sinus development.

Materials and methods: The analysis included 63 patients (82% male) treated at the ENT Department in 2008-2010 and 2019, whose average age was eight years. Information obtained from the medical records considered the type of diagnosis, subject, physical and imaging examinations, and the implemented treatment. The group was divided according to the criterion of age-8 years, into subgroups of 39 (younger children) and 24 (older children) subjects.

Results: In 82% of overall cases, complications occurred in the course of acute inflammation. The most common complication observed in the study group was swelling of the eyelids (77% vs 29%), followed by orbital soft tissue inflammation (12.8% vs 12,5%), with the others occurring less frequently than 5% in the overall group. However, combined intracranial complications were diagnosed in 5% of younger children and 33% of older children. This showed a significant statistical difference in the complications that occurred, with the younger group more likely to present eyelid oedema and the older group more likely to present intracranial complications. Nine patients were discharged from the unit with residual symptoms requiring further treatment, and each patient was diagnosed with an intracranial complication.

Conclusions: The symptoms of patients with sinusitis do not change with their age, but patients with more developed sinuses are more likely to develop serious complications requiring advanced treatment.

Keywords: sinuitis, intracranial complication, swelling of the eyelids, pediatrics

Comparison of cortisol and 17-hydroxyprogesterone concentration in blood and saliva

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Background: Saliva as an easily available biological material may soon become an important source in the monitoring and diagnosis of functioning of endocrine glands, that like blood and urine can reflect changes in human metabolites.

The aim: The aim of the study was to assess of the correlation between cortisol measurements using radioimmunoassay-based methods in saliva and standard cortisol measurements used in clinical practice.

Materials and methods: The study group consisted of 120 patients. The concentration of cortisol in saliva was determined using the RIA, collected twice from each patient using specially designed saliva collection tubes. The collected samples were stored at -8°C in a refrigerator on the hospital premises. The chemiluminescence assay (CLIA) was used to measure the concentrations of cortisol and 17-OHP in the blood. In order to measure free cortisol in urine, a 24-hour urine collection was performed on the day preceding the collection of saliva and blood samples. Then, the concentration of free cortisol in urine was determined using the RIA method. All of the subjects provided written informed consent to participate in the study.

Results: Measurements of cortisol and 17OHP concentrations in saliva are comparable to the results obtained from blood and urine.

Conclusions: We concluded that RIA offers a valuable alternative to CLIA assay and reliable test to discriminate normocortisolemic from hypercortisolemic patients. Major advantages of this assay are the reproducible, non-invasiveness and use in ambulatory patients.

Keywords: saliva, RIA, CLIA

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Morphologic analysis of normal human lumbar dorsal root ganglion - biganglia, and where to find them?

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Background: Ganglia spinalia (GS), have increasingly been considered novel targets for clinical neural interfaces for neuroprosthetic and pain applications. Effective use of either neural recording or stimulation technologies requires appropriate spatial position relative to the target neural element, whether axon or cell body. The internal three-dimensional spatial organization of human GS neural fibers and somata has not been described yet. The GS of the spinal nerve has been also considered an important structure in understanding mechanisms of diseases like low-back pain, and sciatica.

The aim: The purpose of this study was to clarify the normal morphologic features and variations of the lumbar GS in a healthy population.

Materials and methods: Microanatomic dissections (Zeiss surgical microscope) of the lumbar nerves were performed in 5 embalmed human cadavers. We analyzed morphologically ganglia spinalia of human cadavers focusing on L3, L4, and L5 GS.

Results: The L1 - L5 GS were dissected bilaterally. The architecture of GS was classified into 3 types: monoganglia, biganglia, and triganglia. The majority of GS could be defined as monoganglia. Biganglia were identified in L3 and L4 or L5, whereas the singular ganglion, was in the L5 and L1 GS. They were separated by distinct connective tissue layers.

Conclusions: Our data show the presence of biganglia in human lower lumbar GS, supporting the findings of (Shen et all. 2006). It is unclear if the presence of bi- or triganglia would affect the accurate delivery of electrical stimulation to GS neurons, or if the separate ganglia are functionally distinct. We can speculate that connective tissue between multi-ganglia could affect the GS's current spread. Future studies should explore the existence of functionally-distinct biganglia. This may be important for electrode placement for GS stimulation.

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

1-year follow-up of Drip-and-Ship vs Mothership transport models of Mechanical Thrombectomy

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Background: There is currently no common position which model of transfer of acute ischemic stroke (AIS) patients for mechanical thrombectomy (MT) to the Comprehensive Stroke Center (CSC) is more beneficial for the outcomes: mothership [MS] model (direct to the CSC) or drip-and-ship [DS] model (through the Primary Stroke Center [PSC]).

The aim: To compare the impact of delivery model of AIS patients for MT on vessel recanalization and long-term outcomes.

Materials and methods: We studied effective recanalization (TICI≥2b) as well as 1-year outcomes (mortality and good functional outcomes as measured by the modified Rankin score, mRS ≤2), of AIS stroke patients treated by MT in Malopolska Voivodeship between 2019-2021 in respect to the model of transfer to the CSC: MS or DS. According to the protocol in the region, all AIS patients are admitted to the nearest stroke unit (15-unit Network) where intravenous thrombolysis (IVT) is administered and then, to the CSC, if indicated (DS). Some of the AIS patients are admitted directly to the CSC, where they receive IVT or MT or both (MS). We analyzed demographics, stroke risk factors and standardized clinical parameters readily available in AIS. Only patients who gave consent were included to the study.

Results: The study included 583 patients. 380 (65.18%) were transferred to the CSC by the DS model and 203 - by the MS model. Prior to MT 237 (62.4%) patients transferred by the DS model received IVT compared to 94 (46.3%) patients transferred by the MS model, p<0.001. Time lapse from stroke onset to groin puncture was 340.19Ī128,7 minutes in DS model vs. 276.15Ī201,48 in MS model, p<0.001. 1 year mortality was significantly lower in DS model (n=100, 26.3%) vs MS model (n=73, 36%), p=0.015. There were no significant differences in other studied outcome measures.

Conclusions: Real life experience from Malopolska Voivodeship showed that 1-year mortality was significantly lower in the DS model. Further studies are needed to explore factors responsible for this finding.

Keywords: mechanical thrombectomy, acute ischemic stroke, drip-and-ship, mothership, 1-year follow-up

The efficacy of Deep Brain Stimulation of the subthalamic nucleus in the treatment of Parkinson's disease

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Background: Parkinson's disease (PD) is one of the most commonly diagnosed movement disorder. Patients with PD experience many disturbing physical symptoms such as rest tremor, rigidity and slowness of movement. They also have emotional disorders like anxiety, depression or apathy. Deep Brain Stimulation of the subthalamic nucleus (DBS STN) is a gold standard surgical therapy, which may reduce many motor and non-motor symptoms of PD.

The aim: The study was conducted to assess the efficacy of DBS STN in the treatment of non-motor symptoms in PD patients.

Materials and methods: The study group consisted of 29 patients (8 women and 21 men, mean age 58.4Ī10years), with idiopathic PD, who underwent the DBS STN implantation procedure. The scales assessing quality of life (PDQ8, PDQ-39) and non-motor symptoms of PD (PDSS, Epworth, TAS-20, HADS, AES, SRMI) were evaluated two times in each case (before and 24 months after DBS STN surgery).

Results: After the DBS STN implantation, the patients' mean PDQ-39 score decreased by 41% (from nearly 56 points to 33 points, p=0,002). The mean PDQ-8 score decreased by 33% (from approximately 12 to 8 points, p=0,01) and the mean PDSS score increased by 12% (from nearly 91 to 108 points, p=0,02). The remaining non-motor scales were not significantly altered (p>0,05).

Conclusions: DBS STN implantation may significantly improve PD patients' quality of life and such non-motor functions like sleepiness, but tends not to severely impact on mania, apathy and emotional problems in this group of patients.

Keywords: Parkinson's disease, DBS STN

Comparative analysis of giant and nearly giant pituitary adenomas

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Background: Giant pituitary adenomas (GPAs) are tumors with the greatest dimension at or above 40mm. The maximum diameter of nearly giant pituitary adenomas (nearly GPAs) equals 35 to 40mm. The treatment of these tumors is problematic and has a great risk of complications due to the high size and complex anatomical relations of the tumors.

The aim: This study was conducted to analyze GPAs and nearly GPAs treated in The Maria Sklodowska-Curie National Research Institute of Oncology.

Materials and methods: The study is a retrospective analysis of case series of GPAs and nearly GPAs treated with an endoscopic transsphenoidal approach in The Maria Sklodowska-Curie National Research Institute of Oncology from 2007 to 2023. The first study group included 170 patients with GPAs (65 women, 105 men), and the second group comprised 32 patients with nearly GPAs (6 women, 26 men). The mean age of patients at the time of surgery and observation time in the first group were 57.1 and 7.3 years, respectively, and in the second group 54.9 and 5.7 years.

Results: Patients with GPAs had total resections more frequently (75.0%) compared to patients with nearly GPAs (42.4%). The most common histopathologic diagnosis was the gonadotroph adenoma in both groups. GPAs more commonly showed invasion of the adjacent structures (72.9%) than nearly GPAs (46.9%). The treatment of GPAs was more often associated with side effects. Moreover, patients with GPAs experienced serious complications (hematoma, hydrocephalus, coma, death), which were not observed in the nearly GPAs group.

Conclusions: GPAs differ significantly from nearly GPAs in clinical and morphological aspects. The diagnosis of a pituitary adenoma with a maximum diameter above 40mm is associated with a poorer prognosis and should prompt a more intense treatment.

Keywords: giant pituitary adenoma, endoscopic surgery

Endoscopic third ventriculostomy (ETV) in pediatric patients

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Work's tutor: dr n. med. Ryszard Sordyl

Background: Endoscopic third ventriculostomy (ETV) is a minimally invasive method of treatment of obstructive hydrocephalus (HCP). It consists in creating an alternative route for the cerebrospinal fluid outflow by opening the floor of the third ventricle.

The aim: The aim of this study was to assess indications for surgery, clinical picture, and treatment outcomes in children with HCP treated with ETV.

Materials and methods: A retrospective analysis of patients who underwent ETV in the Department of Pediatric Neurosurgery in Katowice between 2013 and 2023.

Results: Study population consisted of 63 patients (31 girls and 32 boys, age: 1.5 mo.-17 yrs.). Obstructive HCP was the cause of treatment in almost all children (98.4%). Most often obstacle was a tumor (44.4%), followed by the aqueductal stenosis (30.1%) and intracranial cysts (17.5%). The most common localization of tumor was tectal plate (71.4%), while cysts were located in the quadrigeminal cistern (44.4%), cerebral aqueduct (33.3%), and posterior fossa (33.3%). Symptoms of increased intracranial pressure were the most common clinical manifestation (82.5%), including: headache, increased head circumference, nausea/vomiting, alterations of consciousness. All patients were qualified for endoscopic intraventricular surgery. In majority of cases (77.8%) ETV was the only performed procedure, while in 11 patients the operation was extended with tumor biopsy, and in another 3 children with cystoventriculostomy. In the short-term observation, symptoms of intracranial hypertension resolved in almost all patients (98.4%). During the follow-up period, 3 children (4.76%) required repeated ETV, while in 12 cases (19.0%) shunt implantation was necessary. Postoperative complications were observed in 10 patients.

Conclusions: ETV is an effective and safe method of surgical treatment of obstructive HCP in children. In the case when HCP is caused by a neoplastic process, the procedure may be extended with a tumor biopsy.

Keywords: ETV, hydrocephalus

The importance of urinary symptoms to the quality of life of RRMS patients

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Work's tutor: dr n. med. Anna Walawska-Hrycek

Background: Urinary disorders are one of the many symptoms in Relapsing Remitting Multiple Sclerosis (RRMS). Bladder dysfunction is for patients often unpleasant and problematic therefore may be decreasing their quality of life.

The aim: There is little information about prevalence of neurogenic bladder symptoms and its impact in the Polish population of patients with RRMS. The goal was to study the effect on the quality of life of these patients.

Materials and methods: Our study was carried out in the Department of Neurology of Medical University of Silesia in Katowice. In examination we used our survey which checked basic information about the patients and their bladder problems. We also used two tests: Actionable Bladder Symptom Screening Tool (ABSST) and King's Health Questionnaire (KHQ) to evaluate the impact of dysuric disorders on patients' quality of life. During our study we also examined motor functions by using two tests: 9 pin test and 25 steps test.

Results: 54 stationary surveys, ABSST and KHQ were distributed, 49 of them were completed and turned back. 30 of them were female (61%) and 19 male (39%), with mean age of 40,7Ī12,75 years and mean duration of the disease 9,3Ī6,26 years, 19 of the patients (38,8%) reported bladder dysfunction symptoms on their own via a stationary survey. The ABSST indicated that 26 of the patients (53,1%) presented at least one highly severe sign of bladder dysfunction. The KHQ shows that in 9 out of 10 domains the presence of urinary symptoms had a significant impact on patients quality of life ($p<0.05$). Patients with bladder problems had worse results of the 25 steps test in comparision to patients without bladder problems.

Conclusions: Bladder dysfunction and dysuric disorders are significant problems in MS patients and should not be overlooked due to their influence in patients' normal activities. Recognition and proper treatment is needed to prevent the development of more severe dysfunction.

Keywords: RRMS, neurogenic bladder, urinary disorders

Surgical treatment of lumbar disc herniation in pediatric patients

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Background: Lumbar discopathy is a rare disease in pediatric population. Children account for only about 5% of all patients treated for lumbar disc herniation. Moreover, only 5.5/100 000 children require surgery for this condition.

The aim: The aim of the study was to analyze indications for surgical treatment of lumbar disc herniation in children and to evaluate postoperative outcomes.

Materials and methods: A retrospective review of medical records was performed to extract pediatric patients who underwent surgical treatment of lumbar discopathy in the Department of Pediatric Neurosurgery in Katowice between 2011-2022. The results of radiological examinations (MR) as well as clinical manifestation, type of surgery and treatment outcomes were evaluated.

Results: Study population consisted of 22 patients (13 girls and 9 boys, average age at admission: 15.5 years). The most frequent presenting symptoms included sciatica (n=22, 100%), low back pain (n=15, 68%), sensory disorders (n=10, 45.5%), and muscle weakness (n=4, 18.2). The most common affected spinal segment was L5/S1 (n=11, 50%), followed by L4/L5 (n=10, 45.5%). Microdiscectomy was performed in all patients (n=22, 100%) with no intraoperative complications. Mean follow-up time was 37 months. All patients report a favorable outcome in terms of preoperative pain reduction (n=22, 100%). In all children with preoperative neurological deficits (paresis/sensory loss, n=10), the symptoms subsided. Reoperation was required in 3 cases (13.6%).

Conclusions: Microdiscectomy is a safe and effective method of treatment in children with symptomatic lumbar disc herniation, in whom conservative treatment does not bring improvement. Possible risk factors for lumbar discopathy in our group include obesity, professional sports, spinal injuries, prolonged sitting position with limited physical activity.

Keywords: pediatric disc herniation, lumbar discopathy, microdiscectomy in pediatric patients

Anterior versus posterior mechanical thrombectomy. Characteristics of patients and comparison of outcomes

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Background: Mechanical thrombectomy (MT) is currently the gold standard in the treatment of the acute phase of ischemic stroke in both anterior (ICA, ACA, MCA) and posterior (PA, BA, VA) circulation. Most studies show that MT in the posterior large vessels is associated with worse patient outcomes.

The aim: The aim of this study was to compare the characteristics, complications and prognosis in patients who underwent MT in anterior (AMT) and posterior (PMT) circulation.

Materials and methods: The retrospective research included an analysis of selected data from patients who suffered from ischemic stroke between 1.03.2019, and 31.01.2022, and were treated by MT. Data analysis was performed with appropriate tests and statistic models.

Results: The median age of patients with PMT was lower than patients with AMT (63 vs. 70; p=0.001) and significantly more frequently women underwent PMT (43; 75.43%; p=0.001). The median of NIHSS score of patients with PMT was significantly lower on admission (9 vs. 13; p < 0.001) and after procedure (7 vs. 12; p=0.006) than in patients with AMT.
In multivariate analysis the parameters with the strongest effect on the good functional status (0-2 points at modified Rankin scale) of the patients with AMT were: at discharge; NIHSS score on the 2nd day of stroke, atrial fibrillation (AF) and on 90th day of stroke; NIHSS on the 2nd day of stroke, AF and the thrombolytic therapy. In the case of PMT they were: at discharge; NIHSS on the 2nd day of stroke, thrombolytic therapy, TICI score, MT time, WBC count and on 90th day of stroke; age, NIHSS on the 2nd day of stroke, hemicraniectomy, MT time, CRP concentration and WBC count.

Conclusions: Patients with AMT and PMT have different clinical profiles. The neurological state 1 day after MT is key prognostic parameter of the good functional state of patients in both groups. Although literature data suggest a poorer prognosis in patients undergoing PMT, better and more accurate qualification for the procedure could eliminate this difference.

Keywords: mechanical thrombectomy, stroke, anterior circulation, posterior circulation

Risk factors for falls in Parkinson's disease and other parkinsonisms

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Background: Parkinson's disease (PD) and other parkinsonisms affect people with cardinal symptoms including tremor, rigidity, and bradykinesia. Falls are a common and overlooked symptom of PD and are believed to be caused by a combination of motor, sensory, and cognitive impairments, as well as environmental and social factors.

The aim: The study aimed to analyze falls in PD and other parkinsonisms, identify predictors, and develop strategies to prevent them.

Materials and methods: The retrospective case-controlled study analyzed an anonymized database of 735 patients with Parkinson's disease or parkinsonism, conducted by the Department of Neurology at Medical University of Silesia in Katowice. The study had 261 patients with a history of falls (group 1) and a control group - 474 patients with negative falls history (2). The most relevant risk factors for falls have been analysed using chi-square test ($p<0.05$ significance level).

Results: The study found that patients in group 1 were more likely to have other types of parkinsonism (19.9% undefined, 14.2% PSP, and 5% MSA) compared to group 2 (9% undefined, 2.5% PSP, and 0.84% MSA). Patients in group 1 also had a higher prevalence of polypharmacy (73.2% vs. 53.4%), required more walking assistance (32.2% vs. 12.9%), and had more frequent postural reflex disorders (66.7% vs. 47.1%). Group 1 also had a higher prevalence of memory impairment (59.4% vs. 40.9%), dementia (25.7% vs. 16.7%), and low B12 levels (9.2% vs. 5.3%). Finally, the mean age of patients in group 1 was higher (68.9 vs. 65.8) and all differences were statistically significant ($p<0.05$).

Conclusions: The study group had a higher prevalence of other types parkinsonism than the control group. This study suggests that walking assistance, polypharmacy, postural imbalance, and memory impairment increase fall risk in patients with parkinsonism. The study is limited by patient selection bias and incomplete data, and further research is necessary to confirm the findings.

Keywords: falls, parkinsonism, Parkinson's, risk factors, neurodegenerative disorder

Selected correlates of positive body image in a sample with multiple sclerosis: a preliminary analysis

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Background: Multiple sclerosis (MS) is a chronic, neurodegenerative disease that can affect not only the physical but also the mental state of patients. In some individuals, a progressive disability can cause changes in their perception of their own bodies.

The aim: The study aimed to assess selected correlates of positive body image in a sample with multiple sclerosis: depression, anxiety and stress level, acceptance of illness and personality traits.

Materials and methods: The study was conducted among 35 MS patients: 26 women and 9 men, between January and April 2023. The mean age of participants was 40. years old (SD = 10.). The survey contained basic demographic questions as well as 4 questionnaires: Depression, Anxiety and Stress Scale, Acceptance of Illness Scale, Body Appreciation Scale and Ten Item Personality Inventory. For the analysis we used the Pearson correlation coefficient (r).

Results: The conducted analysis showed that the more participants with multiple sclerosis appreciate their body (they have a more positive body image), the: (a) lower is their level of stress ($r = -0.58$, $p < 0.001$), (b) lower is their anxiety ($r = -0.59$, $p < 0.001$) and (c) the lower is their depression level ($r = -0.62$, $p < 0.001$). There is a positive correlation between body appreciation and the level of acceptance of illness ($r = 0.49$, $p < 0.01$). Considering the correlations of body image with personality, the higher body appreciation, the greater the: (a) emotional stability ($r = 0.64$, $p <0.001$), (b) openness to experience ($r = 0.43$, $p < 0.05$) and (c) extraversion ($r = 0.55$, $p <0.001$).

Conclusions: The body image of MS patients is related to their emotional state, acceptance of the disease and personality traits. It should be emphasised that these are preliminary analyses that should be developed in longitudinal studies, in which it could be observed how the examined correlates may act as protective or risk factors for the patient's mental state and his relationship with his own body.

Keywords: body image; multiple sclerosis

Analysis of microbial etiology and clinical profile of brain abscess

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Background: A brain abscess is a bacterial infection of the CNS which can be a life-threatening disease. The prodromal symptoms include a classic clinical triad of abscess: fever, headache, and focal neurologic findings.

The aim: The aim of the study was identifying microorganisms associated with brain abscess.

Materials and methods: 52 patients diagnosed with a brain abscess and hospitalized from November 2001 to September 2022 in the Department of Neurosurgery of Medical University of Silesia in Katowice were retrospectively analyzed.

Results: 52 patients were included in the study (20 females and 32 males, mean age was 49.4 ĩ15.2 years). 43 (82.69%) patients were admitted in emergency mode and 9 (17.31%) in elective mode. The dominant symptoms on admission were sensory deficit (65.38%), motor deficits (50%) and decreased level of consciousness (44.23%).Only in 5 (9.61%) patients there was triad of abscess. Single brain abscess occurred in 41(78.85%) patients and multiple in 11 (21.15%). Most often, the abscess was located in the frontal (26.92%) and temporal lobe (19.23%). Twenty-nine (55.77%) samples were culture positive, out of which 22/29 (75.86%) were monomicrobial and 7/29 (24.14%) were polymicrobial. Microbiological analysis of the collected material showed the presence of Gram-positive (n=34, 70.83%) and Gram-negative (n=14, 29.17%) bacteria. Staphylococcus (9/48,18.75) and Streptococcus (6/48,12.5%) infections were dominant among Gram-positive bacteria, while Klebsiella pneumoniae (4/48, 8.33%) among Gram-negative bacteria. Clinical improvements were observed in 47 patients, while only 5 patients died.

Conclusions: Most patients recover with minor neurologic deficits or improve completely. Gram-negative organisms are a noticeable part of the group. High rate of culture negative cases implies the need for more sensitive diagnostic methods

Keywords: brain abscess, microbiology

Cognitive impairment in remitting-relapsing multiple sclerosis - possible risk factors

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Background: Cognitive impairment (CI) occurres in 40-70% of patients with remitting-relapsing multiple sclerosis (RRMS).

The aim: The aim of this study is to determine possible risk factors that can help identify groups of patients
that are more likely to develop CI.

Materials and methods: 94 RRMS patients (63 female and 31 male aged 39Ī11,5 years) on disease-modifying therapy (DMT) underwent a neuropsychological tests (SDMT, TRAIL, ACE-III). A lot of demographic data that includes age, BMI, cardiovascular factors, tabaco use, time of treatment and disease duration were obtained in order to find risk factors of developing CI.

Results: 65/94 (69%) of patients showed signs of CI in at least one of the tests.
14/94 (21%) of them showed severe CI defined as poor results in all of the three tests.
Patients with higher education obtained significantly better results at ACE(
p=0,00005) and SDMT(p=0,005) compared to patients with lower levels of
education. In this respect, no difference was found between the short-term and long-term patients. The other demographic factors such as for example cardiovascular risk factors didn't have any influance on the outcome of neuropsychological tests.

Conclusions: A considerable number of patients with RRMS suffer from CI. The education status may have impact on CI development in RRMS.
Patients with early stages of the disease should not be excluded from
regulary neuropsychological testing because CI may appear on every stage of the disease. Only regular assessment with accessible tools can help determine CI decline.

Keywords: Multiple sclerosis, Cognitive impairment

Infratentorial brain tumors in infants - symptomatology and postoperative outcomes.

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Work's tutor: Ryszard Sordyl PhD

Background: Brain tumors are rare phenomenon in infants. Occurring only in 1.1 per 100 000 live births.
Moreover, in contrast to older children, in this age group infratentorial localization is much rarer (about 27% of infants with brain tumors aged 0-6 months and 53% aged 6-12 months).
This extreme rarity makes tumors of the posterior cranial fossa in infants a significant diagnostic and therapeutic problem.

The aim: This study aimed to determine the clinical presentation and postoperative outcomes in infants with infratentorial brain tumors.

Materials and methods: A retrospective review of the medical records was performed to extract infants, who underwent surgical resection of infratentorial brain tumor in the Department of Pediatric Neurosurgery in Katowice between 2002-2022. Patients' initial symptoms, extent of resection, histopathological type and location of the tumor as well as early and delayed outcomes and type of oncological treatment were evaluated.

Results: A total of 16 infants (7 female, 9 male) were included. The mean age was 9 (SD 4,28) months. The median of infants' stay was 14 days (IQR 10,5-21). Presenting symptoms included nausea and vomiting (n=11, 68,8%), focal deficits (n=11, 68,8%), apathy (n=9, 56,3%). The most common pathologies were choroid plexus carcinoma (n=3, 18,8%) followed by anaplastic ependymoma (n=3, 18,8%). Perioperative complications occurred in 5 patients (31,3%). 12 infants (75%) were admitted to ICU after operation. No patient died during surgery. Reoperation was performed in 7 cases (43,8%). Favorable outcomes were present in 10 cases (n=10, 62,5%). There were no incidentally found tumors in studied population.

Conclusions: Infratentorial brain tumors in infants gives no specific symptoms which can be misleading. Surgical treatment is associated with a substantial complication risk.

Keywords: brain tumors infants neurosurgery

The assessment of the concentration of Pentraxin-3, Osteocalcin and Osteopontin in the CSF in patients with MS

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Background: Multiple Sclerosis (MS) is a chronic, demyelinating disease of the nervous system. Potential biomarkers useful for differentiation of the type of MS, in evaluation of its activity and the prognostical goals are still investigated, especially in the context of immunosenescence phenomenon. Pentraxin-3 (PTX3) is acute phase protein, being thought as a marker of local inflammation. Osteopontin (OPN) is a pro-inflammatory cytokine, which is relevant in the pathogenesis of the autoimmune diseases. Osteocalcin (OCN) is a noncollagenous protein, playing a role in bones mineralization. The immunosenescence is a phenomenon includes immune system aging: delayed immune response, a tendency to chronic inflammation and a higher risk of autoimmune diseases.

The aim: The purpose of a study was evaluation of PTX3, OPN i OCN conentrations in a cerebrospinal fluid (CSF) in patients with MS.

Materials and methods: Fifty two patients treated in the Department of Neurology in Zabrze, Poland with diagnosed MS (recognized according to McDonald's criteria, 2017) were enrolled in a study. The CSF was taken from each person. The study was approved by the ethical review boards of Silesian Medical University, Katowice, Poland (PCN/0022/KB1/48/I/20).

Results: A study group consisted of 78.8% patients with RRMS, 7.7% with SPMS and 13.5% with PPMS. In 19.23% patients a relapse of disease has been diagnosed. The Osteocalcin concentration was significantly higher in the CSF in patients with SPMS than with RRMS (P=0,023). The Pentraxin-3 concentration was significantly higher in patients suffering from MS, who had increased level of IgG antibodies in the CSF (P=0,006). The Osteopontin level was significantly increased in patients whose CSF contained oligoclonal bands (p=0,008). The study found out significant, positive correlation of Osteocalcin concentration and EDSS (R = 0,334, p<0,05).

Conclusions: PTX3, OPN and OCN can be useful biomarkers in MS. The assessment of their application demands further studies.

Keywords: Multiple sclerosis, immunosenescence, pentraxin-3, osteocalcin, osteopontin, cerebrospinal fluid

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An analysis of Polish psychiatrists consultations of displaced people from Ukraine

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Background: In 2022, after the Russian invasion, Poland became one of the main host countries for citizens from Ukraine. The trauma of war has a huge impact on mental health and can lead to depressive and anxiety symptoms. This has created a new challenge for psychiatrists in Poland, who have to take care of psychiatric patients from Ukraine with their current and old mental problems, despite the difficulties caused by the stress of relocation and language barriers.

The aim: The aim of this paper is to analyse the polish psychiatric consultations of displaced people from Ukraine.

Materials and methods: We conducted anonymous survey specifically to assess the mental health problems experienced by Ukrainian refugees and the difficulties encountered by physicians while during visits. Paper surveys containing single multiple-option questions and open-ended questions, were distributed to participants during a national psychiatric congress. The data collected from the surveys were analyzed using descriptive statistics and compared with relevant literature.

Results: 81% (n=34) of respondents consulted patients from Ukraine. The majority of patients admitted for consultations were women (73,5%), mainly between thirty and forty years of age. In most cases psychiatrist received patients in public institutions and communicated with them in Polish and in English. 47,1% of doctors used the help of interpreter, who was rather provided by the patient. The most common symptoms reported by patients were anxiety (61,8%), depressed mood (50%) and restlessness (44,1%). The most commonly reported disorders were mood disorders (55,9%) and neurotic disorders (52,9%). The war most often had an effect on the worsening of the symptoms already occurring before it (64,7%). Anxiety disorders appeared most often as new in connection with the war (72,7%).

Conclusions: The war beyond our eastern border is a completely new challenge for Polish psychiatrists and may cause specific difficulties related to the language barrier or differences in the therapeutic process.

Keywords: war, Ukraine, refugees, psychiatric consultations

The presence of depression's symptoms with patients suffering from IBD as a result of chronic inflammation

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Background: Crohn's disease and ulcerative colitis come under the diseases, which are associated with the chronic inflammation (IBD). The inflammatory hypothesis of depression assumes that the presence of inflammation forms one of the links of depression.

The aim: The aim of the study was to show the dependence between an appearance of the clinical symptoms of depression with the patients suffering from IBD and the circumferential chronic inflammation.

Materials and methods: 50 adult patients took part in this study, hospitalized between December 2022 and March 2023 on the Department of Gastroenterology and Hepatology of UCK in Katowice. The Beck's Depression Inventory and the inflammation indices were used during the study, such as the concentration of C-reactive protein in serum and the leukocytes level in complete blood count.

Results: There wasn't shown any correlation between the number of points of Beck's Depression Inventory and the concentration of CRP or leukocytes level as an individual factor of inflammation ($p>0,05$). However, there was shown a strong correlation between the number of points of Beck's Depression Inventory and the inflammation ($p=0,004$ for every patient suffering from IBD, $p=0,01$ for UC and $p=0,04$ for CD), especially among patients, who had ≤11 points and no inflammation.

Conclusions: The presence or lack of the chronic circumferential inflammation decides about the progression of depression. The inflammation predisposes to the appearance of symptoms of depression. The lack of inflammation as an important link, conditions the limit of symptoms of depression with the patients suffering from IBD. The inflammation as a factor favourable for depression is more significant in case of the patients suffering from UC than CD. In relation to the presence of chronic inflammation with the patients suffering from IBD and the common etiopathogenesis of IBD and depression, it's really important to draw an especial attention to implement the psychiatric diagnosis and take care of these patients' mental health.

Keywords: depression, IBD, CD, UC, inflammation

Usage of AI for making medical diagnoses (ICD-10) on the basis of epicrises of patients with schizophrenia

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Background: Artificial intelligence (AI) is increasingly being used in modern healthcare to improve health outcomes and patient experiences. The most common uses for AI in medical settings are clinical decision support and imaging analysis, where AI tools can quickly provide relevant information to medical professionals and analyze medical images for findings that may be missed by humans. While the overall standards for AI in medicine are still being defined, it is clear that AI will become a core part of digital health systems in the future. Recent advancements in widely accessible AI chatbots have encouraged many health care professionals to check their usefulness in the analysis of medical records.

The aim: To check accuracy of making medical diagnoses, by AI, according to ICD-10 on the basis of epicrises of patients with schizophrenia.

Materials and methods: We anonymized and translated from Polish to English 50 epicrises of patients diagnosed with schizophrenia who were previously hospitalized at the Department of Psychiatry in Tarnowskie Góry and fed them into three AI chatbots: ChatGPT, GPT-4 and Bing. Each time we asked the question: What is the ICD-10 diagnosis for: [epicrise]? and compared the answers given by chatbots with the diagnosis made by the doctors from the Psychiatry Department. Afterwards we analyzed the number of answers which matched with the doctors' diagnoses.

Results: 36 out of 50 (72%) ICD-10 diagnoses given by ChatGPT matched those made by the clinicians. GPT-4 gave the correct diagnosis for the same epicrises in almost 80% of cases. In comparison, Bing had a much lower accuracy of 46% and exhibited poor repeatability.

Conclusions: Overall, the study provides evidence of the potential usefulness of AI chatbots in aiding medical professionals in making diagnoses. While GPT-4 had a relatively high accuracy, there is still room for improvement. Further research can be done to explore the potential of AI chatbots in other areas of healthcare, and to refine their algorithms and improve their accuracy.

Keywords: AI, ChatGPT, Bing, schizophrenia, clinical decission support, digital health systems

Analysis of ego-resiliency and its relationships in a group of Polish men during the COVID-19 pandemic

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Background: The societal response to the COVID-19 pandemic has become the subject of interest for numerous research groups. Literature provides information describing diverse feelings about the epidemiological situation in particular social groups.

The aim: The aim of this study is to assess the impact of psychological resilience on aggressive behaviour, anxiety and alcohol consumption in a group of Polish male respondents.

Materials and methods: This project was conducted entirely online. The first phase conducted from 24 April 2020 to 8 May 2020 involved 125 men. The second part took place between 5 February 2022 and 6 March 2022, when the survey was attended by 136 individuals. Two independent groups of men participated in both studies. The scales used in the study were: GAD-7 (Generalized Anxiety Disorder 7), AUDIT (Alcohol Use Disorder Identification Test), Buss-Perry Aggression Questionnaire and ER-89 (Ego-resiliensy scale).

Results: Optimal regulation (OR), which is part of ego-resiliency, which is a personality trait, turns out to have a significant modulating effect on most of the parameters studied. It correlated negatively with: anxiety, generalised aggression, anger, hostility and positively with verbal aggression. OR
appeared to affect negatively generalised aggression and anxiety in both phases. Comparing the two studies, only generalised aggression was significantly higher in the second study term.

Conclusions: In a crisis situation such as the COVID-19 pandemic, optimal regulation seems to have played the most important protective role against the fear and aggression that can be expressed for the restrictions imposed. Importantly, the effect of OR on anxiety and aggression is stronger in the second phase of the study, which may be indicative of a male adaptation mechanism to the pandemic.

Keywords: COVID-19, pandemic, mental health, ego-resiliency

Symptoms of bipolar disorder among adolescents residing at Youth Educational Centers in Silesia in Poland

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Background: In Poland children and adolescents who are considered to be socially maladjusted are sentenced to Youth educational centers. The main aims of these facilities are adaptation to social norms and resocialization of depraved youths.

The aim: The aim of this study was to measure the prevalence of mental disorders among inmates of Youth educational centers with a main focus on bipolar disorder.

Materials and methods: Patients were examined using K-SADS and retrospective documentation if such existed. Research group consisted of inmates based in two Youth educational centers located in Silesia, one made for women and one for men. The psychiatric examination was fully voluntary. The results were analyzed using the Statistica program and the Spearman correlation coefficient was used as a statistical method to investigate the relationship between different psychiatric symptoms and disorders in the researched group.

Results: The study includes 80 adolescents who agreed to take part in the study, including 48 boys and 32 girls. Among the male patients: 27.08% met the screening criteria for an episode of mania / hypomania, 37.5% for depressive disorders, 22.92% met criteria for both mania and depression. Among female patients: 40.63% met the screening criteria for both mania/hypomania and depressive disorder, 78,13% for depressive disorders only. We have found statistically significant positive correlations among several symptoms in both males and females. Specifically, symptoms of mania were positively correlated with depression and substance abuse in both genders.

Conclusions: Social maladjustment is often accompanied by a mental disorder or can be caused by one. Mental disorders (especially bipolar disorder) in adolescents commonly have subclinical presentations. In order to provide accurate help for inmates of Youth Education Centers we suggest conducting a psychological evaluation before admission to the facility.

Keywords: bipolar disorder, ADHD, youth educational centers, depression, resocialisation

Evaluating factors influencing the differences in the age of diagnosis of ASD in adolescent males and females

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Background: Autism spectrum disorders (ASD) are various symptoms that begin to occur shortly after birth, however their clinical presentation often remains unnoticed until the environment's requirements exceed children's decreased skills (e.g. social ones). The problem is particularly evident among girls, possibly due to their superior ability to learn from their environment and peers, which enables them to „conceal" their symptoms. Hence, they are often diagnosed significantly later than boys.

The aim: The aim of this study is to compare the average age of diagnosis in adolescent males and females, and to evaluate factors influencing potential differences.

Materials and methods: Retrospective analysis of data from patients diagnosed with ASD who either attended to Mental Health Clinic of John Paul II Pediatric Center in Sosnowiec in 2021, or were admited to the psychiatric ward of Pediatric Center before 2022, was conducted. During diagnostic process, patients were admitted for three visits to a psychologist, who performed a number of diagnostic tests.

Results: A total of 189 adolescent males and 139 females were diagnosed with ASD. Average age of diagnosis in males was 11,1, and in females 12,9. Males, more often than females, presented unusual social behavior (24% vs 10%, p=0,000004). Average age of diagnosis in patients with mental disorders (12,4) was significantly (p=0,000005) older than in patients without disorders (10,3), wherein difference was much more strongly expressed among females alone (10,8 vs 14,4, p=0,0008) than males (10,1 vs 11,5, p=0,015). Females significantly more often expressed comorbid mental disorders, while males more often presented anger issues and low tolerance for frustration.

Conclusions: Based on the acquired results, we can assume that, as expected, males were diagnosed in younger age. This fact might be caused by more often occurence of unusual social behavior. Females are admissioned to mental health clinic in significantly older age, which may cause the progression of comorbid mental disorders.

Keywords: autism, children, diagnostics, mental health

Psychoemotional state of surgical patients in the postoperative period and influencing factors

Madara Kraukle

Work's tutor: MPT Māra Kaše - Stūrmane

Background: Any surgical intervention is tough for patients not only physically, but also emotionally. Depression and anxiety are a frequent postoperative complications that can affect persons' recovery and many factors can lead to the development of depression or anxiety. Patients' emotional state and influencing factor evaluation is important to improve overall outcomes of the surgery.

The aim: To find out the psychoemotional state of the patients in the postoperative period and factors influencing it.

Materials and methods: 51 patients after first-time hip replacement surgery participated in a quantitative cross-sectional study. The study was held in the Hospital of Traumatology and Orthopaedics in Riga, Latvia. Hospital Anxiety and Depression Scale (HADS) and researcher created survey were used to evaluate patients' psychoemotional state and influencing factors. Pearson's chi square test were used to analyze the data in IBM SPSS Statistics software program.

Results: The mean age of participants was 64 (SD ±10) years, 34 (67%) were women and 17 (33%) were men. 31 (61%) didn't have anxiety, 12 (24%) had mild, but 8 (16%) had moderate severe anxiety. 42 (82%) of all participants didn't have any signs of depression, 6 (12%) had light and 3 (6%) had moderate severe signs of depression. Pearson Chi Square test showed that there was no significant association between gender and anxiety or depression, $x2(1, N=51) = 0,041$, $p = 0,839$.

Participants were divided into two groups, those who had light or no pain 34 (55%) and those who had mild or severe pain 28 (45%). There was no significat association between depression or anxiety and these pain groups, Pearson Chi square test $x2(1, N=51) = 1,303$, $p = 0,254$.

Conclusions: Study participants had different psycho-emotional states - aproximatelly one third had various anxiety level and one quarter had various level of depression. Gender or pain didn't affect psychoemotional state significantly.

Keywords: Hip replacement surgery, HADS, anxiety, depression

Physiotherapy is also a woman

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Background: Urogynecological physiotherapy accompanies a woman throughout her life. Currently, it is a dynamically developing field of physiotherapy, which becomes a solution to women's problems during pregnancy and the postpartum period. It also plays a key role in the process of preparing a woman for pregnancy, alleviating symptoms resulting from painful menstruation, helps to increase sexual satisfaction and enables solving the problems of urinary incontinence.

The aim: The aim of our study was to analyze the level of knowledge and opinions of female medical students on the use of urogynecological physiotherapy in the perinatal period.

Materials and methods: 103 female students of medical schools all over Poland took part in the study. The research tool was the questionnaire created by the authors of the study. The study used the CAWI (Computer-Assisted WebInterview) method, i.e. a method in which the questionnaire was made available in electronic form.

Results: The study showed that 89.3% of the respondents had previously come across the concept of pelvic floor muscle therapy. According to the majority of respondents (35.9%), there are no contraindications to urogynecological physiotherapy during pregnancy. Only 7.8% of the respondents had ever used the services of urogynecological physiotherapist, and the most common reasons for visits were painful intercourse and troublesome menstrual pain.

Conclusions: The results indicate that the knowledge of female medical students on the use of urogynecological physiotherapy in the perinatal period is at a good level. According to the respondents, counseling by urogynecological physiotherapist is helpful for women in returning to fitness after pregnancy, including a more efficient return to sexual activity. This is an important aspect of the physical and mental health of every woman.

Keywords: urogynecological physiotherapy, woman's health, pregnancy, sex life

Depression, anger and coping strategies of students in polish medical faculties

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Background: While there are many studies focused on establishing the prevalance of depression and anger issues among medical students in Poland there is very little information about the effectiveness of coping mechanisms chosen by them

The aim: The objective was to determine how medical studies impact mental health of students and what coping strategies are used by them to mitigate the negative influence of stress associated with high expectations, peer pressure and overwork.

Materials and methods: A cross-sectional study was conducted among students of polish medical faculties using an online questionnaire. Risk of depression was assessed using validated BDI inventory, aggression using STAXI inventory and evaluation of coping strategies was conducted with Brief-COPE inventory.

Results: Study was conducted among 329 participants. There was no statistically significant difference in age between females and males. Average outcome in BDI equaled 13.84(95%CI:12.8-14.8). 165(49.6%) students had a score above threshold for the increased risk of depression while 32(9.63%) for severe symptoms of it. In case of aggression average outcome of STAXI equaled 24.89(95%CI:22.6-27.1). There was a statistically significant correlation between STAXI and BDI($r=0.3$; $p<0.05$).In the multiple regression analyses coping strategies did not influence neither STAXI nor BDI outcomes.

Conclusions: High levels of depression among the surveyed students is alarming, over 50% presented an increased risk of a depressive episode. Interestingly coping strategies did not constitute a significant protective factor in relation to the severity of the depressive symptoms and agression. Meanwhile, the sense of satisfaction and contentment with the chosen studies was a very good protective factor in terms of the severity of depressive symptoms.

Keywords: Depression, anger, medical students, coping strategies

Patterns of food selectivity among children diagnosed with autism spectrum disorders

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Background: Autism spectrum disorders are a heterogeneous group of neurodevelopmental disorders in which a significant percentage of the population has so-called food selectivity. Despite large number of studies on the clinical presentation of ASD, at the moment there are no analyzes focusing on this element of the clinical picture. Therefore, its nature remains unclear, although two main hypotheses are raised in the available literature. One associates food selectivity with the domain of sensory disorders, on the other hand, it may be a manifestation of stereotypical and repetitive patterns of activity and interests.

The aim: The aim of the study was to determine the prevalence of traits and the nature of food selectivity in the population of people diagnosed with autism spectrum disorder compared to neurotypical population.

Materials and methods: The study was conducted on a group of 251 people, of which 126 people had a diagnosis of autism and 113 people did not. Answers were collected using an authors' own set of questions asked online and using the paper-and-pencil method in a hospital and a center specializing in the diagnosis and therapy of children with ASD.

Results: As a result of the study, it was found that in people with ASD food selectivity traits are more common than in the neurotypical population. Differences in preferences as to the nature of the dishes largely concerned the structure, color, taste, and method of serving the meal.

Conclusions: It has been established that children on the autism spectrum have a greater number of food selectivity traits than children without ASD, and that certain food characteristics can alter food intake as they grow up. Furhtermore it was observed that children were selective both for sensory and stereotypical reasons, however, it was stereotypical features that significantly differentiated neurotypical people from people with ASD.

Keywords: autism spectrum disorder, food selectivity, sensory sensitivity

Does the weather affect suicide rates?

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Background: Weather conditions can be one of the most important aspects affecting mental health. In this context, suicide attempts and suicides, which are characterised by a certain seasonality with peaks in spring and autumn, are very important. A hypothesis explaining the occurrence of seasonality in suicides is the influence of climatic factors such as temperature, sunshine, precipitation and humidity. The results of previous studies indicate that in many countries the risk of suicide increases with increasing temperature.

The aim: The aim of this study is to determine the relationship between various weather factors and the number of suicide attempts and suicides among the residents of Katowice and Łódź.

Materials and methods: The study analysed weather data taken from The Institute of Meteorology and Water Management (IMGW) public database, which was correlated with data on the number of suicide attempts and suicides obtained from the police stations in Katowice and Lodz through access to public information. Statistical analysis was performed using Excel 365 and Statistica 13.3 software.

Results: The number of suicides and suicide attempts in both cities correlated positively with the occurrence of lightning, the duration of the storm, and the strength or duration of the wind in people of different age ranges, but over 35. Moreover, in Katowice, people aged 75-79 were more likely to commit suicide and attempt suicide during the opacity. In Lodz, a positive correlation was observed between temperature and suicidal behaviour especially among men, while a similar very weak correlation occurred in Katowice among women.

Conclusions: Wind and thunderstorms may affect the incidence of suicidal behaviour in middle and late adulthood and older people. Further research is needed to establish links between temperature, turbidity and suicide rates.

Keywords: weather, suicide, mental health, climatic factors

A study of the well-being of people with schizophrenia, in the context of their social functioning

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Background: Schizophrenia belongs to the so-called psychotic disorders, which are states characterized by pathological and inappropriate perception, experience, interpretation, and evaluation of reality. Previous knowledge about psychoses shows us that patients with schizophrenia have difficulties with critical and realistic evaluation of themselves, their environment, and also have impaired relationships with others.

The aim: The aim of the study was to analyze the daily life of patients with schizophrenia by determining the level of their well-being and social functioning.

Materials and methods: The study involved patients with a diagnosis of schizophrenia from the Day Ward of the Clinic of Psychiatry and Psychiatric Rehabilitation of the Independent Public Clinical Hospital No. 7 of the Medical University of Silesia in Katowice. The patients were examined using two questionnaires - the Frankfurt Well-being Scale and Birchwood's Social Functioning Scale.

Results: Scale responses were converted into point values, and then the scores were divided into 4 equal parts, assigning patients to one of 4 groups in both scales separately (low, moderately low, moderately high, and high results). The results of both scales were compared.

Conclusions: After analyzing the results, no correlation was found between the patients' well-being and their social functioning or employment status. Differences in the patients' well-being were detected - the majority (35%) of individuals described it as low or moderately high (30%). 25% of patients rated their well-being as moderately low, and only 10% as high. Despite these differences in well-being, a significant majority of patients belonged to the group with moderate-low or moderate-high social functioning.

Keywords: schizophrenia, psychiatry, well-being, social relationships

Impact of chemsex on human mental and physical health

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Background: The term chemsex, means chemical sex, or sexual intercourse under the influence of psychoactive drugs. There is no denying that it can affect a person's mental and physical health. In addition, the chemicals taken can have an effect on behaviour and decision-making during sexual intercourse.

The aim: The aim of this study was to examine the effects on human physical and mental health.

Materials and methods: 103 chemsex practitioners were included in the study. A proprietary survey questionnaire, consisting of 20 single-choice and multiple-choice questions, was used as the research tool. The survey was conducted online using Google Forms.

Results: 65% of the respondents answered that psychoactive substances have a positive impact on the quality of sexual intercourse. The main reason indicating a higher quality of sexual intercourse was greater boldness and courage during intercourse and stimulation of sexual fantasies. In contrast, the main reasons indicating a lower quality of intercourse were somatic complaints and a lack of control over the act. 70.9% of the respondents indicated that they felt side effects after taking psychoactive substances. 56.3% felt that the substances they had taken had a negative effect on their mental health.

Conclusions: The study shows that chemsex has an impact on a person's physical and mental health. The research showed that despite temporary positive experiences, there were negative effects affecting mental and physical health.

Keywords: chemsex, health, psychoactive substances, chemical sex

Faking an orgasm among women

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Background: A woman's sex life is a very important part of her life. There is no denying that faking an orgasm among women can affect the quality of and satisfaction with their sex life. Every woman is different and therefore can satisfy her own sexual needs in different ways.

The aim: The aim of this study was to investigate the causes of faking orgasm among women and to determine the extent of the problem.

Materials and methods: 406 women were included in the study. A proprietary survey questionnaire, consisting of 33 single-choice and multiple-choice questions, was used as the research tool. The survey was conducted online using Google Forms.

Results: The survey showed that for 82.8% of the female respondents, the type of sexual intercourse influences reaching orgasm. 87.4% of the respondents confessed that they had not sought specialist advice for their problem. 91.6% of the respondents believe that foreplay has an impact on the subsequent sexual experience. Responses regarding the influence of the ovulatory phase of the menstrual cycle on reaching orgasm more easily were mixed.

Conclusions: The study shows that faking an orgasm among women is a serious problem. Several factors influence the achievement of orgasm and satisfaction with sexual life. One of them is psychological. In addition, the type of sexual intercourse has an impact on climax. Respondents do not contact a specialist despite the problem. It cannot be overlooked that one of the main reasons for faking an orgasm among women is the desire to please their partner, as indicated by more than 90% of the women surveyed.

Keywords: orgasm, sexology, sexual intercourse, sexual sensations

SESSION
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Kimmerle anomaly – prevalence and morphologic aspects in North-East Romanian population

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Background: Kimmerle anomaly, also known as ponticulus posticus or arcuate foramen, is an anatomical variant that represents a bony bridge that connects the posterior arch and articular process of the atlas vertebra. This malformation is frequently associated with cervicogenic headache.

The aim: This study has the purpose to reveal both the prevalence and the morphological aspects of this malformation in the Romanian population.

Materials and methods: The retrospective study was based on a total of 487 patients, ages ranging from 5 to 94 years old, which showed different clinical manifestations with cerebral computed tomography indication. The scans were realized since January 2019 until December 2019, in the Department of Radiology, "Sf Spiridon" County Clinical Emergency Hospital, Iasi. The inclusion criterion was the scans which offer a full atlas vertebra visibility, while the exclusion criterion was the presence of cranio-cerebral injuries.

Results: Ponticulus posticus is present in a total proportion of 34.90% in the studied sample, being more predominant among the males (38.75%) than it was seen at females (31.17%). We use an original classification consisting of to five morphologic types: the incomplete type was found at 19.50% of the patients, being more frequent than the complete type, which was seen in 15.40% of the cases.

Conclusions: Ponticulus posticus is a common bone malformation between the Romanian inhabitances. It was mostly seen in adults and young adults than in the elderly population as this study showed regarding the age-wise prevalence.

Keywords: Ponticulus posticus, Kimmerle anomaly, arcuate foramen, atlas cervical vertebra

Analysis of pulmonary embolism during the COVID-19 pandemic

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Background: Pulmonary embolism (PE) is a sudden narrowing or complete occlusion of the pulmonary artery or its branches, which is caused by the migration of thrombi from the deep venous system. The incidence of PE is difficult to estimate due to the fact that almost half of the cases are not diagnosed due to the lack of clinical symptoms. At the end of 2019, the COVID-19 epidemic began. This disease entity is believed to increase the risk of pulmonary embolism. This is due to the fact that the risk of venous thromboembolism increases, especially in people with severe COVID-19, most often in the presence of cardiovascular diseases.

The aim: The aim of the study was to analyze pulmonary embolism in the period before and during the COVID-19 pandemic based on data from the CT lab, an 850-bed hospital

Materials and methods: Two groups of patients who were referred for CT angiography due to suspected pulmonary embolism were analyzed. Group A (262 people) are people tested in the period of March 1, 2019. – February 29, 2020 that is, before the COVID-19 pandemic. Group B (398 people) are the respondents in the period from March 1, 2020 to February 28, 2021, i.e. during the pandemic. In the analyzed period, 11,356 tests were performed in the CT laboratory before the pandemic and 8,077 during the pandemic, respectively.

Results: % share of patients by gender: women 52.67% (group A), 54.52% (group B) % share of patients by age (years): 0-25 (3.05% - group A, 2.01% - group B), 26-50 (14.12% - group A, 13.06% - group B) , 51-75 (51.14% - group A, 50.25% - group B), area 76 (31.68% - group A, 34.67% - group B). Percentage of examinations with suspected pulmonary embolism in relation to all CT examinations: 2.3% (group A), 4.9% (group B) Embolism detected: 32% (group A), 30% (group B) Percentage of examinations diagnosed with pulmonary embolism in relation to all CT examinations: 0.7% (group A), 1.4% (group B) The occurrence of pulmonary embolism according to gender: women (55% - group A, 51% - group B) Location of the embolic material: on both sides (69% - group A, 63% - group B), on the left side (7% - group A, 15% - group B), on the right side (24% - group A , 22% - group B

Conclusions: 1. The percentage of CT scans with suspected pulmonary embolism during the pandemic in relation to the total number of CT scans was much higher than in the pre-pandemic period, 2. Compared to the pre-pandemic period, there was a clear increase in the diagnosed cases of embolism in relation to all CT examinations. 3. Irrespective of the assessed period, embolism was more common in the group of women. 4. The location of the embolic material was very similar in patients before and during the pandemic.

Keywords: pulmonary embolism, COVID-19, CT

Radiation exposure during surgery of supracondylar humerus fracture and Gartland classification

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Background: Supracondylar humerus fracture is one of the most common childhood injuries and the most frequent pediatric fracture that requires surgical treatment. The Gartland classification of supracondylar humerus fracture is categorized by the severity of the bone displacement. Orthopedic surgery as a treatment of supracondylar humerus fracture is performed under fluoroscopy, which involves exposing the patient to ionizing radiation.

The aim: The aim of the study was to demonstrate the correlation between the dose absorbed by pediatric patients and fracture classification according to the Gartland scale.

Materials and methods: The study group included 149 pediatric patients, female (43%) and male (57%), who were treated in The Department of Trauma and Orthopedic Surgery, Upper Silesian Child Health Center in Katowice between 2018 and 2022. The dosimetric parameter Dose-Area Product (DAP) was used to analyze radiation exposure during the surgery.

Results: Measured DAP mean values for fractures type II, III, IV were 3.386 μGy* m2, 3.228 μGy* m2 and 8.499 μGy* m2, respectively. The correlation between the absorbed dose by patients and fracture classification was examined by a non-parametric statistical Kruskal-Wallis test and showed statistical significance between groups of type II+IV and III+IV, whereas there is no significant difference between group II+III.

Conclusions: The statistical analysis shows that there is a correlation between the Gartland classification and the X-ray radiation dose to the patient during the surgery. According to the Gartland Scale, the X-ray dose absorbed during type IV supracondylar fracture surgery is much higher than for types II and III.

Keywords: supracondylar humerus fracture, Gartland classification, fluoroscopy

Retrospective and statistical analysis of hand and forearm injuries in the Silesian Paediatric Population - a cross-sectional study of post-traumatic X-rays in 2022

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Background: Upper limb injuries are common in the paediatric population, with wrist injuries being a particular group. Fractures of the bones of the forearm, wrist, and phalanges are among the most common reasons for visits to emergency departments.

The aim: The aim of this study was to present data on specific injuries and fractures in the wrist region with differentiation of age groups, gender and fracture location.

Materials and methods: This study involved data from the charts of 834 post-traumatic wrist X-ray examinations in 2022 at the Department of Diagnostic Imaging of the Upper Silesian Child Health Centre. Clinical data and results of wrist X-ray examinations were analysed. The analysis included bone injuries, the age and sex of the child, the nature of the lesions, and anatomical location of the injury. The number of injuries and fractures and their proportion were the main outcome variables; gender, age, and month of injury were used as independent variables for stratification. The study group consisted of 322 girls and 512 boys, who were 11.36 ± 3.62 and 12 ± 3.89 years old. Analysis was performed using Statistica 12.0 software. The Shapiro-Wilk test was used to assess the normality of the distribution - none of the variables showed a normal distribution. A p-value < 0.05 was considered significant.

Results: There were 251 single fractures in the study group and 66 multiple fractures. The highest number of fractures was recorded in the metacarpal bones (99), among which the fifth metacarpal bone was the most frequently injured (49). The second most common fracture was in the forearm. Within the wrist, 21 fractures of the metacarpal bone were reported. There were 54 phalangeal fractures in the study group.

Conclusions: The risk of fractures is statistically highest among boys, with a peak at 12 years of age. The metacarpal bones and the radius bone are most at risk of fracture. The likelihood of fracture of the right and left hand is similar in females, while males are more likely to have an injury to the right hand.

Keywords: wrist injuries, hand injuries, forearm injuries

Challenges and effectiveness of mechanical thrombectomy in acute stroke – a single-centre study

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Background: Mechanical thrombectomy is a minimally invasive procedure used to remove blood clots from the circulatory system. There is a growing implementation of mechanical thrombectomy in the treatment of ischemic pathologies, especially stroke, which is one of the most common causes of disability. Nonetheless we do not always succeed.

The aim: Our objective was to evaluate the challenges and outcomes of mechanical thrombectomy performed in the treatment of stroke. We focused on the difficulties caused by patient condition, time since beginning of symptoms to endovascular intervention, location of thrombus and analyzed how the obstacles affected the outcome.

Materials and methods: A single center study based on a retrospective analysis of medical records included 118 consecutive patients with acute ischemic stroke that underwent mechanical thrombectomy between May 2018 and December 2022. Mean age of the patients was 70 Ī 13 years and women constituted 52% of eligible patients.

Results: In the study group thrombectomy was fully successful in 47 (40%) patients, partially successful in 42 (35%) patients and in 29 (25%) patients the thrombus could not be retrieved. The morality was highest in the group with unsuccessful intervention and was estimated at 52% (n=15). In our study group there was a statistically significant correlation between paresis and the likelihood of an unsuccessful intervention. Especially paresis of the upper limb, where no patient with such symptoms had a successful thrombectomy.

Conclusions: Although there are various challenges, mechanical thrombectomy has demonstrated its effectiveness as a treatment method of acute ischemic stroke. However, there is still room for improvement.

Keywords: Endovascular, Interventional, Radiology, Stroke, Mechanical Thrombectomy

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OF DENTISTRY

PSI

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Stress related to tooth extraction

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Background: Fear and anxiety are common psychological responses to unpleasant stimuli, with dental fear being the fourth most prevalent type of fear or phobia. However, not all dental procedures cause the same level of anxiety, with dental surgery and tooth extraction being among the top five most frightening procedures in the field. Tooth extractions are also most common surgical procedure in dental surgery. It is important to manage anxiety and fear in the dental office by identifying the factors that cause dental fear.

The aim: The aim of the study was to analyze the level of stress in patients before and after tooth extraction and to determine the influence of individual factors.

Materials and methods: The study was conducted on a group of the 250 patients. The survey technique and the Beliefs about Pain Control Questionnaire (BPCQ) were used in the study. Pain and stress intensity on a Visual Analog Scale (VAS) were measures in each patient before and after tooth extraction procedures.

Results: The average level of stress before the procedure was 5,21, while postoperative stress was 3,22. Women had a 31,35% higher level of stress before the procedure compared to men. In 92,8% of cases, the level of stress before extraction exceeded or was equal to the level of pain experienced by patients. The average level of stress before the procedure was 2,68 times higher than the average level of pain reported by respondents, and only 3,6% of those surveyed rated the procedure worse than their initial predictions. The most stressful factor was fear of complications after the procedure (39,2%), while the least pleasant part of the extraction was the anesthesia (32,4%).

Conclusions: Perioperative stress is strongly dependent on a numerous factors. For patients comfort, it may be crucial for dentists to have knowledge about these factors and the ability to utilize it to reduce stress before and after tooth extractions.

Keywords: Anxiety, Dental fear, Oral surgery, Dental treatment

A multidisciplinary approach to enhancing the welfare of patients in maxillofacial surgery

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Background: The dysfunctions after maxillofacial surgery can lead to functional and aesthetic disability, which is why it is necessary to provide specialised rehabilitation in the process of treatment. The cooperation of maxillofacial surgeons and physiotherapists resulted in the creation of the Clinical Rehabilitation Team at the Department of Cranio-Maxillofacial Surgery of the Medical University of Silesia in Katowice.

The aim: The aim of study is to present the effectiveness of multidisciplinary rehabilitation after surgical procedures of the facial part of the cranium.

Materials and methods: The rehabilitation team has taken care of patients with craniofacial injuries, patients after oncological and orthognathic procedures and patients with other conditions. The rehabilitation process has most often included: lymphatic drainage, scar therapy, kinesiology taping, mobilization of the temporomandibular joints and respiratory therapy.

Results: Thanks to the use of various physiotherapeutic methods, in many cases a full return of facial nerve function was achieved, along with the correct range of mandibular abduction, reduction or elimination of pain and satisfactory cosmetic effect.

Conclusions: The developed rehabilitation methods allowed to create an algorithm for interdisciplinary treatment of diseases of the facial part of the cranium.

Keywords: head and neck neoplasms, maxillofacial trauma, rehabilitation

Tongue temperature distribution as a prognostic method in the diagnosis of general medical conditions

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Background: The relationship between human body temperature and diseases dates back to the early days of medicine. The stability of the body's internal temperature is determined by maintaining a balance between the processes of heat loss and production. In the diagnosis of many diseases where temperature may reflect the presence of inflammation in underlying tissues or where blood flow is increased or decreased temperature assessment is crucial.

The aim: Presenting the correct procedure of thermal imaging of tongue temperature and using thermal imaging for prognostic purposes of general diseases manifested by fluctuations in internal temperature.

Materials and methods: Patients of the Outpatient Clinic of Maxillofacial Surgery of Medical University of Silesia in Katowice referred to eliminate potential foci of infection belonging to the high-risk group of systemic infections were subjected to tongue temperature screening. The study group consisted of 41 adult, randomly selected patients. The mean temperature of chosen tongue surface sectors: dorsum, left and right side as well as the end of tongue have been measured by using a FLIR T540 thermal camera with sensitivity <0,03K. The Statistica 10 program was used to conduct the statistical analysis. Data that were not normally distributed or did not adhere to the homogeneity of variance assumption were subjected to the Mann-Whitney U test, whereas normally distributed data were subjected to the t-test. The differences were statistically significant with $p<0,05$.

Results: The study showed significant differences in mean temperature (at $p=0.01$) between selected sectors of the tongue surface in patients with ophthalmic diseases and healthy subjects.

Conclusions: There are high hopes for thermography as "a scanning technique that provides a photographic image of temperature differences on a surface". Thermovision of the tongue appears to be useful and may be used in the future as a prognostic test for conditions manifested by temperature fluctuations.

Keywords: thermography, tongue, temperature, diseases, ophthalmic, disorders

Dental age estimation in Silesian children with Demirjian's method

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Background: Dental age is one of the biological maturity indicators that are less influenced by environmental factors in comparison to other determinants of personal development, such as body weight, height, and bone age. Because of its simplicity and precision, Demirjian's method is used, among other clinical and radiological methods, to estimate dental age. Demirjian's method evaluates the development stages of tooth germs during their intraosseous migration period as well as erupted teeth in the oral cavity. The dental age assessment enables the identification of patients whose biological maturity corresponds or not to their chronological age, which is accelerated or delayed. The individual development
stage is an important diagnostic and therapeutic indicator for an orthodontist.

The aim: Evaluation of dental age in Silesian children by means of Demirjian's method and their biological maturation in comparison to their chronological age.

Materials and methods: The study material consisted of 60 OPTG of patients aged 6-12 who were diagnosed at the ACSiMS Orthodontic Clinic at the Department of Orthodontics of the Silesian Medical University in Zabrze prior to orthodontic treatment. The children were divided into groups of boys and girls. The evaluation involved seven teeth, or tooth germs, in the third quadrant. Each tooth was categorized into stages of maturity according to Demirjian's method (1973): one out of six for incisors and canines, or one out of eight for premolars and molars. A certain number of points was assigned to each tooth stage. The sum of points for every patient enabled to determine the dental age by using Demirjian's centile gris and tables.
Received data were compared to the chronological age of each patient.

Results: The study has shown that the dental age was accelerated in comparison to the chronological age by 6 to 18 months.

Conclusions: The dental age differs from the chronological age of the patients. The dental age, compared to the chronological one, was generally accelerated.

Keywords: Dental age, Demirjian, Demirjian's method, degree of mineralization

The implementation of modern technologies in dental practices in Poland

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Background: New technological developments not only improve the efficiency of dental procedures, but also shorten the duration of procedures and make them less stressful for the patient. Every year, more and more dentists offer treatments using advanced techniques. As a result of these changes, the dental industry is changing, taking on a new form. Improvement of long-term results in areas such as endodontics is of profound importance.

The aim: Assessment of the knowledge of Polish dentists about modern technologies and their implementation in practices.

Materials and methods: The study involved the analysis of qualitative data obtained from an anonymous questionnaire posted on social media groups of dentists in Poland 150 responses were obtained. Technologies analysed included: lasers, computer-assisted local anesthesia (e.g. CALAJECT), intraoral scanners, CBCT, microscopes, intraoral radiography devices and the endometer. A chi-squared test was used to assess the statistical significance, with $P \leq 0.05$ being accepted as statistically significant.

Results: Most respondents were familiar with all the technologies included in the survey. Almost every respondent has access to endometers, X-rays and microscopes . Less popular technologies included: CBCT, intraoral scanner , computer-assisted local anesthesia, and lasers. The most frequently cited reason for using technology was to improve the quality of treatment and improve patient comfort. There was a correlation between the use of dental lasers and computer injections and the size of the city where the practice was located.

Conclusions: Polish dentists frequently use intraoral scanners, X-rays and microscopes. The place of work (rural/urban) and the type of practice (private/public) showed a statistically significant impact on access to technology. The willingness to use modern technologies in everyday practice did not depend on age, work experience, place of residence, or type of practice. Conferences are the main source of obtaining relevant information.

Keywords: dental technology, dental lasers, intraoral scanners

Evaluation of the effect of covering the external carotid artery on craniofacial pain - a preliminary study

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Background: Currently, one of the gold standards in the treatment of stenosis of the internal carotid artery (ICA) is percutaneous angioplasty with carotid artery stenting (CAS). They allow the dilution of the ICA but lead to the complete coverage of the external carotid artery (ECA), which is the source of vascularity for the facial part of the skull.

The aim: Evaluation of the effect of the ECA coverage on perioperative and early postoperative craniofacial pain.

Materials and methods: A prospective study was conducted in a group of 26 patients who were treated endovascularly for critical carotid artery stenosis. All procedures were performed in a typical way, using brain neuroprotection. Immediately and 24 h after the procedure, the patient was asked to provide subjective information expressed in the visual analog scale (VAS) regarding pain symptoms and their location. The obtained data were supplemented and compared with clinical and imaging data: Doppler ultrasound and intraoperative angiogram.

Results: 26 patients (18-men, 8-women) treated with endovascular techniques from January to April 2023 were involved. The mean age was 69.3 years. All patients had an improved flow within the ICA and simultaneously the ECA orifice was covered with a stent. Craniofacial pain was reported in both perioperative (7/26 patients) and postoperative (1/27 patients) periods. Symptoms were not associated with the vessel diameter change ($p= 0.845$). The postoperative change in vascular diameter was also not correlated with pain severity ($p= 0.878$). However, there was a statistically significant ($p<0.01$) correlation between the degree of stenosis (ICA) and the degree of craniofacial pain during the surgery

Conclusions: There is a significant correlation between the percentage of the ICA stenosis and the perioperative degree of pain in the facial part of the skull. There is no correlation between the craniofacial pain and the change in perioperative vessel diameter after CAS.

Keywords: craniofacial pain, ECA, CAS,

Risk of multidrug-resistant Staphylococcus aureus carriage in dental health care workers

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Background: Staphylococcus aureus is one of the most prevalent human pathogens causing various infections, from mild skin infections to life-threatening endocarditis and sepsis. S. aureus is transmitted by the droplets or directly, so there is an increased risk of SA transmission in dental facilities and dental staff are more likely to be carriers of S. aureus than other occupational groups.

The aim: To assess the risk of multidrug-resistant S. aureus (MDRSA) colonization in dental staff and evaluate the possibility of antibiotic eradication of carriage.

Materials and methods: The study included 28 dentists, 30 assistants and 4 registration staff. Nasal and hand swabs were taken from all participants. The specimens were cultured on Columbia agar and on Chapman agar. The isolated S. aureus strains were identified based on standard biochemical and serological tests. The susceptibility to antibiotics was determined by the disk diffusion method. MLSb resistance to macrolides-lincosamides-streptogramins was determined by D-test.

Results: From 124 specimens 27 SA strains were isolated (22%). Dentists, assistants, and registration staff were colonized with SA at rates of 54%, 30%, and 75%, respectively. The nares were the source of S. aureus isolates in dentists (87%), followed by registration staff (67%), and assistants (44%). All isolated S. aureus strains were susceptible to methicillin (MSSA). Resistance to penicillin (70%), erythromycin (33%), tetracycline (30%), gentamicin (22%), and clindamycin (4%) were detected. Ten (37%) S. aureus strains were MDRSA and eight (30%) strains showed MLSb- resistance.

Conclusions: The risk of colonization with multidrug-resistant S. aureus strains among dental professionals should be monitored to implement precautions to reduce the risk of spreading S. aureus.

Keywords: Staphylococcus aureus, MDRSA, nasal carriage, dental facilities

SESSION
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Pinworm infection prevalence in Silesian kindergartens in the context of sanitary regulations and prevention

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Background: Pinworm infection, caused by Enterobius vermicularis, is a common parasitic disease in preschool children. It is transmitted through the eggs of the parasite, which are laid around the anus. Symptoms include anal itching, lack of appetite, and abdominal pain. Although rare, complications may include urinary tract infections and inflammation of the large intestine.

The aim: The main goal of the study was to collect data on the frequency of pinworm infection within a given time period in the surveyed institutions. Additional objectives included analyzing various preventive behaviors, both related and unrelated to pinworm infection, such as: the frequency of sand exchange in the sandbox, children's access to hand washing facilities, the method of hand drying, and the source of information about the infection (detection by staff vs. parent notification).

Materials and methods: Surveys in the form of an anonymous electronic form were distributed to preschool institutions. Due to the initial research assumptions, some institutions were informed about the study by phone beforehand.

Results: A total of 173 surveys were collected (n=173). Among them, 28% of institutions reported 112 cases of pinworms noticed by parents, while 7% of institutions reported a total of 49 cases noticed by personnel. In addition, information was collected on preventive measures (training of staff in the prevention of childhood diseases) and sanitary issues (frequency of sand exchange in the sandbox, availability of sinks for children), which may suggest that some institutions do not comply with applicable sanitary regulations.

Conclusions: Although the number of surveys (173) did not exhaust the potential possibilities of the population pool (emails were sent to 1639 institutions), and thus excluded some of the initially planned analyses (including the analysis of the geographic occurrence of enterobiasis), it provided potentially important data on disease detection and implementation of sanitary regulations with consequences not only for enterobiasis.

Keywords: Pinworm infection, sanitation regulations, public health, epidemiology, parasites, preschools

Vaccinological prophylaxis of seasonal diseases among medical students. Influenza and COVID-19 vaccination

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Background: Seasonal vaccination is one of the ways to prevent influenza. It is recommended not only to the elderly, but also to healthcare workers and medical students.

The aim: The aim of the study was to recognise the vaccination coverage against influenza and COVID-19 among medical students and the determinants influencing the acceptance or resignation from vaccination.

Materials and methods: A cross-sectional study was conducted among students of the Medical University of Silesia in Katowice (SUM) in November 2022. 302 students of medical courses took part in the survey. The answers to the survey were collected using a Google form, and the data was subjected to statistical analysis based on the capabilities of the STATISTICA package.

Results: Overall, the vaccination coverage rate among all students was 42.1% (n=127). Most students ever vaccinated against influenza were medical students (n=65, 64.4%). The level of vaccination depending on the direction differed significantly (p = 0.013). An important variable affecting the decision to vaccinate was participation in clinical activities. Among the students taking practical classes, 59.4% (n=60) were vaccinated. Most of the respondents have a positive opinion about influenza vaccination (n=99, 98%). In terms of vaccination against COVID-19, 22.5% (n=68) received the full vaccination, i.e. primary vaccination and two booster doses. The belief in the effectiveness of vaccinations (35.6%) and the desire to protect oneself against illness (31.7%) were the main reasons for vaccination against influenza indicated by the respondents. The main reasons for not being vaccinated were: no fear of influenza (22.9%) and no recommendation to vaccinate (21.9%).

Conclusions: The largest percentage of those vaccinated against influenza were medical students (42.1%), while in the entire group of respondents, 33.4% of respondents were vaccinated. The obtained results show an absolute need to extend students' current knowledge regarding the effectiveness of influenza vaccination.

Keywords: seasonal influnenza vaccination, vaccine acceptance, vaccination uptake, COVID-19

Medical simulations in opinion of students from Śląski Uniwersytet Medyczny

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Background: Created survey will be used to examine students' opinions about medical simulations in Śląski Uniwersytet Medyczny.

The aim: Researching students from Śląski Uniwersytet Medyczny's opinion about medical simulations.

Materials and methods: Created survey is shared online, is directed to students of degree courses: midwifery, nursing, medicine, medical rescue and dentists in Śląski Uniwersytet Medyczny in Katowice. Analysis od the results using programmes: Statistica and Excel.

Results: The results from the completed form will be examined in the programmes. Opinion of each student in medical simulation will be considered, divided into a given field of study: midwifery, nursing, medicine, medical rescue and dentists.

Conclusions: Medical simulation is a new and innovative form of knowledge acquisition, also in medicine. We distinguish between low and high fidelity simulations. Properly designed gives unlimited opportunities for development and learning. Simulation carried out in the appropriate form allow to achieve the expected results of education. These classes allow students to face the tasks they will perform in the future.

Keywords: simulations, students, opinion, perception

Evaluation of physical activity among pregnant women

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Background: Regular physical activity is key to a healthy lifestyle. Pregnant women without contraindications should aim to regular physical activity. Physical activity can improve cardiorespiratory fitness, reduce the risk of gestational diabetes and improve well-being.

The aim: The aim of the study was to assess the lifestyle of pregnant women in terms of physical activity.

Materials and methods: A total of 539 women participated in the study. The largest group was women aged 27-32 (43%). Most of the women surveyed had higher education and lived in cities. A orginal questionnaire was used, including 10 questions about physical activity and questions about the sociodemographic characteristics of the respondents. Data were collected by traditional means (paper version) and electronically with the use of groups associating pregnant women. The study was voluntary and anonymous. The results were statistically processed using Statistica.

Results: Only 35% of the surveyed women were active during pregnancy. In the group of physically active women, walking was the most common form of exercise. Other most frequently chosen activities included: exercising with videos posted on the Internet, yoga and swimming. Among the physically active respondents, 64% declared a beneficial effect of exercise on their well-being during pregnancy. The majority of physically active pregnant women practiced sports 2-3 times a week. Only 38% of pregnant women were encouraged to exercises during pregnancy, while every 5th respondent was advised against physical activity.

Conclusions: The research showed that the number of women exercising during pregnancy is not satisfactory. There is a need for education on this issue, because pro-health behaviors affect both the health of the expectant mother and her child. Thus, it is essential to promote awareness among pregnant women about the benefits of supervised physical activity. Medical staff should encourage women to engage in regular physical activity during pregnancy.

Keywords: exercise, physical activity, pregnancy, pregnant woman, public health, woman

Self medication used by adult patients with acute rhinosinusitis in comparison to EPOS 2020 guidelines

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Work's tutor: dr Karolina Dorobisz

Background: Acute rhinosinusitis (ARS) is an infectious disease mostly caused by viral infections. Viral ARS is a prevalent disease in Poland and Europe. The new EPOS 2020 (European Position Paper on Rhinosinusitis and Nasal Polyps) guidelines place great emphasis on initial diagnosis and self treatment performed by patients before visiting the general practitioner.

The aim: ARS significantly impacts public health and generates high costs for healthcare systems. Due to the change in the guidelines and partial transfer of responsibility for the treatment and diagnosis of ARS to patients, it seems reasonable to assess previously used self-treatment among Poles. Knowing the beliefs prevailing in society about the treatment of ARS, optimal interventions can be planned to increase awareness and achieve better compliance in the population.

Materials and methods: The study involved 410 participants aged 18 to 72 years. Respondents were recruited in various ways. The survey began with a definition of ARS, followed by demographic questions. The following segments address the topics of treatment and knowledge about ARS.

Results: The majority of those surveyed were aware of the definition of ARS. Over 57% of respondents reported self-medicating and 43% denied doctor visits. The drugs most often chosen (by 71.46%) were NSAIDs. The percentage of patients who would use antibiotics was high-19,3%. The general practitioner was the most frequently chosen source of knowledge about ARS treatment.

Conclusions: The most frequently chosen drugs were in line with the latest guidelines. Vitamin C was a frequently chosen therapy, which may be due to the established belief that it is an effective treatment for ARS. Compared to other countries, antibiotics were more popular in the Polish population. Frequent use of this group of drugs without prior identification of the etiological factor can lead to serious consequences. According to the respondents choices, awareness campaigns should be carried out with the help of general practitioners and otolaryngologists.

Keywords: Infections, Respiratory Tract Infections, Sinusitis, Public health, Self Medication

Glass ceiling in academia - women's career paths at the medical faculties in Poland

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Background: Throughout the centuries women's position in medicine has been changing. In 1945 there were merely 15.7% of women among medical graduates in Poland, but the number grew to even 71.1% in 1973. Nowadays, there is no law regulating gender participation in medical training. However, despite the majority of PhD students being women, it is still men who are more likely to hold the highest academic positions.

The aim: The aim of the study was to find existing gender inequalities in academic careers at Polish medical faculties, highlight their existence and define possible causes in order to support women in medicine and science.

Materials and methods: The study assessed the percentage of women at various academic positions at eleven Polish medical universities between the years 2017-2021. We obtained the unpublished data from Central Statistical Office, which was processed at our request. Later, we requested for the records of eleven Polish medical faculties. Our database contained information on the number of women studying and working at medical universities as PhD candidates, academic teachers, heads of departments and professors of medicine.

Results: Female PhD candidates accounted for no more than 69.8% of all PhD students. Moreover, at the time described, 59.2% of academic teachers were female. In none of the years between 2017-2021, women accounted for even 50% of the heads of the departments and clinics. In the analyzed years, the percentage of hospital wards run by women increased by 3%, however, the trend was not statistically significant($p>0.05$). In 2021 the percentage of female professors was as low as 40.1%.

Conclusions: This study is the first to describe gender inequalities in academia at Polish medical faculties in a comprehensive manner, with the special interest to present the unpublished data on the percentage of women being the heads of the departments and clinics. Despite being the majority of PhD students, the percentage of women at the highest levels of academic career is still noticeably lower than men.

Keywords: women in medicine, women in science, women's career paths

The problem of kinesiophobia in overweight and obese people

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Background: Overweight and obesity are a global health problem. The World Health Organisation (WHO) estimates that approximately 1.6 billion adults are overweight and 400 million people are obese. An important part of fight against excess body weight is physical activity. Kinesiophobia, defined as a fear of movement, can affect physical activity. The presence of kinesiophobia in individuals with a BMI above normal may cause an passivity to movement and hinder weight reducing.

The aim: The aim of this study was to assess the prevalence of kinesiophobia, its severity and its association with physical activity among people struggling with overweight and obesity.

Materials and methods: 105 subjects were studied, including 36 men (x=46 years ĪĪ 12.88) and 69 women (x=45 years ĪĪ 14.11). 58 % of the respondents were found to be overweight, 30% were found to be first degree obese and 11% were found to be second degree obese. The research tool was a self-administred survey that included questions on basic socio-demographic data, the Tampa Kinesiophobia Scale (TSK) and the SEWL Physical Activity Questionnaire.

Results: In the study group, the mean TSK score was 37 points (Ī8.93). In qualitative terms, where the result was above 37 points, the problem of kinesiophobia occurred in 54% of respondents. The SEWL index in the study group was low and amounted to x=7.91 (Ī1.23). Significantly lower level of kinesiophobia was observed in people practicing sports than people who do not practice sports (p=0,0015).

Conclusions: Among people with excessive body weight, the problem of kinesiophobia is universal - applies to more than half of the respondents. Physical activity is associated with the level of kinesiophobia, as people declaring practicing sports showed less fear of movement. The health aspects require psychological interventions to reduce kinesiophobia, which would help to increase the level of physical activity of people who are overweight or obese.

Keywords: Kinesiophobia, overweight, obesity, physical activity

Mental health of medical students - Jagiellonian University - Medical College example

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Background: The mental health of medical students varies and depends on many factors, such as individual experiences, the level of stress related to studying, or the lack of balance between private life and studying. Researches conducted among students of medical faculties indicate that their mental health may be lower than that of students of other faculties.

The aim: The aim of this study is to examine the mental health of students of the Jagiellonian University Medical College, sources of knowledge about it and factors that affect the mental health.

Materials and methods: The analysis was conducted on the basis of self-reported anonymous data from 1294 out of 5255 students of the Jagiellonian University - Collegium Medicum. The survey was completed during the period from January 13, 2023 to February 12, 2023.

Results: The results of the study showed that the majority of students assess their knowledge of mental health as good (Mean7.10/10). However, students rate their mental health as below average (4.74 /10). They often reported experience of numerous ailments, such as: problems with concentration (74%), anxiety (71%), sleep disorders (61%), anxiety (53%). Almost 60% of students declared that they need psychological support. Factors that have a positive impact on the mental health of students include: support from friends (70%) and family (57%), physical activity (48%). On the other hand, negative factors include: stress related to the amount and distribution of study material (71%) and insufficient sleep (65%).

Conclusions: The mental health of students of the Jagiellonian University Medical College is not satisfactory and specific actions to improve the well-being of students are required. This is particularly important in the prevention of mental disorders and diseases.

Keywords: #mentalhealth, #publichealth, #medicalstudents, #burnout, #depression

The patient's knowledge of the prevention, treatment, and monitoring of blood pressure disorders

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Background: Hypertension is a disease that affects more than half of the Polish population and is one of the most common causes of death. Untreated hypertension can lead to numerous organ complications, including the development of coronary artery disease, renal impairment, and stroke. The effectiveness of the treatment of hypertension worldwide is low so education on the subject is very important. The ESC/ESH emphasizes the key role of pharmacists and nurses in long-term care, including education, support, and patient monitoring.

The aim: The purpose of this study was to assess knowledge of the proper measurement of blood pressure and drug interactions used in BP disorders.

Materials and methods: Data were collected through a stationary - University of the Third Century and an online survey distributed via social networks. Respondents with different levels of education, age range were assessed.

Results: Approximately 1/3 of respondents are currently being treated for BP disorders associated with hypertension or hypotension. The results indicate that the degree of knowledge about the threshold value at which hypertension is recognized is similar in the group of patients treated and untreated. More than 30% of respondents from both groups have no knowledge about it. Even though a large proportion of respondents declared knowledge of the correct techniques for measuring BP, the data indicate that they do not have up-to-date knowledge on this subject. 65% of respondents are unaware that long-lasting dry cough can be the result of ACEI drugs, and almost half are unaware that regular blood potassium testing is necessary during diuretic therapy.

Conclusions: Although the problem of BP disorders is widely known and often raised, a large proportion of patients do not measure BP at all. The project provided us with an opportunity to address the need for education on that problem because, as the results show, there are areas that should be improved with the help of pharmacists.

Keywords: drug interactions, high blood pressure, Pharmaceutical Care

The symptoms of chronic venous disease are a serious problem in a population of young women

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

Background: Chronic venous disease (CVD) is a serious population problem. Its symptoms and/or signs affect almost half of the entire adult population. Among the risk factors are female gender, age, obesity, pregnancy and a positive family history. CVD symptoms among women at a young age are an inconspicuous problem due to significant symptomatology as well as due to the possibility of disease progression at an older age.

The aim: To determine the prevalence of CVD symptoms and its clinical manifestation in a population of women 19-25.

Materials and methods: The survey was conducted among 213 women (students), aged 19-25. A paper questionnaire was distributed at teaching hospitals and the university. It asked them to assess the presence of the signs of chronic venous disease corresponding with class C of the CEAP classification. In addition, they were asked about the presence of the CVD related symptoms such as pain, tenderness, cramps. Clinical concepts were explained in terms they could understand.

Results: The presence of CVD clinical manifestations was declared by 47.4% of the respondents. However, CVD symptoms were present in 42.3% of women. Despite having no clinical manifestations, symptoms occurred in 13.1% of the participants. The most common symptoms among all women were: calf cramps and pain, which occurred in 26.2% and 24.9% of the respondents, respectively. Among all women, 21.2% indicated the presence of teleangiectasia and 24.9% indicated the presence of reddening or rash, which require medical evaluation to determine how many of them may correspond to eczema. Symptoms worsen in the evenings or at nights in 42.7% of symptomatic women. Among the factors that alleviate symptoms, symptomatic women most often cited rest (39.9%) and leg elevation (24.7%).

Conclusions: Symptoms of CVD are a common problem among the young female population. Further studies are needed to determine potential risk factors and their impact on the CVD.

Keywords: chronic venous disease, young women

The influence of caffeic acid on breast cancer cells of the MCF-7 line

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Background: Breast cancer is the most frequently diagnosed malignant neoplasm in women worldwide. In Poland in 2020, 24 000 women suffered from breast cancer, in which 1/3 of patients died directly due to this illness. Substances of plant origin, their primary and secondary metabolites are a reservoir of potential anticancerous drugs. Caffeic acid (CA) is one of the phenolic acids commonly found in human food. Its proven anti-inflammatory and antioxidant properties are already the subject of three clinical trials.

The aim: The aim of the study was to evaluate the effect of caffeic acid on breast cancer cells of the MCF-7 line in vitro.

Materials and methods: The cell culture was carried out due to manufacturer instructions. The morphology of breast cancer cells was assessed in the hematoxylin-eosin staining. The MTT test was used to evaluate cytotoxic properties of the test compound. Inhibition of cell migration was assessed by the wound-healing method.

Results: It has been proved that the caffeic acid damages cells of the MCF-7 line, causes shortening of their cellular extensions and disintegration of the nucleus. Depending on a dose and duration of the experiment, caffeic acid reduces the viability of the examined cells. It also inhibits the wound healing process.

Conclusions: Caffeic acid reduces the viability of breast cancer cells of the MCF-7 line and inhibits their ability to migrate. Its mechanism of action remains the subject of further research.

Keywords: breast cancer, caffeic acid, cell culture

Blue light blocker effectiveness in age-related macular degeneration

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Background: Age related macular degeneration (AMD) is a degenerative disease that affects the retinal pigment epithelium (RPE) and photoreceptors in the macula. AMD is a leading cause of blindness among elderly people. AMD progresses to advanced stages of the disease, atrophic AMD or in 15% of cases to neovascular AMD, associated with substantial vision loss.

The aim: The study aimed to find out the effectiveness of blue light blocking glasses and their impact on improving visual performance in phakic and pseudophakic patients suffering from age-related macular degeneration.

Materials and methods: To collect data, the Bailliart Test was performed on 54 healthy volunteers and on 76 patients suffering from AMD. Each patient was tested twice without glasses and twice with them on. Each eye was tested separately during each cycle.

Results: According to analyzed data, the use of blue light glasses reduced the average readaptation time among the healthy population by 3.8 seconds ($n=108$, CL=99%, $p<0.05$). In the population of patients suffering from age-related macular degeneration, the average time needed for retinal regeneration was reduced by 26.5 seconds ($n=76$, CL= 95%, $p<0.05$). Increase in intraocular pressure proved to decrease time on average by 12.7 seconds ($n=76$, CL=99%, $p<0.05$). In the population of patients that underwent cataract surgery, use of blue blocking glasses resulted in no apparent advantage.

Conclusions: The results show that blue light-blocking glasses significantly decrease the time needed to complete retinal regeneration among the healthy population and patients suffering from AMD. Our study confirmed that blue light leads to a reduction in the physiological function of the retina much more in AMD patients and that the use of glasses with blue light filters can significantly improve readaptation time among patients suffering from macular degeneration.

Keywords: ophthalmology, age-related macular degeneration, blue light, blue-light blocking glasses

Noise assessment in kindergarten

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Background: Children between the ages of 3 and 6 are preschoolers and they spend a good part of the day at kindergarten. Their stay at kindergarten should meet hygiene requirements to be safe and healthy. One of the most common harmful factors in kindergarten is noise. Kindergarten noise, characterized by high sound pressure levels, can adversely affect the health and well-being of children's and teachers, interfere with the reception and understanding of speech, and hinder the educational process.

The aim: The aim of the study was to assess noise levels in kindergarten during classes.

Materials and methods: The sound pressure level was measured with a sonometer SON-50 in 4 kindergarten buildings located in one city in Silesian Voivodeship. The A sound pressure level was measured in classrooms during the presence of children. The study took into account the age of the children, the number of children in each class and the subject. Additionally, the A sound pressure level was measured during meals.

Results: The average A sound pressure level measured during various classes and activities exceeded 71.9 dB. The highest average A sound pressure level of 93 dB (range 72-110 dB) was measured during children's play.

Conclusions: Acoustic environment in kindergartens is loud and highly intermittent and it may not be supportive for young children's hearing. Noise in kindergarten depends mostly on the type of activity. The health consequences of noisy classrooms can affect both children's and teachers.

Keywords: exposure, noise, kindergarten, children

SESSION
OF SYSTEMATIC REVIEWS
AND META-ANALYSES

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Benign thyroid diseases treatment using radioiodine I-131- methodes and aspects of radiological protection

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Background: Thyroid therapy with radioactive iodine I-131 was introduced in 1940s in the USA. The introduction of this method revolutionized the treatment of thyroid diseases. This method is currently the pillar of treatment of diseases resulting from hyperthyroidism. Despite the dynamic development of nuclear medicine and improvement of diagnostic and therapeutic techniques, there are still concerns about the safety of patients and personnel working with radiopharmaceuticals. Factors and methods ensuring the safety of these groups - protection against radiation - are described in the International Commission on Radiological Protection (ICRP) and in government regulations.

The aim: The aim of this work is to discuss the aspects of radiological protection of patients and medical staff in radioactive iodine therapy procedures of the thyroid gland (I-131) and to quote the ICRP guidelines.

Materials and methods: This paper considers official ICRP guidelines, the opinions of nuclear medicine specialists, specialized textbooks and ICRP guidelines. Also data-collection using PubMed with mash-words: "radioiodine I131 treatment", "radiological protection" has been carried out.

Results: The methods of radiology and nuclear medicine require adherence to strict rules of radiological protection. During radioiodine (I-131) treatment, patients receive accurate, personalized doses of the radiopharmaceutical. They are also carefully instructed on how to maintain safety rules after exposure. Personnel protection is based on optimizing exposure to radiation sources. Exposure is assessed based on effective doses received and measured in personal dosimeters. According to ICRP recommendations, the annual effective dose should not exceed 50 mSv. Long-term stochastic and deterministic effects or radiation sickness are extremely rare (<0.01%).

Conclusions: Hyperthyroidism treated with radioiodine (I-131) is a relatively safe treatment. The basic condition for ensuring safety is compliance with the principles of radiological protection.

Keywords: nuclear medicine, radioactive iodine I-131, thyroid diseases treatment, radiological protection

Autoimmune NMDA receptor encephalitis as a cause of secondary psychosis: a case study review

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Background: Autoimmune NMDA Receptor Encephalitis is the most common form of autoimmune encephalitis (AE), although its diagnosis is estimated at only 1.5 per 1,000,000 inhabitants per year. This disease and related psychiatric symptoms were the subject of our review.

The aim: The purpose of this review was to characterize the psychiatric symptoms of this condition and describe effective therapies.

Materials and methods: Due to the rarity of the NMDA encephalitis and the lack of clinical trials in this topic, we decided to include case studies. We searched through online medical data bases such as: Embase, PubMed and Scopus consistent with PRISMA protocol. We only included papers published in peer-reviewed journals written in Polish or English between 2016 and 2021. The database search resulted in 230 articles which met the inclusion criteria. Analyzing the included cases, we distinguished the most frequently described etiological factors, psychiatric symptoms and the treatment methods used in the studies.

Results: The publications described 317 cases, 78.7% of which were women. The characteristics of 17 patients did not include sex and age. The most common cause of disease in female patients is ovarian teratoma, confirmed in 45.3% of patients. Other cancers and autoimmune diseases are also potential etiologic factors. Most of the patients were under 30 years of age. Most of the symptoms subsided after second-line immunosuppression.

Conclusions: Currently, there are many probable factors, which may contribute to the development of AE. Given the fact that psychotic symptoms of AE are not rare, a psychiatrist may be the first physician to whom such patients are referred. Taking into account many similarities of this manifestation of AE and schizophrenia, it is crucial to bring awareness of this disease among those specialists as the standard antipsychotic therapy has a limited application in such cases.

Keywords: NMDA encephalitis, NMDA, NMDAR, anti-NMDA

The prognostic and therapeutic significance of expression of PD-1 in CLL - a review of recent reports

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Background: CLL is one of the most common types of leukemia. In the course of the disease, there is clonal proliferation and accumulation of mature lymphocytes in the blood, bone marrow, lymph nodes and spleen. Programmed death receptor 1 (PD-1) inhibits T-cell activity in peripheral tissues. Thus, it limits the unfavorable immune response and enables the maintenance of immune tolerance; however, it can also contribute to the development of tumor cells. In the course of cancer - including CLL - there is overexpression of PD-1 on T cells and its ligand, the programmed death ligand 1 (PD-L1), in tumor cells and in the tumor microenvironment. PD-L1 in tumor cells promotes activation of proliferation and survival signaling pathways, indicating its important role in disease progression.

The aim: The aim of this study is to present the prognostic and therapeutic significance of PD-1 molecules in CLL.

Materials and methods: Data was collected from Pubmed from the period 2017-2022 by searching the following keywords: "CLL", "PD-1", "PD-L1", "pembrolizumab" and "nivolumab".

Results: It has been shown that the higher amount of PD-1 expression on T lymphocytes in CLL patients is associated with a more severe clinical course of the disease, e.g. a shorter time after which treatment must be initiated or a higher risk of relapsed and refractory CLL. The involvement of PD-1 molecule in immune response pathways has made it possible to create anti-cancer therapies based on blocking it through monoclonal antibodies (e.g. pembrolizumab and nivolumab). There is also a positive correlation between the amount of PD-1 and PD-L1 expression in the tumor microenvironment and the amount of response to this type of therapy.

Conclusions: PD-1 may be an important prognostic factor in CLL patients. Given the significant role of PD-1 molecules in the course of CLL, monoclonal antibodies blocking PD-1 could provide a highly effective alternative to traditionally used therapies and contribute to a significant improvement in the prognosis of patients.

Keywords: CLL, PD-1, PD-L1, pembrolizumab, nivolumab

Benefits of treadmill training for patients with Down Syndrome: a systematic review

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Background: The objective of this study was to evaluate the effectiveness of various results of treadmill training in children and adults with Down syndrome (DS).

The aim: We aimed to analyze what were the benefits of treadmill training alone or combined with physiotherapy in study groups compared to controls groups, in which no interventions were applied, in patients with Down syndrome.

Materials and methods: To provide an overview of this effectiveness, we conducted a systematic literature review of studies in which participants with DS from all age groups received treadmill training, alone or combined with physiotherapy. We also looked for comparisons with control groups of patients with DS who did not undergo treadmill training. The search was performed in medical databases: PubMed, PEDro, Science Direct, Scopus and Web of Science and included trials published until February 2023. Following PRISMA criteria, the Risk of Bias assessment was conducted using a tool developed by the Cochrane Collaboration for RCT. The selected studies presented multiple outcomes with differences in methodology, therefore we were not able to conduct any sort of data synthesis, so we presented measures of treatment effect as mean differences and corresponding 95% confidence intervals.

Results: We selected 25 studies for the analysis with a total number of 687 participants and came across 25 different outcomes which are presented in a narrative manner. In all outcomes we observed positive results favoring the treadmill training.

Conclusions: Introducing treadmill exercise into typical physiotherapy generates improvemt of mental and physical health of people with DS.

Keywords: Down syndrome; treadmill training; physiotherapy; intellectual disability

Arteria lusoria - a marker of fetal abnormalities and a cause of multiple clinical manifestations

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Background: As a result of abnormalities in embryogenesis, the right subclavian artery may diverge from the aortic arch behind the left subclavian artery. This is known as the arteria lusoria. This anomaly is detectable on fetal prenatal screening in the second trimester of pregnancy and is an important marker of congenital malformations.

The aim: To provide a description of the embryology, anatomy, clinical implications and diagnosis of arteria lusoria.

Materials and methods: Two medical databases (Medline, Cochrane Library) were searched to identify potentially qualifying articles for review. Forty-five scientific publications were included.

Results: Atrophy of the fourth right aortic arch during embyogenesis can lead to arteria lusoria. This occurs with a frequency of 0.5-2%. This artery originates directly from the aortic arch as a fourth branch or from the proximal part of the descending aorta. Then follows an upward and rightward direction crossing the trachea and oesophagus in its course. This abnormal artery is accompanied in 20-60% of cases by a dilatation of its proximal part, called Kommerell's diverticulum. A correlation has been shown between the presence of arteria lusoria and chromosomal aberrations, mainly Down syndrome. Arteria lusoria in fetuses is diagnosed using ultrasound, and in adults, the gold diagnostic standard is CT or MR angiography. Consequences of arteria lusoria may include dysphagia (dysphagia lusoria), chronic cough, arterio-oesophageal fistula, retrosternal pain, respiratory problems, and numbness of the right upper limb. Respiratory disorders accompanying arteria lusoria occur mainly in children because their trachea is less rigid than in adults and more prone to deformation.

Conclusions: Arteria lusoria is a clinically significant marker of fetal congenital malformations. Arteria lusoria may be a cause of non-specific symptoms in children and adults that should be considered during differential diagnosis.

Keywords: arteria lusoria, Kommerell's diverticulum, fetal malformations, dysphagia lusoria

Cardiovascular consequences of hematopoietic stem cell transplantation

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Work's tutor: doc. dr. Daiva Emilija Rekienė

Background: Haematopoietic stem cell transplantation (HSCT) is a medical treatment for various blood-related cancers and diseases. Although it has many benefits, it can also cause various problems, such as cardiovascular events. This review aims to summarize the current knowledge about the cardiovascular changes that can happen after HSCT.

The aim: To review the current knowledge about the cardiovascular changes that occur after HSCT.

Materials and methods: The literature used for this review was selected using "Pubmed" and "Cohrane Library" databases. More than 18 published studies between 2018 – 2022 were reviewed.

Results: Many studies have found that HSCT recipients have a higher risk of developing cardiovascular disease (CVD), which can be caused by several factors, such as chemotherapy, radiation therapy, graft-versus-host disease (GVHD), and traditional risk factors for heart disease. The most commonly observed cardiovascular changes after HSCT include problems with the heart's pumping function, problems with the heart's relaxation function, abnormal heart rhythms, high blood pressure, and blockages in the heart's blood vessels. These changes can occur soon after transplantation or many years later, and some studies suggest that the risk of CVD persists even decades after HSCT.

Conclusions: Cardiovascular changes after HSCT are common and can be caused by many factors. The reasons for these changes are complicated and involve multiple mechanisms, such as damage from free radicals, inflammation, and problems with the cells that line blood vessels. Because of this, healthcare providers should carefully monitor the heart health of people who have had HSCT. Future research should focus on finding the best ways to prevent and manage cardiovascular complications after HSCT.

Keywords: Haematopoietic stem cell transplantation, cardiovascular disease

Assessment of the sleep quality of children, adolescents and young adults during the COVID19 pandemic

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Background: The COVID-19 pandemic has affected everyone, but especially young people and children. The disturbed pace of life led to the emergence of psychological problems, which were often accompanied by a deterioration in the quality of sleep. This study aimed to summarize the literature examining the consequences of the COVID-19 pandemic on sleep quality in young adults.

The aim: The aim is to evaluate the sleep quality of young people during the COVID-19 pandemic.

Materials and methods: A review of the literature was performed based on the scientific databases of PubMed. The search was performed by using the following keywords: "COVID 19 pandemic", "sleep disorder", "children", "adolescent", "young people". More than 7 published studies between 2022 - 2023 were reviewed.

Results: A study of 11,835 adolescents and young adults in China found a 23.2 percent prevalence of insomnia symptoms during the COVID-19 epidemic. The study found that women's gender and urban living were risk factors for insomnia symptoms. Young people with depression and anxiety disorder were more likely to experience insomnia during the pandemic.
Reduced physical activity; delayed bedtime; increased sleep duration, screen time, internet use and sedentary habits, poor quality of life were other notable findings often associated with anxiety/depression. Delayed bedtime, increased sleep duration, screen time, internet use and sedentary habits, poor quality of life during the pandemic has affected many young people. All studies show that during the pandemic, children slept less than usual and had nightmares more often.

Conclusions: The literature found describes the significant negative impact of the COVID-19 pandemic on the quality of sleep among children, adolescents and young people. Insomnia was the most common sleep disorder found in individuals with depression or anxiety. teenagers and children often had nightmares during the pandemic, woke up sleepless and tired.

Keywords: sleep, covid -19, children, adolescent, pandemic

The role of circulating biomarkers in the diagnosis and prognosis of cardiovascular disease: a comprehensive E

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Background: Cardiovascular disease (CVD) remains the leading cause of morbidity and mortality worldwide. Traditional risk factors such as age, hypertension, dyslipidemia have been used to identify individuals at high risk for CVD, but these factors alone do not capture the full complexity of the disease process. There is growing evidence that circulating biomarkers, which can be measured in blood, urine, or other bodily fluids, may provide valuable insights into the pathogenesis and progression of CVD. It may also have diagnostic and prognostic value.

The aim: This thesis aims to provide such an evaluation, focusing on the most promising circulating biomarkers associated with the pathogenesis and progression of CVD.

Materials and methods: A review of the literature was performed based on the scientific databases of PubMed. The search was performed by using the following keywords: "biomarkers", "cardiovascular disease". More than 15 published studies between 2017 – 2023 were reviewed.

Results: Circulating biomarkers can be early markers of CVD, allowing early diagnosis and control of the disease. For example, high levels of NT-proBNP have been associated with an increased risk of heart failure, even in asymptomatic patients. By monitoring NT-proBNP levels in at-risk patients, doctors can identify those who may benefit from earlier treatment.
For example, hsCRP levels and traditional risk factors can be used to identify patients who are at high cardiovascular risk and require aggressive treatment.
Some biomarker tests can be expensive, and the cost-effectiveness of using biomarkers in routine clinical practice needs to be carefully evaluated.

Conclusions: Certain biomarkers, such as hsCRP, NT-proBNP, troponin may be particularly useful in predicting cardiovascular risk and guiding treatment decisions in specific patient populations.
Biomarkers in combination with traditional risk factors can improve the accuracy of cardiovascular disease risk prediction.

Keywords: Biomarkers, cardiovascular disease

Impact of gut microbiota pattern on the course of selected eating disorders

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Work's tutor: Zofia Spandel

Background: Mental, behavioral, and neurodevelopmental disorders are common in the XXI century, and their etiopathogenesis is overly complex. Anorexia, bulimia, and binge eating disorder are a few of the many eating disorders that can be linked to changes in the composition of the human microbiome. Understanding the relationship between the balance of the gut microbiota and the maintenance of health and prevention of eating disorders may be a promising basis for therapeutic interventions by healthcare providers, including dieticians.

The aim: This review aims to compile scientific studies based on the relationship between the gut microbiota and selected eating disorders (anorexia nervosa, bulimia nervosa, binge eating disorder) based on the ICD-11 classification.

Materials and methods: The author analyzed information focusing on the role of the microbiota in changes in the host body. For this purpose, PubMed a search engine was used as a methodological instrument. We analyzed the results of animal and human participation studies in different health conditions.

Results: Currently, there are still few studies showing the impact of gut microbiota patterns on eating disorders such as anorexia, bulimia, and binge eating disorder. These studies present aspects of intestinal dysbiosis. It is difficult to determine whether the microbiota changes in the observed patients are a consequence or a causative factor, as the etiology of these disorders is still not fully understood.

Conclusions: The studies presented in this review allow us to conclude that the correlation between gut microbiota and selected eating disorders does exist. Moreover, it was found that such an interaction regulates multiple mechanisms responsible for maintaining host homeostasis.

Keywords: microbiota, microbiome, gut, eating disorders, anorexia, bulimia, binge eating disorder

Innovative methods of treatment of chronic urticaria: a systematic review

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Background: Chronic urticaria (CU) is a disturbing allergic condition of the skin. Although frequently benign, it may sometimes be a red flag sign of a serious internal disease. Antihistamines and omalizumab are the mainstay therapies of CU. Additional treatment options are needed.

The aim: Systematic review of innovative methods of treatment of chronic urticaria.

Materials and methods: Four databases (PubMed, Google Scholar, Sciencedirect, Medscape) were systematically searched for studies published from October 2018 to June 2022 in English. The search terms were: "anti-IgE antibodies", "omalizumab", "ligelizumab", and "chronic spontaneous urticaria" in the title or abstract or as keywords. A total of 36 references, excluding duplicates, were identified.

Results: Most currently available treatments do not provide complete control of symptoms in patients with chronic idiopathic urticaria. Other promising drugs are being studied. Ligelizumab and UB-221 are 2 new anti-IgE monoclonal antibodies that are being studied for the treatment of CU. Ligelizumab is a next-generation humanized anti-IgE monoclonal antibody with high affinity. UB-221 is superior to ligelizumab and omalizumab in the downregulation of CD23-mediated IgE production. A single dose of UB-221 given to CU patients in the first human study showed sustained improvement in disease symptoms, in parallel with a rapid reduction in serum free IgE levels. UB-221 and ligelizumab bound cellular IgE with equal potency and effectively neutralized IgE in the sera of patients with atopic dermatitis, whereas omalizumab was not as effective. There are limited data on the dose-effect relationship of ligelizumab and its efficacy and safety compared to omalizumab and placebo in patients with CU.

Conclusions: New and better treatments for CU are desperately needed. Some agents are already in clinical trials (e.g. ligelizumab) and additional agents should be developed based on the many promising recently identified and characterized targets.

Keywords: anti-IgE antibodies, omalizumab, ligelizumab, and chronic spontaneous urticaria

Effectiveness of therapeutic drug monitoring in anti- cancer treatment. Systematic review

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Work's tutor: PhD Barbara Lorkowska-Zawicka, PhD Beata Bujak-Giżycka, UG Konrad Kaleta

Background: Therapeutic drug monitoring (TDM) optimizes cancer treatment by measuring drug concentrations to maintain effectiveness while minimizing toxicity. It has been successful with various anticancer agents and can lead to better outcomes and cost-effectiveness. TDM enables personalized dosing but more research is needed.

The aim: This study aims to determine the optimal use of TDM in monitoring commonly used anticancer drugs including 5-fluorouracil (5-FU), methotrexate (MTX), paclitaxel (PTX), cyclophosphamide (CP), platinum derivatives (PtD), and monoclonal antibodies (MAB) and to identify the ideal timing and frequency of drug concentration monitoring for improved clinical outcomes and reduced toxicity.

Materials and methods: A systematic literature search was done on original studies in English, French or Russian that involved different types of TDM protocols. PRISMA guidelines were followed in reporting the findings. Online databases, including EMBASE, MEDLINE, and Cochrane, were searched using specific phrases that included all the mentioned drugs. In case of MAB some meta-analyses/systematic reviews were also used for the assessment.

Results: Interim analysis was performed on 69 studies out of 1346 found. TDM is valuable for 5-fluorouracil that allows effective dose adjustment helpful to significantly reduced of adverse events. Data for CP, PTX and PtD was limited and more RCTs studies which prove the positive influence of TDM on the patients' survival are highly needed. The influence of TDM on MAB varies depending on the specific antibody being used. Some studies show improvement in efficacy and toxicity reduction, while other studies have found that TDM may not be necessary for optimal dosing of certain MABs

Conclusions: TDM should be more widely implemented in the clinical use, especially in treatment of malignancies with the use of 5-FU. In some cases, TDM is not needed for optimal dosing or it does not improve the patients' survival.

Keywords: Therapeutic drug monitoring, 5-fluorouracil, MTX, cyclophosphamide

The reassessed potential of SARS-CoV-2 attenuation for COVID-19 vaccine development — a systematic review update

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Work's tutor: dr n. farm. Marcin Delijewski

Background: Live-attenuated vaccines against SARS-CoV-2 received very little attention during COVID-19 pandemic. This is despite the fact that several broadly applicable methods of attenuating coronaviruses have been described and tested in animal models.

The aim: To identify strategies of coronavirus attenuation applicable to SARS-CoV-2.

Materials and methods: PubMed, Scopus, Web of Science and Embase databases were searched to identify relevant articles that described attenuated coronaviruses. In case of coronaviruses other than SARS-CoV-2, sequence alignment was used to exclude attenuating mutations that cannot be applied to SARS-CoV-2. Data regarding immunogenicity, safety and efficacy of attenuated coronavirus vaccines in animals were extracted.

Results: A total of 31 attenuation strategies and 122 coronaviruses attenuated in vivo have been described in 82 eligible articles. This review update includes data from 26 additional articles. Disruption of furin cleavage site appears to be the most promising strategy for SARS-CoV-2 attenuation. The replacement of core sequences of transcriptional regulatory signals is also very advantageous as it prevents recombination with wild-type viruses. Sufficiently attenuated coronaviruses have repeatedly been shown to cause no meaningful disease in animal models and provide excellent immunogenicity and protection from challenge. Compared to original review published on 7th May 2022, additional previously known attenuation strategies were tested in SARS-CoV-2 and data regarding intramuscular administration, dose-response relationship and occurrence of anamnestic response are available.

Conclusions: Live attenuated SARS-CoV-2 vaccines may have had a large impact on COVID-19 pandemic. Although the most critical period of the pandemic has ended, coronavirus biology and attenuation remain actively studied. Robust and widely-applicable attenuation strategies may serve as an important tool for accelerated coronavirus vaccine development in the future.

Keywords: live, attenuated, vaccine, coronavirus, covid, sars

The Ilizarov technique – a review

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Work's tutor: Jarosław Brudnicki PhD

Background: The Ilizarov technique was developed in the 1950s and has been widely popularized and applied. It is used in treatment of many different pathologies of musculoskeletal system.

The aim: The aim of the study was to summarize and collect information from the last 10 years about the use of Ilizarov frame.

Materials and methods: Analysis of articles found by databases (PubMed, Embase) and summary of information on the use of the Ilizarov technique. 176 articles were found after entering the keywords: Ilizarov, Ilizarov technique, Ilizarov apparatus, Ilizarov osteosynthesis in the databases. Articles that did not meet the criteria of the subject of the study were rejected and 86 articles, that dealt with the use of an external fixator, were selected.

Results: There are many indications where Ilizarov technique can be used – the most important ones are: the treatment of infected bone nonunion, congenital and acquired bone defects and limb length discrepancies, osteomyelitis, pseudoarthrosis and feet deformities ect. There are no specific contraindications for use of Ilizarov techinque, but some authors have claimed that surgery under 3 to 4 years of age is not beneficial in the treatment of congenital pseudarthrosis of the tibia.

Conclusions: The Ilizarov technique has a lot of advantages. It is a very effective and minimally invasive method. It does not require massive intensive care measures postoperatively. The Ilizarov frame has been successfully used to manage infected nonunion. However, the possible risk for pin tract infection, join stiffness and long treatment time should be entered into consideration.

Keywords: Ilizarov, Ilizarov technique, Ilizarov apparatus, distraction osteogenesis, Ilizarov osteosynthesi

Brain – adipose tissue axis - how brain and adipose tissue affect each other

Monika Błądek, Karolina Drygała

Work's tutor: Dorota Bartusik-Aebisher, Ph. D., D. Sc., B. Eng.,Professor UR

Background: Different types of axes connecting the brain with other organs have been discovered so far. Recently, there have also been reports of a link between the brain and adipose tissue. Adipose tissue is not only a storage of energy but also an active endocrine organ that secretes various substances. This means that it can have both direct and indirect effects on the brain.

The aim: The aim is to review available knowledge about the brain-adipose axis.

Materials and methods: In this paper, a systematic review of literature available in scientific databases such as PubMed was made.

Results: The theory of the brain-adipose tissue axis proposed by the authors of the studies assumes several postulates, which include criteria indicating the influence of endogenous molecules and their receptors on the hypothalamus and adipose tissue, regulation of appetite by centers in the brain and the influence on lipogenesis in adipocytes. Molecules belonging to the axis include, for example, adiponectin, corticotropin-releasing hormone, MSH, or leptin. Some molecules and their own receptors present in the hypothalamus also have their receptors localized in adipose tissue. Fatty tissue affects the brain also by affecting the brain-gut-microbiota axis. In addition, adipose tissue, through secreted substances, may disturb the stability of the hypothalamic-pituitary axis, becoming a cofactor of progression in patients with mental illnesses such as depression.

Conclusions: The interplay between the brain and adipose tissue results in a dynamic interaction of one structure with another. Appropriate, undisturbed communication between the components of this axis allows for the maintenance of homeostasis. Disturbances in the functioning of any of the elements affect the rest, causing the entire axis to malfunction.

Keywords: brain-adipose axis, adipose tissue, adipocyte

Caplan syndrome

ken-charles Cynthia Chizoba

Work's tutor: dr. Solomko Olena.V

Background: Caplan syndrome also known as rheumatoid pneumoconiosis, is a rare condition that involves rheumatoid arthritis and pneumoconiosis which manifests as intrapulmonary nodules with influence on the airway and interstitium. It is known to occur amongst coal miners and the risk of industrial mine dust is one of the greatest challenges not only in Europe especially Poland but also the world.

The aim: The aim amongst many is to first, highlight how overlooked Caplan syndrome is research-wise, and to increase knowledge about a topic that receives less coverage to heart attacks and diabetes, yet remains a significant concern for miners worldwide.

Materials and methods: A comprehensive literature search using PubMed, BazTech and Research Gate was made for publications within 5 years on the key word 'Caplan syndrome'. In Poland a pilot assessment of the effects of long-term exposure of employees of the preparatory departments of mine X to mine dust and interview with the patient, physical and Spirometrics tests. An analysis was conducted on diabetes and Caplan syndrome written addressing articles.

Results: Among the surveyed miners in Poland, 18.4% had various disorders and changes in the respiratory system, including pneumoconiosis. Miners employed in hard coal mines, who in 2021 they accounted for 89.8% of all exposed persons in Poland (34,876 employees). These individuals immune systems are altered hence recurrence inflammations and scarring of lungs leading to complications such as pleural effusion, interstitial lung diseases and many others. Prevention is important as there is no treatment other than management in treating complications. Bibliometric analysis during the last five years 15500 articles and reviews have been written on diabetes and coronary disease. No bibliometric analysis on Caplan syndrome.

Conclusions: The prevalence of Caplan syndrome lapsed over the years both health wise and literature publication system. Hence, it must be kept in mind that over a million people die each year from Caplan syndrome.

Keywords: Caplan syndrome, pneumoconiosis, respiratory diseases

Surgical management of multiple brain metastases of the tumours of (un)known origin – a systematic review

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Work's tutor: dr n. med. Michał Nycz

Background: Intracerebral metastases are said to be very dangerous for patients, as they might affect strongly the cognitive functions or cause death rapidly. Nowadays, surgery in the treatment of multiple metastases is rare and may be performed due to lack of additional neurological disorders predicted during correction of mass effect symptoms or if the primary tumour is localised outside the nervous system.

The aim: The aim of this study was to investigate whether surgical management of multiple intracerebral metastases of the tumours with (un)known primary location could be a safe and efficient alternative to current treatment protocols.

Materials and methods: This systematic review was held in March 2023 and based on PubMed, Scopus, Web of Science and Clinical Trials databases. The research question was stated in compliance with PICO rules and the methodology was conducted due to PRISMA standards. Original studies analysing the clinical outcomes (1-year survivorship rate, neoplasm regression, any adverse effects) of surgical methods of management of multiple intracerebral metastases of (un)known primary tumours were deemed eligible, followed by secondary research of the selected manuscripts by three reviewers independently. The risk of bias and quality of evidence with GRADE method were established. Finally, there were 12 works included into this research.

Results: The response to treatment in such group of patients differs due to an exact location, amount, control and the extent of resection of brain metastases. The total extent of intracerebral neoplasms associates with better quality of life and higher chances for 1-year survivorship. The primary location of the tumour does not influence later patient's condition.

Conclusions: Surgical management seems to be a potential method especially for the metastases located shallowly in the brain and feasible to complete resection. However, the results indicate the need for conducting more prospective trials to assess widely the clinical outcomes of such method of treatment.

Keywords: Intracerebral metastases, Cancer metastases, Multiple metastases, Surgery, Tumours

CytoSorb: a run down adjuvant in infective endocarditis surgery

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Work's tutor: Prof. Dr. Indraneil Mukherjee MBBS, MD, FACS

Background: Cytokine storm (CS) is a dysregulated immune response causing organ damage, leading to high mortality and morbidity among critically ill patients. Extracorporeal cytokine hemoadsorption therapy (ECAT) is a modality aiming to prevent CS by reducing cytokines. CytoSorb® is the latest and the only approved ECAT modality in the European Union. Surgery is the treatment of choice for Infective Endocarditis (IE) with failed medical treatment and complications, which can result in an inflammatory response and increases the risk of sepsis and mortality. CytoSorb can filter out cytokines responsible for IE, improving the clinical outcome.

The aim: To assess the role of CytoSorb in the prevention of end-organ failure in IE surgeries and evaluate its efficacy to reduce cytokine levels.

Materials and methods: A literature search was performed in the MEDLINE database among articles of the last decade using appropriate syntaxes. Articles were screened using various methods and 17 articles were considered.

Results: CytoSorb® was effective in reducing sepsis-associated mortality in high-risk IE surgeries. Initial studies reported greater hemodynamic stability and faster recovery supported by a case report showing reduced markers and improved outcomes. However, RCTs did show contradictory results owing to small sample sizes and varied treatment protocols, verified by Träger et al.'s conclusion of inadequate EuroScores and poor results in the CytoSorb group.

Conclusions: Intracardiac devices have increased the need for cytokine reduction, which is via intracorporeal or extracorporeal techniques. CytoSorb, a newer modality, is now the epicenter of research, but the current review shows conflicting results with RCTs failing to confirm its efficacy. Limitations in these studies such as missing pre-op scores and small sample sizes may have contributed to these results. A higher quality RCT with a larger sample size and stronger evidence might verify CytoSorb's efficacy.

Keywords: CytoSorb, Extracorporeal Cytokine Adsorption Technique, Infective Endocarditis, Cytokine Storm

MicroRNA – new perspectives for glioma therapy

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Work's tutor: dr hab. n. med. Paulina Gil-Kulik

Background: Gliomas are the most common malignant tumors of central nervous system. The prognosis is usually not good – only half of patients survive the first year after diagnosis. Researchers have still been looking for the best methods to diagnose and treat this disease. The potential has been discovered in the microRNA. It is endogenous, non-coding RNA containing 21-23 nucleotides. Its function is to regulate gene expression responsible for cell proliferation, maturation and programmed cell death. The involvement of miRNA in gliomas could be used in diagnostic and therapeutic processes.

The aim: This review shows current research into the role of microRNA as candidates for diagnostic biomarkers and treatment options.

Materials and methods: Data were collected from Pubmed, Web of Science and Scopus for the period of 2019-2023 through searching of these keywords: "microRNA" and "glioma".

Results: An increasing number of studies have shown that abnormalities in the expression of selected miRNAs may contribute to the glioma development. The isolation and characterization of different types of microRNA using cellular and molecular biology techniques could potentially be used for improved diagnosis, prognosis and treatment decisions. These biomarkers can serve as target for the therapy. This observation allowed to develop miRNA inhibitors and mimics. Exogenous administration of specific microRNAs could help to restore the balance between tumor oncogenic and suppressive transcripts.

Conclusions: MicroRNAs could be ideal candidates for diagnostic and prognostic indicators for patients with gliomas. The understanding of miRNA influence on glioma biology provides the foundation for effective biomarker panels with high diagnostic accuracy and clinical applicability. Developments in miRNA brain-tumor therapy is the promising prospect of treating tumors in precise ways. For these reasons microRNA definitely deserve future research.

Keywords: microRNA, glioma

Effect of protein intake on the kidney condition of athletes

Anna Zabochnicka

Work's tutor: mgr Marcin Osowski, mgr Bartłomiej Dorożyński

Background: Higher demand for protein in athletes is due to the need to regenerate muscle damage that arose during training, maintain more muscle mass than a non-training person and increased muscle protein synthesis.

The aim: The aim of the study was to evaluate the impact of protein intake on kidney function among athletes.

Materials and methods: A critical analysis was made of the available literature from 1982-2023 on the impact of protein intake on kidney function. The literature review was conducted on the basis of searched databases (Google Scholar, PubMed) The following search terms were used: protein, kidney, creatinine, cystatin C, chronic kidney disease, muscle protein synthesis, high protein diet, bodybuilding

Results: Studies show no harmful effects on the kidneys of high-protein diets >2.2g/kg bw/d consumed for up to two years. There was no difference between 2.5g and 3.3g protein/kg body weight in creatinine, eGFR, and urea. Bodybuilders use other practices that can negatively impact kidney health.

Conclusions: There is currently insufficient evidence to suggest that healthy kidneys are damaged by an increased protein intake of two to three times the recommended daily allowance. A protein intake of 1.4–2.0 g/kg per day for physically active people is safe and will also improve training adaptation to exercise training. More research is needed to evaluate the long-term effects of high protein intake on kidney function among athletes.

Keywords: protein, cystatin C, kidney, creatinine, bodybuilding

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Honokiol and magnolol - promising compounds in the treatment of diabetes and its complications

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Work's tutor: dr n. farm. Weronika Borymska, dr hab. n. farm. Maria Zych, prof. dr hab. n.med. i n. o zdr. Ilona Kaczmarczyk-Żebrowska

Background: Type 2 diabetes mellitus (T2DM) is a disease associated with hyperglycemia and excessive production of free radicals. The accompanying oxidative stress (OS) leads to numerous metabolic complications, including hormonal disorders. Honokiol (HON) and magnolol (MAG) are neolignans with antioxidant activity.

The aim: The purpose of this study was to investigate the effect of HON and MAG on the level of sex hormones in the serum as well as total parameters describing OS in the testes of rats with experimentally induced T2DM.

Materials and methods: The research was carried out on mature male Wistar rats, divided into 6 groups: control non-T2DM rats, control T2DM rats and T2DM rats receiving HON or MAG. The compounds were administered orally at the doses of 5.0 or 25.0 mg/kg. T2DM was induced by high fat diet and streptozotocin. In isolated and homogenized testes the concentration of vitamic C (VIT C), total thiol groups (SH) and non-protein thiol groups (NPSH) along with total oxidant status (TOS) and total antioxidant response (TAR) were measured spectrophotometrically. Serum testosterone and estradiol levels were estimated using ELISA method.

Results: The collected outcomes revealed that T2DM caused irregularities in the level of sex hormones and parameters related to OS. On the contrary, neolignans dosing resulted in overall improvement. Inter alia, a statistically significant increase in TAR and decrease in TOS levels were observed after administration of both doses of MAG. Administration of the higher dose of MAG resulted also in a statistically significant increase in NPSH and SH levels. Treatment with a lower dose of HON resulted in a statistically significantly increase in TAR and NPSH levels and with a higher dose – increase in VIT C and decrease in TOS levels. Sex hormones level did not return to comparable values with the control non-T2DM group.

Conclusions: The obtained results may indicate a positive effect of neolignans on the parameters of OS, but not on sex hormone imbalance, in rats with T2DM.

Keywords: type 2 diabetes, oxidative stress, sex hormones, testes, honokiol, magnolol

SARS-CoV-2 infections and deaths among infected healthcare workers in Poland

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Work's tutor: prof. dr hab. n. med. Małgorzata Kowalska

Background: The COVID-19 pandemic leads to many problems in the organization of healthcare. One of them is the reduction in the number of healthcare workers (HCW) due to the SARS-CoV-2 infection. A review of the existing data indicates that the prevalence of SARS-CoV-2 infection among HCW in Poland is not well known or described.

The aim: The aim of the study is to present the scale of infections and deaths among HCW in Poland due to COVID-19 pandemic.

Materials and methods: To know the scale of infections among HCW secondary epidemiological data obtained from the 'e-Health Centre' for the period 01.2021-07.2022, was analyzed. The collected data enabled to assess the percentage of infected employees in individual occupational categories in total and individual voivodeships of the country. In addition, the number of deaths and the number of vaccinated HCWs were tracked, which made it possible to know the territorial differences in the infection, mortality rate, and the vaccination coverage.

Results: The prevalence of SARS-CoV-2 infections among HCW was 16.48%. The highest percentage of infected concerned laboratory scientists (21.62%) and paramedics (18.34%) and the smallest was registered at dentists (8.62%). The highest frequency of infections among HCW occurred in the province of Zachodnio-Pomorskie (18.9%). The fewest infected doctors came from the province of Podkarpackie (12.2%). Due to COVID-19, 558 HCW died during the analyzed period, mostly nurses (n=236) and doctors (n=200).
The results regarding the vaccination coverage of HCW against COVID-19 indicate the highest percentage of vaccinated were among doctors (83.63%) and the smallest among physiotherapists (38.2%).

Conclusions: The percentage of SARS-CoV-2 infections among HCW, in general, during the pandemic in Poland was high and amounted to 16.48%. Laboratory scientists and paramedics were most often infected. The highest percentage of deaths was recorded in the professional group of dentists. The largest percentage of HCW vaccinated against COVID-19 concerned physicians.

Keywords: healthcare workers, SARS-CoV-2, COVID-19 pandemic

The effect of sorafenib on Ras/Raf/MEK/ERK signaling pathway activity in hepatocellular carcinoma

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Background: Hepatocellular carcinoma treatment is a major issue in oncology due to its chemo- and radioresistance. In advanced stages, the gold standard is sorafenib, a kinase inhibitor targeting the Ras/Raf/MEK/ERK signaling pathway.

The aim: The aim of this study was to evaluate the effect of the increasing sorafenib concentrations on the viability of the HepG2 hepatocellular carcinoma cell line and the RAS/Raf/MEK/ERK signaling in HepG2.

Materials and methods: HepG2 cells were cultured in medium (DMEM, 10% fetal bovine serum, 1% penicillin-streptomycin and 1% L-glutamine) in 5% CO2 37°C with or without the addition of sorafenib for determining the biologically active concentration.
The toxicity of sorafenib on the HepG2 cell line was evaluated using MTT assay with sorafenib solutions first: 0-100 ĶM (24h) and after: 0-12.5 ĶM (24, 48 and 72h).
The effect of sorafenib on Ras/Raf/MEK/ERK signaling was assessed in HepG2 cells using RT-qPCR for HRAS, KRAS, RAF1 and CCNE1 genes in cells treated with 0-10 ĶM sorafenib solutions for 24, 48 and 72h.

Results: In MTT assay, a significant decrease in cell viability was observed in 50 ĶM and 100 ĶM sorafenib solutions. For lower concentrations (0-12.5 ĶM), the decrease occurred in all concentrations after 48h and 72h and in 7.5 ĶM and 12.5 ĶM after 24h.
After that, gene expression analysis revealed that 2.5ĶM and 5ĶM sorafenib reduced the expression of HRAS after 48h of incubation, 7.5 ĶM concentration lowered the expression of RAF1 after 48h and 72h and CCNE1 after 48h. Sorafenib at the concentration of 10 ĶM reduced RAF1 and CCNE1 expression after 48h with statistical significance. No effect was found after 24h.

Conclusions: Based on the results of RT-qPCR and MTT assay, the final sorafenib dose of 7.5 ĶM for 48 hours was chosen for further studies aiming to evaluate the synergistic anti-cancer effect of sorafenib and human mesenchymal stem cells.

Keywords: hepatocellular carcinoma, sorafenib, cell signaling, cell viability

Effect of high-fat feed on selected blood parameters of Long Evans rats

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Background: The high-fat (ketogenic) diet has been long used as an alternative therapy in cases of drug-resistant epilepsies.

The aim: Because of its proven neuroprotective properties, it raises hopes for its potential applications in the treatment of neurodegenerative diseases and neurodevelopmental disorders. The diet is also widely used to induce rapid weight loss. In addition to its positive aspects, the ketogenic diet modulates the expression of neurotrophic factors and the levels of steroid hormones, which can adversely affect the physiological parameters of the body.

Materials and methods: Collected blood was centrifuged at 4 ° for 20 minutes at 2000 g. The concentration of the studied proteins and hormones was determined by commercially available ELISA kits. The studied targets were determined in serum samples according to the manufacturers' instructions. The absorbance of the samples was measured at 450 nm using the multiwall plate reader (Biotek, USA)

Results: The purpose of the project is to evaluate the effects of a ketogenic diet on the levels of selected hormones depending on the plant or animal fats used.

Conclusions: The results will contribute to a better understanding of the mechanisms by which the ketogenic diet may influence the animal and human body.

Keywords: high-fat diet, ketogenic diet, FSH,LH, testosterone, DHT

Pro-thrombotic and pro-inflammatory phenotype of blood platelets in secondary progressive multiple sclerosis

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Work's tutor: prof. dr hab. Joanna Saluk

Background: Multiple sclerosis (MS) is a chronic disease that involves inflammation and neural damage to the central nervous system. Secondary progressive (SP)MS is the advanced stage of the disease, marked by ongoing neurodegeneration and disability. It is proposed that the activation of blood platelets (PLTs) and their crosstalk with leukocytes (LEUs) can directly contribute to the disruption of the blood-brain barrier and MS initialisation.

The aim: To identify the selected structural and functional properties of PLTs and their interactions with LEUs in SPMS.

Materials and methods: The material was clinical specimens from SPMS patients and healthy controls. The analysis of the functional status of PLTs was performed by examining the soluble (s)P-selectin concentration using ELISA. Structural alternations of activated PLTs were visualised by microscopic techniques. Plasma concentrations of PLT-derived inflammatory mediators: IL-1β, IL-8, TNF-α, RANTES, and MIP-1α were determined using the Bio-Plex multiplex system. The chemotactic potential of PLTs toward LEUs was analysed using a migration assay in a Boyden chamber.

Results: Plasma sP-selectin levels were elevated in SPMS by 30% ($p<0.05$). Imaging techniques confirmed that PLTs in SPMS are markedly activated, exhibited irregular shapes, and formed a long numerous pseudopodium. All measured inflammatory mediators showed a significantly higher concentration in SPMS. The level of LEUs that actively migrated toward PLTs was elevated by approximately 48% ($p<0.05$).

Conclusions: This pilot study reveals that PLTs of SPMS patients exhibit an increased level of spontaneous activation, as well as show elevated chemotactic potential toward LEUs, which may promote the formation of PLT-LEUs aggregates. Markedly increased levels of PLT-derived chemokines/cytokines suggest enhanced PLTs capability to encourage LEUs recruitment and promote inflammation in SPMS.
The study was funded by NCN Preludium grant (UMO-2017/27/N/NZ4/01868) and NCN Opus grant (UMO-2018/31/B/NZ4/02688).

Keywords: blood platelets, platelet-leukocyte aggregates, secondary progressive multiple sclerosis

Assessment of effectiveness of the algorithm for automated analysis of strut coverage with intravascular OCT

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Background: Optical coherence tomography (OCT) is characterized by highest resolution among intravascular imaging modalities which enables precise quantification and detection of tissue coverage on struts surface. Evaluation of neointimal coverage in coronary stents in in-vivo setting seems crucial to accurately define their safety profile. Currently, such analyses are mainly done manually, which is time-consuming.

The aim: The aim of the study was to validate an algorithm for automated quantitative analysis of both the vessel lumen and stent struts at early stages of vessel healing in intravascular OCT imaging.

Materials and methods: A set of 2,000 images (cross-sectional views) from 25 patients one month following drug-eluting stents implantation, including 1134 cross-sections with covered and uncovered struts, was used to validate the data. Uncovered strut was defined as a strut not covered at any side or partially covered by tissue but only, at one side. The first step in development of the algorithm was segmentation of the vessel lumen based on active contour and local binarization. The next step was automatic strut detection and assessment of neointimal hyperplasia (NIH) coverage thickness.

Results: The proposed fully automated method showed high efficiency and accuracy of lumen segmentation method [Dice 0.9; Accuracy of 0.995] versus manual reference. The algorithm for detection of stent area showed a Dice of 0.81 in the context of the position of stent struts. It showed a high precison of 91% and sensitivity of 88% in detecting metallic struts in one month evaluation, including cases with thick NIH compared to gold standard (Expert). In addition, the precision were 93% and 91% and the sensitivity were 90% and 87%, respectively, for uncovered and covered struts.

Conclusions: Automating the stent coverage assessment might facilitate imaging analysis and increase its reproducibility. The algorithm demonstrated high sensitivity and precision in detection of uncovered struts.

Keywords: OCT, coronary artery disease, PCI, stent

Identification of correlations between EMT markers and mechanical properties of prostate tissues and cells

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Background: Cells are highly dynamic structures that change their biochemical and mechanical properties in response to various stimuli. Relating changes between expression of molecules involved in EMT and mechanical properties is not clear. The use of atomic force microscopy (AFM) enables differentiation between normal and cancerous cells. Correlating these changes with protein expression can improve characterization.

The aim: To develop a new cancer classification method based on molecular and mechanical tissue properties that change during cancer progression.

Materials and methods: The study was conducted on ATCC human prostate and bladder cell lines and tissues after surgical operation. The cell lines were cultured according to the protocol. The expression and activity of EMT proteins were analyzed using the Western Blot technique. Cell and tissue mechanics were tested using the AFM technique.

Results: The studies were performed on prostate and bladder cell lines and tissues. The study used tissues with diagnosed bladder and prostate cancer, as well as tissues obtained from patients undergoing radical cystectomy which were collected from areas of the bladder without cancer. All tissues expressed E-cadherin and Twist, with protein levels varying depending on the expression of other EMT proteins, indicating a correlation between the changes observed. Normal tissues expressed E-cadherin and did not express N-cadherin, vimentin, Twist, or Zeb. Tissues from the EMT transition groups expressed E-cadherin and had significant expression of N-cadherin, vimentin, and Zeb. Selected cell lines of both tumors were also used for comparative analysis. In parallel studies, we observed cells undergoing neoplastic changes to have a decreased value of Young's modulus, indicating increased deformability.

Conclusions: Initial studies suggest a connection between changes in EMT protein expression and elasticity, offering potential for a new method of diagnosing cancerous growths.

Keywords: prostate cancer, bladder cancer, EMT, AFM, tissue mechanics

Relationship between the hand grip strength and endurance and the masticatory muscle activity in sport climber

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Background: The growing interest in sport climbing and its increasing competitiveness prompts researchers to look for answers to what factors are essential in achieving success in this discipline.

The aim: The presented study aimed to analyze the relationship between the dominance of the upper limb in terms of strength and endurance and the bioelectrical activity of masticatory muscles in sports climbers.

Materials and methods: The study was conducted on a group of 41 sport climbers. Participants were divided into intermediate and advanced groups using the International Rock Climbing Research Association scale (IRCRA). The strength and endurance of the hand grip were assessed with a digital dynamometer (Jamar Plus+; Sammons Preston, Rolyon, Bolingbrook, IL, USA). Next, the electromyographic activity of the masseter, temporalis, digastric and sternocleidomastoid muscles was recorded using the BioEMG III™ device (BioResearch Associates, Inc., Milwaukee, WI, USA).

Results: Higher activity of the temporalis muscle was observed on the opposite side to the dominant hand in the advanced climber's group ($p=0.045$). The bioelectric activity of masseter muscles using factor: the percentage change of handgrip strength using the last three and the first three repetitions was statistically significantly higher on the non-dominant side ($p=0.04$). The percentage change of handgrip strength using the first six and the last six repetitions was statistically significantly higher on the dominant side ($p=0.04$). The higher bioelectrical activity of the digastric muscle was observed on the opposite side of the dominant hand ($p=0.048$).

Conclusions: The author's study did not show that advanced climbers had greater endurance and grip strength than intermediate climbers. No differences were noticed regarding dominant and non-dominant hands in these parameters. However, it has been proven that the masticatory muscles show higher muscle activity on the non-dominant hand side.

Keywords: sEMG; sports climbing; rock climbing; climbers; masticatory muscle; muscular strength

The intake of B vitamins and the titre of anti-peroxidase antibodies in patients with Hashimoto's disease

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Background: The scientific literature is increasingly highlighting the important role of nutrients in Hashimoto's thyroiditis (HT), which is more and more common in women. A particularly documented relationship is in the case of iodine, selenium or vitamin D. The relationship between B vitamins and HT-specific anti-peroxidase (anti-TPO) antibodies is little known. There are indications that B vitamins act on the immune system, e.g. cobalamin is involved in the regulation of CD8+ (cluster of differentiation 8+) T cells, which affects HT.

The aim: To assess the relationship between anti-TPO concentration and dietary intake of B vitamins in patients with HT.

Materials and methods: The examined group were women aged 18-64 with elevated levels of anti-TPO in the blood. The intake of selected B vitamins (B1, B2, B3, B6, B9 and B12) was assessed based on a 3-day food records and compared to the nutritional standards by the National Institute of Public Health - National Institute of Hygiene. The blood samples were taken to determine the titre of anti-TPO. As part of the statistical analysis, the Mann-Whitney test was used.

Results: The study involved 37 women aged 21 to 55 (37.2 ± 10.5 years). The anti-TPO titer averaged 372.7 ± 409.1 IU/ml (19 - 1666.67 IU/ml). The relationship between the titer of antibodies and the meet of the recommendations for vit. B12 ($p=0.01$). Nearly 84% of the respondents meet the recommendation for this nutrient (average intake 4.5 ± 2.5 mcg). There was also a trend towards significance between the level of anti-TPO and vitamin B6 ($p=0.08$) and B9 ($p=0.09$).

Conclusions: There is a possible link between anti-TPO and vitamin B12. It is recommended to conduct further studies on a larger number of patients with HT, including cobalamin tests in the blood.

Keywords: B vitamins, Hashimoto's thyroiditis, diet

Variant anatomy of anterior neck region at prenatal period of human ontogenesis

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Work's tutor: Professor, Doctor of Medical Sciences, MD Olexandr Tsyhykalo

Background: As the number of incidences with congenital malformations in newborns remains stable without descending tendency, prenatal human morphology allows to enlarge data on sources and variabilities of human prenatal development in order to manage and treat congenital malformations preventively. Anterior region of neck encloses principle structures of vascular, nervous, respiratory and digestive systems that make this area clinically valuable for surgical management of cysts, tumors and during reconstructive surgeries.

The aim: The aim of the study was to investigate anatomical features and possible variations in anterior neck region of human prefetuses and fetuses during prenatal intrauterine development (IUD).

Materials and methods: Macro- and microscopy, dissection, morphometry and three-dimensional reconstruction was performed on 14 specimens of human prefetuses and fetuses. Material was classified by parieto-coccygeal length (PCL) and obtained in accordance with Declaration of Helsinki, based on bilateral agreement between Department of Histology, Cytology and Embryology and Regional Pathologists Bureau.

Results: Sternohyoid had vivid asymmetry in 70,0 mm PCL prefetus, accompanied by shortened width of left muscle within omotracheal triangle. In 80,0 mm PCL prefetus sternocleidomastoid had two primary parts of attachment, accompanied by additional fibrous belly. In 200,0 mm PCL fetus omohyoid didn't have intermediate tendon between superior and inferior bellies, accompanied by non-angulated course in the middle portion. Absence of intermediate portion within omohyoid impairs investigated morphometric indexes for carotid and omotracheal triangles prenatally.

Conclusions: Dysmorphoses of neck muscles was prevalent anatomical variation. These may occur due to deficient mesenchymal separation processes. Variations of course and attachment of anterior and lateral neck muscles involve vascularization and innervation changes that are crucial during surgical interventions in neck region.

Keywords: prenatal development, congenital malformations, neck, omohyoid, sternocleidomastoid

Influence of leptin to adiponectin concentration ratios on inflammation-related genes expressionin RPTEC cells

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Work's tutor: dr hab. n. med. Joanna Gola, prof. SUM

Background: Fat-derived hormones such as leptin and adiponectin take a part in the type 2 diabetes mellitus development. The research shows that ratio between the concentration of adiponectin to leptin has a stronger correlation to insulin resistance than leptin and adiponectin concentration as a single factor, thus could be considered as a predictive marker. However, little is known about how the individual ratios affect kidney cells. Moreover, it is not known whether they can affect genes associated with the inflammatory response, the expression of which is changed in the development of diabetic nephropathy.

The aim: Assessment of the Influence of leptin to adiponectin concentration ratios on the expression of genes related to inflammatory response in renal proximal tubule epithelial cells(RPTEC).

Materials and methods: Renal proximal tubular epithelial cell line (RPTEC) was used in the research(Lonza). Viability of cells treated with different concentrations of leptin and adiponectin was assessed using MTT and SRB assays(Sigma-Aldrich). A pilot analysis concerning influence of concentration ratios on mRNA level of genes encoding IL-1B and IL -6 was performed using real-time RT-qPCR method. The last part of the research was transcriptome analysis with the use ofHG-U133A 2.0microarrays (Affymetrix).

Results: Based on the results of viability tests three ratios of leptin [ng/ml] to adiponectin [ug/ml] (5/0.5, 60/0.5 and 200/0.5) and three incubation times (2h, 8h,24h) were chosen. Based on the results of a pilot study, microarray analysis was performed for ratios 5/0.5, 60/0.5 and 200/0.5 and time of incubation 8h. Each tested ratio influenced expression of inflammation-related genes. Ratio leptin to adiponectin 60/0.5 changed expression of 110 genes. The strongest changes were observed for genes CXCL5, SNAP23 and CXCL8.

Conclusions: Changes in the leptin to adiponectin ratio affect RPTEC by altering the expression of genes associated with the inflammatory response.

Keywords: adiponectin, leptin, nephropathy, inflammation, RPTEC

Behavioral alteration after chronic administration of escitalopram in rodents subjected to early life stress

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Work's tutor: prof. dr hab. n. med. Ewa Obuchowicz

Background: Major depression disorder (MDD) is one of the most common diagnosis in children and adolescents with incidence ranging up to 12% and is associated with significant morbidity and suicidality in this population. A lot of effort has been made to improve its diagnostics and treatment options. Due to ethical reasons it is very hard to perform proper double-blinded clinical study exploring this topic in adolescent population. Early Life Stress (ELS) is a preclinical developmental model of depressive-like disorders in rodents. Moreover, escitalopram is the drug which is still not registered in Europe in pediatric and adolescent population.

The aim: Investigation if behavioral alterations induced by ELS are reversed by chronic administration of escitalopram in adolescent rodents.

Materials and methods: Forty male newborn Wistar rats were divided into four groups: Control + NaCl, ELS + NaCl, Control + escitalopram, ELS + escitalopram.
Groups II and IV were subjected to maternal separation (MS - subtype of ELS protocol) for 14 days (postnatal days - PND 2-15) for 6 hours a day. At the same time groups I and III were left with their dams in order to experience proper maternal care. Afterwards starting from PND 35 escitalopram or NaCl were administered intraperitoneally for 21 days. After the last dose of the drug blood samples were taken in order to check corticosterone levels that represent hypothalamus-pituitary-adrenal axis activity. At the end of experiment three behavior tests were performed: open field test (OFT), forced swimming test (FST) and elevated plus maze test (EPM). All the tests were analyzed manually with support of dedicated software, then the results underwent statistical evaluation.

Results: Behavioral changes as well as increased corticosterone levels provoked by early life stress in adolescent rats are partially reversible by chronic administration of escitalopram.

Conclusions: Escitalopram seems promising drug in therapy of MDD in this population, but further research on its safety is required.

Keywords: escitalopram, early life stress, depression, adolescent

SESSION
OF
CLINICAL MEDICINE

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Lifestyle of women with Hashimoto's disease: identifying the areas that require changes

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Background: In Hashimoto's disease patient's lifestyle seems to be important. It can affect the course and progression of the disease and consequently the quality of life. For this reason it is advisable to monitor the lifestyle of patients and to conduct health education, in order to assess the risk and correct inapropriate behaviours.

The aim: Assessment of the lifestyle and quality of life of women with hypothyroidism caused by Hashimoto's disease. Identifying lifestyle areas that require changes.

Materials and methods: The study included 88 women diagnosed with hypothyroidism caused by Hashimoto's disease. An anonymous survey was conducted. The standardized KomPAN questionnaire was used to assess lifestyle, while the standardized WHOQOL-BREF questionnaire was used to assess the quality of life.

Results: The diet of the participants is characterized by a moderate intensity of pro-health quality; the average healthy diet index = 23.74. According to the recommendations: 42% of the women eat vegetables several times a day, 59% of them eat fish at least once a week, and 39.8% eat legumes at least once a week. A total of 63% participants sleep for 6-9 hours, as recomended. Most (90%) do not smoke cigarettes. The physical activity level of half of the study group is low (51.1%). Good or very good quality of life is declared by 63.6% of women, but negative emotions such as despondency, despair, anxiety and depression occure in 47.7% of the group at least often.

Conclusions: The lifestyle of women diagnosed with Hashimoto's disease is mostly incorrect and requires changes especially in areas of eating behavior and physical activity. Concidering the influence of lifestyle on the course of Hashimoto's disease, it is necessary to conduct nutritional education. It will be beneficial to educate about anti-inflammatory diet and nutrition that support the production of thyroid hormones.

Keywords: Hashimoto's Disease, Health Behavior, Quality of Life

Physical activity and pelvic floor muscle training in postpartum women

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Background: Physical activity (PA) during the postpartum maintains a healthy body weight, alleviates the symptoms of depression and improves the quality of life. Pelvic floor muscle training (PFMT) increases the strength and endurance of pelvic floor muscles and reduce the symptoms of urinary incontinence.

The aim: The aim of this study was to assess the frequency and accuracy of PFMT and PA at 6 weeks postpartum in women who had supervised physical therapy training, online training, or no intervention.

Materials and methods: 342 women, 3-4 days after delivery, were randomly assigned to the following groups: no intervention (Gr.Con), online exercises (Gr.Onl), supervised exercises (Gr.Sup). There were 3 exercise sessions in 6 weeks after delivery. The exercises were conducted in real time in small groups - online or stationary. The exercises focused on strengthening postural and pelvic floor muscles. Gr.Con received only instructions on everyday ergonomics. 6 weeks after delivery women completed the author's and IPAQ questionnaires.

Results: PFMT were performed by the majority of postpartum women (76.4%). However, only 42.1% exercised correctly. In addition to the exercises conducted with physiotherapist, PFMT was performed by 91.4% of women from Gr.Sup, then 81.4% from Gr.Onl, and only 64.4% from Gr.Con (Gr.Con-Gr.Sup;$p<0.05$). On the other hand, PFMT were correctly performed by 64.8% of women from Gr.Sup, and only 23.4% from Gr.Con ($p<0.05$). According to the IPAQ, _ of postpartum women are not physically active enough. Moderate PA is undertaken by 36.7% of women from Gr.Con, 38.9% from Gr.Onl and 58.3% from Gr.Sup ($p<0.05$). All women walked during the study, but spend a large amount of time sitting, however, the differences are not statistically significant.

Conclusions: Most women after childbirth declare that they practice PFMT, but few do it correctly. Supervised training seems to be the most effective way to get the correct PFMT. The level of PA of postpartum women is at a moderate level. Most energy is spent on walking.

Keywords: pelvic floor muscle training, pregnancy, physiotherapy, postpartum, women, physical activity

To vaccinate or not to vaccinate? Why some people do not want to be vaccinated against Covid-19?

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Background: The development of preventive vaccinations is one of the greatest achievements of medicine. The anti-vaccine movements are still skilfully juggling untrue, misunderstood scientific data and conspiracy theories. It would be worthwhile to try to explain, along with campaigns promoting the idea of vaccination, what is the cause of negative attitudes towards such an effective medical procedure as vaccination.

The aim: Assess some mental factors that may be related to the attitude towards vaccination against Covid-19.

Materials and methods: The study involved 419 people, including 317 (Age 36.10±13.41) who received vaccination against Covid-19 and 102 (age 38.16±12.33) who decided not to be vaccinated. The following methods were used for the study: the Conspiracy Belief Scale (GCBS), the Perceived Stress Scale (PSS-10) and the State and Trait Anxiety Inventory (STAI-X2).

Results: In the GCBS, an average score of 34.41 ± 12.95 points was obtained in the vaccinated group and in the unvaccinated group 48.67 ± 13.62 pts (p=0.00). In the PSS-10 questionnaire, the vaccinated respondents obtained an average score of 19.55 ± 6.75 points, and in the unvaccinated group the mean score was 18.44±7. In the vaccinated group, the mean score was 46.96±Ī7.69 in the state anxiety questionnaire (X2), and 45.85±8.18 in the unvaccinated group. Significant positive correlations were found in the results obtained in GCBS with the results obtained in the PSS - 10 stress scale and with the results obtained in the anxiety scale as a personality trait in both study groups.

Conclusions: People presenting conspiracy thinking may be more likely to show anti-vaccine attitudes compared to people not showing a tendency to this kind of thinking. Conspiracy thinking may be associated with a high level of anxiety as a personality trait but also with the level of experienced stress. Due to the presence of anti-vaccine groups, the task of medical personnel is to educate the publicity. Moreover, information campaigns are needed to promote vaccination safety.

Keywords: Covid-19 pandemic, vaccination, stress, anxiety, conspiracy theories

Assessment of knowledge and beliefs about electroconvulsive therapy among medical students

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Background: Electroconvulsive treatment (ECT) is one of the old methods of psychiatric treatment that has managed to survive to this day. It seems, however, that despite over 70 years of documented effectiveness, treatment with ECT is still a therapeutic method chosen too rarely.

The aim: The aim of the study was to analyze the knowledge and beliefs of medical students about electroconvulsive (ECT) treatments.

Materials and methods: The survey was conducted in a group of 143 students of the 6th year of medical studies, including 77 women and 66 men, aged 22-27 (age: 24.34 ± 1.28 years). Assessment of students' knowledge and beliefs in relation to ECT was made on the basis of a self-constructed questionnaire.

Results: The vast majority of respondents, 94.4%, answered that they learn about ECT treatments from psychiatry classes, 34.3% from professional literature, 24.5% from the Internet, and 8.4% of the respondents learned from television. The lack of any knowledge on this subject was declared by 6.3% of the respondents. The analysis of the knowledge questionnaire showed that almost half of the respondents (47.6%) knew that memory impairment was the most common side effect after the procedures, but only 18.9% knew that ECT does not cause permanent changes in this area. In the assessment of beliefs, over 70% of respondents declared that if necessary, they would recommend the procedure. In the comparative assessment, in the group of people who had the opportunity to observe the procedure, a statistically significant, better overall result in terms of their knowledge was noted.

Conclusions: The students who had the opportunity to see the EW presented slightly more knowledge in this area. The results of the research suggest the necessity to constantly expand the knowledge and shaping the right attitudes regarding ECT procedures among future doctors.

Keywords: students, knowledge of electroconvulsive therapy, ECT, beliefs

Type I of diabetes mellitus in an interdisciplinary perspective

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Background: Type I diabetes mellitus is a chronic metabolic disease that is increasingly prevalent among children and adolescents in the populations of developing and developed countries. It is classified as a disease of civilization and is not only a medical issue but also a socioeconomic issue related to the persistence of the disease and the costs incurred for health care in this area.

The aim: The aim was an interdisciplinary analysis of the problem of type I diabetes mellitus in children and adolescents.

Materials and methods: The research material was the document "Information on the number of services provided to children with the diagnosis of E10 against the entire patient population" for the years 2016-2019. Statistical analysis of the data extracted from the records of the e-Health Center was performed using Microsoft Excel and Statistica 13.1.

Results: The number of reported hospitalizations with the main diagnosis E10 in the annual periods considered was greater than the number of patients. This indicates that the same patients were hospitalized more than once in a given calendar year. The increase in hospitalization costs during the period under review increased by 25.2% with a 7.5% increase in the number of hospitalizations. The average annual cost of health services per patient in 2019 was PLN 3726,3. The total number of patients in the studied years 2016-2019 amounted to 59,767 people, and the total cost of reimbursement for health services provided amounted to more than 207 million PLN.

Conclusions: Type I diabetes mellitus will pose a growing challenge to health systems due to increasing costs. It is important to remember not to marginalize non-medical aspects in child and adolescent diabetes that can cause various changes and even worsening of the patients' condition as a consequence.

Keywords: diabetes mellitus, paediatrics, children and adolescents, chronic disease costs

Static stabilization in subjects with various forms of temporomandibular disorders

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Background: Indirect evidence show numerous connections between body balance and the masticatory system. However, the results of studies evaluating the impact of temporomandibular disorders (TMD) on body balance are inconclusive.

The aim: The aim of the study was to assess if particular forms of TMD affect the body balance.

Materials and methods: 36 subjects met the inclusion criteria (study group (SG)- 25 participants diagnosed for TMD, including 9 people with a muscle disorders (MD) form, 9 people with disc disorders (DD) form and 7 people with a mixed form (Mx), and control group (CG)- 11 subjects without TMD). TMD was diagnosed by use of Research Diagnostic Criteria for TMD. To assess static balance the reaction forces platform FreeMED MAXI (Sensor Medica; Guidonia Montecelio, Roma, Italia) was used. The postural sway area (PSA) and velocity of the centre of pressure (COP) sways were used for statistical analysis. Those parameters were examined in three occlusal conditions- mandible resting (REST), maximal teeth clenching (CLENCH), maximal clenching on dental cotton rolls (CLENCH ROLLS), each with eyes open (EO) and closed (EC).

Results: The comparison of PSA of all TMD forms and CG shows the greatest differences between the CG and the MD (18.82 vs. 52.31 $p<0,01$ EO CLENCH; 21.36 vs. 56.17 $p<0,001$ EC CLENCH) and between the CG and Mx (18.82 vs. 47,36 $p<0,01$ EO CLENCH; 21.36 vs. 67,98 $p<0,001$ EC CLENCH). The comparison of velocity of all TMD forms and CG shows the greatest differences between the CG and the MD (11.09 vs. 28.37 $p<0,01$ EO CLENCH; 12.13 vs. 29.47 $p<0,01$ EC CLENCH; 12.00 vs. 28.97 $0=0,03$ EO CLENCH ROLLS; 10.77 vs. 25.26 $p=0,01$ EC CLENCH ROLLS). There were no statistically significant differences in balance parameters when comparing the CG and the group with DD.

Conclusions: The influence of TMD on body balance is visible only in certain forms of the disorder. The involvement of the muscular factor determines the occurrence of deviations in the balance of the body.

Keywords: temporomandibular disorders, body balance, stabilization

Global longitudinal strain improvement after transcatheter edge-to-edge mitral valve repair – pilot study

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Background: Secondary mitral regurgitation (SMR) is associated with left ventricle dysfunction associated with ischemic or non-ischemic cardiomyopathy. Despite SMR is consequence of heart failure, it is related with worse clinical outcomes and transcatheter edge-to-edge-repair (TEER) is proved method of treatment.

The aim: Aim of this pilot study is retrospective analysis of periprocedural echocardiographic parameters including left ventricle global longitudinal strain (GLS) measurements.

Materials and methods: Analysis included data of 12 patients diagnosed with severe SMR treated in our department with TEER from 08.2022 to 01.2023.

Results: Mean age of patients was 79 years, 58% were male. Pre-procedural echocardiographic parameters were as follows: left ventricle ejection fraction (LVEF) was 42±8% (mean ±SD), LV end-diastolic diameter (LVEDD) of 58,5±8,4mm and LVESD of 41,2±12,3mm. Approximately 60% of patients had EF <40%. Left atrium area (LAA) was (38,4±16,6cm2). GLS, left atrial reservoir strain (LASr), right ventricle global strain (RVSG) and free wall strain (RVSFW) and were severely reduced -12,1±4,7% (N>-19%), 10,8±6,6% (N>23%), -13,6±6,3% (N>-17%) and 16,7±6,6% (N>-19%). All patients underwent successful TEER with no complications and optimal results (reduction of MR to ≤mild with mean Pg<5mmHg and appropriate length of leaflet insertion). Mean follow-up was 7±4 days. Control discharge TTE evaluation of GLS was recorded for 8 patients. There was no significant difference between pre- and post-procedural LVEF (44,8vs43,8%, p=0,713). However there was GLS improvement form -11,6 to -14,7% (p<0,05) and LV EDD reduction form 60,5mm to 58,3mm (p<0,05). There was no significant difference between the LAA (41vs37cm2, p=0,059), LASr (10,5vs11,1, p=0,621), RVSG (-12,7vs-17%, p=0,141) and RVSFW (-15,6vs-20,7%, p=0,086).

Conclusions: This pilot study suggests in patients with severe SMR TEER leads to an immediate postprocedural improvement in GLS. This finding warrants validation in larger cohort of patients.

Keywords: global longitudinal strain, left atrial reservoir, transcatheter edge-to-edge, mitral regurgitation

Pain relief management in use of episiotomy among Latvian obstetricians and midwives

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Background: Episiotomy is a common procedure that can be associated with pain and discomfort for the woman undergoing it. Pain relief during episiotomies is a crucial aspect of ensuring optimal care. Various methods of pain relief, including local and epidural anesthesia, can be employed during the manipulation.

The aim: To assess healthcare providers practice on pain management during episiotomy.

Materials and methods: A questionnaire was developed to assess the knowledge and understanding of health professionals about episiotomies, indications, procedure etc. A total of 74 subjects were included in the study - 33 midwives, 37 obstetricians and 4 trainees in the specialty.

Results: The results revealed that among the participants, 64 individuals (86.5%) chose to perform the procedure with local anesthesia (Sol. Lidocaini), while 10 individuals (13.5%) opted against it. Epidural anesthesia as a pain relief method was chosen by 44 individuals (59.5%), while 30 individuals (40.5%) did not. Furthermore, when asked about the necessity of analgesia during episiotomies, 59 participants (79.7%) responded affirmatively. On the other hand, 15 participants (20.3%) expressed the opinion that analgesia was not necessary at all. Inquiring into the frequency of analgesia administration prior to performing an episiotomy, the results revealed that out of the total respondents, 14 individuals (18.9%) reported always administering analgesia, while 33 individuals (44.6%) reported doing so often. A smaller proportion of respondents, 20 individuals (8.1%), reported rarely administering analgesia, and a minority of 7 individuals (9.9%) reported never administering it.

Conclusions: The findings reveal variability in pain management practices. Most participants preferred local or epidural anesthesia, but a small percentage opted not to use any. These findings contribute to the existing knowledge and highlight the need for further research and consideration of individualized care in guiding pain management practices during episiotomies.

Keywords: Episiotomy; health knowledge; practices in health; obstetrics; delivery; perineum.

SARS-CoV-2 and Chronic Fatigue Syndrome: Investigating long-term neurological complications

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Background: After COVID-19 pandemic, an increasing number of individuals are experiencing long-term complications affecting the nervous system caused by this pathogen.

The aim: Aim of this study was to investigate the prevalence of Chronic Fatigue Syndrome (CFS) symptoms after the COVID-19 infection.

Materials and methods: The study was conducted using an anonymous online survey on 180 individuals (126 women and 54 men), who had tested positive for SARS-CoV-2. The respondents' age ranged from 13 to 78 years, with a mean age of 32.6 (median = 25.5). Using the CDC-1994 criteria, we divided patients into those who did not report any CFS symptoms, those who reported 1-3 symptoms of CFS, and those who met the diagnostic criteria for CFS and reported the presence of ≥4 symptoms for a period longer than 6 months. Of the 24 respondents who met these diagnostic criteria, 37.5% had a history of psychiatric disorders. Additionally, 41.7% had experienced COVID-19 infection more than once in the last 3 years, and 25% had been hospitalized in the past due to a head injury. 91.7% (n=22) had experienced symptomatic SARS-CoV-2 infection with symptoms such as fever, cough, shortness of breath, bone, and joint pain, etc. None of these 24 individuals required hospitalization or oxygen therapy due to SARS-CoV-2 infection.

Results: The prevalence of CFS was higher among women (15.9%) than men (7.4%). A higher percentage of men (33.33%) reported no CFS symptoms than women (23%). There was a significant association between contracting SARS-CoV-2 and experiencing CFS symptoms for women ($p<0.001$) and men ($p=0.007$). Age was not a significant factor in experiencing CFS symptoms for both women ($p=0.773$) and men ($p=0.194$).

Conclusions: The prevalence of Chronic Fatigue Syndrome symptoms in subjects after SARS-CoV-2 infection is significantly higher than in the general population, where it ranges from 2-2.5%. Our results suggest that SARS-CoV-2 infection may be associated with CFS symptoms regardless of patients age, gender and infection severity.

Keywords: COVID-19, SARS-CoV-2, neurology, long-term complications, chronic fatigue syndrome

Optimizing of biological treatment of ulcerative colitis - first step

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Background: Ulcerative colitis (UC) is one of the inflammatory bowel diseases (IBD). Standard treatment includes usage of steroids, anti-inflammatory and immunosuppressive drugs. In case of poor symptom control biological treatment offers the possibility of reducing the activity of the disease. Frequent problems during biological therapy are loss of response and necessity to change the drug.

The aim: This study aims to establish factors affecting biological treatment and identify parameters that can be used to predict the effectiveness of treatment.

Materials and methods: 95 patients (57 men and 38 women) at the age from 18 to 75 years (mean age 41.07 ± 13.9) were included to study. Inclusion criteria were: age above 18 years old, diagnosis of UC and treatment with either infliximab or vedolizumab in therapeutic program in Department of Gastroenterology and Hepatology, UCK, Katowice. Clinical remission of symptoms was assessed using Mayo score. IBM SPSS program was used to perform statistical analysis.

Results: The effectiveness of biological treatment was 70.2%. The average decrease in Mayo score was 4.4 ± 2,7 points ($p<0.001$). No statistically significant associations were found between decrease of Mayo score and variables such as: sex, age, BMI, time from diagnosis to drug use, levels of hemoglobin (Hb), white blood cells (WBC), platelets (PLT), hematocrit, CRP, calprotectin at the start time of therapy. Change in Hb ($p<0.001$), hematocrit ($p<0.001$), WBC ($p<0.005$) and PLT ($p<0.005$) levels during the treatment was significant. Decrease of Mayo score was associated with decrease of CRP ($p<0.01$), PLT($p<0.01$) and WBC ($p<0.05$), Spearman test.

Conclusions: Some of the parameters required to monitor therapy have a statistical effect on the treatment outcome. Results of this study will serve as a first stage of work aimed at attempting to construct a mathematical model for predicting the effectiveness of biological treatment of UC. This may help to increase the response to treatment.

Keywords: ulcerative colitis, biological treatment, inflammatory bowel diseases, therapy effectiveness

A pharmacological induction of labour with Dinoproston. Factors influencing a complete induction of labour

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Background: Rates of labour induction are increasing. Cervidil is a vaginal therapeutic system containing 10 mg of dinoprostone, prostaglandin PGE2 is used to pre induce labour in patients with an unprepared cervix for delivery after the 37th week of pregnancy.

The aim: To evaluate factors affecting the effectiveness of labour induction.

Materials and methods: The retrospective study was conducted in 2021 and 2022 in the Department of Gynaecology, Obstetrics and Oncological Gynaecology of the hospital UCK named by prof. K. Gibiński in Katowice. The study consists of a group of 151 women at the age from 22 to 41 for labour induction. In the data analysis the following factors were taken into account: gestational age, presence of comorbidities, cervix score and medical reasons for labour induction. The data was obtained from the analysis of the patient's medical history and analyzed in Statistica software.

Results: From the analyzed patients, all of them were qualified for the pharmacological induction of labour with Cervidil. The most common indication for labour induction firstly was gestational diabetes mellitus (36.4%), then exceeded time after delivery (34.4%), and pregnancy induced hypertension (PIH) (11.3%) and others. Natural labour took place in 96 patients (63.6%). Foley catheter as an additional method of labour induction has been applied for 58 patients (38.4%) in which natural labour was in 33 (56.9%) patients. The group of only cervidil induction consists of 93 women (61.6%) in which there were 62 (66.7%) natural births, but this was not statistically significant for the rate of labour induction ($p>0.05$). Additional oxytocin induction did not have an influence on the rate of labour induction.

Conclusions: Cervidil is an effective method of labour preinduction. The effectiveness of cervidil preinduction is associated with the initial preparation of the cervix, determined by the Bishop scale.

Keywords: cervidil, preinduction, induction, labour

Influence of oxytocynergic and vasopressynergic systems on the clinical presentation and risk of ASD

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Background: Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that affects social interaction, communication, and behavior. Although its genetic origin is beyond doubt, the particular causative factor remains unclear. Supposedly, the occurrence of the specific clinical manifestations is mediated by the number of proautistic alleles of polymorphisms. The most promising candidate is the neurohormone system of oxytocin (OXT) and vasopressin (AVP) altogether with their receptors (oxytocin receptor (OXTR) and vasopressin 1A receptor (AVPR1a) or enzymes responsible for metabolism, i.e. CD38 protein responsible for the secretion of both these neuropeptides and leucil / cystylin aminopeptidase (LNPEP) responsible for their breakdown.

The aim: The aim of the present study was to assess the level of expression of genes associated with the function of the oxytocinergic and vasopressinergic systems and to relate it to elements of the clinical picture of ASD in the adolescent population.

Materials and methods: The study included 90 subjects, 63 of the study and 27 of the controls, who were divided into two groups based on a confirmed or excluded diagnosis of ASD. The mRNA, later used to analyze the gene expression, was extracted from peripheral blood.

Results: In the case of the LNPEP and CD38 genes, significantly higher levels of expression were observed in the group of people with ASD than in the neurotypical group. In the case of the AVPR1a gene, the level of expression in the study group was slightly lower than in the control, while for the OXTR gene the fold expression change obtained was similar between the two groups.

Conclusions: The results indicate that in said neurohormone systems, the balance between the levels of expression of the CD38 gene and the LNPEP gene plays a key role for the risk and clinical presentation of ASD. At the same time, the most frequently studied genes – AVPR1a and OXTR – seem to be at best of marginal importance.

Keywords: ASD, Autism, Oxytocine, Vasopressin,

Selected eating styles and diet quality among Polish adults – a cross-sectional study

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Background: Available studies suggest that adaptive eating styles (AES), e.g. intuitive eating (IE), and maladaptive eating styles (MAES), e.g. restrained (RE) and external eating (EE), may be useful in explaining food intake, yet little is known about their role in determining diet quality (DQ).

The aim: The study aim was to assess the link between IE, RE, EE and DQ among women and men.

Materials and methods: The data were collected from October 2022 to January 2023 from 708 Polish adults via Internet. The questionnaire included: 1/'Restrained eating' (RE) and 'External eating' (EE) subscales from the Dutch Eating Behaviour Questionnaire; 2/Intuitive Eating Scale 2 with 4 subscales - 'Reliance on Hunger and Satiety Cues' (RHSC), 'Eating for Physical Rather Than Emotional Reasons' (EPR), 'Body-Food Choice Congruence' (B-FCC), 'Unconditional Permission to Eat' (UPE); 3/questions regarding food intake from the KomPAN questionnaire that allowed to calculate 3 diet quality indexes – non-healthy (nHDI-14), pro-healthy (pHDI-10) and general (DQI); 4/metrics. Spearman's correlation coefficient and Mann-Whitney's U Test were used to analyse the data.

Results: Men presented higher level of EPR in comparison to women, while women scored higher in RE and EE. pHDI-10 and DQI scores were higher among women, while higher nHDI-14 score was observed in men. Weak correlations were found between eating styles and all diet quality indexes in both women and men. nHDI-14 correlated positively with UPE and EE and negatively with B-FCC and RE among both men and women. pHDI-10 and DQI correlated positively with B-FCC and RE, while DQI correlated negatively with UPE, in both men and women. Additionally, among women, negative correlations between pHDI-10 and UPE as well as between nHDI-14 and EPR were noted.

Conclusions: IE, RE and EE may explain DQ in the similar manner among women and men. Future research should also include other eating styles, e.g. mindful or emotional eating, to enable better understanding of the link between AES, MAES and DQ.

Keywords: eating style, intuitive eating, restrained eating, external eating, diet quality

Late diagnosis of autism spectrum disorders–the effect of specialists' inattention or patient characteristics?

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Background: Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by deficits in social interaction, communication and the presence of stereotypical, repetitive behaviors. Early diagnosis and implementation of specialized care in this population may positively affect their functioning and quality of life. Unfortunately, this disorder is often diagnosed late in life, which negatively affects the life of neuroatypical people and often leads to the development of mood or anxiety disorders.

The aim: Therefore, the aim of our study was to determine the factors affecting the time of ASD diagnosis.

Materials and methods: The study was conducted on a group of 61 people, whose average age was 14 years. In this population, the diagnosis was made on average at the age of 12.95, and the average time of diagnosis (the period from the first visit to a specialist to obtaining the diagnosis) was as much as 3.5 years. The study group consisted of 39 men, who were on average 11.1 years old at the age of diagnosis, and 21 women who were diagnosed at the age of 16.25; which was a statistically significant difference. All study participants were assessed on the following scales: ASD diagnostic test - ADOS-2; the Stanford Binet Intelligence Scale; a test for reading mental states from the eyes - RMiE; obsessive-compulsive disorder survey - OCI-R and the INTE questionnaire - used to assess emotional intelligence.

Results: There were statistically significant differences between the sexes in all the above scales. What is extremely interesting, the time of diagnosis did not depend on intelligence or any parameter related to the criteria for ASD diagnosis, but was conditioned only by the level of emotional intelligence.

Conclusions: Professionals make a diagnosis of ASD based on factors unrelated to ASD, instead of focusing on the criteria of diagnosis. Moreover, a high level of emotional intelligence may mask symptoms in people with ASD, making it much more difficult to make a proper diagnosis and implement therapeutic interventions.

Keywords: autism spectrum disorders, the population of children and adolescents, emotional intelligence

HIGH SCHOOL STUDENTS' SESSION

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Potential use of apple cider vinegar and grapefruit extract in the prevention of S. epidermidis endocarditis

Aleksandra Kobyłecka[1]

1. Batory High School in Warsaw

Work's tutor: dr hab. n. med. Dorota Pastuszak-Lewandoska

Background: S. epidermidis is part of the human microbiome. It becomes life-threatening in the case of infective endocarditis, which has a mortality rate of 30%. Its risk is increased after a prosthetic heart valve implantation. The study proposes alternative methods of infective endocarditis prevention in patients after prosthetic heart valve implantation, which might allow to lower the amounts of antibiotics used, hence decreasing the rate of antibiotic resistance development.

The aim: The aim of the study was to investigate the impact of apple cider vinegar (ACV) containing acetic acid (AA) (0.6%, 0.06% and 0.006%), grapefruit seed extract (GSE) (8.4%, 0.84% and 0.084%) and chamomile extract (CE) (1.66%, 0.166% and 0.0166%) on the growth of S. epidermidis.

Materials and methods: The growth and survival of S. epidermidis over 24 hours of incubation at 37 °C were measured using optical density (OD) and colony-forming units (CFU). The research trials were compared to control trials, where none of the substances was added.

Results: In the case of measuring OD change, in all concentrations of ACV and GSE bacterial growth was fully inhibited. In all CE concentrations bacterial growth was greater than in the control group, suggesting that CE promotes it. In the case of CFU, in all AVC concentrations, two higher concentrations of GSE and the highest concentration of CE almost no growth was observed. Growth inhibition was also statistically significant in the case of the medium CE concentration. All other concentrations were unsuccessful in causing S. epidermidis cell death.

Conclusions: ACV and the AA in it, effectively inhibits the growth of S. epidermidis in concentrations of at least 0.006%. It is the most effective substance of the three examined. GSE also effectively inhibits the growth of S. epidermidis in concentrations of at least 0.84%. The experiment would have to be repeated for CE to draw definitive conclusions. A further study is to be performed to test the substances' effectiveness and toxicity in human epithelial tissue.

Keywords: Staphylococcus epidermidis, antibiotic resistance, infective endocarditis, microbiology, polyphenols

Doping in sports

Kacper Woźniak[1]

1. III Liceum Ogólnokształcące z Oddziałami Dwujęzycznymi w Zabrzu

Work's tutor: mgr Ewelina Kucharz

Background: The past cases of doping which ruined many people's careers, the ever increasing list of dangerous substances, morality ethics and safety.

The aim: The aim is to raise awareness about the dangers and consequences of efficiency doping which is a big problem in today's sport.

Materials and methods: Using open-access information sources such as articles and news, while also providing real life examples and explaining how doping works

Results: Doping is a dangerous practice and should be discouraged in order to ensure fair play and safety

Conclusions: Using all the provided material in order to prove the unethicalness and danger of artificially boosting your body in order to achieve greater feats

Keywords: Sports, Doping, Health

How do space conditions affect the nervous and motor systems of astronauts?

Paulina Kudzia[1]

1. I High School named after Bartlomiej Nowodworski in Krakow

Work's tutor: mgr Renata Kania

Background: People want to go back to the Moon and fly even further. During the first manned mission to the Moon, the public was not aware of all the effects of such travel. With the development of technology, space medicine has been developed. It studies the effects of humans surviving in space conditions and seeks methods to prevent these effects. The most serious of effects are those affecting the nervous and motor systems.

The aim: Assessment of perceptual, nervous system and motor impairments in astronauts exposed to space conditions.

Materials and methods: A Martian gravity simulation study was conducted. Ten subjects were tested, where participants were supported by a device that relieved their weight, first completely (0G) and then partially (0.38G) or not at all (1G) using two visual conditions; normal vision and a visual-vestibular conflict generated by disorienting optokinetic stimulation (DOS). Fourteen crew members of space shuttle missions and 18 crew members of the International Space Station were also examined. Brief vestibular examinations focused on the presence of vestibular and motor coordination difficulties, motion sickness and motion sensations.

Results: Gait, postural instability and motion sickness symptoms were observed in both the group subjected to simulated Martian gravity and in those after long-term space missions. Symptoms lasted from 2 to 5 hours.

Conclusions: Astronauts often experience oscillopsia when they move their head after returning from space, which contributes to impaired locomotion. The effects limit the mobility of the subjects.

Keywords: Tandem Walk, simulated Martian gravity, visual-vestibular conflict, motion sickness, nervous system, motor system

Skin Preventer - a system to support the diagnosis of skin lesions

Bogdan Jabłoński, Oliwia Raniszewska, Wiktoria Sadowska

Work's tutor: mgr Sylwia Jędrzejewska

Background: Skin lesions are symptoms of diseases that, when not detected in their early stages, can cause serious complications. A big challenge for proper patient diagnosis is that the majority of society doesn't attend regular medical check-ups. Due to the wide variety of skin changes, their classification is often problematic.

The aim: The aim of our project is to develop a system that will make it possible to detect and classify skin lesions based on machine learning methods, particularly deep neural networks, as well as the design and construction of a device to which the mentioned system will be implemented.

Materials and methods: The device has been designed and built by us. The CNN was made, using the Python programming language and the TensorFlow library. It was trained using images from professional databases, containing 18 311 images of different skin lesions. Different variations of the network parameters have been tested, as well as different versions of the network architecture. Additional programs were written to manage the device's input and output, and to manage utilizing the network.

Results: The results of our neural network are: accuracy - 77,48%, sensitivity - 89,35%, precision - 82,07%. The accuracy of the model is the highest if it's trained for 10 epochs using images in the RGB color space.

Conclusions: We believe that the solution we propose has a high potential for wide application. Due to the simple way of conducting tests with its help, as well as reading the results, every person, regardless of their medical knowledge or age, will be able to use it regularly, independently at home. The introduction of such a solution on the market may contribute to improving the level of prevention and early diagnosis. This will expand the possibilities of home health monitoring, as with measurements carried out with a pulse oximeter or blood pressure monitor. In addition, the system could be a support tool for doctors or staff of other public health institutions (e.g. pharmacies).

Keywords: neural network, diagnosis of skin lesions, skin cancer, AI, dermatology

The influence of NaCl at different concentrations on the development of Lemna minor L.

Marlena Smerczek[1]

1. II Liceum Ogólnokształcące z Oddziałami Dwujęzycznymi im. Andrzeja Frycza Modrzewskiego w Rybniku

Work's tutor: mgr Agnieszka Dudek-Pomykoł

Background: I have decided to conduct this study as I have observed deteriorating condition of plants around the main road in my area after winter. I wanted to establish what is accountable for decreasing the growth of plants next to the road.

The aim: The aim of the research paper is to present the correlation between the levels of sodium chloride and the deteriorating condition of the examined species. What is more, my goal is to raise awareness as far as the results of deicing roads using salt on the development of plants are concerned.

Materials and methods: The acceptor plant used during the experiment was Lemna minor L. It is a species of plant in the subfamily Lemnoideae of the arum family Araceae. Lemna minor L. is used as animal fodder, bioremediator, for wastewater nutrient recovery, and other applications. It is a floating freshwater aquatic plant, with one, two, three or four leaves each having a single root hanging in the water. Leaves are oval, 1–8 mm long and 0.6–5 mm broad, light green, with three (rarely five) veins and small air spaces to assist flotation. It reproduces mainly vegetatively by division. Lemna minor has a subcosmopolitan distribution and is native throughout most of Africa, Asia, Europe and North America. It is present wherever freshwater ponds and slow-moving streams occur, except for arctic and subarctic climates. The experiment has been conducted for 21 days in home conditions. The reagents used were NaCl and tap water. The trial was repeated 3 times, which means that the effects of each concentration of NaCl on the plant were scrutinized three times using 150 specimens of Lemna minor L.

Results: The conducted experiment has shown a significant decrease in the number of living specimens as well as the deteriorating state of plants in the samples with NaCl present.

Conclusions: The levels of salt after deicing roads in the winter should be monitored, as they contribute to the deteriorating condition of plants. Seeing as Lemna minor L. has a significant role in aquatic ecosystems, its worsening state might have devastating results.

Keywords: NaCl, saline water, Lemna minor L., plant development

Effect of phytoncide-allicin concentration on the development of lactobacilli (Lactobacillus acidophilus M.)

Michał Zabojszcz[1]

1. IV Liceum Ogólnokształcące im. Gen. Maczka w Katowicach **Work's tutor: mgr Dagmara Knapik**

Background: Phytoncides are compounds synthesized by higher plants and inhibit the development of microorganisms. Phytoncides include organosulphur allicin, characteristic of representatives of the Allium genus, which include garlic and onion.

The aim: The study aimed to evaluate the antibacterial effect of allicin contained in garlic and onion extracts on Gram-positive lactobacilli (Lactobacillus acidophilus M.).

Materials and methods: MRS solid support on plates was used for the experiment. Three sterile paper discs were placed on each plate, on which 0.1 ml of suspension of the Lactobacillus acidophilus M. strain had been sown earlier, and 20 Ķl of garlic and onion suspension were given placed on them. The plates were placed in a refrigerator to allow the secretion mechanism of phytoncides into the medium and then incubated at 37°C for 48 hours. After the incubation period, a macroscopic analysis of the plates was performed, including observing the zone of bacterial growth inhibition around the disks.

Results: No zones of inhibition of bacterial growth were observed around any of the discs soaked with garlic and onion extracts, regardless of the concentration of the extract.

Conclusions: Probiotics are bacteria isolated from the human body and showing a multidirectional, beneficial effect on its proper functioning. Microorganisms with a well-documented probiotic impact in clinical trials include the strain Lactobacillus acidophilus M. The strains used in probiotic preparations must have several functional characteristics, among which is the origin of the human body or resistance to gastric juice and bile acids. The combination of these two aspects justifies the lack of inhibitory effect of allicin on the growth and development of the probiotic strain Lactobacillus acidophilus M. The pharmacological significance of allicin as a natural antibiotic with documented antimicrobial activity against many pathogens may be a good alternative supporting classical antibiotic therapy.

Keywords: phytoncides, allicin, probiotics

Variability in size and shape of leaves of Norway maple (Acer platanoides L.) and pedunculate oak (Quercus robur L.) as indicators of sensitivity to urban conditions in Rybnik

Bartłomiej Czogała[1]

1. 2nd High School Andrzej Frycz Modrzewski in Rybnik

Work's tutor: Mgr Agnieszka Dudek-Pomykoł

Background: Rybnik figures amongst the most polluted cities in Poland. Air pollution in the city is mostly caused by the combustion of coal in household heating. Pollutants present in the atmospheric air (especially: SO2 and NO2 and Ox) affect forest ecosystems, causing disruptions in tree growth, Altering species composition, and increasing susceptibility to biotic factors, such as insect outbreaks (Wamelink et al., 2009; Liu et al., 2011).

The aim: The aim of the study was to examine the variability in size and shape of the leaves of Acer platanoides L. and Quercus robur L. in order to determine the quality of atmospheric air in Rybnik.

Materials and methods: The origin of studied trees was unknown, thus they were not genetically homogeneous. Due to this, there could have been a difference in reactions to harmful external factors of individual specimen amongst the same species. However, conducting research on a population level makes the results representative. To carry out the study, eight sites with varying levels of air pollution were selected in Rybnik, from which plant material was collected. Material marked with number 9, collected from the Rudy, was used for comparative purposes. The analyses were performed based on the measurement of nine different biometric characteristics of the leaves of Acer platanoides L. and Quercus robur L..

Results: In both species of trees, a decrease in leaf blade size was observed in terms of the studied parameters, especially in the length of the petiole and the surface area of the leaf blade. This may be caused by a weakening of the health condition of the trees due to a reduction in the assimilation surface of the leaves. It has been proved that Acer platanoides L. belongs to the species more sensitive to the effects of SOx , NOx , and dust (Supuka and Chladná 1995). An exception to this rule was the measurement of angles between the veins, where smaller values were recorded in the control group than in the experimental groups. In this case, oak was found to be less sensitive.

Conclusions: There is no doubt that in the Rybnik aglomeration the dust and oxides have the most destructive influence on plants vegetation. However, it is not possible to determine which factors is more detrimental. It is certain that the air quality in Rybnik is poor.

Keywords: Rybnik, Botany, Air Polulution

Nanoparticles as carriers of biology active substances boosting the seed germination and plant growth

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1. Jan Zamoyski High School No. XVIII

Work's tutor: dr Magdalena Osial, Jakub Lewandowski

Background: The widespread use of synthetic fertilizers can have an adverse effect on the ecosystem. Science tries to solve these problems with the use of nanotechnologies for plant cultivation. Nanomaterials can easily cross the biological membranes and stimulate many processes in leaves and roots. They can also work as carriers of the compounds that induce the growth of plants working as nanofertilizers increasing crops productivity in an ecological way.

The aim: The aim of the study was to develop the optimal composition of nanofertilizer based on different concentrations of nanoparticles and plant hormone which would stimulate the growth of plants.

Materials and methods: The nanostructural iron oxide and hydroxyapatite were obtained with a co-precipitation method and loaded with gibberellic acid (plant hormone). The different concentrations of the colloidal suspensions of particles with and without plant hormone were delivered to Lamb's Lettuce and Arugula, where the plant's cultivation was performed in the self-made grow-box. Qualitative and quantitative analysis of plant yields was performed.

Results: Singular tests showed that none of the substances inhibit growth of Arugula and Lamb's Lettuce. Results from medium concentration were presenting their influence better than the other, that is why the prototype was based on medium concentrations. It was noticed that hydroxyapatite nanoparticles with gibberellic acid double the growth of selected plants and both of those substances work better together than separately.

Conclusions: Nanosized particles are facile to be obtained and can work as a plant hormone carriers with prolonged delivery in soil enhancing the growth of plants. With this work, the optimal dose of the nanofertilizers was estimated with the posisive effect on the two types of plants.

Keywords: nanofertilizer, nanotechnology, nanomaterials, nutrition, agriculture, soil

The relationship between sleep, working memory and frequency of mind-wandering among high-school students

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1. Liceum Ogólnokształcące im. św. Jadwigi Królowej, Kielce

Work's tutor: dr Krystian Barzykowski

Background: Insufficient sleep duration and its poor quality have a negative impact on cognitive functioning of adolescents. However, it is still unclear how these factors influence working memory capacity (i.e. the ability to store and manipulate information in one's mind) and frequency of mind-wandering (i.e. the experience of task-unrelated and stimulus-independent thoughts) among representatives of this age group.

The aim: This study aimed to investigate whether the frequency of mind-wandering and working memory capacity are correlated with the duration and quality of sleep in teenagers.

Materials and methods: 162 high-school students (mean age = 15.98, standard deviation = 0.95, 64.8% females) completed a 45-minute procedure consisting of research questionnaires and experimental tasks. Research questionnaires were used to collect information about participants' sleep duration and quality, while experimental tasks allowed for real-time measurement of working memory capacity and mind-wandering frequency. Research sessions were conducted directly in the schools of the participants.

Results: The results indicate that poor sleep quality - not insufficient sleep duration - is correlated with more frequent experience of mind-wandering in adolescents. Furthermore, it was also observed that a higher intensity of declared problems with falling asleep and waking up, as well as a higher intensity of declared sleepiness, are also correlated with more frequent experience of mind-wandering in adolescents.

Conclusions: The findings of this study suggest that the frequency of mind-wandering in teenagers may be related to their subjective experiences regarding sleep, such as its quality, rather than objective measures of sleep, such as its duration.

Keywords: sleep quality, sleep duration, mind-wandering, working memory, high-school students

Cannabis-based products in the treatment of Autistic Spectrum disorder

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1. Adam Mickiewicz 3rd High School in Katowice

Work's tutor: Piotr Lewandowski

Background: ASD (autistic spectrum disorder) is a neurodevelopmental disorder affecting up to 1 in 36 children. It's characterized by defficits in social and linguistic skills, restrictive and repetitive behaviors (RRB), sensory issues and others. To this day there is no officially approved treatment for core symptoms. Drugs used for common comorbidities often worsen the core symptoms, which is why many patients discontinue their use. Because of that there is a need for a new treatment of autistic symptoms Anecdotal evidence on the effects of CBMP (cannabis-based medicinal products) on autistic patients led to increasing interest in researching their safety and efficacy in treating ASD.

The aim: The goal of this paper is to provide a brief overview of the current evidence for CBMP safety and efficacy in managing symptoms of ASD.

Materials and methods: The pubmed database was searched for papers whose title included mentions of cannabis and autism. 4 reviews and 7 studies were included, including two randomized double-blind trials, three retrospective studies, and three prospective studies without a control group. All the prospective studies involved children.

Results: Between the studies, the highest adverse effect rate was 26%, with no severe ones. After up to 2 years of treatment no long-term side effects were identified. All studies showed mild to robust improvements in at least one area in the majority of patients. A systematic review of 13 studies (5 ongoing) among the patients 61-93% showed improvements up to 80% have been able to wane other medications, up to 27% had adverse effects. Two patients had psychotic episodes. Other reviews show similarly promising results.

Conclusions: Current data show that CBMPs are a safe and effective way to manage ASD in children and adults, significantly improving quality of life. More research is still required, especially on the long-term effects.

Keywords: Autism, ASD, Medical Cannabis, CBD

SESSION
OF PUBLIC HEALTH
AND HEALTH CARE II

POLSKIE TOWARZYSTWO
ZDROWIA
PUBLICZNEGO
ODDZIAŁ ŚLĄSKI

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The association of central obesity on hypertension in adults aged 40-60 years

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Work's tutor: dr. Rizki Fajar Utami, M.Sc.

Background: Central obesity is a risk factor for hypertension.

The aim: This study aims to determine the association between central obesity and hypertension in adults aged 40-60 years.

Materials and methods: This research is a cross-sectional study of Trimulyo villagers, Sleman, Indonesia, aged 40-60 years. Blood pressure was measured using an oscillometric blood pressure monitor. The diagnosis of hypertension is based on the results of systolic blood pressure ≥140 or diastolic ≥90 mmHg. Central obesity is determined based on waist circumference ≥90 cm in men and ≥80 cm in women which is measured using a measuring tape. Fisher's exact test was used for bivariate analysis.

Results: This research was conducted on 29 residents of Trimulyo Village, Sleman aged 40-60 years. The proportion of hypertension is 37.9% and the proportion of central obesity is 69%. The proportion of hypertension in respondents with central obesity is 55%. The results of bivariate analysis (p-value = 0.005) showed a significant association between central obesity and hypertension.

Conclusions: There is a significant association between central obesity and hypertension in adults aged 40-60 years.

Keywords: Central obesity, hypertension, adults

Appraisal of habits and the level of knowledge about photoprotection among medical students and clients of beauty salons

Mikołaj Boroń, Katarzyna Gęca, Natalia Gruszka, Julia Jaworska

Work's tutor: dr n. med. Anna Deda

Background: Ultraviolet radiation is an integral part of everyday life. Its high level persists throughout the year, even during colder months. Many studies have proven that excessive exposure to harmful UVA and UVB radiation induces many adverse effects, including sunburn, carcinogenesis, immunosuppression and photoaging. For this reason, it is extremely important to educate people in every age group about the importance of adequate protection against harmful radiation, as well as its negative impact on the health and appearance of the skin.

The aim: The aim of the study was to assess the level of knowledge and habits related to skin protection against ultraviolet radiation among clients of beauty salons and students of medical related faculties.

Materials and methods: An anonymous online survey, was conducted among 250 volunteers.

Results: The results of the study show differences in the level of knowledge about proper sun protection between the group of clients of beauty salons and the group of students of medical related faculties. Depending on the age of the respondents, the basic sources of information on proper skin protection vary.

Conclusions: To sum up the results of the study indicate the need to further educate the public about the long-term effects of excessive exposure to ultraviolet radiation and the principles of proper skin protection.

Keywords: sun protection, spf, UV filter, UV radiation, questionnaire survey

Evaluation of the antibacterial activity of selected phenolic acids against staphylococcal reference strains

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Work's tutor: dr n. med. Maria Miklasińska-Majdanik

Background: For the last half century, antibiotics have been considered a reliable way to combating bacterial infections. Unfortunately, years of excessive use of these drugs have led to the spread of resistance among bacteria. The situation becomes critical because microorganisms that are resistant to all available antibiotics are already present in the environment being one of the main threats to public health. Nowadays, researches focusing on searching a compounds that posse antibacterial properties and could be used in the future as substances supporting the action of currently available antibiotics.

The aim: The aim of presented study was to evaluate and compare the antibacterial activity of five phenolic acids with different chemical structure against reference strains of staphylococci.

Materials and methods: In this study five natural compounds were tested: chlorogenic acid, p – coumaric acid, ferulic acid, protocatechuic acid ethyl ester and caffeic acid. The antibacterial activity of above compounds was assessed against four reference staphylococcal strains: Staphylococcus aureus ATCC 25923, Staphylococcus aureus ATCC 43300, Staphylococcus epidermidis 12228 and Staphylococcus epidermidis 35984. The antimicrobial potential of the compounds was tested by determining the minimum inhibitory concentrations (MIC) growth of microorganisms. MIC values were measured by the serial microdilution method in Mueller – Hinton broth using 96 – well titer plates. The determinations were performed in triplicates.

Results: The strongest antimicrobial activity was shown by the protocatechuic acid ethyl ester, while the weakest by chlorogenic acid. The statistical analysis indicated that the differences in MIC values between the tested compounds were not statistically significant ($p = 0,180$).

Conclusions: The research shown that all tested compounds have antibacterial properties against staphylococci. These properties varied depending on the compound.

Keywords: phenolic acids, Staphylococcus spp., antibacterial activity

A comparison of awareness of cardiovascular risk factors between medical students and students of other majors

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Work's tutor: dr hab. n. med. Wojciech Wańha

Background: Cardiovascular diseases are the leading cause of death in Poland and worldwide. Awareness of CVD risk factors among young people is essential for proper prevention both in people pursuing medical/healthcare degrees and others.

The aim: Research awareness of cardiovascular risk factors and compare knowledge of medical and healthcare students to other majors.

Materials and methods: A cohort of 252 students of 64 different majors filled an online questionnaire comprising 19 questions posted to student online groups. Students were familiarized with the concept of cardiovascular risk and the survey asked about its factors. The study compares the knowledge of 108 medical and healthcare students with 144 other majors.

Results: Compared to students in the other group, medical and healthcare students were more likely to know that cardiovascular disease was the leading cause of death in their country ($p<0.001$), and that the following increased cardiovascular risk: diabetes regardless of type ($p<0.001$); cigarette smoking ($p<0.05$); higher values of total blood cholesterol ($p<0.05$); excess visceral fat regardless of BMI ($p<0.001$); male gender ($p<0.001$). They more often indicated the correct cutoff point between normal and abnormal blood pressure ($p<0.001$).There were no statistically significant discrepancies in awareness of the impact of age, obesity and alcohol consumption between the two groups.

Conclusions: The knowledge of medical students was found to be higher and they were more often satisfied with the state of their knowledge ($p<0.001$), with the percentage of those dissatisfied being 7%. Among non-healthcare students the percentage of those dissatisfied reached 54%. This study shows a necessity of raising awareness of cardiovascular disease factors in the general populace.

Keywords: risk factors, cardiovascular diseases, students

Breast cancer in my family – Will I be sick, too? BRCA1, BRCA2 in General Practitioner practice

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Work's tutor: dr n. med. Anna Rogalska

Background: Inherited mutations in genes such as BRCA1 and BRCA 2 are associated with a significantly increased risk of breast and ovarian cancer. Genetic tests are financed by the NFZ. However, it is necessary to refer to the genetic clinic from the General Practitioner (GP).

The aim: This study aimed to identify the experience of GPs in the theme of BRCA1 and BRCA2 genetic tests.

Materials and methods: The study involved 73 GPs in Poland. A diagnostic survey method with the use of an original questionnaire was applied. The questionnaire was distributed via the Internet.

Results: Overall, 73% (53/73) of GPs were women. According to the respondents, in only 17 cases (23%) patients asked their GPs about genetic diagnosis, e.g. BRCA1 and BRCA2 mutations. 30 of all GPs surveyed (41%) had ever offered their patients visits to a genetic clinic for the diagnosis of gene mutations. Most doctors, 62% (45), did not refer anyone for genetic diagnostics in the last 2 years, and only 1 doctor issued a referral for genetic consultations 4-10 times. 24 out of 30 (80%) are female doctors informing about available diagnostic options, and 24 out of 28 (85.7%) are female doctors referring for genetic consultations. It should be noted that only 4 of all 28 respondents referring patients for these tests (14.3%) were doctors with more than 16 years of professional experience.

Conclusions: The small number of patients asking about BRCA1 and BRCA2 gene mutations and potential diagnostics is very disturbing. If we are telling about the theme of hereditary cancers and gene mutations – we should promote it among patients and doctors too. Therefore, we created a few minutes of animation on this topic. It can be a key to a social campaign, and we want to show this animation to you.

Keywords: BRCA1, BRCA2, Breast Cancer, General Practitioner

The symptoms of chronic venous disease are a serious problem in a population of young women

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

Background: Chronic venous disease is a serious population problem. Its symptoms or clinical manifestations affect more than 2/3 of the entire adult population. Among the risk factors are female gender, age, obesity, pregnancy and a positive family history. CVD symptoms among women at a young age are an inconspicuous problem due to the possibility of disease progression at an older age.

The aim: To determine the prevalence of chronic venous disease symptoms and its clinical manifestation in a population of women 19-25.

Materials and methods: The survey was conducted among 213 women (students), aged 19-25. A paper questionnaire was distributed at teaching hospitals and the university. It asked them to assess the presence of clinical manifestations of chronic venous disease included in the CEAP classification. In addition, they were asked about the presence of calf-related symptoms such as pain, tenderness, cramps. Clinical concepts were explained in terms they could understand.

Results: Clinical manifestations were present in 47.4% of the women, of whom 38.6% were asymptomatic and 61.4% were symptomatic. Despite having no clinical manifestations, symptoms occurred in 13.1% of the participants. Only 39.4% of women had neither symptoms nor clinical manifestations. The most common among symptoms were calf cramps (60.2%) and pain (57%). The most common among clinical manifestations were eczema (53%) and telangiectasias (45%). Symptoms worsen in the evenings or at nights in 42.7% of women. Among the factors that alleviate symptoms, women most often cited rest (39.9%) and elevation of the legs (24.7%).

Conclusions: Symptoms of CVD are a common problem among the young female population. Further studies are needed to determine potential risk factors and their impact on the chronic venous disease. Direct assessment of declared clinical manifestations also seems necessary.

Keywords: chronic venous disorder, young women

Environmental impact on cardiovascular diseases risk growth of 1st year students at Medical University of Silesia

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Work's tutor: prof. Tomasz Urbanek

Background: Nowadays, cardiovascular diseases are the leading cause of death in Poland. Their etiology is rooted in the patient's lifestyle, stress level or consumption of sodium-rich foods.

The aim: The aim of this paper is to find the environmental factors which could potentially affect the risk of the future occurrence of the cardiovascular diseases in 1st year students of the Medical University of Silesia.

Materials and methods: During the study the online survey among 1st year students of the Medical University of Silesia was conducted. The students were asked about their biometrics data in the first section. Then the second section was focused on the potential cardiovascular risk factors.

Results: In the survey took part 127 of 1st year students in 2022/23 most of in the age of 18-20 years old. The majority of attendants were women (64.6%). It came out that students generally access their mental health as moderate and stress level as high. 3.9% of participans declared the presence of arterial hypertension (mean value: 150/86 [mm/Hg]), while 3.1% declared diabetes. In the families of 56.7% of students asked has never appeared any of cardiovascular diseases, in 37.8% of them at least one appeared. 20.8% of students who have ever had their cholesterol level tested declared that it is or was above the normal value. Only 3.9% of students declared that they don't eat junk food at all, while only 0.8% don't eat sweets. Last but not least, students declaring that they sleep less than 8 hours per night is 96.1%. Also, 23.6% of students have to support themselves farmacologically in order to sleep.

Conclusions: All the gathered data allowed to raise the conclusion that the 1st year medical students are the group of people with definitely elevated risk of occurrence of the cardiovascular disease in their future if they don't change current lifestyle. The results obtained indicate that there is significant amount of environmental risk factors, however most of them could be reduced.

Keywords: cardiovascular diseases, epidemiology of cardiovascular diseases, 1st year students

Knowledge of women living in Poland about prenatal tests

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Background: Prenatal diagnostics is a variety of tests that are performed on pregnant women to determine the risk of genetic and developmental defects in the unborn child. Such tests are safe for the fetus, but their result only assesses the likelihood of genetic abnormalities. More effective methods of assessing the presence of genetic defects in the fetus are amniocentesis, chorionic villus sampling or cordocentesis, thanks to which the karyotype of the fetus can be assessed.

The aim: The questionnaire included questions about invasive and non-invasive prenatal tests, screening and ultrasound examinations. The aim of the project was to check the level of knowledge of women living in Poland on prenatal diagnosis and to determine which issues in the field of prenatal testing should be discussed more widely with women. As future medical personnel working with women of different ages, we want to improve the education system in Poland covering the issue of prenatal diagnosis. Women's higher awareness about this diagnosis gives a chance for early detection of various genetic and developmental defects and their treatment during pregnancy.

Materials and methods: The survey was conducted at the turn of February and March 2023.

Results: Several basic conclusions can be drawn from the conducted research. Women who are living in Poland do not have adequate knowledge about prenatal diagnosis, both invasive and non-invasive. Education in this area is insufficient, the group of qualified people who will be able to provide reliable information on perinatal prevention related to the proper developmental and genetic defects should be expanded. The results of the survey also showed that doctors are the only professional group that provides information on diagnostics among all medical staff.

Conclusions: The age of the respondents affects the level of knowledge- the higher the average age, the less knowledge about prenatal diagnosis.

Keywords: Prenatal diagnostics, knowledge, genetic defects, chorionic villus sampling

Association of psychological state with the quality of life among Ukrainian students during the war

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Background: In Ukraine from the beginning of war, millions of people fled the country, exposed to the horrors of war, that ruined their lives. But, mental health and changes in quality of life (QL) among young Ukrainians are not studied yet.

The aim: was to analyze level of depression and changes in QL among Ukrainian students during a war.

Materials and methods: A survey-based cross-sectional study was performed among 75 Ukrainian students, who studied at the universities in a period September-October, 2022. According to migration status of respondent were devided onto 2 groups:1) respondents who went abroad since the beginning of the war (n = 12) and 2) respondents who remained on the territory of Ukraine (n = 63). Depression was assessed Patient Health Questionnaire (PHQ-9), QL - Short Form Health Survey (SF-36).

Results: 93% of respondents continue their education at the Ukrainian university at 2022/2023 academic year, while the rest were unable to return to the education. Currently, the main hosting countries for students are the EU countries. 19% of respondents were forced to leave their home and become an internally displaced person since the beginning of the war. SF-36 survey detect that physical amd mental health components were without significant difference between groups. It was established that there is a probable prevalence of mild and moderate degrees of depression among respondents who stayed in Ukraine, compared to those who left the country. Correlation analysis showed that among students, the level of depression according to PHQ-9 is likely to be negatively correlated with the indicators of the SF-36 questionnaire, namely vitality ($r = -0.68$; $p<0.05$), mental health ($r = -0.68$; $p<0.05$) social functioning ($r = -0.61$; $p<0.05$).

Conclusions: The war negatively changed lifestyle Ukrainian student via necessity forced relocation and disability continue education in universities. Among students who stay in Ukraine was detected depression, low level of QL due to changes in mental health during war.

Keywords: War; Students; Depression; Quality of life, Ukraine

Accommodation spasm: a study on a group of medical students

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Background: Accommodation spasm is a situation in which there is an excessive contraction of the ciliary muscle in response to an accommodative stimulus, both when looking at close range and from a distance, and problems with its subsequent relaxation. The accommodative contraction causes pseudomyopia.

The aim: The objective of this work was to evaluate the frequency of accommodation spasm appearance in medical students of Medical University of Silesia.

Materials and methods: A group of 37 medical students of the Medical University of Silesia in Katowice, aged 22-25, were included in the study. Among them, 22 women and 15 men, 74 eyes in total.
Each person underwent distance and near visual acuity tests, with and without spectacle correction using Snellen charts as well as autorefractometer test, diameter of pupil and intraocular pressure test of both eyes.

Results: According to our study, 19 students did not need any spectacle correction to read. In 12 of them, the refractive values showed no deviations. 3 subjects in this group had refractive values equal to or greater than -0.75D in one or both eyes. 18 individuals needed spectacle correction to achieve full vision. 6 of them had refractive values greater than or equal to -0,75D relative to the selected spectacle correction needed for full vision in one or both eyes. The accommodation spasm occurred in 9 of the examined students, which constitutes 23,7% of this group. There was no significant aberration in the examination of diameter of pupil. A slight asymmetry in 1 student was observed.

Conclusions: To sum up, the occurrence of accommodation spasm in children and adolescents is becoming more and more common. Long-lasting work involving close observation of a computer monitor or phone display contributes to the development of ciliary muscle dysfunction.Thereupon it is important to implement healthy habits, such as taking breaks at work and limiting the time spent in front of a screen.

Keywords: accommodation spasm, pseudomyopia, diameter of pupil, eye-healthy habits

Knowledge and awareness of the harmful effects of UV radiation among beauticians

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Work's tutor: Dr n. med. Jolanta Malinowska- Borowska

Background: Treatments carried out in beauty salons often use UVA and UVB radiation, which has carcinogenic properties. The most common treatments using UV radiation in beauty salons are manicures using UV nail curing lamps and laser therapy, such as laser epilation.

The aim: The aim of this study was to assess the knowledge and awareness of beauticians about the harmfulness of UV radiation. Knowledge and proper training of cosmetic staff are key factors in maintaining client safety when performing treatments with UV radiation.

Materials and methods: The survey was conducted among 70 beauticians using an anonymous self-designed questionnaire. The survey was divided into 3 thematic blocks. The first block concerned general knowledge about UV radiation and was mandatory for all respondents. The second block concerned only those who perform manicures with UV lamps, while the questions in the third block were for those who perform laser therapy. More than half of the respondents perform UV manicures. Only 16% of respondents perform laser therapy.

Results: More than 74% of respondents had a degree in cosmetology. Only 48% of qualified respondents knew that UVA radiation penetrates the skin most deeply. Only 26% of respondents with no education answered this question correctly. The question about contraindications was the most difficult for respondents. Only 43% of respondents believed that antibiotic therapy was a contraindication to UV lamp treatments.

Conclusions: The degree of education has a major impact on the knowledge and awareness of cosmetic workers about the risks of UV exposure.

Keywords: UV radiation, cosmetology, UV manicure, laser therapy.

SESSION
OF SYSTEMATIC REVIEWS
AND META-ANALYSES II

PIEBM

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Evidence Based Medicine

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Participation in the patient's clinical presentation of chordae tendineae atrioventricular valves pathology

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Background: The chordae tendineae anatomically originate from the apical part of the papillary muscles of the ventricles and attach to the corresponding free margins of the atrioventricular valves. Together with the papillary muscles, they contribute to the effective contraction of the ventricles, creating the so-called "annular-ventricular continuity". The chord structures help adequately distribute the mechanical load on the papillary muscles during contraction and prevent the valve leaflets from protruding into the atria.

The aim: This publication aimed to evaluate and analyze the impact of chordae tendineae pathology of the atrioventricular valves on the clinical presentation of the patient.

Materials and methods: A systematic review of the available literature was performed in the PubMed database and according to the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analysis). Publications potentially eligible for research were obtained, after the initial screening of titles and abstracts, exclusion of repeated studies and those not containing information related to the subject of the review, 17 articles were finally listed.

Results: This review allowed us to distinguish six groups of characteristic pathological lesions of chordae tendineae that were involved in cardiac disorders. They were involved in such diseases as congestive heart failure, parachute mitral valve, hypertrophic cardiomyopathy, endomyocardial fibrosis, or bacterial endocarditis. Macroscopic anomalies of chordae tendineae included thickening, elongation, shortening, fibrosis, or complete absence of chordae in the subvalvular apparatus. In addition, descriptions of patients with histopathological changes in the chordae tendineae are listed.

Conclusions: Most of the cases resulted from congenital underlying diseases and treatment mainly consisted of surgical correction.

Keywords: chordae tendineae, atrio-ventricular valves, papillary muscles, congenital heart defect

Sources, quantity, and division of data in medical machine learning models

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Background: Medical machine learning models require representative amounts of data for training, which can be collected for the purpose of work, come from inter-center programs, or be archival data from specific facilities. The source of data and the learning methodology are important aspects in the context of developing universal and effective models.

The aim: The aim of this study was to conduct a systematic review and analysis of original studies on machine learning in medicine. Based on the collected data, an attempt was made to determine the percentage share of individual data sources, as well as to carry out their qualitative analysis. The division of training data into pools during the process of model training and evaluation was also analyzed.

Materials and methods: Using the PubMed database, we initially searched for 334 studies using the keywords "prediction" and "artificial intelligence" or "machine learning" between 2021 and 2023. After preliminary selection, 100 studies were included for evaluation. The primary evaluation criterion was the determination of the number of training, validation, and testing records, and their source of data. Studies that did not include these criteria were disqualified from the review.

Results: Results, excluding studies with mixed data sources (5% of the original pool), indicated the highest proportion of models trained on archival institution data (62%), followed by those trained on dedicated inter-institutional databases (21%), and the smallest proportion of studies using data collected for research purposes (10%). Based on the gathered data, a preferred methodology for categorizing data into training, validation, and testing sets was determined.

Conclusions: Databases created as a result of dedicated projects seem to be the richest source of data, although they were used in only 21% of the analyzed studies. Undertaking similar initiatives in the future may improve the quality and universality of the resulting models.

Keywords: machine learning, databases, predictive models, neural networks

The association between cardiac disease and mental health: a literature review

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Background: Cardiovascular disease is the leading cause of mortality and morbidity worldwide, accounting for over 17 million deaths annually. While there have been significant advances in the diagnosis and management of cardiac disease, comorbid mental health disorders in patients with cardiac disease remain a significant challenge. The high prevalence of mental health disorders in this population has been linked to adverse health outcomes, including increased morbidity and mortality rates, reduced quality of life, and higher healthcare costs.

The aim: To conduct a literature review to investigate the association between cardiac disease and mental health.

Materials and methods: A review of the literature was performed based on the scientific databases of PubMed. The search was performed by using the following keywords: "cardiovascular disease", "mental health". More than 15 published studies between 2017 – 2023 were reviewed.

Results: Studies have consistently shown a high prevalence of mental health disorders in patients with cardiac disease, with rates ranging from 20% to 60%. Depression is the most common mental health disorder in this population, with prevalence rates ranging from 20% to 40%. Anxiety disorders are also common, with prevalence rates ranging from 10% to 30%. Other mental health disorders, such as post-traumatic stress disorder (PTSD) and bipolar disorder, have also been reported in cardiac patients, although at lower rates.

Conclusions: This literature analysis provides a comprehensive overview of the relationship between cardiac disease and mental health. The high prevalence of mental health disorders among patients with cardiac disease has significant implications for clinical practice, including the need for routine screening and integrated management of both conditions. Mental health disorders have been shown to have a negative impact on cardiac disease outcomes, underscoring the importance of addressing these comorbidities in treatment planning.

Keywords: Cardiac disease, mental health, depression.

The clinical utility of apolipoprotein A1 and apolipoprotein B biomarkers in cardiovascular disease's risk assessment

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Background: Apolipoprotein A1 (Apo A1) and apolipoprotein B (Apo B) are associated with cardiovascular disease. Apo A1 is the main protein of high-density lipoprotein (HDL) cholesterol, which is considered "good" cholesterol because of its protective effects on the cardiovascular system. Meanwhile, Apo B is a protein found in low-density lipoprotein (LDL) cholesterol, which is known as "bad" cholesterol because of its negative effects on the cardiovascular system.

The aim: To assess the clinical utility of the Apolipoprotein A1 and Apolipoprotein B biomarkers in the assessment and management of cardiovascular disease risk.

Materials and methods: A review of the literature was performed based on the scientific databases of PubMed. The search was performed by using the following keywords: "biomarkers", "apolipoprotein". More than 11 published studies between 2017 – 2023 were reviewed.

Results: Research studies have indicated that individuals with low levels of apoA1 and high levels of apoB have an increased risk of CVD, independent of traditional risk factors like cholesterol levels. Measuring the levels of apoA1 and apoB can assist healthcare providers in identifying patients at a higher risk of CVD, allowing for earlier intervention and the creation of customized treatment plans. ApoB has been proposed as a superior predictor of CVD risk when compared to LDL cholesterol, particularly in patients with metabolic syndrome or high triglyceride levels. Recent advancements, such as proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors, that target apoB-containing lipoproteins have been created and have been proven to decrease the risk of CVD.

Conclusions: In conclusion, Apo A1 and Apo B are biomarkers that have been extensively studied in the context of cardiovascular disease. Apo A1 is a protective biomarker due to its role in reverse cholesterol transport and anti-inflammatory properties. On the other hand, Apo B is considered a pro-atherogenic biomarker due to its association with LDL cholesterol and risk of atherosclerosis.

Keywords: Apolipoprotein A1, apolipoprotein B, cardiovascular disease, biomarkers

Autoantibodies in atrial fibrillation — state of the art

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Background: Atrial fibrillation (AF) is the most common type of cardiac arrhythmia. There is increasing evidence suggesting that autoimmunity is an important factor in the initiation and perpetuation of AF. Autoantibodies are thought to play a pivotal role in regulating heart rhythm and the conduction system and, therefore, are associated with AF development.

The aim: In this review, we have summarized current knowledge concerning the role of autoantibodies in AF development, their prognostic and predictive values in this disease, their correlations with other concomitant heart conditions and possible mechanisms leading to structural and electrophysiological changes.

Materials and methods: We searched the PubMed Database and eventually included 31 original research publications (both clinical and preclinical) relevant to the discussed field, excluding only the records found by coincidence. We divided these studies into the following groups: (i) research investigating only antibodies against β-adrenergic receptors, (ii) research investigating only antibodies against M2-muscarinic acetylcholine receptor, (iii) research investigating both anti-β and anti-M2 antibodies, (iv) research investigating anti-heat shock protein antibodies, (v) research investigating other types of autoantibodies.

Results: Serum concentrations of various autoantibodies have been proven to be significantly increased in patients with different
types of AF compared to healthy people. Many studies have shown that other autoantibodies may affect pathogenetic pathways leading to AF.

Conclusions: Autoantibodies could be used as a screening tool to determine the risk of developing AF in the future, especially in patients with underlying cardiovascular system diseases. Establishing the autoantibody profile of separate AF patient groups may appear to be crucial in terms of developing novel treatment approaches for those patients; however, the exact role of various autoantibodies in AF is still a matter of ongoing debate.

Keywords: atrial fibrillation, autoantibodies, arrhythmias, autoimmunization

miRNA: petite molecules with significant application

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Background: Liquid biopsy is a novel concept of a less invasive diagnostic method, with the potential of replacing standard tissue biopsy. It relies on drawing blood samples to find specified biomarkers, such as miRNA. These molecules are distinct in various cells, therefore it is possible to determine their origin. Moreover in pathological conditions, like myocarditis or cardiomyopathy, some of the miRNAs, may get into the blood. Thus It is believed that specific miRNAs might be potential biomarkers in cardiac diseases.

The aim: Compare studies measuring miRNA levels in the blood of patients with non-ischemic dilated cardiomyopathy (DMC) or myocarditis (MCI), to find the best potential biomarkers for the above diseases.

Materials and methods: The systematic review was created, according to PRISMA guidelines. Scopus, Embase, Web of Science, and PubMed were searched to find miRNA measuring studies in the blood of patients with non-ischemic DCM and/or MCI compared to healthy subjects. A 1185 records were identified, of which 56 were relevant and 187 miRNA were found. Data were extracted and miRNAs were screened and assessed using a scale created in-house. Then, highly graded miRNAs were assessed for usability as liquid biopsy biomarkers. In total, 24 of the screened miRNAs were included in the final assessment, 3 of which were selected as the best and potential candidates.

Results: Serum levels of three miRNAs—miR-Chr8:96, miR-155, and miR-206—are the best candidates for myocardial inflammation liquid biopsy panels.

Conclusions: Three miRNAs with potential applicability were extracted from the studies. However, further studies are needed to prove their role, specificity, and sensitivity.

Keywords: miRNA, liquid biopsy,

Immune-related adverse effects including the cardiovascular system – systematic review

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Background: Cancer immunotherapy, which leverages features of the immune system to target neoplastic cells,has revolutionized the treatment of cancer. Unique adverse effects associated with immune checkpoint inhibitors are termed immune-related adverse effects (irAEs) and are usually immunostimulatory in nature. Almost all organ systems may be affected by irAEs including the cardiovacular system.

The aim: The aim of our systematic review is to discuss the toxicity of immunotherapy to the cardiovascular system due to the noticeable upward trend of this phenomenon.

Materials and methods: Systematic review of clinical trials reported cardiovascular toxicity induced by immunotherapy.

Results: Cardiac irAEs include myocarditis, pericarditis, cardiac fibrosis, arrhythmias, and new-onset heart failure.Our systematic review of clinical trials showed an upward trend for most pathologies. Some of them require complicated treatment because they may end in death, which makes the knowledge of diagnosis and treatment very valuable for clinicians.

Conclusions: Immunotherapy revolutionized the treatment of cancer.This method of treatment is valuable but shows toxicity. Side effects increasingly concern the cardiovascular system, which is a multi disciplinary therapeutic problem that must be properly diagnosed and treated.

Keywords: Immunerelated adverse events, Checkpoint inhibitor, Cardiovascular toxicity, ICI-induced myocarditis

Macro and microcirculatory endothelial dysfunction in psoriatic and rheumatoid arthritis: a comparative review

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Background: Cardiovascular diseases, the leading cause of death worldwide, are linked to endothelial dysfunction (ED), characterized by reduced vasodilatory, antithrombotic, and anti-inflammatory capabilities of the endothelium. ED is strongly associated with autoimmune conditions, particularly Rheumatoid Arthritis (RA), which is known to negatively impact the endothelium. However, the association between ED and other rheumatological diseases is less explored.

The aim: Understanding the causes and prevalence of endothelial changes is critical in preventing cardiovascular events in at-risk patients. This study investigated the link between ED and Psoriatic Arthritis (PsA), the third most common inflammatory joint disease globally, and compared it to well-recognized ED in RA.

Materials and methods: Data from the accessible peer reviewed literature about the influence of PsA on the endothelium in both macro- and microcirculation has been extracted from online databases including MEDLINE, Cochrane, EMBASE, Scopus, Web of Science, and Google Scholar search engine in consent with PRISMA2020 checklist. The protocol assumed the search for original works that use specific indicators evaluating ED in micro- (CFR), macrocirculation (FMD, CTP, coPB, cPB) and arterial stiffness (AIx, PWV, cIMT, ABI). Studies with less than 20 participants were excluded.

Results: PsA patients show significant microvascular endothelial changes compared to healthy controls. They also exhibit macrovascular endothelial dysfunction, a higher burden of atherosclerotic plaques in large and medium arteries, impaired vasodilatation, and increased arterial stiffness, which are similar to RA patients. Appropriate treatment may help alleviate the increased arterial stiffness but conflicting data exists on this effect.

Conclusions: Literature suggests that PsA, like RA, increases the risk of ED over time, making cardiovascular event prevention crucial for PsA patients. Anti-TNF treatment may help improve endothelial function, but the impact of other therapies remains unclear...

Keywords: psoriatic arthritis, rheumatoid arthritis, endothelial dysfunction, atherosclerosis,microcirculation

Vaping and reproductive health: a systematic review

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Background: Infertility affects 186 million people worldwide. Electronic cigarettes (EC, vaping) use is increasing dramatically particularly among adolescents and young adults. There are serious concerns about the potential impact of EC on human reproduction.

The aim: To review the existing evidence on effects of vaping on reproductive health.

Materials and methods: Four databases (PubMed, Google Scholar, Sciencedirect, Medscape) were systematically searched for studies published from July 2014 to March 2023 in English. The search terms were "vaping", "electronic cigarettes", "fertility", "reproductive health" in the title or abstract or as keywords. A total of 72 references, excluding duplicates, were identified.

Results: While data on the impact of EC on human reproduction are limited, numerous studies investigated their effect in animal models. The effect of EC on reproduction can result from the toxicity of nicotine, flavours, formaldehyde and heavy metals, however, the precise mechanism of the toxicity is hard to determine. Vaping was reported to alter male gonadal structure and semen quality, increases intratesticular oxidative stress, decreases testosterone levels, reduces sperm counts, motility and morphology, and disturbs sexual/erectile function. Moreover, the findings suggest potential mutagenic effects of EC on sperm. There is no clear evidence looking at alterations in oocyte quality and fertilization in women. However, in mice exposed to EC vapour estrogen levels were reduced. The main limitations of the analysed studies were their methodological inconsistencies (numerous varying components in e-liquids, animal models, conditions etc.).

Conclusions: There is a growing body of experimental studies that EC can exert numerous adverse effects on male and female fertility. Further investigations, particularly in humans should be conducted to identify precise adverse effects of EC on fertility. However, the EC users should be warned about the potential harmful effect of vaping on their reproductive health.

Keywords: vaping, electronic cigarettes, fertility, reproductive health

New cardioprevention strategies in cardio-oncology based on the ESC Guidelines 2022

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Background: Cardiooncology guidelines are the answer to emerging medical problems such as the numerous side effects of various cancer therapies. Along with improved therapies, the number of cancer survivors is increasing, creating massive need for strategies how to prevent or minimalize side effects, create algorithms dedicated to maintain both health and quality of life of patients.

The aim: We aimed to summarize the recent European Society of Cardiology Guidelines 2022 and scientific papers published in 2022&2023. We presented the currently available data in straightforward charts, decision trees, extracted the highlights of findings in terms of cardioprevention.

Materials and methods: ESC Guideline and newly published articles analysis was performed. We have been using PubMed as a searching tool. We assess the evidences regarding pharmacological cardioprevention drugs in clinical studies and basic science data.

Results: The choice of biomarkers tests and imaging should be individualized based on cardiovascular risk and the treatment plan. Dedicated risk assessment tools and calculators should be used. Risk assessment, family history, prior cardiovascular history should be considered before primary or secondary prevention is implemented. Physical activity is a promising counteracting strategy to oncology treatment side effects. In patients at high risk of cardiac dysfunction, the use of cardiotoxic drugs should be minimized, cardioprotective therapy should be initiated and dexrazoxane or liposomal anthracycline should be added to anthracycline. Each cancer therapy has dedicated cardiovascular toxicity monitoring protocols.

Conclusions: Multidisciplinary teams should be established to supervise the diagnostic, treatment, follow-up process. Risk stratification scales, protocols to monitor pre-existing cardiovascular risk factors or diseases, effective treatment without interruption, surveillance plans, personalized approach should be further developed. The evidence on the population of cancer patients and survivors should be expanded.

Keywords: cardioprevention, cardiooncology, oncology treatment, cancer survivors

COACH: COVID-19 influence on athletic cardiopulmonary health: a systematic review and meta-analysis

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Background: Coronavirus disease 19 (COVID-19) may lead to a decrease in exercise performance. Maximal oxygen uptake (VO2max) is described as a critical vital sign.

The aim: This meta-analysis aimed to assess the impact of COVID-19 on athletes' endurance capacity, considered the VO2max.

Materials and methods: We included observational studies assessing the post-COVID-19 change in VO2max compared to (a) pre-COVID-19 VO2max in the same athletes or (b) VO2max in non-COVID-19 healthy reference athletes. We included studies where VO2max was defined as the average value in the 10-30s interval before the cardiopulmonary exercise test termination. We excluded: (i) case reports, (ii) studies conducted on the pediatric population (<18 years old), and (iii) reports with missing/insufficient data. We searched five databases: PubMed, Embase, Scopus, Medline Ultimate, and Web of Science. Each database was last searched on April 10th 2023, and all studies that met the selection criteria were included. The analyses were done with the random effects model.

Results: Out of 526 primary records, a total number of 7 studies and 476 participants were included. VO2max measured before COVID-19 did not differ from VO2max measured in the same athletes after recovery from COVID-19 (mean difference 0.66 mL/kg/min; 95%CI [-2.22, 3.54]; p=0.65). VO2max measured in reference healthy athletes not suffering from COVID-19 did not differ from VO2max measured in athletes who recovered from COVID-19 (mean difference -0.54 mL/kg/min; 95%CI [-2.21, 1.14]; p=0.53). The pooled analysis also found no difference in VO2max between non-COVID-19 and COVID-19 athletes (mean difference 0.12 mL/kg/min; 95%CI [-1.45, 1.69]; p=0.88).

Conclusions: Despite heterogeneity between included studies, our meta-analysis shows that COVID-19 does not significantly influence VO2max in athletes. It advocates returning to regular training by athletes after undergoing COVID-19. Nevertheless, a complete health examination may be required to ensure a safe return to play for selected individuals.

Keywords: VO2max, COVID-19, athletes, sports medicine

Surgical treatment outcomes of ccildren with congenital heart disease in sub-Saharan Africa

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Background: Congenital Heart Disease (CHD), which refers to a range of structural defects in the heart that are present at birth and affect millions of children in sub-Saharan Africa (SSA). Surgical therapy is the most common treatment modality in SSA due to its cost-effectiveness and the availability of basic surgical equipment in hospitals.

The aim: The study aims to analyze the surgical treatment outcomes of children with CHD in SSA.

Materials and methods: A review of the literature was conducted to identify studies that reported on the surgical treatment outcomes of children with CHD in Africa. The search was performed in PubMed, Embase, and Scopus databases, using the keywords "congenital heart disease," "surgery," and "sub-Saharan Africa." Studies were included if they reported surgical outcomes, such as mortality rate, survival rate, or complications.

Results: The primary analysis of this research involved 18 studies, but only 7 of them were deemed suitable for the final analysis. These 7 studies examined 850 patients who received surgical treatment for CHD in sub-Saharan Africa. The findings indicated that the average rate of complications was 28.2%, while the average mortality rate was 8.5%. Nevertheless, the average survival rate was 41.1%.

Conclusions: Surgery is a viable and cost-effective method to treat CHD in SSA, however, it comes with a substantial risk of complications and mortality. Therefore, enhancing the quality of surgical care for CHD patients in the region through the implementation of advanced pre-surgical screening, surgical techniques, and post-surgical care is recommended.

Keywords: Congenital Heart Disease, sub-Saharan Africa, Cardiac Surgery

Diabetes mellitus (type 2): why exercise works when insulin fails: a systematic review

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Background: Hyperglycemia and insulin resistance are among the characteristic features of diabetes mellitus (type 2), a chronic metabolic illness that frequently results in long-term consequences such as cardiovascular disease, neuropathy, and retinopathy. Despite the fact that insulin therapy and a variety of other medications are frequently used to lower blood sugar levels, some individuals may not respond well to this course of treatment, necessitating the use of additional therapies to enhance glycemic control. The metabolism of glucose has been proven to be enhanced with exercise.

The aim: This systematic review seeks to understand why, in the absence of efficient insulin therapy, exercise can be helpful in the management of type 2 diabetes mellitus. To achieve this goal, the available evidence on the physiological, molecular, and cellular pathways that facilitate the effects of exercise on glucose regulation in the presence of insulin resistance will be examined.

Materials and methods: Exercise, Glucose Transporter Type 4 (GLUT4), and Type 2 Diabetes Mellitus were predefined terms in our search strategy, and we thoroughly searched electronic sources including PubMed, Google Scholar, and Cochrane Library from 2009 to 2023. We included studies that examined the effects of exercise on glucose metabolism in type 2 diabetes mellitus. Studies that involved children, pregnant women, or patients with type 1 diabetes mellitus or other metabolic disorders were excluded.

Results: The majority of research showed that glycemic control, insulin sensitivity, and glucose uptake all significantly improved as a result of exercise interventions such as aerobic, resistance, and combination training. Exercise has also been linked to lower levels of HbA1c, fasting glucose, and insulin resistance. Additionally, certain studies indicated that this effect could be achieved through a pathway that is not related to the insulin pathway.

Conclusions: Exercise improves glucose control in type 2 diabetes. It is a safe and effective adjunct therapy.

Keywords: Exercise, Glucose Transporter Type 4 (GLUT4), and Type 2 Diabetes Mellitus

Evaluation of the effectiveness and safety of colchicine in prevention of atrial fibrillation

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Background: Colchicine is an ancient alkaloid microtubule-disassembling agent that is primarily used in the treatment of gout. Evidence indicates that chronic inflammation correlates to the development of atrial fibrillation. Colchicine through its anti-inflammatory mechanism could play a role in decreasing atrial fibrillation incidence in post-cardiac surgery cases.

The aim: The aim of this study is to assess the effect of colchicine for the prevention of atrial fibrillation in patients who undergo cardiac surgery.

Materials and methods: A systematic review of Literature was carried out to investigate the effects of colchicine in atrial fibrillation cases. The Investigation was carried out using PubMed, Curious, Future Medicine, Bio med journal, JAHA, Medicare (2020-2023).

Results: The articles used for this investigation were only in English and are recently published works. The literature search was conducted using 15 articles. 14 of which recorded no adverse effects and only one article reported some cases of a few adverse effects in preoperative colchicine use in cardiac surgery. We reviewed 3 studies, the first study using 2031 patients (studying colchicine use in the long and short duration), the second and third placebo controlled studies using 2274 and 584 patients, all found no significant adverse effect of colchicine use in the long or short duration and between the placebo and colchicine groups; similar results were reported in other studies. The reviewed articles revealed that Colchicine helps to reduce the risk of Postoperative Atrial Fibrillation (POAF) in cardiac surgery patients.

Conclusions: Our study concludes that the drug "Colchicine" may play a significant role in the reduction and prevention of recurrence of Postoperative Atrial Fibrillation (POAF) in post-cardiac surgery patients. There were minimal side effects from the oral colchicine and most of it was due to overdose.

Keywords: Colchicine, Atrial Fibrillation, Effects, Surgery

Cardiac representation of dysautonomic disorders in Guillain-Barre syndrome - literature review

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Background: Guillain-Barre syndrome (GBS) is a rare condition with the incidence ranging from 1 to 4 cases per 100,000 people per year. Patients usually experience GBS after bacterial or viral infections, surgery, or certain vaccines.

The aim: The cause of developing GBS is an autoimmune reaction directed at peripheral fibers. The most characteristic symptoms are a symmetrical progressive weakness of the limbs and loss of deep tendon reflexes. In addition, GBS can also be manifested by dysautonomic symptoms (ie. fluctuations in blood pressure, orthostatic hypotension, tachycardia, and arrhythmia), the frequency of which is very differently estimated.

Materials and methods: The study aims to review the literature on disorders of cardiac origin occurring during an episode of Guillain-Barre syndrome.
Several case reports were reviewed, including keywords: Guillain-Barre syndrome; autonomic dysfunction; arrhythmia; cardiomyopathy; heart arrest.

Results: Presented patients suffer from a fairly standard picture of GBS: usually, these are paresis of the limbs but their general condition is usually good. Cardiac disorders usually occur within 24 hours from the onset of neurological symptoms despite prompt treatment and severity of movement disorders. Difficulty breathing can be an initial symptom of dysautonomia. Additionally, the patients who were examined showed elevated parameters such as prolonged P-wave dispersion, which was later correlated with post-GBS disability and development of atrial fibrillation.

Conclusions: Researchers' reports indicate the possibility of a rapid, progressive change in the patient's condition due to dysautonomic symptoms. Due to the high likelihood of developing dysautonomic disorders that can be life-threatening, it is important to give special attention to the cardiac problems of patients who are experiencing or have recently experienced GBS, even of mild severity. Prompt diagnosis of the cause of these disorders can significantly reduce the risk of serious complications.

Keywords: Guillain-Barre syndrome; autonomic dysfunction; arrhythmia

N-Terminal Prohormone of Brain Natriuretic Peptide (NT-proBNP) in gestational hypertension and preeclampsia

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Background: N-terminal prohormone of brain natriuretic peptide (NT-proBNP) is a non-active prohormone secreted by ventricular cardiomyocytes into the circulation in response to ventricle overload due to increased blood volume. The changes in NT-proBNP levels during pregnancy have been investigated thoroughly in multiple studies. In the case of hypertensive disorders of pregnancy (HDP), the increase in vasoconstriction results in aggravation of cardiac burden, excessive ventricular volume, and pressure overload, thereby leading to higher NT-proBNP secretion. As HDP is among the leading causes of prematurity and perinatal mortality, early prediction and diagnosis of gestational hypertension (GH) and preeclampsia (preE) are important for improving maternal and infant prognosis.

The aim: NT-proBNP has been regarded as one of the potential biomarkers of HDP. Therefore, we aimed to outline the clinical imperative for the prognostic and diagnostic utility of NT-proBNP in patients with GH and preE.

Materials and methods: Numerous clinical studies investigating the role of NT-proBNP in GH and preE have already been conducted. We searched PubMed Database and eventually included 31 original clinical research published in years 2001-2022 relevant to the discussed field. The unrelated articles, case control studies and reviews were excluded from our investigation.

Results: A total of 2124 women with preE, 406 patients with GH and 3696 normotensive pregnant women were considered in our review. Based on the selected studies we compared the differences between these groups and changes throughout pregnancy.

Conclusions: NT-proBNP can be considered as a biomarker of HDP (GH and preE). The diagnostic and prognostic utility of NT-proBNP may include not only the binary assessment of these disorders' presence but also the evaluation of the preE severity. In addition, testing NT-proBNP levels may be beneficial to the monitoring of pregnant patients with HDP and women with the history of developing preeclampsia in previous pregnancies.

Keywords: NT-proBNP; gestational hypertension; preeclampsia, hypertensive disorders of pregnancy