



INTERNATIONAL MEDICAL CONGRESS OF SILESIA

Conference organized online and in Katowice
May 25-27th 2022

ABSTRACTS' BOOK



**STUDENTS' SCIENTIFIC ASSOCIATION
OF THE
MEDICAL UNIVERSITY OF SILESIA**



**POLISH ASSOCIATION OF DENTAL
STUDENTS
BRANCH ZABRZE**



**DOCTORAL STUDENTS' GOVERNMENT
OF THE
MEDICAL UNIVERSITY OF SILESIA**

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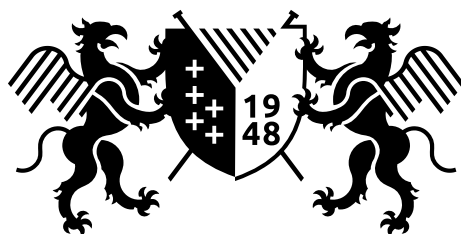
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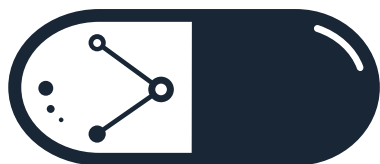
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Dear Students,

I have a great pleasure to invite you to the International Medical Congress of Silesia 2022 - "SIMC 2022" organized by the Medical University of Silesia. After difficult period of pandemic, it is vital to meet again face to face.

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.

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 a 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 that are prepared by you will meet the expectations of attendees. I am very happy that despite pandemics 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 2022 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 the health and safety of our attendees, staff and exhibitors remained the top priority of the Scientific Society of Medical University of Silesia which was why we had made the decision to transition the 2021 SIMC's sessions to a virtual meeting. This year I do hope to see you all in person in May. We will have the opportunity to continue the good traditions of student scientific meetings.

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

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

Sincerely

The Head of

Students' Scientific Association

Of the Medical University of Silesia in Katowice

Michał HOLECKI, MD, PhD, Professor of Medicine

Dear Participants!

68 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 2022 (SIMC 2022). This year almost 250 papers were submitted and arranged between 21 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 2022 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 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 of 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) 2022, 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, 25th May 2022

9:00 – 9:45	The Opening Ceremony
10:00 – 13:30	Session of Neonatology and Pediatrics Session of Gynecology and Obstetrics Session of Pharmacy and Clinical Pharmacology
14:00 – 17:00	Session of General Medicine Session of Experimental Medicine Session of Radiology, Radio Diagnostic and Nuclear Medicine Session of Psychiatry and Sexology

Thursday, 26th May 2022

9:00 – 13:30	Session of Noninvasive Cardiology Session of Noninvasive Cardiology II Session of Anesthesiology, Emergency Medicine and Intensive Care Session of Dermatology Session of Public Health and Healthcare I
14:00 – 17:00	Session of Invasive Cardiology Session of Basic Science, Biotechnology and Biomedical Engineering Session of Orthopedics and Physiotherapy Session of Surgical Specialities Session of Public Health and Healthcare II

Friday, 27th May 2022

9:00 – 13:30	Session of Internal Medicine Session of Neurology and Neurosurgery
14:00 – 16:30	Session of Dentistry Session of Dietetics and Nutrition
16:45 – 18:00	The closing ceremony: Honorary lecture, Awards announcement



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**SESSION
OF ANESTHESIOLOGY,
EMERGENCY MEDICINE
AND INTENSIVE CARE**



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Changing in the characteristic of patients admitted to the ICU in 10 years observation

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Work's tutor: lek. Marcelina Czok, prof. dr hab. n. med. Łukasz Krzych

Background: Patients admitted to the ICU constitute a highly distinctive group. Their medical condition is usually very severe and can change rapidly. At the same time delayed admission of patients to the ICU may be associated with higher mortality.

The aim: To analyze changes in the characteristics of patients admitted to Polish ICUs based on a local registry from the past 10 years.

Materials and methods: A multicenter study based on a Silesian Registry of Intensive Care Units has been performed including 25416 patients from 2010 until 2020. The changes in prevalence of comorbidities and primary reasons of admissions were evaluated. Statistical data was assessed by dividing admissions into 2.5 year quartiles (Q1-Q4). The analysis was performed using STATISTICA 9.0 Software.

Results: The median age of patients was 66 (IQR=20), 10619 were female, 14797 male. The comorbidities which prevalence has changed over 10 years with statistical significance were: hypertension (Q1-40.98%, Q2-53.35%, Q3-57.43%, Q4-60.98%), obesity (Q1-4.84%, Q2-3.99%, Q3-6.02%, Q4-7.20%), diabetes (Q1-20.58%, Q2-25.62%, Q3-27.90%, Q4-27.90%), chronic kidney disease (Q1-11.98%, Q2-15.37%, Q3-15.98%, Q4-16.42%), stroke (Q1-6.27%, Q2-7.63%, Q3-7.85%, Q4-8.75%) and malignancy (Q1-5.02%, Q2-7.29%, Q3-10.02%, Q4-14.03%). As for immediate reason of admission the study showed that frequency of heart failure (Q1-43.70%, Q2-44.89%, Q3-47.85%, Q4-55.41%), multiple organ failure (Q1-9.85%, Q2-12.09%, Q3-14.85%, Q4-17.71%) and post surgical (Q1-25.6%, Q2-31.37%, Q3-31.23%, Q4-37.52%) have all increased whereas sudden cardiac arrest as the main reason (Q1-27.04%, Q2-24.38%, Q3-23.32%, Q4-19.23%) has decreased.

Conclusions: The prevalence of comorbidities in patients admitted to the ICUs is significantly higher meaning that treatment is being implemented for patients with more severe conditions. There is however more restriction on admittance of post sudden cardiac arrest syndrome patients since their prognosis has been proven unfavorable.

Keywords: patients' characteristic, intensive care unit, ICU, epidemiology

Characteristics of ventilator-associated pneumonia in patients with subarachnoid hemorrhage in the ICU

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

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

The aim: The aim of study was to assess the prevalence of VAP, determine the etiological factors and evaluation of correct use of empiric antibiotic therapy.

Materials and methods: The study group consisted of 58 patients hospitalized in the period from 01.2019-10.2021. Demographic and clinical data were collected, including the method of collecting material from the respiratory tract, results of laboratory and microbiological tests, and the applied empirical antibiotic therapy was analyzed in relation to antibiograms.

Results: The median duration of MV was 8.5 days (IQR 3-19). More than 97% of patients were intubated on the day of admission to the ICU. On admission, 47 microbiological samples from the respiratory tract (39 aspirates, 8 bronchopulmonary lavage) were collected and 26 of which (55%) were physiological flora. In the following days, VAP was diagnosed in 8/26 patients (31%). The median time from admission to diagnosis was 4 days (IQR 3-4). VAP with a multi-drug resistant etiology was diagnosed in 2 patients (K. Pneumoniae ESBL+, K. Pneumoniae KPC+). Inadequate empirical antibiotic therapy was administered to 2/8 of VAP patients.

Conclusions: VAP was a common complication of mechanical ventilation in patients with SAH. Most patients with VAP received appropriate empirical antibiotic therapy.

Keywords: SAH; subarachnoid hemorrhage; aneurysm; embolisation; VAP; ventilator-associated pneumonia

Delirium in ICU patients - an underestimated problem?

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Background: Delirium is a state characterised by disorganisation or narrowing of the field of consciousness, dysfunction of perception, thinking, drive, memory, emotions and sleep-wake cycle. Due to certain changes in psychomotor drive we can distinguish between: hypoactive, hyperactive, mixed delirium and the one without cognitive dysfunction. Unfortunately, delirium is often underdiagnosed.

The aim: The aim of the study was to determine the frequency and type of delirium in patients hospitalized in the Department of Anaesthesiology and Intensive Therapy, Prof. Kornel Gibiński University Clinical Center in Katowice and its impact on the length of stay in the ICU. Moreover, the influence of other factors (i.e. the administration of particular sedative drugs or the use of invasive mechanical ventilation and its length) on the occurrence of delirium was examined.

Materials and methods: The assessment of patients was conducted daily for 93 days, using the ICU-CAM scale with an inclusion criterion RASS \geq -3 (n=47). Observation was conducted between January and April 2022. Each assessment was performed with verbal consent of the patient.

Results: Delirium occurred in 28 patients (59.6%) during the specified time period. The mean age of patients who developed delirium was 56.8 (\bar{I} 16.1) years. Delirium of the hyperactive type occurred in 2 patients (4.3%), of the mixed type (hypo-hyperactive) in 10 patients (21.3%), and of the hypoactive type in 16 patients (34%). The mean length of stay in the ICU was 12 (\bar{I} 9) days, among patients with delirium 16 (\bar{I} 10) days. There is no statistical relationship between length of stay in the ICU in patients with hypoactive delirium as against hyperactive and mixed delirium (p=0.32).

Conclusions: Delirium is a serious medical condition in intensive care units, which requires close monitoring and appropriate treatment.

Keywords: delirium, ICU-CAM, RASS, mental disabilities

Differential diagnosis of respiratory failure in patients with SAH: a single-centre analysis

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Work's tutor: Piotr Liberski, MD;
Michał Pluta, MD;
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Background: Acute respiratory failure (ARF) requiring mechanical ventilation, occurs in most patients with severe subarachnoid haemorrhage (SAH). This pathology is caused most often by neurogenic pulmonary edema (NPE) and/or ventilator-associated pneumonia (VAP).

The aim: The aim of the study was to detect laboratory factors that may distinguish between NPE and VAP in ARF in SAH.

Materials and methods: The study group comprised 58 patients with severe SAH, hospitalized from 01.2019 to 10.2021. Demographic, clinical and laboratory data were collected, including arterial blood gas analysis, inflammatory markers and parameters of mechanical ventilation, needed to maintain appropriate oxygenation and CO₂ level.

Results: During the 7-day follow-up, 45 patients (78%) developed ARF with an Horowitz index of <300 mmHg. C-reactive protein (CRP) in VAP patients progressively increased ($p=0.03$) and in NPE it was unpredictable ($p=0.65$). The main differentiating factor between inflammatory and neurogenic acute lung injury was the increasing level of partial pressure of carbon dioxide, requiring increase in minute ventilation - hypercarbia was presented in patients with VAP compared to patients with NRE. Horowitz index didn't correlate with CRP level.

Conclusions: Increased levels of hypercarbia help distinguish neurogenic pulmonary edema from ventilator-associated pneumonia in patients with subarachnoid haemorrhage with acute respiratory failure.

Keywords: SAH, acute respiratory failure, ventilator-associated pneumonia, neurogenic pulmonary edema

Factors assoc. with dec. arterial oxygen tension before induction of anaesthesia for coronary artery surgery

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Work's tutor: dr. n.med. Ewa Trejnowska,
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Background: It may be observed, that some patients present with decreased arterial oxygen tensions before induction of anaesthesia for coronary artery surgery. It is not clear in which patients this problem can be expected to occur.

The aim: We aimed to investigate this on the basis of data obtained from patients scheduled for coronary artery surgery at the Silesian Center for Heart Diseases in Zabrze (SCCS).

Materials and methods: Data of all consecutive adult patients scheduled for coronary artery surgery between January 1st and July 31, 2021, were analyzed. All patients were premedicated with pregabalin 75 mg orally 1 hour before arriving at the operating theatre. No other sedative drugs were given. Baseline values of the arterial gas analysis taken directly before induction of anaesthesia were retrospectively analyzed. Values of partial pressure of oxygen (paO₂) were analyzed only in patients breathing room air. Patients with paO₂<70 mmHg entered group A, while the remaining patients were allocated to group B. Demographic data of patients in groups A and B were compared. Additionally, paO₂ values were correlated with the values of oxygen saturation with the use of Spearman rank-order correlation. For all calculations, it was assumed that statistical significance occurs when $p < 0.05$.

Results: In a group of 175 patients analyzed, only 18 patients (10.3%) were in group A and had a baseline paO₂<70 mmHg on room air. Age, sex and BMI in groups A and B were similar ($p=0.764$, $p=0.964$ and $p=0.675$, respectively). Patients in group A however, had a significantly lower mean left ventricular ejection fraction (40.1 ± 13.5 vs $47.3 \pm 12.0\%$, $p=0.042$) and were marginally more frequently classified ASA IV or V (61.1% vs 38.2% , $p=0.127$). Arterial pO₂ values were poorly correlated with pulse oximetry values ($r=0.167$, $p=0.027$).

Conclusions: High-risk patients with poor left ventricular function tend to have lower values of paO₂ before induction of anaesthesia for coronary artery surgery.

Keywords: coronary artery surgery, arterial oxygen tension, high-risk patients, SCCS Zabrze

Insight on the nutritional status of critically ill patients with COVID-19

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Work's tutor: dr Tomasz Jaworski

Background: COVID-19 infection is a serious clinical condition, which may lead to impaired nutrition absorption. Poor nutritional status increases the risk of malnutrition and contributes to inadequate therapeutic effectiveness.

The aim: Due to the lack of sufficient data about nutritional therapy of critically ill patients with COVID-19, we investigated nutritional treatments on patients admitted to the Intensive Care Unit of University Clinical Center prof. K. Gibiński of the Medical University of Silesia in Katowice.

Materials and methods: The study was conducted retrospectively by analyzing medical records of 72 COVID-19 patients hospitalized between 2020–2021 in the Intensive Care Unit (ICU). Data, including calorie intake, was collected from admission to the ICU to the 7th day of hospitalization or from their functioning hospitalization period in ICU. The implementation of caloric demand was presented as a percentage of basal metabolic rate (BMR). BMR was defined using the Harris-Benedict equation and Mifflin-St Jeor equation.

Results: The study group included 72 patients, 47 (65%) were male, and the median age was 63. On admission to the ICU, the median BMI was 29 and median NRS 2002 was 4. According to the Harris-Benedict equation, median percentage implementations of BMR on the 1st, 4th and 7th day of ICU stay were 24%, 72% and 69% respectively. Isocaloric nutrition (70%-100% BMR) was applied to 24% of the study group on the 4th day and 27% on the 7th day. In regard to the Mifflin-St Jeor equation, calorie intake on the 1st, 4th and 7th day of hospitalization in ICU was consecutively 24%, 74% and 76% of BMR. Nutrition of 26% of patients was isocaloric on the 4th day of hospitalization in the ICU. 25,5% of the study group met the calorie intake target on the 7th day.

Conclusions: Nutritional targets among COVID-19 patients were not achieved during the first week. Due to the above, nutritional interventions should be enhanced.

Keywords: COVID-19, nutritional therapy, critically ill patient

Is hospital-acquired anemia an issue in patients hospitalized in the ICU: a retrospective cohort study

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Work's tutor: Piotr Czempik (MD, PhD), Łukasz Krzych (MD, PhD, Prof.)

Background: Prevalence of anemia in patients at admission to the ICU reaches up to 66%, and almost all patients become anemic within further 72 hours. Iatrogenic blood loss (BL) contribute to anemia. There may be numerous causes of BL in the ICU.

The aim: The aim of our study was to analyze the trend of Hb concentration and factors contributing to iatrogenic BL in patients hospitalized in the ICU.

Materials and methods: We performed a retrospective analysis of consecutive patients admitted to the local ICU over 2-year period. We excluded patients with hemorrhagic shock or major bleeding. We analyzed Hb concentration during the first week of hospitalization and all episodes of bleeding and other BL sources.

Results: Hb concentration at admission in non-transfused and transfused patients was 12.0 (IQR 10.2 - 13.6) and 10.2 (IQR 8.5 - 11.8) g/dL and Hb decrease during the first week was 1.4 (IQR 0.4-2.4) and 2.2 (IQR 1.0-3.4) g/dL, respectively. Common factors contributing to iatrogenic BL were: RRT circuit clotting, BL at insertion sites of dialysis catheters and tracheostomies, BL into tracheo-bronchial tree and postoperative drainage. BL at insertion sites was almost twice as frequent for dialysis catheters compared to central venous catheters. BL from the insertion site of TPE dialysis catheter occurred in app. 24% of patients. Bleeding at insertion site occurred in app. 47% of tracheostomy patients. BL for laboratory testing was not significant due to preventive measures.

Conclusions: Anemia was common among medical and surgical patients at admission to the ICU. There was significant drop in Hb during the first week of hospitalization. Common contributing factors were: BL into tracheobronchial tree and postoperative drainage, BL at insertion sites of dialysis catheters and percutaneous tracheostomies, and clotting of an extracorporeal circuit. Laboratory BL was not significant due to preventive measures.

Keywords: hospital-acquired anemia, iatrogenic blood loss, RBC transfusion, intensive care unit

Massive transfusion increases serum magnesium concentration

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Background: Massive transfusion of red blood cells (RBCs) and fresh frozen plasma (FFP) is a lifesaving procedure to which patients in a state of hemorrhage shock and other clinical settings are subjected. Although generally safe, massive transfusion is associated with several serious complications, among which are electrolyte disturbances, including dysmagnesemia. They can result from disorders occurring in the patient himself, the blood donor, and changes in blood products due to their long storage time. Since magnesium is an intracellular cation, the transfused RBCs of the donor can significantly influence the magnesium concentration in the recipient's blood, and there seems to be a correlation between perioperative change in magnesium concentration and transfused blood volume, but data is scarce.

The aim: The aim of this study was to assess how the transfused RBCs influence the recipient's perioperative serum magnesium concentration.

Materials and methods: A retrospective study was performed among 27 patients hospitalized in the Central Clinical Hospital of the Medical University of Warsaw between November 2021 and March 2022 who have received a massive blood transfusion (4 units/hour). Data on serum magnesium concentration preoperative, 24h, and 48h postoperative were collected from the hospital database. The mean serum magnesium concentration was 0.9 ± 0.12 mmol/l before blood transfusion.

Results: The mean age in our study group was 58 ± 16.3 years, and males constituted 48% of eligible patients. We didn't find any association between preoperative serum magnesium concentration and sex, $p = 0.96$. There was a statistically significant change in medium serum magnesium concentration preoperative and 24h postoperative (0.9 (0.68 - 1.15) mmol/l vs 1.06 (0.82 - 1.42) mmol/l, $p < 0.00001$), but also in mean serum magnesium concentration preoperative and 48h postoperative (0.9 ± 0.12 mmol/l vs 1.06 ± 0.15 mmol/l, $p < 0.000001$) values.

Conclusions: Transfused RBCs significantly increase serum magnesium concentration 24h and 48h postoperative.

Keywords: Massive transfusion, magnesium concentration

Postpartum patients treated with Extracorporeal Membrane Oxygenations for severe COVID-19

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Background: ECMO is used to treat the most severe forms of respiratory failure due to COVID-19 pneumonia, however, the reported outcomes are inconsistent.

The aim: Our study aimed to analyze the population of postpartum women treated with ECMO during the COVID-19 pandemic at the Silesian Center for Heart Diseases in Zabrze (SCHD).

Materials and methods: Data of all consecutive postpartum women, treated with ECMO at the SCHD between October 21, 2020 (first registered case) and May 31, 2021 (end of the observation period), were reviewed. All patients have been tested positive for COVID-19 and met the stringent criteria described by the Agency for Health Technology Assessment and Tariff System (AOTMIT) to implement ECMO.

Results: There were 34 patients treated with ECMO for COVID-19 in SCHD in the defined period. Among them, 4 postpartum women (mean age: 35.8 ± 7.9 years) were analyzed. The majority of patients (75%) were treated during the third wave of the pandemic in Poland. The median duration from ventilator use to ECMO therapy was 1.5 days (from 1 to 3 days). 2 of these women (50%) were transferred to our center on ECMO support. The mean duration of ECMO therapy was 23.3 ± 8.8 days (from 15 to 35 days). Crude hospital mortality in the whole analyzed group was 75%. One of the patients underwent successful lung transplantation.

Conclusions: The outcomes observed in our postpartum patients treated with ECMO for severe COVID-19 were generally poor, however, ECMO served as a bridge to lung transplantation in some of these patients.

Keywords: ECMO, COVID-19, pneumonia, postpartum women

Prognosis of ICU discharge based on APACHE II, SAPS II and SOFA scales acquired on admission and discharge

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Background: The Acute Physiology and Chronic Health Evaluation (APACHE) II, Simplified Acute Physiology Score (SAPS) II and Sequential Organ Failure Assessment (SOFA) scales are intended for predicting ICU mortality based on lab results and clinical data. However, a little is known about their usefulness on discharge.

The aim: In our study we aimed to investigate their accuracy in predicting short- and long-term prognosis as well as post in the ICU of the University Clinical Center of the Medical University of Silesia in Katowice.

Materials and methods: We performed a retrospective analysis of 157 patients admitted from 07.01.2020 to 17.07.2021 with the exclusion criterion of an intrahospital death. APACHE II, SAPS II and SOFA scores were calculated twice; the first results are based on the worst values from the first 24 hours post-admission and the second relies on discharge day results. Patients were divided into surgical (SP) and nonsurgical (NSP) subjects. Information on patient mortality after discharge from the ward will be obtained from official statistical data.

Results: The median score on the APACHE II, SAPS II and SOFA scales on admission was 16 (IQR 9-21), 36 (IQR 24-49), 7 (IQR 5-10), respectively and 7 (IQR 5-11), 18,5 (IQR 11-28), 2 (IQR 1-4) on discharge. The results on admissions were not significantly different between the SP and NSP, however, on the discharge, the scores of SAPS II and SOFA were significantly lower among SP than NSP ($p < 0,005$). The difference between the scales on discharge and admission was 5 (IQR 0-12), 12 (IQR 1,75-27), 4 (IQR 0-8) for APACHE II, SAPS II and SOFA scales correspondingly. The difference between SOFA scale scores calculated on admission and discharge correlated (rank correlation coefficient 0,216, $p = 0,0067$) with length of ICU stay.

Conclusions: The conclusions of the study will be presented after official statistical data regarding post-admission mortality is received.

Keywords: intensive care unit, prognosis, APACHE II, SAPS II, SOFA

Risk factors for acute kidney injury in patients undergoing pancreaticoduodenectomy: a cohort study

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Background: Pancreaticoduodenectomy (PD) stands as one of the most invasive and difficult type of abdominal surgery. Patients who undergo this procedure are at high risk of developing postoperative complications.

The aim: To identify and analyse all possible pre- and intraoperative risk factors associated with postoperative AKI.

Materials and methods: In this retrospective study (01.01.2018-1.12.2021), the authors analysed a plethora of potential risk factors associated with the development of AKI. Demographic data, comorbidities, ASA-PS class, intraoperative data (mean arterial pressure - MAP, adjunction of regional anaesthesia, duration of anaesthesia, blood loss, diuresis, fluid therapy, catecholamine doses, need for blood transfusion) were considered as potential risk factors for the postoperative AKI.

Results: The study group consisted of 199 patients (47.7% men; median age 65 years). Arterial hypertension was present in 61.2% of subjects. The median duration of PD was 525 min (IQR 470-560 min). Hypotension, defined as MAP <60 mmHg was present in 32.3% of patients. Norepinephrine was administered in 93.4% of patients (with median dose of 0.09 $\mu\text{g} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$). AKI was diagnosed in 18.5% (37/199). Significant risk factors associated with AKI were as follows: age, dose of norepinephrine, at least 40% MAP drop, transfusion of blood products and urine excretion. There was no association between fluid dosing and urine excretion, even after taking bleeding into account.

Conclusions: In high risk surgery, namely, pancreatoduodenectomy, it is important to guide haemodynamic therapy based on preinduction MAP. Additionally, the dose of fluid therapy does not seem to influence urine excretion, suggesting that haemodynamic optimization with goal directed therapy is a cornerstone in reducing the risk of postoperative AKI.

Keywords: pancreatoduodenectomy, acute kidney injury, blood pressure

Survival among patients discharged from intensive care unit in a vegetative or minimally conscious state

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Background: Duration of survival among patients discharged from the general intensive care units (ICU) in Poland with profound neurological damage is unknown.

The aim: We aimed to analyze this issue on the basis of data coming from the general ICU at the Silesian Center for Heart Diseases in Zabrze (SCCS).

Materials and methods: Data of 110 adult patients discharged from the general ICU in the SCCS in the vegetative or minimally conscious state in a period of 14 consecutive years (2007–2021) were retrospectively analyzed. Information on the patient's possible death and the date of death after discharge from the ICU was obtained from the National Health Fund. Patients who survived less than 7 days following ICU discharge (group A) were compared with the remaining population (group B. For all calculations, it was assumed that statistical significance occurs when $p < 0.05$.

Results: In a group of 110 patients discharged from the ICU with profound neurological damage, there were 36 patients who survived less than 7 days following ICU discharge (32.7%). There was a similar proportion of male patients among patients in group A when compared to group B (72.2% vs 56.8%, $p=0.175$). The age in both groups was also similar ($63,5 \pm 10,3$ vs $63,9 \pm 12,0$ years, $p=0.506$, respectively). Duration of ICU stay in patients with PND was prolonged, but not significantly different ($29,3 \pm 17,3$ vs $28,3 \pm 16,7$ days, $p=0.733$, respectively). Overall, 30.6% of patients in group A and 43.2% of patients in group B required mechanical ventilation in the last 72 hours preceding ICU discharge. Patients in group A had a lower, lowest recorded mean systolic blood pressure in the last 24 hours before ICU discharge ($100,0 \pm 16,2$ vs $108,1 \pm 12,7$ mmHg, $p=0.016$), however the other vital signs proved to be similar.

Conclusions: Arterial hypotension and low oxygen saturation may indicate patients with the increased risk of 7-day mortality following ICU discharge, however more research is needed to answer this issue.

Keywords: minimally conscious state, vegetative state, ICU, survival

The knowledge and the approach to the ethical aspects of resuscitation among medical students

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Background: Ethical issues like aspects of medical futility, palliative care or DNAR (Do Not Attempt Resuscitation) decisions are crucial dilemmas while performing CPR (cardiopulmonary resuscitation). Ethical principles serve to make it less controversial while supporting end-of-life choices. Attitudes to those issues evolve through the course of medical studies together with gaining knowledge and experience.

The aim: The aim of this study was to assess students' attitude and knowledge about ethical issues of CPR in correlation with their year of studies (first vs. fifth and sixth) at Medical University of Silesia.

Materials and methods: The study included 240 students: 88 (36.7%) in 1st-, 98 (40.8%) in 5th- and 54 (22.5%) in 6th year who completed an anonymous online survey with 29 open and closed questions regarding their gender, age, former medical course studied, former participation in CPR, along with their general knowledge and opinions about the ethical issues concerning CPR. The answers were collected in two academic years.

Results: Senior students claimed that ethical principles were definitely important in undertaking CPR more frequently than first year students (65.8% vs 44.3%; $p=0.001$). Almost half of seniors do not know them from medical studies, neither does every third one of the latter. Significant majority in these groups (90.1% vs 75% respectively, $p=0.007$) shared the opinion that DNAR may prevent palliative patients from harmful effects of CPR decision. Among all the students who have ever done CPR 59.7% of them would not start it in terminal patients.

Conclusions: There are clear differences in attitudes and knowledge in terms of ethical aspects of CPR between students depending on the attended year of medical studies. Also, students who have ever participated in CPR had different opinions of CPR ethical issues. However, undoubtedly more emphasis should be put on the education about ethical issues that future doctors may face in their medical practice.

Keywords: CPR, resuscitation, DNAR, ethics

The use of the Mallampati Score as a predictor of the need for escalation to active oxygen therapy in Covid-19

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Background: Mallampati Score is a simple scale based on 4 pictures which shows the rising risk of difficult airways. It started to play a significant role in different parts of medicine. For example, it is used to presume the presence and the severity of Obstructive Sleep Apnoea.

The aim: Because of the simplicity and short time of examination using Mallampatii Grading Scale (MGS) we decided to find if there is a coincidence between MGS and the severity and mortality of COVID-19.

Materials and methods: The study involved the assessment of patients with COVID-19 who were admitted to the Temporary Hospital in Pyrzowice from 13/11/2021 to 02/01/2022 using the Mallampati scale. The presence of patient comorbidities and the results of additional tests performed on admission to the hospital, such as morphology, d-dimers, procalcitonin, and chest scan, were also analyzed. The severity of the disease was assessed by the need for active oxygen therapy during the hospitalization and the 60-day all-cause mortality. For statistical evaluation we used the backward logistic regression.

Results: 499 patients participated in our study, of which: 69 (14.0%) were assessed as Mallampati I, 57 (11.6%) - Mallampati II, 78 (15.8%) - Mallampati III and 288 (58.9%) - Mallampati IV. Except the prevalence of chronic kidney disease ($p=0.046$) there wasn't found any significant difference in the initial characteristics. According to the statistical analysis, patients with Mallampati IV had significant ($p=0.005$) highest risk of active oxygen therapy (33%) during hospitalization.

Conclusions: Mallampati IV is an independent risk factor of active oxygen therapy due to COVID-19 patients.

Keywords: Covid-19, Mallampati Score

What do we know about potential organ donors: a Silesian ICU Registry

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Background: In Poland, over 1000 organs are transplanted annually. Most organs come from deceased donors, including patients with confirmed brain death. However, not all patients diagnosed with brain death qualify as potential organ donors.

The aim: To identify determining factors that facilitate the eligibility of a patient with confirmed brain death to become a potential organ donor

Materials and methods: A retrospective, cross-sectional study based on data from the Silesian ICU registry for 2010–2019 and publicly available information from Poltransplant.

Results: Out of 25465 patients enrolled in the Silesian ICU registry, brain death was diagnosed in 385, including 148 female patients (38.4%). The median age was 54 years (IQR 43–64). In the studied group of patients, 180 were reported as potential donors (46.75%). The median age of patients reported as potential organ donors was 51 years (IQR 41.5–60). Usually, brain death was found in patients first admitted to the ICU (96.4%), most often from the ED or admission room (32.2%). Using logistic regression, we were able to identify the predictive factors that influence whether a patient will be reported as a potential donor. The most important factors that disqualify a patient from becoming a donor include chronic renal failure as a pre-ICU admission condition (94.1%) ($p=0.01$), the need for CRRT (88.2%) ($p=0.01$) and prolonged respiratory failure requiring tracheotomy (82.4%) ($p=0.007$). The essential factors that predispose a patient to qualify as a potential donor include acute neurological conditions as the primary reason for ICU admission (72.1%) ($p=0.01$) and the neurological status of patients on admission (unconscious patients were more likely to qualify as potential donors) ($p=0.016$).

Conclusions: A relatively small percentage of patients diagnosed with brain death qualified as potential organ donors. Few medical factors significantly influenced the eligibility of a patient to become a potential donor.

Keywords: brain death, organ donor, Silesian ICU Registry, intensive care unit

Intra-abdominal pressure during surgery in prone position and its impact on postoperative renal function

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Background: Spinal surgeries are a very specific type of interventional approach to treating vertebrae-associated diseases. One of the major differences is positioning patients prone during surgery to achieve the best access to the patient's back. This positioning can cause an increase in intra-abdominal pressure (IAP), which makes higher the risk of intra- and post-operative complications. They include, among others decrease renal blood flow and acute renal failure. In our study, we monitored IAP in patients who underwent spine surgery in the prone position, and then we assessed its impact on renal function.

The aim: Assessment of the impact of changes in intra-abdominal pressure during spinal surgeries performed in the prone position on postoperative kidney function.

Materials and methods: Intra-abdominal pressure was measured in 10 patients who underwent spine surgery in the prone position. The first measurement was performed in the supine position, the second just after the patient was positioned prone, and the next measurements were taken every 20 minutes until the end of the operation. The levels of creatinine, potassium, myoglobin, uric acid, and eGFR were assessed in laboratory tests taken before the procedure and 8 hours after it finished.

Results: In 9 patients, the intra-abdominal pressure increased after changing from supine to prone position (mean IAP before translation 8,8 mmHg \pm 3,0 mmHg, after translation 10 mmHg \pm 2,58 mmHg). A comparison of pre- and postoperative laboratory test results and general condition of the patients did not indicate deterioration of renal function in any case.

Conclusions: The way the patient is positioned on the abdomen has a significant impact on IAP. Proper positioning reduces the increase in IAP and helps to prevent postoperative deterioration of renal function.

Keywords: intra-abdominal pressure, prone position, spine surgery

**SESSION OF
BASIC SCIENCE,
BIOTECHNOLOGY AND
BIOMEDICAL ENGINEERING**



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Effects of ethanol on cells of the mammillary bodies

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Background: Alcohol is one of the most commonly used psychoactive substances. It's toxic effects are seen in many organs of the body yet cells of the central nervous system are particularly susceptible. Alcohol damages nerve cells in various areas of the brain. Additionally, by affecting glial cells, it causes astrogliosis, which manifests itself as a lack of metabolic support for neurons. An area of the brain particularly sensitive to the toxic effects of alcohol is the mammillary bodies.

The aim: Because of the important role of the mammillary bodies in the central nervous system, we performed a morphological analysis of neurons and glial cells in brains collected from alcohol abusers.

Materials and methods: Sectomy specimens from six alcohol-dependent men (with comorbidities) were used in this study. The control group consisted of brain sections from a person who died of natural causes. The collected materials were subjected to a standard histological procedure. Observation of morphological changes and photographs were taken using an Olympus BX43 light microscope.

Results: Significant morphological changes were noted within the mammillary bodies in the subjects of the study group. The comparison between the study groups was only qualitative. Atrophy of the white matter and gray matter of the brain was noted in the area of the mammillary bodies. Blood vessels were markedly dilated, endothelial cell proliferation and neuronal and glial cell damage with marked edema and vacuolization were seen.

Conclusions: The results obtained are consistent with the literature data. Ethanol causes direct damage to neurons and glial cells. The main symptoms of dysfunction of the mammillary bodies are memory impairment, confabulations and cognitive-behavioral disorders. The severity and distribution of the lesions correlate with the duration of exposure and the dose of ethanol consumed. It is hoped that the increasing amount of research in this area will allow for better assessment of its toxicity within the nervous system in the future.

Keywords: alcohol, brain, CNS, ethanol, mammillary bodies

Analysis of ultrasonic vocalization and motor activity of mice with a knockout of the TSC-1 gene

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Background: TSC1 coding a hamartin involved in the regulation of mTOR pathway. Inactivation of TSC1 results in hyperactivation of mTOR, leading to increased proliferation and cell death. mTOR dysregulation has been observed in diseases like autism, tuberous sclerosis, epilepsy, Alzheimer's, Parkinson's and Huntington's chorea.

The aim: In order to determine the role of hamartin in these diseases, transgenic manipulation was used - expression of TSC1 was turned off only in Purkinje cells.

Materials and methods: Mice with one TSC1 allele (HET) turned on, full knockout (KO) mice and wild-type (WT) mice were used in the studies. All animals were examined for ultrasonic vocalization and changes in motor activity to the Fox battery. In the study groups, the number of mice was at least 12. Ultrasonic vocalization is used for newborn-mother communication, the weakening of which may indicate neurodevelopmental disorders similar to autistic behavior. The mouse newborns were recorded every two days from 2 to 14 days of age. The following parameters: latency to first call, total number of calls, duration, amplitude, frequency, modulation and vocalization bandwidth. The Fox battery is a test to assess the motor and behavioral progress of mice during the first three weeks of life. The following parameters: eye opening, gait, rooting reflex, ear flipping, posture reflexes, grasping reflexes, geotaxis and straightening reflexes.

Results: Statistical analysis showed that the only parameter changed during the vocalization study was the latency time, while the other parameters did not differ. The study of motor skills showed differences between the KO and WT groups in the straightening reflex, but the change of genotype did not affect the development of this reflex. The other parameters did not differ between the groups.

Conclusions: In the analyzed tests, the mice didn't show any unusual behavior after switching off the TSC1 gene in the cerebellum, which is the basis for further research into the causes of the above-mentioned diseases.

Keywords: expression switch off, Fox battery, mTOR, transgenic animals, TSC1, ultrasonic vocalization

Effects of pulsed electric field on pancreatic cancer cells

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Background: Currently, there is no effective way of treatment of non-resectable pancreatic cancer. The only option remains palliative chemotherapy. The other options include the experimental procedures. Electroporation and electrochemotherapy remain interesting attempts in anticancer therapy due to their high effectiveness and relatively low systemic toxicity. The nanosecond pulsed electric field (nsPEF) is currently under evaluation for its use as a method for the modulation of the cells towards therapy.

The aim: The aim of the study is to evaluate the effects of nsPEF on the chemotherapy resistance and tumor formation properties of pancreatic cancer cells.

Materials and methods: The experiments were performed on pancreatic cancer cell lines: EPP85-181RDB, EPP85-181RNOV and EPP85-181P. Molecular dynamics simulations were performed to evaluate the differences in membrane permeabilization following nsPEF treatment. Next, we analysed the release of extracellular vesicles from cancer cells with holotomographic microscopy and analysed the cytotoxic effect of nsPEF on cells via MTT and clonogenic assays. Finally, we tested how nsPEF influences the formation of the 3D tumor using the spheroid models.

Results: The response of the cells to nsPEF differs with respect to their size and resistance to electric field. EPP85-181RDB cells become more sensitive towards paclitaxel chemotherapy, EPP85-181RNOV cells reduce the tumor mass and preserves the attachment to the other cancer cells. On the other hand EPP85-181P do not change after nsPEF treatment.

Conclusions: The anticancer therapy modulating effect of nsPEF is cell line dependent. nsPEF can act on pancreatic cells reducing their growth and sensitizing them to chemotherapy.

Keywords: chemotherapy, electric field, nsPEF, pancreatic cancer, tumor growth

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Mossy fibers morphology in the hippocampus of PTENflox mice

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Background: The classical trisynaptic circuit in the hippocampus is composed of: granule cells in the dentate gyrus, pyramidal neurons in CA3 and in CA1. The dentate gyrus creates synapses on pyramidal cells in CA3 via mossy fibers which create a distinguishable anatomical pattern called stratum lucidum. It has been demonstrated that the mossy fiber pathway in CA3 undergoes very particular structural rearrangement in mice with mutated PTEN gene - a genetic model of autism spectrum disorders that are associated with epilepsy.

The aim: The aim of this work was to morphologically characterize the rearrangement of mossy fibers in mice with mutated PTEN gene in dentate gyrus granule cells.

Materials and methods: Experiments were performed on male mice with a knockout of PTEN gene (PTENflox). Animals were anesthetized, placed in a stereotactic frame, and after that, viral solution was injected intracranially. Four weeks after vector injection brains of the animals were dissected, cryosectioned, and subjected to immunodetection. Fluorescent specimens were examined under a spectral confocal microscope. The synaptic clusters were labeled by ImageJ.

Results: Mossy fiber rearrangement in mice with mutated PTEN gene in dentate gyrus causes widening of stratum lucidum. The analysis of synaptoporin immunoreactivity demonstrates that the density of synaptoporin clusters and the average size of a cluster remains unchanged.

Conclusions: The PTEN mutation from dentate granule cells leads to stratum lucidum widening, which suggests altered mossy fiber synapses localization on CA3 cells. Moreover, unaffected density of synaptoporin clusters in affected stratum lucidum implicates an increased number of synapses in that region. That allows formulating hypotheses about altered information processing by mossy fibers in the hippocampus.

Keywords: epilepsy, hippocampus, mossy fibers, PTEN, seizure

Obtaining functional cells from gene-repaired iPSC cells from patient with Osteogenesis Imperfecta type II

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Background: Induced Pluripotent Stem Cells (iPSCs) were first obtained in 2006 by Yamanaka's research team. The procedure involved transducing somatic cells with transcription factors responsible for maintaining pluripotent state: Oct 3/4, Sox2, c-Myc, and Klf4. iPSCs represent a single source of genetically patient-specific somatic cells of any type. Combined with the ability to repair DNA mutations in iPSCs, this technology is a novel, valuable tool for personalised gene therapy and regenerative medicine, as well as other medical areas. One of the potential gene therapy targets might be Osteogenesis imperfecta (OI) type II, a lethal disease caused by collagen encoding gene mutation.

The aim: The aim of the study was to prove that repaired iPSCs obtained from patients' fibroblasts with OI type II mutation are capable of differentiating into fully functional cell lines: adipocytes, osteoblasts and chondrocytes.

Materials and methods: Repaired iPSCs were differentiated into mesenchymal cells using STEMdiff™-ACF Mesenchymal Induction Medium. After confirming mesenchymal state using flow cytometry cells were differentiated into adipocytes in MesenCult MSC Basal Medium with adequate supplement, osteoblasts using MesenCult Osteogenic Differentiation Basal Medium, and chondrocytes by Mesenchymal Stem Cell chondrogenic Differentiation Medium. Cells were stained in order to confirm iPSCs differentiation potential to adipocytes (Oil Red), osteoblasts (Alizarin Red S) and chondrocytes (Alcian Blue).

Results: Patient-specific iPSCs with repaired OI type II mutation are able to differentiate into adipocytes, osteoblasts and chondrocytes.

Conclusions: This study is a proof of concept that iPSCs may have potential in gene therapy as models of genetic diseases and in vivo therapies in the future. Further studies including animal models and clinical trials are required.

Keywords: cells reprogramming, cell/-gene therapy, Induced pluripotent stem cells, Osteogenesis imperfecta

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Star polymers as non-viral carriers for apoptosis induction

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Background: Apoptosis is the strictly programmed cellular process that leads to morphological and biochemical changes of the cell, which subsequently results in cell death. Impaired apoptosis is related to various types of diseases such as autoimmune diseases, neurodegenerative diseases and cancer. Detailed knowledge of apoptosis mechanisms is essential to improve the treatment. Non-viral carriers are significant candidates to become the comprehensive tools, which target apoptosis for specific cells in apoptosis-based gene therapy.

The aim: In this work we investigate the effect of star polymer with 28 poly(N,N'-dimethylaminoethyl methacrylate) arms (STAR) on different cell types according to its concentration and structure.

Materials and methods: STAR was obtained via controlled atom transfer radical polymerization (ATRP). Cytotoxicity of STAR was assessed for human fibrosarcoma cells HT-1080, human dermal fibroblasts (PDF) and human bladder cancer cell lines 5637 and T24. Used cell lines have been assessed in terms of morphology and chromatin condensation changes after treatment with STAR. Cell death type was assessed using double staining with annexin V and propidium iodide and the level of ROS. Moreover, the most characteristic apoptotic genes expression has also been assessed.

Results: The results indicated that using of STAR triggers apoptosis in HT-1080 cells, human bladder cancer cell lines 5637 and T24 and PDF what makes these nanoparticles a promising drug in therapeutic strategy, which targets apoptosis.

Conclusions: This study demonstrate highlighting potential of star polymers as an innovative tool for anti-cancer therapy.

Keywords: apoptosis, cross-membrane transport, delivery systems, star polymers vectors

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The effect of dopamine and acetylcholine on the viability of mesenchymal stem cells in toxic conditions

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Background: Neurodegenerative disorders are associated with the gradual damage to the function of neurons in the human brain. Frequency of neurodegenerative diseases increases with age. The aging societies have created a need for further research of selected substances, searching for protective influence on brain cells in such disorders. Dopamine and acetylcholine are neurotransmitters synthesized in neurons. Natural methods of increasing dopamine levels include physical activity or meditation. The concentration of acetylcholine is influenced by the provision of choline-rich nutrients in diet e.g. egg yolks and meat. The deficiency of these neurotransmitters is associated with the etiopathogenesis of neurodegenerative disorders. Staurosporine is an organic chemical compound somewhat reflecting the cytotoxic conditions exhibited in the brain structure during neurodegenerative diseases.

The aim: The aim of the study was to examine the effect of determined concentrations of acetylcholine and dopamine on mesenchymal stem cells (MSC) in normoxic and cytotoxic conditions, both separately and synergistically.

Materials and methods: The study was performed on human MSC acquired from Wharton's jelly. Cells obtained from the in vitro culture have been treated with certain concentrations of acetylcholine, dopamine or both for 24 hours under normoxic conditions and in a staurosporine environment. The metabolic activity of the cells was then examined using the WST-1 assay.

Results: In the course of the experiment, the results confirmed the existence of acetylcholine and dopamine concentrations which reduce the MSC metabolism in both normal and toxic environment. There was also established the synergistic concentration of acetylcholine and dopamine that increases the metabolic activity of MSC in toxic conditions.

Conclusions: The results may suggest a concentration-dependent cytoprotective effect of dopamine when combined with acetylcholine on MSC in toxic conditions, moreover a cytotoxic effect when used separately in normal and toxic environment.

Keywords: acetylcholine, dopamine, MSC, neural differentiation, staurosporine

Y2 receptors modulate procedural memory in accelerating Rotarod protocol in mice

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Background: Neuropeptide Y (NPY) modulates food consumption, circadian rhythms, mood and anxiety via presynaptic Y2 receptors (Y2Rs). Their activation, in a negative feedback mechanism, leads to the inhibition of neurotransmitter release. Y2Rs are widely located in the cortex, hippocampus, and cerebellum, which have been linked to motor learning.

The aim: According to literature data, it could be supposed that the involvement of NPY through the Y2R is engaged in the modulation of procedural memory. Hence, the presented study aimed to investigate the involvement of Y2R receptors in motor learning in mice.

Materials and methods: The involvement of Y2R in the cognitive processes was examined in 6-week-old Swiss mice, which were subjected to intraperitoneal injections (i.p.) of SF-11, a Y2 receptor antagonist agent. The motor learning procedure was conducted by using the Rotarod acceleration test. Animals were exposed to 4 learning sessions per day for three consecutive days to acquire procedural/motor skills while undergoing the protocol. Then, on the 3rd and 10th days after the training period, the animals were subjected to test sessions to verify short-term and long-term memory.

Results: Results of the statistical analyses reveal meaningful effects of SF-11 on learning/memory performance in accelerating Rotarod. The analyses show that mice treated with SF-11 at a dose of 20 mg/kg did not develop procedural memory. Interestingly, 5 mg/kg SF-11 significantly increased latency time at the testing session on 10th day.

Conclusions: Altogether, this study revealed that SF-11 dose-dependently modulates motor learning indicating the important involvement of Y2R in procedural memory.

Keywords: learning, memory, NPY

The Carbapenem Inactivation Method (CIM) – to detect carbapenemases in Gram-negative Enterobacterales

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Background: Carbapenemase producing Enterobacterales (CPE) - Gram-negative bacilli constitute one of the greatest AMR-related public health threats. The treatment of infections caused by CPE is difficult due to multidrug resistance – resistance to the most available antimicrobials. Often the treatment options are limited. In Poland, the most common carbapenemase producing strains are KPC - Klebsiella Pneumoniae Carbapenemase, as well as MBL - Metallo- β -lactamase and OXA-48 producers.

The aim: To compare phenotype-based assays that detect carbapenemases in Enterobacterales to the CIM test and to determine the antimicrobial susceptibility of the CPE strains.

Materials and methods: The material consisted of 13 Klebsiella pneumoniae strains (8 KPC, 2-NDM, 2-OXA-48, 1-VIM), 3 Escherichia coli strains (2-KPC and 1-OXA-48), 1 Enterobacter cloacae (VIM) and 1 Citrobacter freundii (VIM). The molecular ability to produce carbapenemases was detected by comparing the phenotype-based assays with the CIM test. Antimicrobial susceptibility of the 18 studied strains was performed by a disk diffusion test with 9 antibiotics. The classification of antimicrobial resistance was conducted in accordance with EUCAST Breakpoint tables for interpretation of MICs and zone diameters (Version 12.0, valid from 2022-01-01).

Results: Among the studied strains 2 (11%): Citrobacter freundii (VIM) and Klebsiella pneumoniae (OXA-48) demonstrated resistance to all antimicrobials used. All strains - 100% were resistant to ciprofloxacin and ceftozolane/tazobactam; 13 strains (72%) were resistant to trimethoprim-sulfamethoxazol.

Conclusions: The CIM Test is a reliable, easy and cost-effective method to detect the ability to produce carbapenemases by strains of Enterobacterales. CPE strains are characterized by multidrug resistance (MDR) including some of the next-generation drugs. Among the KPC and OXA-48 strains, resistance to ceftazidime-avibactam was established.

Keywords: carapenemases, Enterobacterales, antibiotic resistance

Does a blue light blocker filter reduce the glare effect?

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Background: Blue light is a short-wavelength electromagnetic radiation which carries the highest amount of energy. Some studies suggest that blue light can induce photochemical damage by increasing the concentration of oxygen free radicals inside the retina's cells and by prolonging the time needed to complete regeneration of the visual pigments. This mechanism is significant for professional drivers for whom the prolonged time of pigment resynthesis can lead to traffic accidents.

The aim: The study aimed to confirm the effectiveness of blue light blocker glasses and their impact on the regeneration of the visual pigments after glare.

Materials and methods: To collect data, the Bailliant Test was performed on 45 healthy volunteers aged 18 to 30. 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 blocking glasses reduced the average time needed for complete retina regeneration from 26,89 seconds (n=78; SD=11,036) to 24,02 seconds (n=78; SD=8,119) among the population without visual impairment, while in population with visual impairment, blue light blocking glasses reduced the average time from 40,76 seconds (n=36; SD=16,525) to 34,93 seconds (n=36; SD=12,486). For the whole population, usage of blue-blocker glasses decreased the average time from 31,28 seconds (n=114; SD=14,473) to 27,46 seconds (n=114; SD=10,916). There was no statistical difference in the effect of glasses on the reaction time of the eye between people with and without visual impairment.

Conclusions: The results show that blue light blocker glasses significantly decrease the time needed to complete retina regeneration. Our study confirmed that blue light leads to a reduction of the physiological function of the retina and that the use of glasses with blue light filters can significantly improve eyesight among people suffering from retina diseases.

Keywords: ophthalmology, age-related macular degeneration, blue light, blue-light blocking glasses

**SESSION
OF DENTISTRY**

PSI



**Polskie Stowarzyszenie
Implantologiczne**



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Laser diagnostic methods in oral malignant lesion assessment

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Background: Oropharyngeal cancer (OPC) is the eleventh most common cancer in the world with increasing death rate. Oral mucosal lesions (OML) are risk factors contributing to developing OPC. Early detection of OML is relevant in early diagnosis and treatment of OPC.

The aim: Comparative assessment of Lasotronix TM diagnostic diode laser (DL), light-based Microlux TM system (ML) and conventional clinical examination under operator light (CCE) in visualization of OML. Validation of listed methods efficacy in histopathologically diagnosed OML.

Materials and methods: Study group consisted of 30 patients. Medical history concerning OPC risk factors was collected. Oral mucosa examination based on listed light-based methods was performed. Four researchers evaluated visually identified OML independently. Statistical analysis was performed using TIBCO Statistica 13.3. software. Results of p-value less than 0,05 were considered statistically significant. The Wilcoxon test was used for results comparison. ROC curves were analyzed. Considering multiple comparisons, the Holm-Bonferroni method was applied to calculate corrected significance level.

Results: The Wilcoxon test for DL and ML showed $Z = 2,56$; $p = 0,010$, for DL and CCE showed $Z = 2,98$; $p = 0,006$ and for CCE and ML showed $Z = 0,13$; $p = 0,900$. The outcome of ROC curve (with Holm-Bonferroni correction) after comparison with results of histopathology for DL were $AUC = 0,78$; $p = 0,002$, for ML: $AUC = 0,68$; $p = 0,150$, for CCE: $AUC = 0,62$; $p = 0,401$. The cut-off level*** of Youden's index for DL was higher than for ML and CCE.

Conclusions: OML visibility is significantly enhanced in DL method as compared to ML and CCE methods. Outcomes do not vary substantially between ML and CCE methods. Altogether the results combined with histopathological validation indicate that only DL examination could uncover a pathology in a relevant matter. ML and CCE cannot be considered as effective screening tools.

Keywords: oral cancer, precancerous conditions, lasers

Analyses of Post-Operative Pain & Analgesics Efficacy Following Third Molar Extractions

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Background: Management of pre-operative pain is usually best resolved by removing the causative agent during the operation. With new Anesthetics' efficacies, and regional block techniques; Inter-operative dental pain is well controlled nowadays. This leaves a wide range of Post-operative pain experiences that are still poorly managed. Severity of pain can vary, and depends on the type of surgery performed, response to pain killers, and individual's pain tolerance. Modern dentistry aims at reaching a pain free environment at the clinic and the days that follow procedures, rendering the experience of dealing with a dental problem smoother.

The aim: The aim of this study is to investigate post-operative pain and determine the efficacy of analgesics use following third molar extractions.

Materials and methods: A self-prepared questioner was circulated at dental clinics targeting patients who have undertaken third molar extractions with three different techniques of escalating invasiveness. Survey was divided into three sections with particular questions examining pain at different timelines. Three international pain scales were used; Visual Analogue scale (VAS), Verbal Rating Scale (VRS), and Numerical Rating Scale (NRS), assessing pain intensity in patients able to self-report.

Results: Results convene with the aim of the study. Patient groups II and III that required lobe detachment and bone removal reported higher NRS and VRS values than Patient group I when muco-periosteal flap was only needed. Similarly, some of the patients from the three groups, that have previously used analgesics to manage pain caused by other health problems reported higher values. In the majority of the patients from all groups pain values, swelling, bleeding and trismus were peaking two days following the surgery, and diminishing significantly when recorded ten days after the surgery.

Conclusions: In Conclusion, current analgesics prove high efficacy in managing post-procedural pain, but in most cases don't exclude it.

Keywords: oral surgery, molar extractions, analgesics, pain management

Comparison of the knowledge about the radiological anatomy of the craniofacial structures between women and men

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Background: Panoramic radiographs are used as screening pictures to evaluate the temporomandibular joints. The inseparable distortion, existence of superimposing ghost artifacts, double shadows, and so on prevent an accurate and quantitative examination of the osseous components of the temporomandibular joints. However, this view allows visualization of both joints, giving a possibility of a reasonable comparative evaluation. Graduates of dental studies should be aware of image distortions and be able to distinguish them from appropriate structures.

The aim: The aim of the present study was to assess the differences in the ability to recognize anatomical structures on the orthopantomogram between men and women.

Materials and methods: The study was carried out at the turn of March and April 2021 on 131 Polish, dentistry students of Jagiellonian University Medical College, using the Microsoft Teams program. Each participant had to determine the location of 4 anthropometric points on 4 orthopantomographic images. The authors of the study determined the lines from the points and then calculated the angle between them. All these results were compared to "Golden standard" gotten from the calibrated Researchers. The research was approved by the Bioethics Committee of Jagiellonian University. The results were assessed with statistical analysis software.

Results: There was no difference between males and females in the results, if we look at it as a whole only the results of men from the third year showed statistically significant differences compared to the rest of the respondents. Men from the third year achieved the most appropriate results, which were very close to the gold standard.

Conclusions: In the third year of studies, men do not have the same skills in the field of craniofacial radiology as the rest of the students. They are characterized by the best ability to recognize anatomical structures on radiographs.

Keywords: orthopantomogram, articular angle, panoramic technique mistakes, dentistry studies

Parents' awareness of nutritional recommendations for infants. Research conducted in Silesian Voivodeship

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Background: Adequate nutrition of children promotes proper development and prevention of future diseases. Breastfeeding is important for the maturing body due to its nutritional, immunological and trophic properties. World Health Organization (WHO), The European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) and The American Academy of Paediatrics (AAP) recommend exclusive breastfeeding for the first 6 months of life. Guidelines do not specify when to stop breastfeeding.

The aim: Assessment of parents' awareness of nutritional recommendations for children in infancy and of the way of feeding infants and the nutritional habits introduced by parents.

Materials and methods: The research was conducted in the form of an anonymous proprietary internet questionnaire. The target group was parents of children aged 0-12 months, living in the Silesia, associating in groups on Facebook and parents who entrust their children to the care of Silesian nurseries. The questionnaire included questions about feeding methods, vitamin supplementation and adherence to recommendations issued by WHO, ESPGHAN and AAP.

Results: 127 people participated in the study. 100 surveys were included in the study. Parents introduce complementary foods according to recommendations in 97%. Nearly half of the parents do not continue breastfeeding after introducing complementary foods. Only 18.5% continued breastfeeding until the age of 1, and nearly 15% continued until the age of 2.

Conclusions: Knowledge about nutritional recommendations for infants seems to be sufficient. Parents' awareness of how to introduce complementary foods during breastfeeding should be broadened and complement. The recommendation regarding vitamin D supplementation is followed, but it is worth paying attention to the specific dosage of this vitamin.

Keywords: nutrition, breastfeeding, infants, recommendations, parental awareness

Specialistic axiographic examination of the patients with muscular TMDs for functional assessment of TM joint

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Background: The diagnosis of temporomandibular disorders often represents an actual problem in the daily practice of dentists. Among the diagnostic tests that allow the diagnosis and differentiation of particular temporomandibular disorder, the most important is a clinical examination. However, the subjectivism of physical examination and the problem with the repeatability of many physical tests (e.g. palpation test) indicate the value of additional examinations. The author describes the proposed method of using axiographic examination with the Cadiax Diagnostic Device in patients with diagnosed muscular form of temporomandibular disorders.

The aim: Assessment of measurable parameters of jaw movements and selected functions of masticatory organ in patients' with muscular forms of temporomandibular disorders.

Materials and methods: Patients diagnosed with muscle pain and myofascial pain according to the DC/TMD protocol were qualified to the study group.

The goal at the of the study was to make an assessment of measurable parameters of mandibular movements and selected functions of the masticatory system in anaxiographic study in patients from the study group in comparison to the control group which consisted of volunteers without observed temporomandibular disorders.

Results: It has been shown that the axiographic examination can be applied to the determination of measurable parameters of mandibular movements and the objective assessment of the masticatory organ functions.

Conclusions: The use of axiographic examination allows to achieve information about measurable parameters of mandibular movements. Axiographic examination allows to assess selected functions of the masticatory organ, such as speech, swallow, parafunctions (clamping, grinding).

Keywords: axiography, temporomandibular joint, muscle pain, mandibular movements, function assessment, cadiax

The effect of vitamin D3 use on the incidence of dental caries in children - survey research

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Background: Vitamin D3 has vital role in functioning of human body. It is important in enabling the right mineralization of teeth.

The aim: The aim of this study was to assess the correlation between supply of vitamin D3 and caries occurrence in children. The use of vitamin D3 preparations during pregnancy and/or during the postnatal development of the child has been considered.

Materials and methods: 194 questionnaires were completed by mothers of children aged 0-18. 175 questionnaires were qualified. Mothers participating in this survey answered questions about vitamin D3 supplementation during pregnancy and vitamin D3 supplementation to their children during postnatal period. Questionnaire consisted of questions about period of vitamin supply, frequency of dental visits, diagnosis of caries in children in 6 months of questionnaire.

Results: We concluded that caries is more common in children whose mothers did not take vitamin D3 during pregnancy or did not give it to children after birth. In group of 51 women who took vitamin D3 during pregnancy and gave it to their children, 78.43% of children did not develop caries in the last 6 months. In the group of 18 women who did not supplement vitamin D3 during pregnancy and did not give it to their children, 55,6% admitted that their children were diagnosed with tooth decay in the last 6 months. The regularity of taking vitamin D3 is vital. The best results were among children who took vitamin D3 daily, no caries was observed in 85.71% of children. Caries occurrence is more frequent in children who took vitamin D3 in the fall-winter season and in children who took vitamin D3 irregularly, no caries was detected in 65.38% and 42.86% respectively.

Conclusions: Research showed vitamin D3 supplementation can aid prevention of tooth decay if taken prenatally and postnatally.

Keywords: vitamin D3, decay, questionnaire

Thermography as a diagnostic tool in the detection of the odontogenic infectious foci

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Background: Thermography is a completely non-invasive and safe diagnostic method for a patient and an examiner. It provides an evaluation of the temperature distribution in a given area resulting from metabolic processes occurring there. The thermographic examination enables diagnoses of pathological processes within the human body.

The aim: The purpose of the study is to show a correlation between the temperature changes of the periapical tissues of a given tooth and the presence of the odontogenic infectious foci.

Materials and methods: To evaluate potential infectious foci, the examiners conducted an interview, a clinical examination and took an OPG picture. Fifty-eight patients were examined with the thermal imaging camera Flir System E 50 to eliminate odontogenic infectious foci in preparation for treatment of the primary disease. A potential odontogenic infectious foci were compared with the symmetrical segment of the dentition without pathologies based on the radiograph. The examiners took thermography measurements from a 1 m distance from the examined area after 10 minutes of adaptation to the room temperature (20 Celsius degrees). Photographs were taken with the open mouth using dental dilators, positioning the center of the studied area to the apex of the diagnosed tooth. The patient's head was immobilized using Halyman's stabilizer. The examiners selected a research group consisting of 7 patients (12 teeth cases) who met the following criteria: the presence of a corresponding healthy tooth without advanced caries or visible pathological changes in the X-ray image. This group was used for further pilot studies.

Results: The temperature differences were noticed between asymptomatic odontogenic infectious foci and healthy teeth areas.

Conclusions: Thermal imaging is a diagnostic method that delivers clinically relevant information in the therapeutic proceeding of patients with the primary disease to eliminate odontogenic infectious foci.

Keywords: thermography, odontogenic infectious foci, infection diagnostics, maxillofacial surgery

The state of knowledge in selected medical groups on first aid in permanent tooth avulsion

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SUM

Background: Patients experiencing craniofacial injuries at first most often have contact with doctors in Hospital Emergency Departments or with paramedics, much less often with dentists. The most serious tooth trauma is undoubtedly complete tooth avulsion. It causes damages to many tissues - gums, periodontal ligaments, pulp, alveolar bone, cementum and root dentin. The treatment is to replant tooth, which should be done as soon as possible after the injury occurs. Considering this it is important to paramedics or healthcare professionals be aware of how to provide first aid to the victim. Proper procedure can significantly affect the success of treatment, good healing and maintaining the function and aesthetics of the tooth for many years.

The aim: The aim of the study was to assess the knowledge about procedures and current therapy concept when the complete permanent tooth avulsion occurs of three professional groups - HEDs, paramedics, dentists. The article also includes the algorithm of proper procedure.

Materials and methods: The method used to determine the level of knowledge was a questionnaire containing specialized questions about the procedure, replantation time, storage of dislocated teeth and subsequent patient care.

Results: A survey was conducted among 588 people, of which 45,5% were dentists, 37,5% were paramedics and 17% were doctors working in the Hospital Emergency Department. Dentists responded first, then paramedics, then doctors working in the hospital emergency department.

Conclusions: The survey highlighted the knowledge gaps in each of the professional groups. All respondents during their professional work may have contact with patients who require tooth replantation, therefore it is advisable to promote knowledge and regular education in the field of first aid in the complete permanent tooth avulsion.

Keywords: Tooth avulsion, dislocation, first aid, replantation

**SESSION
OF DERMATOLOGY
AND ALLERGOLOGY**



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Effects of COVID-19 vaccination on angioedema patients: report from a single center

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Background: Angioedema is a potentially life-threatening condition that can occur alone or with acute and/or chronic wheals. It has been suggested that COVID-19 vaccination may trigger a flare up of chronic urticaria, which may be confused with vaccine allergy. During the COVID-19 pandemic, patients with chronic urticaria / angioedema felt insecure. As their symptoms "mimic/resemble an allergy", they were concerned about how COVID-19 vaccination would affect their disease and is the vaccination safe? For this reason, they often consult with allergists.

The aim: Assessment of the effects of COVID-19 vaccines on the rates of exacerbation and hypersensitivity reactions in patients with idiopathic histaminergic angioedema (IH-AE).

Materials and methods: Retrospective analysis of medical records of 103 patients with IH-AE who were referred to an allergist for consultation/qualification for COVID-19 vaccination.

Results: None of these patients had symptoms of an immediate hypersensitivity reaction to any dose of these vaccines. Three non-atopic patients experienced an episode of angioedema in the third (1 patient) and fourth week (2 patients) after the first dose, the clinical manifestation and location were consistent with the previously described edema episodes in these patients. No worsening of angioedema symptoms was observed in these patients after the second and third vaccination over 4 weeks.

Conclusions: Our results may indicate that patients with isolated IH-AE do not have an increased risk of hypersensitivity reactions (immediate and delayed) and angioedema exacerbation following COVID-19 vaccine.

Keywords: angioedema, COVID-19, vaccine, exacerbation, allergic reaction

Can atopic dermatitis make your retirement worse?

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Background: Atopic dermatitis (AD) is a chronic, inflammatory, and relapsing disease most commonly associated with elevated immunoglobulin E levels and a history of atopy, often coexisting with allergic asthma and allergic rhinitis. In most cases, AD appears before the age of five, and data on prevalence in children show a slight predominance in women. However, there is little data on the prevalence of allergies, including atopic diseases in elderly patients.

The aim: This study aimed to present the characteristics and possible clinical differences of AD in a prospective analysis of patients over 60 years of age and compare them to young patients.

Materials and methods: The study group consisted of 144 subjects with a mean age of 66.3 \pm 4.54 years. The control group consisted of 92 young with a mean age of 24.1 \pm 4.32 years. Patients were assessed according to the SCORAD score, total IgE and allergen-specific IgE (sIgE) levels were measured using the Poly Check immunoenzymatic method, skin prick tests were carried out, and quality of life was evaluated according to the Dermatology Life Quality Index.

Results: The results of skin tests and allergen-specific IgE determination in elderly AD patients were comparable to young patients. However, the mean serum concentration of total IgE in elderly AD patients was 1678 \pm 759 kU/l and was statistically significantly lower than in young patients 6980 \pm 3721 kU/l ($p < 0.05$). The quality of life assessed in elderly AD patients according to the DLQI questionnaire was worse compared to the young group and was respectively: 18.5 \pm 5.6 and 10.78 \pm 1.13. In more than 50% of the elderly patients with AD, inadequate treatment was observed and the use of drugs was significantly less frequent than in younger patients, except for topical steroid preparations.

Conclusions: AD in patients over 60 years of age has similar clinical characteristics to younger people. Worse quality of life and often inadequate AD treatment in elderly patients were observed compared to younger people.

Keywords: Atopic Dermatitis, allergies, IgE, elderly patients

Demodex spp. as an opportunistic parasite

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Background: Demodex folliculorum and Demodex brevis are species of Demodex commonly existed the human skin . These mites live in the sebaceous glands and hair follicles and participate in the pathogenesis of chalazions, conjunctivitis, eyelid margin inflammation. Often Demodex spp. are indirectly responsible for the progress of rosacea. The most common symptoms of demodicosis are itching of the eyes, lachrymation and eyelashes loss.

The aim: The aim of the study was to demonstrate the presence of Demodex spp. among 18-27 aged students of medicine at the Medical University of Silesia.

Materials and methods: For this study the approval of the Bioethics Committee of the Medical University of Silesia was obtained. The study group consisted of 70 students aged 18-27. Each of the participants in the study completed a questionnaire, especially to inform the occurrence of ocular symptoms. The eyelashes of the each examined student were collected with tweezers from the upper and lower eyelids of both eyes, then the preparation was made and observed under a light microscope at 10 x magnifications zoom. The presence of one parasite in one of the preparations was considered a positive result.

Results: A positive results were obtained in 41/70 students (58.57%), including 24/32 (75%) men and 17/38 (44.74%) women. Out of 41 positive for Demodex spp. cases in 27 (65.85%) ocular symptoms were noted. The most common symptoms reported in students with confirmed demodicosis were itching and burning (18/27), barley and chloasma (8/27), conjunctivitis (4/27), and eyelash loss (4/27).

Conclusions: Among studied 70 students 58.57% were Demodex spp. carriers. Such a high percentage may be due to the relatively frequent usage of microscopes, which makes it easier for the Demodex spp. to expand into new hosts. Our study shows that in the male students Demodex carrier state is much more common. We suggest high probability of involving Demodex spp. in the pathogenesis of chalazions and conjunctivitis.

Keywords: demodex, demodicosis

Side effects of wearing masks during the end of the pandemic

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Background: During the pandemic, many measures were introduced to limit the spread of the virus among the population. One of such measures were masks, the usage of which has a proven negative effect on the condition of the skin.

The aim: The aim of the study was to continue the previous study on influence of the mask usage on the acne prone skin at the beginning of the pandemic, and to compare the results at the beginning and end of the obligation to use masks.

Materials and methods: The study, similarly to the previous one, was carried out with an online survey spread via social media. The survey consisted of 27 single and multiple choice questions. 352 questionnaires were collected, of which 340 were included in the study. The study was performed at 2 last weeks of obligation to wear the masks.

Results: The study, similarly to the previous one, was carried out with an online survey spread via social media. The survey consisted of 27 single and multiple choice questions. 352 questionnaires were collected, of which 340 were included in the study. The study was performed at 2 last weeks of obligation to wear the masks.

Conclusions: The covid-19 pandemic has left a significant mark on the skin condition of many people, and this study confirms this. Unfortunately, all the negative trends from the beginning of the pandemic were also observed at the end of the obligation to wear masks, which prompts us to say that at that time the human body did not develop any adaptive mechanisms and we can hope that the situation will improve with the end of the obligation to wear masks. Otherwise, we will face the unobvious consequences of the covid-19 pandemic for many years.

Keywords: Masks, Covid-19, Ance

Tissue Hypercoagulable State in the Skin Biopsies of Patients with Diffuse Cutaneous Systemic Sclerosis

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Background: So far research on the role of tissue hemostasis factors in the etiopathogenesis of scleroderma is inconclusive. A number of studies have indicated impaired hemostasis, while others have not confirmed it.

The aim: Therefore, the aim of this study was to assess the phenotypic expression of tissue factor (TF) (procoagulant factor) and thrombomodulin (TM) (anticoagulant factor) in the skin sections of patients with diffuse cutaneous systemic sclerosis.

Materials and methods: The study included skin samples from 11 patients (women) with scleroderma. The control group consisted of skin samples from 6 healthy individuals. Immunohistochemical reactions for the presence of TF and TM expression were performed using the EnVision DAKO AP method on frozen sections. Anti-TF monoclonal antibodies from American Diagnostica and anti-TM from DAKO were used. Expression of both antigens was assessed by qualitative and semi-quantitative methods using a scale from 0-3 + (0 - no expression, 1+ - weak expression; 2+ - moderate expression, and 3+ - intense and generalized expression in skin sections).

Results: Immunohistochemical assessment showed a statistically significant decrease in TM expression in keratinocytes and skin vascular endothelial cells with a simultaneous increase in TF expression in the above cells with respect to the control group (TM, $P = 0.03$; TF, $P < 0.01$, Mann-Whitney U test).

Conclusions: The results indicate a shift of hemostasis toward the prothrombotic state in the skin sections of patients with scleroderma.

Keywords: diffuse cutaneous systemic sclerosis, Tissue Factor, Thrombomodulin, Hemostasis.

The assessment of the effectiveness of chemical peels in acne vulgaris

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Background: Acne vulgaris is a chronic inflammatory disease of the pilosebaceous unit and the eight most common dermatosis in the world. Main causes of the disease are keratosis disorders, seborrhea, C. acnes, and inflammation. Depending on severity and clinical variety, the treatment is based on oral and topical dermatological medications. Chemical peels are also a very effective way to treat acne vulgaris, not only to inhibit the development of dermatosis but also to prevent complications - scars and discoloration.

The aim: The aim of the study was to evaluate the effectiveness of chemical peels in the treatment of acne vulgaris.

Materials and methods: A series of 3-6 chemical peels was carried out on 10 volunteers with acne vulgaris of varying severity every 3 weeks. Before the first treatment and 2 weeks after the last one a clinical photos of all volunteers was taken, a level of skin hydration and sebum secretion were measured. The volunteers were asked to complete a short survey before and after the treatment and have had an USG done as well.

Results: The results of the study indicate that chemical peels are a valuable tool in the treatment of acne vulgaris. They have a positive effect on skin hydration level, decrease sebum secretion, and severity of dermatosis. They effectively reduce inflammatory, noninflammatory lesions, and discoloration. As a result, they improve the overall appearance of the skin, which becomes more radiant and smooth. The sensations during the procedure were assessed positively. The most common symptoms after the procedure were erythema, burning sensation, and peeling.

Conclusions: Chemical peels are an effective way of treating acne vulgaris. They might be a valuable complement to dermatological treatment.

Keywords: chemical peels, chemoexfoliation, acne vulgaris, acne vulgaris treatment

The concentration of total and allergen-specific IgE in the population of people over 60 years of age

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Background: Allergic diseases in elderly are a growing problem. Performing diagnostic skin tests and determining IgE in seniors still raise doubts as to their diagnostic value.

The aim: The aim of the study was an attempt to assess the incidence of inhalation allergy in patients over 60 years of age on the basis of skin tests and determination of allergen-specific IgE concentrations in the blood serum, and to assess their value in comparison with the results in young people.

Materials and methods: 1204 patients aged 67.4-12.9 years and 1560 young patients were qualified for the study as a control group. All subjects underwent skin prick tests with inhaled allergens and the corresponding determinations of allergen-specific IgE in the blood serum, as well as the determination of total IgE. All patients signed informed consent to participate in the study.

Results: In 373 (31%) patients, at least one positive skin test for the tested inhaled allergens was confirmed. Among them, the most frequently positive results were obtained for the grass /cereals mixture - in 23.4% of the respondents, D. pteronyssinus - 21.8% and rye -17.8%. Similar results were obtained in the concentrations of allergen-specific IgE: grasses/cereals (34.2%), D. pteronyssinus (32.5%) and rye (22.1%). The obtained allergy profiles in elderly patients were consistent with those obtained in young patients, but the number of positive results in both PTS and sIgE was lower in seniors.

Conclusions: In the population of patients over 60 years of age, positive test results and specific IgE for inhalation allergens were frequently observed. They correlated with the allergen profile of young people, but the percentage of positive results was significantly lower.

Keywords: allergic diseases, allergen-specific IgE, inhalation allergens, ageing and health, allergen profile

The relationship between BMI and reaction severity (SYS) and tryptase concentration in patients with Hymenopte

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Background: Allergy is an excessive, abnormal reaction of the immune system to foreign allergens. Insects whose venom cause allergic reactions in Central Europe usually come from the order of Hymenoptera. An anaphylactic reaction is a complex process. The risk of its development and severity of its course depend on various factors. Increased tryptase levels are among the risk factors for a severe allergic reaction. Literature studies indicate that elevated levels of tryptase may occur in people with BMI > 30.0, which could suggest a greater degree of reaction severity (SYS) following a hymenoptera sting in people with allergies.

The aim: Assessment of the relationship between BMI and SYS values

Materials and methods: Medical records of 72 patients with symptoms of hypersensitivity to the venom of hymenoptera referred to the Opole University Hospital from the 2018-2021 period were analyzed. The data from the history and the results of additional tests (skin tests with venoms, serum tryptase level and BMI) were obtained. The symptoms of hypersensitivity were classified according to the Mueller scale.

Results: Increased levels of tryptase were observed in the older age group of patients. There was no statistical difference between people with abnormal BMI values

Conclusions: In our research, no direct relationship between the BMI value, the severity of the reaction and the concentration of tryptase in patients allergic to Hymenoptera venom was found. It should be borne in mind that the role of overweight and obesity in the development of allergic diseases is still being investigated.

Keywords: allergy, tryptase, BMI, Hymenoptera

The relationship between cigarette smoking and chronic spontaneous urticaria

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Background: Urticaria is heterogeneous disease which is characterized by the appearance of wheals and may be associated with angioedema. Unlike inducible urticarias, in chronic spontaneous urticaria (CSU) the appearance of clinical manifestations is spontaneous and not evoked by physical and/or environmental stimuli. The literature indicates the possible protective effect of smoking on CSU development.

The aim: To assess the impact of active smoking by women and men on the occurrence of chronic spontaneous urticaria (CSU) by evaluating the rate of smoking patients among those diagnosed and further to analyse parameters of inflammation severity and frequency of coexistence of angioedema.

Materials and methods: Data from 68 adult patients (52 females, 16 males) admitted to the University Hospital in Opole (2018-2021) diagnosed with CSU was collected and the group was divided concerning sex and smoking. We tested patients for CRP, NE, LYMP levels and NLR.

Results: Women are three times more likely to develop chronic urticaria than men (52 vs 16). No statistically differences were found between smokers and non-smoker regarding level of CRP, NE, LYMP or NLR. In the female group (regardless of smoking) in relation to male there were statistically significantly different levels of NE (mean: 6,28 vs. 6,06), LYMP (6 vs. 1,66) and NLR (4,13 vs. 4,11). In the group of nonsmokers, females had significantly different levels of LYMP (7,07 vs. 1,55) and LR (4,81 vs. 4,22), while in group of smokers of NE (4,36 vs. 6,32) and NLR (1,92 vs. 3,92).

Conclusions: Significant differences in NE, LYMP, and NLR between males and females need further investigation and might support the concept of inflammation as an important factor in CSU pathogenesis. Prevalence of cigarette smoking in CSU patients is the same as in general population. The statistical analysis performed does not confirm the claims from the literature data that smoking reduces the course and reduces the incidence of chronic spontaneous urticaria.

Keywords: chronic spontaneous urticaria, CSU, cigarette

**SESSION
OF DIETETICS
AND NUTRITION**



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What is the pro-inflammatory dietary model associated with?

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Background: Disturbances of cellular potentials cause a number of disease entities due to increased systemic inflammation, which is a consequence of the multifactorial substrate of proinflammatory changes presented in this study.

The aim: To highlight the importance of the pathomechanism of oxidative stress and oxidative potential for changes in metabolic mechanisms at the cellular level, predisposing to polyplasia and the development of destructive transformations depicted in physical appearance. Targeted by a pro-inflammatory nutritional model.

Materials and methods: A sample of 226 respondents was selected by random sampling. The author's questionnaire concerned metric data, level of physical activity, diagnosed disease entity, inflammatory changes in the dermis of the body and level of frequency of consumption of selected food groups. The results obtained were verified by statistical analysis with a significance level of $\alpha < 0.05$.

Results: The study group was characterised by a diagnosed multimorbidity at the level of (approximately 20%) in relation to the individual clinical course of the respondent. The anthropometric parameter BMI without gender breakdown (due to the predominance of women among the respondents) among 55% of the total group was within normal limits, representing 24.4 kg/m², but showed a significant target correlation with the pathomechanism of multimorbidity at 78% in physical appearance.

Conclusions: The pathomechanism for the development of multimorbidity is significantly associated with the presence of tissue changes translating to the coating system and with anthropometric measures associated with body mass index values. Multiple morbidity in the cutaneous sheaths is significantly dependent on implemented phytotherapeutics - bioactive components extracted from oregano to achieve high antioxidant potential (ORAC).

Keywords: oxidative stress, free radicals, antioxidant capacity, multivariability, polyopatologies

Assessment of preschool bill of fare in relation to the applicable nutritional standards

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Background: The kindergarten becomes the main feeding place for children during the week. Improperly balanced meals will have a bad effect on the physical development of children. Employees of the preschool nutrition department usually do not have adequate knowledge in the field of children's nutrition and up-to-date nutritional recommendations. Knowledge about proper and healthy nutrition should be based on the current regulations and nutrition standards. The introduction of appropriate nutrition will contribute to the proper development of the body, the development of appropriate eating habits and the preferences of the choices of products

The aim: The aim of the study was to qualitatively assessed menus in selected kindergartens and to compare similar requirements in the Bielińska test and in the current Regulation of the Minister of Health.

Materials and methods: The survey was conducted in 2020-21, among 7 public kindergartens in the Śląskie region. A total of 504 one-day menus (including 117 weekly menus) were tested. The menus for the spring, summer, fall and winter seasons were obtained. The obtained results were process in Microsoft Excel 2019 and Statistica 13.3. The p-value of less than 0.05 was considered statistically significant

Results: It has been observed that there was an insufficient supply of milk and dairy products (67,5% vs 81,9%) , animal products (83,7%) , vegetables and fruits (17,1% vs 10,7%), cereal products (95,7% vs 73,8%). The fulfillment of the criterion was not influenced by the seasonality of the menus, but only by the choice of the preschool institution.

Conclusions: The insufficient supply of pro-health products will contribute to the incorrect development and functioning of the children's body. Nutritional education of staff may have an impact on the reduction and duplication of nutritional errors in preschool menus.

Keywords: children, nutrition, bill of fare, education

Evaluation of sugar intake in kindergartens of the Silesian Province in relation to the binding norms

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Background: Adequate nutrition promotes proper growth and development of children. Added sugars do not provide any essential nutrients and are the source of "empty" calories. Excessive intake of monosaccharides can lead to obesity, tooth decay and may influence cultivation of inappropriate eating habits. In mass caterers such as kindergartens, meals have to be composed properly and based on current recommendations and nutritional knowledge. Proper organization of children's nutrition ensures that their energy needs are met and nutrients are consumed in accordance with the demand, and partially prevents nutritional errors.

The aim: The aim of the study was to verify certain criteria that must be met by food products used in the mass nutrition of children and adolescents in education system facilities. Based on the Regulation of the Minister of Health of July 26, 2016.

Materials and methods: 66 respondents took part in the study. An original questionnaire was used, in which closed questions were included. Participation in the study was voluntary and anonymous.

Results: Most of the respondents in the study were dietitians and manciples. Most of the respondents (78%) declared that drinks and ready-made products do not exceed the permitted sugar supply standard - 10g 250ml / g of product, including 13.6% of them claiming that they sweeten vegetable and fruit juices. White sugar and honey are most often used in the menu. More than a half (51.5%) of the surveyed kindergartens do not use chocolate in their menus, 41% of kindergartens use chocolate with min. 70% cocoa, and 6.1% do not give it at all.

Conclusions: The study showed that kindergartens compose menus in accordance with the criteria included in the current Regulation of the Minister of Health. However, there are single mistakes that can potentially result from the lack of adequate nutritional education and knowledge of current recommendations. Education is essential to avoid errors in the preparation of menus.

Keywords: nutrition, children, Regulation, kindergartens, menu

Antioxidant activity of selected wines assessed by DPPH method

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Background: In recent years positive effects of moderate consumption of wine have been discussed by scientific as well as laic community. Drinking of wine has a lot of positive effects on health of human population. More than 500 various compounds (saccharides, acids, tannins, vitamins, phenolic compounds) are present in wine. Wine is considered to be an important source of antioxidants among beverages. Polyphenolic compounds are very monitored and discussed group of antioxidants in wine that exert bio-protective effects and have strongly positive effect on human health. Epidemiological studies pointed out that the consumption of red wine has been shown to increase the body's antioxidant capacity and is associated with a lower risk of mortality from cardiovascular diseases

The aim: The aim of the work was to assess the antioxidant activity of five selected wine and their total polyphenol content.

Materials and methods: The antioxidant properties of the analyzed samples were determined with the use of Brand-Williams et al. method using of DPPH (1,1-diphenyl-1-picrylhydrazyl) radical. Absorbance was read at 515 nm and antioxidant effectiveness was expressed as % inhibition of DPPH (quantitative ability of tested compound to remove in certain period a part of DPPH radical). The total polyphenols content in analysed wines were tested with the use of the Folin-Ciocalteu method. Total polyphenols content in wines was calculated as amount of gallic acid in mg per 1 litre of wine.

Results: Significant differentiation of antioxidant activity and content of polyphenol compounds of tested wines was found. The antioxidant activity of analysed wines was in range 48,5- 87.9 % inhibition of DPPH of the initial amount of the free radical. The content of polyphenolic compounds ranged from 1420 to 2103 mg gallic acid /1000 ml of wine.

Conclusions: Moderate consumption of wine that contains a lot of polyphenolic compounds is beneficial to human health and can help in prevention of many lifestyle diseases.

Keywords: DPPH method, antioxidant activity, polyphenolic compounds

Dietary behavior of people with acne vulgaris

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Background: Acne vulgaris is a chronic inflammatory disease of the sebaceous glands and hair follicle outlets. The disease manifests itself in adolescence, but may persist into adulthood

The aim: The aim of this study was to evaluate the dietary behavior of subjects with acne vulgaris.

Materials and methods: The study was conducted using an online, self-administered survey with a link inserted in Facebook groups of people struggling with acne. 131 individuals participated in the survey. The survey was conducted between November and December 2021.

Results: Less than half of those surveyed were currently under the care of a specialist. The most common location of acne was the cheek, forehead, jaw, back, nose, and neckline. 7.6% of the respondents were on a low glycemic index diet. 45% of the respondents consumed 4-5 meals a day. The most frequent group consumed by the respondents were milk and its products, and wheat bread was consumed daily, once a day. The least frequently consumed products were: corn flakes, raisins, sodas, fatty meats and cured meats, oils rich in Omega-6 e.g. soybean, corn, and sweeteners. Only 12% of the respondents answered that they do not consume spicy condiments.

Conclusions: Associations between dairy intake and acne, as well as acne with consumption of high glycemic index products, have been investigated in various scientific studies. The literature recommends replacing high-GI products with lower-GI ones, discontinuing dairy products, or avoiding spicy condiments. However, more studies, including observational studies after eating a given product and the severity of skin lesions, are needed to make clear recommendations.

Keywords: acne vulgaris, acne, eating behavior

Differences in health activities of medical and dietitian students during the COVID-19 pandemic

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Background: Healthy and preventive behaviors play an important role in the course of life. The behaviors are especially important in the COVID-19 pandemic

The aim: The aim of the study was to analyze the preventive and prohealth activities of students from different faculties of medical universities before and during the COVID-19 pandemic

Materials and methods: 179 students of two faculties: dietetics (D) (n=122; 68.2%) and medicine (M) (n=57; 31.8%) took part in the study. Factors undertaken by the study groups related to preventive actions against COVID-19 and prohealth activities before and during the COVID-19 pandemic were examined by original, anonymous questionnaire.

Results: The prophylactic vaccination against COVID-19 was admitted by 64.8% D vs. 98.3% M students ($p<0.05$). The leitmotif prompting immunization was protection against disease: D 82.0% vs. 91.2% M students. In terms of undertaking other preventive behaviors against COVID-19 among the study groups, the following parameters were obtained: maintaining social distance: D 53.3%, M 49.1% ($p>0.05$); hand disinfection: D 91.0%, M 93.0% ($p>0.05$); use of a protective mask: D 78.7%, M 94.7% ($p<0.05$). Changes of the nutritional behaviors of the respondents before the pandemic vs. during the pandemic did not differ ($p>0.05$). Regularity of meals: D 53.3% vs. 55.7%, M 54.4% vs. 56.1%; snacks between meals: D 59.0% vs. 63.9%, M 78.9% vs. 78.9%; daily consumption of sweet or salty snacks: D 7.4% vs. 9.8%, M 15.8% vs. 12.3%. However, M students reported greater consumption of snacks between meals compared to D ($p>0.05$).

Conclusions: Preventive activities resulting from the restrictions against COVID-19 were more reliably followed by the medical faculty students. While, dietetics students showed better eating behaviors both before and during the pandemic. On the other hand, analyzing the nutritional behaviors of respondents of both faculties, they need to be corrected and appropriate educational activities should be undertaken to improve them.

Keywords: health activities, preventive activities, medical students, dietitian students, COVID-19 pandemic

Eating disorders and nutrition-related diseases among young women

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Background: Eating disorders (ED) are an ever-growing problem, seen mainly among young women. People with eating disorders are particularly predisposed to follow restrictive eating patterns. Diet therapy of many diseases, mainly of the gastrointestinal tract, includes elimination of certain food groups. The use of restrictive diets in people who have suffered from EDs is risky, because this dietary pattern may be a risk factor for recurrence of the disorder

The aim: The aim of this study was to assess the risk of ED among young women with diet-related disorders or following restrictive diets.

Materials and methods: The study was conducted among 420 female respondents aged 19 to 30 years. The research tool was a self-administered, anonymous questionnaire consisting of a part serving to characterise the respondents and questionnaires assessing the risk of eating disorders (SCOFF) and orthorexia (ORTO-15).

Results: Nearly half of the subjects (n=208;49.5%) reported having an eating disorder in the past and 37% (n=155) of the subjects were currently struggling with it. One in five respondents was overweight or obese, while one in three declared to be on a weight-loss diet (n=155;29%). Nearly half of the respondents suffered from diet-related conditions (n=194;46%), and most of them had received professional advice from a dietician (n=111;75%). The majority of female respondents were at risk of ED (n=243;58%) and one in three respondents were prone to orthorexia (n=129;30%). Those with diet-related illnesses were significantly more likely to show risk of orthorexia ($p<0.05$), while those on a reduction diet were significantly more likely to show both risk of orthorexia and ED ($p<0.05$).

Conclusions: Women with diet-related diseases belong to the risk group for the development of eating disorders, so prevention of ED through appropriate nutrition education and psychological support is necessary. It is worth paying attention to screening for ED in people with diet-related diseases.

Keywords: eating disorders, diet therapy, elimination diet, diet-related diseases

Evaluation of the level process contaminants in food lunch concentrates and their impact on health

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Background: The current research on food, their composition and the compounds formed during their production is widely discussed. Food concentrates classified as convenience food currently have a significant share in the food market offer. Despite growing consumer awareness, foods requiring little heat treatment or directly ready to eat are widely accepted. Chloropropanediol esters and glycidol esters are chemical contaminants that are formed during the food production process and storage. The deodorisation of oil, which is an inherent raw material in dinner concentrates, contributes to the formation of 3-MCPD(3-monochloropropane-1,2-diol), 2-MCPD(2-monochloropropane-1,3-diol), its esters and glycidol esters (GE). As a result the products may cross the blood-brain barrier and the blood-nucleus barrier and can be harmful to the body.

The aim: The work analyses the content of chloropropanediol esters and glycidol esters in dinner concentrates.

Materials and methods: The research material consisted of 20 bouillon cubes (poultry and beef) purchased on the retail market. The amount of 3-MCPD, 2-MCPD and GE in dinner concentrates was determined using a AOCS official method Cd 29a-13 with the use of gas chromatography – mass spectrometry.

Results: The amount of chlorinated contaminants was compared with the standards established in European Union. Furthermore, the results obtained in this study were compared with the values published in the literature. Based on tolerably daily intake established by European Food Safety Authority and coverage consumption of the investigated products it was found, that 3-MCPD present in lunch concentrates no exceeded permissible levels (For one type of poultry cubes the mean results were; 3-MCPD: 336.2 µg/kg; 2-MCPD: 57.4 µg/kg; GE: 28.2 µg/kg.)

Conclusions: The supply of 3-MCPD esters with food is too high in relation to the human weight, especially children. However, there is a need for further research to improve knowledge related to the effects of these compounds on the human condition and functioning.

Keywords: 3-MCPD, 2-MCPD, GE, Cancer, Toxic compounds and contamination in food

Impact of fractalkine polymorphisms (rs 614230, rs 170364) on inappropriate body mass occurrence

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Background: Fractalkine (FKN) is a membrane-bound glycoprotein, that plays a role of chemoattractant for leukocytes. Previous research showed that FKN is related to glucose metabolism. There is also shown that CX3CR1 mutations are implicated in obesity. Consequently, FKN plays important roles in metabolic diseases. It remains interesting to investigate and prove the impact of genomic variants – especially the Single Nucleotide Polymorphisms (SNPs) in FKN genes.

The aim: Aim of our study was to assess the correlation between two of SNPs - rs 614230, rs 170364 in FKN gene and inappropriate body mass in examined population.

Materials and methods: In total, 284 adult patients were involved in the study. The following group included 151 women and 133 men who came to general practice and agreed to participate in the study. The consent of the Bioethics Committee was obtained. A sample of venous blood was taken, then the DNA was isolated and analyzed. The genotyping was performed by fluorescent Real Time PCR (TaqMan Predesigned SNP Genotyping Assay) which allowed amplification and typing of selected gene fragments (rs 614230, rs 170364).

Results: In the treatment group 96 patients had a normal body mass index (BMI), 140 had an excess weight and 48 were obese. The Waist - Hip Ratio (WHR) was also analyzed – 78 patients had normal ratio, 72 had an excess weight and 134 were obese. The most frequent genotype in our BMI and WHR groups for rs 614230 was heterozygote CT 123 (43%) and homozygote TT 115 (40%). However, in case of rs 170364 the most frequent genotype was homozygote GG 158 (56%) and heterozygote GT 109 (38%).

Conclusions: In this study, the correlation between the SNP in FKN and the BMI as well as the WHR was shown. The genotype CC possessing is conducive to the development of obesity regard to WHR as well as BMI. However, genotype of heterozygote GT conducted to the development of obesity regard only to BMI. It potentially makes FKN useful in new therapies. Though, future researches on other rs numbers are needed.

Keywords: fractalkine, Single Nucleotide Polymorphism, body mass index (BMI), Waist-Hip Ratio (WHR)

Smoothies – not so healthy?

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Background: As many as 96,5% of people don't know that smoothies may contain 5-hydroxymethylfurfural (HMF) which has mutagenic, genotoxic and cytotoxic effects and also induces anaphylactoid reactions. Smoothies contain the highest amount of sugars among fruit juices, juice drinks and themselves.

The aim: The aim of the research was to compare: (1) the content of HMF and (2) the amount of sugar in smoothies, (3) preferences of smoothie-drinkers.

Materials and methods: An online survey has been conducted to evaluate people's smoothie preferences (n=258). Then, 22 popular store-bought smoothies were analysed. Determination of HMF content was performed by the White's UV spectrophotometric method using Carrez solutions. Sugar, calories and vitamin C content, expiration date and information about pasteurization were obtained from the label on the product.

Results: HMF content in analysed smoothies was in the range of 0-1,945 mg/100g. Average concentration of HMF in shelf-stored smoothies was 1,097 mg/100g and in fridge-stored smoothies 0,215 mg/100g. HMF concentration in HPP-treated smoothies was 0,064 mg/100g and in pasteurized ones 0,542 mg/100g. Average amount of sugar and calories were respectively 10,7 g/100ml and 54,6 kcal/100ml.

Conclusions: HMF content in smoothies is overall low, even though there are no guidelines for maximum concentration in smoothies (only for honeys the international tolerance for HMF is 4 mg/100g). Shelf-stored smoothies and pasteurized ones had higher concentration of HMF than fridge-stored and in HPP-treated smoothies. We found that 41,4% of smoothie-drinkers drink at least 0,25l of smoothies weekly, which is about 27g of sugar and one 0,25l smoothie a day would be exceeding the WHO norms of daily intake of free sugars. Most pollsters choose banana-based smoothies, which are high in sugar and although they have low glycaemic index, it's healthier to eat whole fruits.

Keywords: 5-hydroxymethylfurfural (HMF), smoothie, sugar

The histamine content in baby food with the addition of fish, taking into account storage time and temperature

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Background: Histamine is one of the biogenic amines. It performs many important physiological functions in the human body. However, used in excess, it becomes toxic. This compound may be also present in some food products, including fish due to the microbiological processes which take place in them. Food products rich in histamine are a frequent cause of food poisoning, which can be particularly dangerous for infants and toddlers.

The aim: The aim of the study is to determine the histamine content in selected „ready-to-eat” baby food with the addition of fish. The research takes into account the storage time and temperature.

Materials and methods: The ELISA method is used to determine the histamine content in selected food products. The study involves 70 „ready-to-eat” baby food with fish, purchased from retail chains in the Silesian Voivodeship. The baby food were analysed on the day of opening, after 24h and 48h of storage in a refrigerator and in room temperature (22.0°).

Results: The presence of histamine was found in all analysed samples, and for 40 measurements <LOD, i.e. <2.5 mg/kg. In the remaining samples, histamine content ranged from 2.71 to 15.32 mg/kg. The average histamine content was the lowest at the beginning of the study and the highest after 48h of storage at room temperature.

Conclusions: The content of histamine in all samples was within the normal range. Products with the addition of tuna and salmon had the highest concentrations of histamine. The storage time and temperature significantly influenced the changes in the concentration of histamine.

Keywords: histamine, fish, baby food, toddlers, infants, temperature

The lack of control over eating habits. The risk of nutrition disorder in post-childbirth women

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Background: Episodes involving a loss of control over eating habits are widespread in the general population. Available studies indicate that up to 36% of women experience them during pregnancy. While pregnant, many women experience significant physiological changes which are not only related to weight gain, but also the changes in body shape. Consequently, during pregnancy and postpartum periods, women are subject to increased risk factors that can trigger eating disorders.

The aim: The aim of this study was to analyze the perception of body image by women after childbirth, particularly focusing on possible eating disorders. The primary goal of this study was to check whether psychomarkers associated with excessive weight control (or its lack) exist in the studied population and whether there are any correlations among them.

Materials and methods: The study was conducted in the autumn and winter of 2021. 288 women participated in the study. The age of the respondents ranged between 21 and 45 years of age.

Results: The majority of women - 198 (68,8%) - are dissatisfied with their current body weight and shape. This group includes mainly women who gave birth through cesarean section (52,1%). The respondents who had a higher body mass index after pregnancy were also characterized by dissatisfaction with their body shape (49,8%). Both the level of satisfaction with one's body and the BMI index were essential components of the occurrence of pathological phenomena related to the lack of control over food intake, food restriction, or emotional eating in the studied group.

Conclusions: Based on the conducted research, one can conclude that women's eating behavior was associated with BMI levels and post-pregnancy weight satisfaction. The focus on nutritional restrictions, the lack of control over eating habits, and the emotional eating in the studied group of women translated into a negative body image in the form of dissatisfaction with one's body weight.

Keywords: excessive control, body shape, women, pregnancy, eating disorders, TFEQ-13

Vitamin D deficiency as a pathogenic factor of metabolic syndrome: observational study

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Background: Vitamin D deficiency in children is a common issue in many populations worldwide, which results from various factors, both nutritional and environmental. It is associated not only with skeletal malformations, but as recent studies suggest also with development of obesity and metabolic syndrome.

The aim: The current observational study was aimed at assessing the nutritional status of vitamin D in a group of 78 Polish children with obesity and different grades of metabolic syndrome, followed by a consequent analysis of correlation between the vitamin D levels and the components of metabolic syndrome.

Materials and methods: The anthropometric and biochemical parameters of participants were assessed, and further analysed in search of significant differences between the groups, using Student's t test and Pearson correlation coefficient.

Results: In children with obesity and vitamin D deficiency the HDL and adiponectin values are significantly lower than in their peers without vitamin D deficiency, whereas W/HtR and TG levels are significantly higher. Moreover, the values of W/HtR and plasma glucose in the 2. hour of OGTT test showed a significant inverse correlation with values of vitamin D.

Conclusions: Vitamin D deficiency might influence the lipid and glucose metabolism in children, leading to the development of abnormalities characteristic of metabolic syndrome. The observed alterations did not always correspond with criteria of metabolic syndrome, despite their significance, which suggests that the metabolic dysfunctions resulting from vitamin D deficiency might exceed the definition of metabolic syndrome.

Keywords: Vitamin D, metabolic syndrome, obesity

SESSION OF EXPERIMENTAL MEDICINE



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Effect of magnolol on oxidative stress markers in the testes of rats with experimental diabetes

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Background: Hyperglycemia is one of the most distinctive features of diabetes mellitus. Oxidative stress associated with hyperglycemia can contribute to testicular dysfunction and infertility - common diabetic complications in the male reproductive system. Magnolol is a natural lignan found in the bark of magnolia, which has, inter alia, antioxidant properties.

The aim: The aim of this study was to evaluate the effect of magnolol on the oxidative stress parameters in the testes of rats with type 2 diabetes induced by high fat diet combined with a single streptozotocin injection.

Materials and methods: The study was conducted on mature male Wistar rats, divided into 4 groups: control non-diabetic rats, control type 2 diabetic rats and type 2 diabetic rats receiving magnolol orally, respectively at the doses of 5.0 or 25.0 mg/kg. Diabetes was induced by high fat diet and single intraperitoneal injection of streptozotocin. The level of soluble protein, glucose, malondialdehyde, advanced oxidation protein products (AOPP) as well as activities of glutathione peroxidase (GPx), catalase (CAT) and superoxide dismutase (SOD) were measured spectrophotometrically in the isolated and homogenized testes. The body weight and testicular weight of the rats were also recorded.

Results: The obtained results indicate that type 2 diabetes caused a statistically significant increase in the activity of antioxidant enzymes and in AOPP level in the testes of the rats. A decrease in soluble protein level was also observed. Administration of magnolol at doses of 5.0 and 25.0 mg/kg resulted in a statistically significant increase in protein soluble level and decrease in SOD and GPx activity, as well as AOPP level. The CAT activity in the testes of rats was reduced only after administration of the dose 5.0 mg/kg. Other parameters remained unaffected.

Conclusions: The obtained results may indicate a positive effect of magnolol on the parameters of oxidative stress in the testes of rats with experimentally induced type 2 diabetes.

Keywords: diabetes, oxidative stress, testes, magnolol

Efficiency of isolation of human amniotic cells obtained from normal and pathological pregnancies

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Background: Human amniotic epithelial cells (hAEC) are a population containing stem cells which can be isolated from human placenta without ethical concerns. Transplanted hAEC exhibit significant regenerative potential in damaged tissues and do not cause the risk of neoplastic transformation.

The aim: To evaluate the effectiveness of isolation of a large number of hAEC from normal and pathological human placentae obtained from C-sections.

Materials and methods: We analysed 38 isolations of hAEC. The efficiency of the procedure was defined as the quotient of the number of obtained cells and the weight of the amniotic membrane. Placentae were obtained from C-sections performed in the 34.-40. week of pregnancy in patients aged 22-42 years in the absence of infection. 5 placentae (13.2%) were obtained from pre-term deliveries, and in 3 cases (7.9%) the indications for a C-section were fetal hypotrophy or gestational hypertension. hAEC were isolated from dissected amnion with an average weight of 22.2 g, purified in physiological solutions, and enzymatically digested with 0.05% trypsin (10ml/g). The cells were analysed quantitatively and qualitatively using flow cytometry.

Results: During isolations, we obtained from 5 to 260 million hAEC, which corresponded to the efficiency of 0.04 to 13.2 million cells per gram of amniotic membrane. The efficiency of isolations was not influenced by maternal age, number of previous pregnancies, labours and C-sections, maternal blood parameters before delivery, placenta's weight, and newborn's Apgar score ($p < 0.05$). There were no differences in the efficiency of hAEC isolations in normal pregnancy as compared to pathological pregnancies.

Conclusions: Differences in the efficiency of hAEC isolation may result, to a greater extent, from individual variability than from the parameters analysed in this study, such as maternal age, pregnancy length, and maternal and newborn health status.

Keywords: amniotic epithelial cells, amniotic membrane, caesarian section, pathology of pregnancy

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Expression of CD276, VTCN1 and HHLA2, a members of the B7 family, in colorectal cancer.

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Background: Colorectal cancer does not benefit from immunotherapy and current immunotherapies are effective in only 10% of CRC patients with deficient mismatch repair microsatellite instability (MSI) tumors. Therefore, searching for potential immune targets is crucial for development of CRC-immunotherapies. CD276, VTCN1 and HHLA2 are members of the B7-immune checkpoints family.

The aim: The aim of our study was to assess CD276, VTCN1 and HHLA2 expresion in relation to MSI- status and histopathological parameters: microvessel density (MVD), budding, tumor-infiltrating lymphocytes (TILs) and TNM scale.

Materials and methods: 84 patients were enrolled in the study. CD276, VTCN1, HHLA2 and CD8 expression was assessed with the use of IHC staining in tumor cells. MSI/MSS status was determined by IHC testing for MLH-1, MSH-2, MSH-6, and PMS-2. The MVD and budding were assessed using a light microscope.

Results: Of 62 cases tumors analyzed, CD276 was expressed in 35,48%, VTCN1 in 70,49% of CRC. Only one case was negative for HHLA2 staining. All the other cases positive for HHLA2 staining differed by percent of positive tumor cells and staining intensity. 22,61% cases were MSI. There was no association between MSI/MSS status and expression of CD276, VTCN1 and HHLA2. CD276 and HHLA2 expression was negatively correlated with budding. CD276 expression was positively related to VTCN1 expression and higher number of CD8 cells. HHLA2 expression was negatively correlated with N feature of patients. Budding was positively correlated with stage, T and N parameter of patients while TILs were negatively associated with the same parameters. Number of CD8 cells were negatively related to N feature and stage of disease.

Conclusions: This study provides valuable insight into the role of B7- immune checkpoints family in CRC. Further studies are required to elucidate the mechanisms and therapeutic values of B7 family.

Keywords: colorectal cancer, immune checkpoints, B7 family, IHC, microsatellite instability

Functional parameters of coagulation and conventional coagulation tests in the setting of fluid resuscitation

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Background: Functional point-of-care tests (POCTs) evolve into useful tools for diagnosing disorders of blood coagulation and fibrinolysis.

The aim: We aimed to describe the in vivo association between standard and functional parameters of coagulation and fibrinolysis in the setting of acute haemodilution induced by an infusion of balanced crystalloid or synthetic gelatine solutions.

Materials and methods: This prospective randomized crossover in vivo study included healthy male volunteers aged 18–30 years. Enrolled participants were randomly assigned to receive either the Optilyte® or Geloplasma® infusion. Laboratory analysis included conventional coagulation parameters and rotational thromboelastometry (ROTEM) assays. The study was registered online in the ClinicalTrials.gov database (NCT05148650).

Results: 25 healthy Caucasian males were included. ROTEM viscoelastic assays sufficiently correlate with conventional coagulation tests, regardless of the fluid type utilized. Irrespectively of the extent of haemodilution, significant correlations remained unaffected. The strongest associations were found for ROTEM clot formation and clot strength and fibrinogen concentration, platelet count, APTT and PT.

Conclusions: This in vivo experimental study in healthy male volunteers demonstrated that ROTEM may be used as a credible alternative to standard laboratory tests to assess blood coagulation and fibrinolysis in the setting of fluid resuscitation with both crystalloid and colloid solutions.

Keywords: fluid resuscitation, point-of-care test, coagulation and fibrinolysis, rotational thromboelastometry

In vivo effects of crystalloid or gelatine infusions on functional parameters of coagulation and fibrinolysis

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Background: Prudent administration of fluids helps restore or maintain hemodynamic stability in the setting of perioperative blood loss. However, fluids may arguably exacerbate the existing coagulopathy.

The aim: We sought to investigate the influence of balanced crystalloid and synthetic gelatine infusions on coagulation and fibrinolysis in healthy volunteers.

Materials and methods: This prospective randomized crossover study included 25 males aged 18–30 years. Infusions performed included 20ml/kg of a balanced crystalloid solution (Optilyte®) or 20ml/kg of gelatine 26.500 Da (Geloplasma®) in a random order over a period of 2 weeks. Laboratory analysis included conventional coagulation parameters and rotational thromboelastometry (ROTEM) assays.

Results: We confirmed a decrease in fibrinogen concentration and the number of platelets, and prolongation of PT after infusions. Compared to baseline values, differences in the ROTEM assays' results after infusions signified the decrease of coagulation factors concentration, and fibrinogen concentration, causing impaired fibrin polymerization and clot structure. The ROTEM indicator of clot lysis remained unaffected. Both in the case of Optilyte® and Geloplasma®, the results suggested relevant dilution. Gelatine disrupted the process of clot formation more than balanced crystalloid.

Conclusions: Infusions of both crystalloid and saline-free colloid solutions causing up to 30% blood dilution cause significant dilution of the coagulation factors, platelets and fibrinogen. However, balanced crystalloid infusion provides less infusion-induced coagulopathy compared to gelatine.

Keywords: fluid resuscitation, coagulation and fibrinolysis, rotational thromboelastometry, point-of-care test

Leptin, selected tumor markers and metabolic syndrome parameters in pancreatic neuroendocrine neoplasms

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Background: Metabolic abnormalities, which are components of the metabolic syndrome (MS), and leptin are well known risk factors for many cancer, including pancreatic cancer even though no clearly link with pancreatic neuroendocrine neoplasms (PanNENs) was yet investigated. It is not so far fully studied whether the MS components could be involved in the etiology of PanNENs or could influence their outcomes. The prevalence of PanNENs is constantly increasing over last years in parallel with the increasing incidence of the MS therefore, the possible relationship should be investigated.

The aim: The aim of the this research was to assess the serum levels of leptin, chromogranin A, CA 19-9, and CEA in patients with PanNENs and to search for associations between PanNENs, these markers, and MS. Second, we aimed to investigate whether obesity increases the risk of PanNENs, such as pancreatic cancer, which could provide evidence for defining PanNENs as obesity-related cancers.

Materials and methods: Study included 106 patients with PanNENs and 40 healthy volunteers. The serum concentrations of leptin, selected tumor markers (CgA, CA 19-9 and CEA), metabolic parameters (glucose, cholesterol, triglycerides) and anthropometric measurements (weight, height, BMI) were assessed. The statistical calculations were performed using Statistics v. 13.0.

Results: Patients with PanNENs showed higher serum concentration of CA 19-9, CEA and CgA in comparison to controls. Statistically significant differences CEA levels were found in PanNENs patiens with MS. PanNENs patients with BMI ≥ 25 kg/m² and female patients exhibited significantly higher leptin levels.

Conclusions: Study reflects the importance of determined markers. Future research should focus on understanding the impact of obesity and metabolic disturbances on PanNENs and accounting for the relationship between PanNENs and MS, like on others malignancies. Furthermore as a result of proved role of leptin in cancerogenesis in gastrointestinal cancers, further research in PanNENs needs to be done.

Keywords: leptin, chromogranin A, CEA, CA 19-9, metabolic syndrome, pancreatic neuroendocrine neoplasms

Quantitative assessment of extracellular matrix proteins in the abdominal aortic aneurysm

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Background: Cardiovascular diseases are considered the leading cause of death among adults in developed countries. Among this group abdominal aortic aneurysm (AAA) is of great public health importance due to its multifactorial, asymptomatic and high mortality rate. AAA is diagnosed incidentally at the time of abdominal USG examination and it affects mainly men over 65 years of age, whereas the only treatment used currently is surgery. The principal cause of AAA development is uncontrolled degradation of the extracellular matrix (ECM) proteins, both collagenous and noncollagenous.

The aim: Standardization of the methods of ECM proteins purification from the AAA wall and quantitative analysis of collagenous (COL) proteins and elastin (ELN).

Materials and methods: Biological material for the study included AAA wall samples from patients diagnosed with AAA. Each sample was divided into 3 separate sections. Biochemical extraction of ECM proteins was performed with 0.5 M acetic acid and 5 M guanidine hydrochloride. Identification and analysis of COL α -chains and ELN were carried out by WB method. The relative expression of COL1A1, COL1A2, COL3A1 and ELN genes was analyzed by qRT-PCR.

Results: Our results showed decreased levels of COL I and III in the inner and middle layers of AAA, while ELN was undetectable. Significant differences of COL1A2 expression were found between sections 1 and 2 of AAA, whereas decreased expression of COL1A1 was noted in section 2. Increased expression of COL3A1 occurred in section 1, and decreased in sections 2 and 3.

Conclusions: Purification of collagenous proteins from AAA wall samples with guanidine hydrochloride proved to be more efficient as compared to acetic acid, but none of method have been effective for ELN isolation. Decreased levels of COL I and III, and lack of ELN in the inner and middle layers of AAA may indicate on significant role of ECM proteins degradation in AAA pathogenesis.

Keywords: abdominal aortic aneurysm, collagen type I and III, extracellular matrix

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The effect of bariatric surgery and diet on the level of selected parameters of oxidative stress in obese rats

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Background: The prevalence of obesity is growing exponentially and becoming a global public health problem. Metabolic disturbances occurring with obesity are associated with oxidative stress. Bariatric surgery such as duodenal-jejunal omega switch (DJOS) is a treatment method which effectively reduces body weight and mortality. However, little is known about influence of bariatric procedures on cellular mechanisms, including oxidative stress.

The aim: The aim of the study was to assess the impact of DJOS surgery and different dietary patterns on the selected oxidative stress markers in liver tissue of diet-induced obese rats.

Materials and methods: 48 seven-week old male Sprague-Dawley rats were randomly assigned to 2 groups. The first one (n=24) was on a high-fat high-sugar diet (CF) for 8 weeks, while the other (n=24) was fed a normal chow diet for the same time. During the surgery a transection was conducted distally to the duodenal bulb the the distal part of the transected duodenum was closed. The second incision was performed in the first half of the total small intestine length. An isoperistaltic end-to-end anastomosis was performed between the duodenal bulb and the selected loop. After the surgical procedure all rats were randomly divided into high-fat high-sugar diet group or control diet group for next 8 weeks. The animals were then euthanized and the tissues harvested for assays. Selected parameters of oxidative stress (incl. GR, CAT, SOD, GPx, GST) were assessed using ELISA kits.

Results: CAT and GR and GPx activity were significantly lower after DJOS surgery versus SHAM. High-fat high-sugar diet is associated with increased levels of antioxidant enzymes such as GR, SOD, GPx, regardless of the type of operation. The lowest concentration of MDA was observed in groups fed control diet both before and after surgery.

Conclusions: DJOS surgery significantly affects redox processes by reducing the concentration of oxidative enzymes in rats' liver. Type of diet, irrespective of surgery, crucially affects oxidative stress.

Keywords: obesity, oxidative stress, bariatric surgery

The evaluation of chemosensitizing properties of neobavaisoflavone towards etoposide in anaplastic astrocytoma

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Background: Induction of apoptosis is considered one of the major strategies in chemotherapy. The pharmacological targets of anti-cancer drugs concern several mechanisms leading to triggering programmed cell death, such as DNA replication. However, due to drug resistance, the treatment is often ineffective. It is a characteristic of many types of tumors including high-grade gliomas, i.a. anaplastic astrocytoma. The therapy efficacy can be improved by targeting multiple different signaling pathways contributing to tumor resistance, growth, and progression, which may result in the sensitization of neoplastic cells to the drug. The compounds that possess such properties are polyphenols.

The aim: The purpose of the study was to investigate the effect of neobavaisoflavone, a *Psoralea corylifolia* polyphenol, on the pro-apoptotic activity of etoposide.

Materials and methods: To estimate proper concentrations of neobavaisoflavone and etoposide for the combined treatment, colorimetric cell viability WST-1 test was carried out. In the next part of the study, the experimental panel involving image cytometry techniques was performed. Annexin V assay was used to detect apoptotic cells. We also evaluated mitochondrial membrane potential by JC-1 staining, and the distribution of cell cycle phases using DAPI. The research was conducted on the in vitro culture of human anaplastic astrocytoma cells.

Results: In the group treated with etoposide in combination with neobavaisoflavone, there was a statistically significant increase in an apoptotic subpopulation, when compared to etoposide alone. The etoposide-neobavaisoflavone combination also caused an elevation in the subpopulation of the cells with decreased mitochondrial membrane potential. In the cells incubated with neobavaisoflavone alone, no changes were found in comparison to the control.

Conclusions: Neobavaisoflavone intensifies apoptosis induced by etoposide. The effect on mitochondria suggests that the isoflavone may act through the intrinsic pathway.

Keywords: etoposide, isoflavones, chemosensitization, glioma

Initial assessment of compatibility of potential new ACEI drugs with selected excipients used in the solid oral

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Background: The finished drugs, in addition to the active pharmaceutical substance (API), contain excipients. Excipients perform many important functions in drug formulations. Excipients in the formulation of solid drug forms are used to: fill the mass of the tablet, improve the appearance and taste of the drug, stabilization of the API in the drug formulation. In formulations of drugs, it is important that API and excipient are compatible. As a quick and cheap method of testing the compatibility of API with an excipient, thermal methods can be used, including TG, and c-DTA analysis.

The aim: In this study, assessed compatibility of new synthesized indole derivatives of potential ACEI drugs with excipients used in the solid dosage form. In the experiment, thermal (TGA, c-DTA), and colorimetric analysis were used.

Materials and methods: The active pharmaceutical substances used in this study were two indole derivatives of potential importance as ACEI drugs. In the study tested excipients used in the formulation of oral solid dosage forms. In the assessed of compatibility tested API with excipients, the TGA, c-DTA, and colorimetric methods were used.

Results: The TG, DTG, D2TG, and c-DTA analysis were done for pure APIs, excipients, and binary mixture API with excipient in ratio 1:1. The study has shown that the tested indole derivatives are incompatible with most tested excipients. The incompatibility was most visible for excipients contain mono-, and polysaccharides. The Maillard reaction is responsible for this incompatibility, which was additionally confirmed by a colorimetric method.

Conclusions: The compatibility study of new synthesized indole derivatives with selected excipients used in solid dosage forms using thermal and colorimetric analysis pointed out that the tested APIs were strongly incompatible with glucose and lactose monohydrate. The thermogravimetric analysis may be used for the preliminary examination of compatibility API with excipients in preformulation studies.

Keywords: ACEI, excipients, TGA, c-DTA, compatibility studies, color measurement

SARS-CoV-2 antibody levels according to vaccination status in healthcare workers from the University Hospital

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Background: Serologic methods have public health value for monitoring and responding to the COVID-19 pandemic, and clinical utility in providing care for patients. In Poland, national vaccinations began on December 27, 2020 starting from medical personnel.

The aim: The aim of the study was to determine the level of antibodies before and after inoculation with mRNA preparations depending on the previous COVID-19 disease exposure among healthcare workers (HCWs).

Materials and methods: HCWs were asked to complete two surveys: the first one before receiving the first dose of vaccine or within 4 following days (in January 2021) and the second survey after a six-month follow-up (in June 2021). Additionally, in parallel two blood samples from each participant were collected in the baseline and in follow-up. Anti-SARS-CoV-2 S (Spike) total antibody levels were measured using the electrochemiluminescence ECLIA technique.

Results: In baseline 41.1% of HCWs had positive antibody test result and in follow-up vaccinated HCWs had almost fifty times higher antibody levels than unvaccinated HCWs 1 620.0 U/ml vs. 33.7 U/ml ($p < 0.001$). HCWs, who were under 30 years old, had significantly higher antibody levels in June than older HCWs. Among participants with positive antibody test result in January HCWs with asymptomatic COVID-19 had over four times higher antibody levels in June than HCWs self-reported severe COVID-19, 2 666.0 U/ml vs. 595.0 U/ml ($p = 0.046$).

Conclusions: Our study revealed statistically significant higher antibody levels 6 months after vaccination among participants with positive antibody test result at the baseline – as the result of SARS-CoV-2 exposure – than unvaccinated participants also with positive antibody test result at the baseline. Moreover, vaccination among HCWs under 30 years old induced more effective antibodies production in comparison to older individuals.

Keywords: SARS-CoV-2, antibodies, vaccination, COVID-19, healthcare worker

Effect of UVB phototherapy of psoriasis vulgaris on skin directional reflectance

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Background: Psoriasis is chronic, autoimmune inflammatory skin disease manifested by papules on the body, usually covered with plaques. One of the most popular treatment for psoriasis is phototherapy.

The aim: The aim of the study was to assess the effect of UVB phototherapy on skin covered with psoriatic plaques and without lesions in patients with psoriasis vulgaris on the directional reflectance of the skin.

Materials and methods: 48 patients with psoriasis vulgaris participated in the study. Patients were subjected to 20 UVB irradiations performed three times a week. A 410 - Solar reflectometer was used to study the total reflection from the skin surface in the range of 335 to 2500 nm. Measurements were made before the start of therapy, after 10 and after 20 irradiations.

Results: There was a difference in the reflectance of skin without psoriatic plaques and lesional skin. Depending on the wavelength range, the skin was characterized by different reflectance values. During the course of phototherapy, the reflectance values changed, both in the psoriatic skin and skin without psoriatic plaques.

Conclusions: The use of the 410-Solar Refractometer makes possible to conduct total reflectance measurements for skin with psoriatic lesion and without any sight of psoriatic plaque which allows to assess impact of the phototherapy on the skin.

Keywords: psoriasis, phototherapy, skin reflectance

Clostridium spp. antibiotic susceptibility, genetic phenotype and spores prevalence in a hospital environment

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Background: Clostridium spp. spores are resistant to environmental factors including alcohol disinfectants. Among the popular methods of testing the cleanliness of the hospital environment none ensures detection of spores.

The aim: To detect the presence of Clostridium spp. spores in hospital environment with the use of a special C diff Banana Broth™, to evaluate antibiotic susceptibility of isolates and their genetic profile.

Materials and methods: Sterile swabs were used for collection of environmental samples (n=40) and have been directly inoculated to C diff Banana Broth™. After incubation positive broths were inoculated on selective media and incubated for 48h at 37°C under anaerobic conditions. The growing colonies were identified with the VITEK 2 Compact. The antibiotic susceptibility of the isolates was determined by E-tests for 10 antibiotics in accordance with the recommendations of EUCAST 2020. Bacterial DNA was isolated using the QIAmp DNA Mini Kit (Qiagen USA). Among C. difficile strains mPCR reaction was carried out for detecting genes encoding toxins: A (tcdA), B (tcdB), binary (ctdA and ctdB), 16S rDNA, GDH (gluD) and macrolide and lincosamide MLSb type resistance (ermB). C. perfringens strains were tested by mPCR for the presence of the toxins: alpha(cpa), beta(cpb), iota(iA), entero(cpe), epsilon(etx) and cpb2(cpb2).

Results: Out of collected 40 samples 15 (37,5%) positive results for Clostridium spp. were obtained : 7 C. perfringens, 3 C. baratti, 3 C. difficile and 2 C. paraputrificum strains were isolated. All C. perfringens strains possessed cpa gene. One C. difficile demonstrated all toxin genes, but ermB(-), 1 – only ermB(+), and the last only tcd(+).

Conclusions: Isolation of antibiotic resistant toxigenic strains of C. perfringens from hospital environment demonstrates one of the spreading ways of anaerobic spore forming bacilli between hospitalized patients. For epidemiological surveillance appropriate media such as C diff Banana Broth for Clostridium spp. spore detection should be used.

Keywords: Clostridioides difficile, Clostridium perfringens, spores, toxins, hospital environment,

Does vulvar lichen sclerosus predispose young girls and adolescents to autoimmune thyroid disease?

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Background: Vulvar lichen sclerosus (VLS) is a chronic inflammatory condition affecting the anogenital region, which may present in a prepubertal or adolescent patient. The most popular theories are its autoimmune and genetic conditioning. VLS may correlate with autoimmune thyroid diseases (AITD) however, this topic has not been sufficiently studied in children.

The aim: The aim of the study was to study coexistence of thyroid autoimmune diseases in girls diagnosed with VLS and to evaluate the occurrence of antibodies for specific AITD in order to provide a multi - speciality medical care.

Materials and methods: Our study was handled between July 2020 and February 2021. Our study group consisted of 55 girls aged 2-18 years old without any systemic diseases. The study group was formed by 20 girls who were previously diagnosed with VLS whereas the control group was formed by 35 girls without VLS. Patients' legal guardians were asked to complete questionnaires regarding the medical history of their children. All the patients had blood samples taken and biochemically analyzed. Human antibodies against thyroid peroxidase (antiTPO) and thyroglobulin (antiTG) were determined in each sample by the immunoenzymatic method with the commercially available ELISA kits.

Results: In the study group an analysis of frequency of symptoms was performed: 70% complained of pruritus, and 50% had a burning sensation in the urogenital area. In 40 % erythema, whitening and bleeding of mucosa were observed. The levels of antiTG and antiTPO antibodies was evaluated in both study and control group. In both groups no statistical significance was found (antiTG $p=0.379$, antiTPO $p=0.96$).

Conclusions: Although no statistically significant relation between the occurrence of VLS and levels of antiTPO and antiTG antibodies were found, the results obtained make us sure that it is necessary to provide a patient with multidisciplinary medical care. This issue requires further research on larger groups of patients.

Keywords: Vulvar lichen sclerosus, VLS, Autoimmune thyroid diseases, AITD, Adolescent Gynecology

Fetuin-A concentrations in patients with genotype 1b chronic hepatitis C during DAA treatment

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Background: Hepatic glycoprotein fetuin-A is related to metabolic homeostasis dysregulation. Hepatitis C virus (HCV) infection is associated with glucose and lipid metabolism disturbances. Up today there is no clear data, if fetuin A may be involved in metabolic disorders observed in patients with chronic hepatitis C (CHC).

The aim: Estimation fetuin-A levels in G1b CHC patients during treatment with direct- acting antivirals (DAA).

Materials and methods: Study was conducted in the group of 85 patients diagnosed G1b CHC (37M and 48 W in the age ranged 26-71 ys), who had been offered DAA treatment according to National Health Fund. Three times: just before treatment starting, in the end and at moment of sustained viral response (SVR) checking 2ml of the blood taken for routine laboratory tests was stored for future fetuin-A levels analysis. At the same time point the anthropometric parameters were taken: height, weight, waste and hip circumferences. Patients were enrolled to the study after their written consents had been obtained. Fetuin-A concentrations were examined using immunassay method and correlated with body mass index (BMI), waste-hip ratio (WHR) and results of other estimations (laboratory tests, fibroelastography examination).

Results: Fetuin -A concentrations were lower than reported as physiological, but did not importantly change during period of the study and did not show statistically significant correlations with other analyzed parameters.

Conclusions: As fetuin- A concentrations in G1b CHC patients cured with DAA using regimen were lower than previously reported as physiological, but did not significantly change during circa 6 months and not correlate with anthropometric parameters and routine laboratory tests, its role in this group of patients should be evaluated basing on greater cohort and laboratory tests exploring the glucose and lipid metabolism.

Keywords: fetuin-A, genotype 1b chronic hepatitis C, direct- acting antivirals

Hyperspectral evaluation of acne skin subjected to intense pulsed light irradiation

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Background: Intense pulsed light devices emit polychromatic, incoherent and diffused light covering a wide spectrum of wavelengths from 420 to 1200 nm. These properties allow for a great variety in the selection of individual treatment parameters and adaptation to different skin types and problems. It is used to reduce discoloration, erythema, acne and photorejuvenation.

The aim: The aim of the study was to evaluate the hyperspectral acne skin before and after intense pulsed light therapy and to compare it with acne-free skin.

Materials and methods: The study involved 20 volunteers (mean age 24 ± 4 years) - 11 women and 9 men with diagnosed moderate acne. The control group consisted of 20 people (12 women and 8 men, mean age 25 ± 3 years) without acne lesions. All acne volunteers underwent a series of 4 Intense Pulse Light (IPL) treatments at weekly intervals. A 515-1200 nm head was used for the treatments, and the light energy was increased during each treatment. Volunteers with acne lesions were photographed using the Specim IQ hyperspectral camera before starting the series of treatments and one week after the 4th treatment.

Results: Acne skin shows lower reflectance than skin not affected by acne lesions. Acne skin after therapy is characterized by a higher reflectance compared to the skin before the therapy and is close to the results of skin reflectance in the control group.

Conclusions: IPL therapy increases skin reflectance, which may be due to a lower content of chromophores in the skin, reduced inflammation and fewer acne lesions. Thanks to hyperspectral imaging, it is possible to determine the wavelength with the lowest skin reflectance, and thus the highest amount absorbed by the tissue. This will enable a precise selection of the wavelength, e.g. of a laser, or the limitation of the IPL range with cut-off filters in the desired range. This will help to minimize side effects such as: erythema, burns or low effectiveness due to the optimization of the treatment procedure in terms of skin reflectance.

Keywords: acne vulgaris, hyperspectral imaging, reflectance, acne therapy

**SESSION
OF GENERAL
MEDICINE**



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2010 vs 2017 – comparison of antibiotic use due to respiratory tract infections

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Background: Infections are common reason of patients's admission to the family doctor. The role of the family doctor is to assess both the symptoms suggesting the aetiology of infection, as well as performing additional tests, in order to make diagnosis. An increasing clinical problem is antibiotic resistance.

The aim: The objectives of this study were to assess and compare antibiotic use due to acute respiratory infections in the rural primary care population for over a 7-year period, excluding the time of SARS-COV-2 epidemic.

Materials and methods: A retrospective examination of electronic medical records covered 4355 declared patients in 2010 and 3959 patients declared in 2017. The analysis included advice – medical consultations due to acute respiratory infections, related or not related to the antibiotic prescription. In 2010, 2531 such consultations were given, and in 2017 - 1687.

Results: The results of our analysis indicate that in the surveyed rural population there was a decrease in both the frequency of consultations for respiratory infections (58.12% vs 42.61%) and the frequency of prescribing antibiotics / chemotherapeutics for this reason (50.8% vs 34, 6%). The type of antibiotic, which was most often used in the diagnosis of J06 (dominating both in 2010 and in 2017), has changed as well - from azithromycin to amoxicillin. The structure of diagnoses of respiratory tract infections systemized by ICD-10 has also been slightly changed.

Conclusions: The reducing frequency of prescribing antibiotics as well as the change of the first choice; antibiotic in the treatment of acute respiratory infections is a favorable trend and may result from the doctors' greater awareness of antibiotic resistance. Likewise, the change in the structure of diagnoses made by doctors from unspecified to specific ones may indicate greater awareness, resulting in treating specific diseases with targeted antibiotics. Further studies are needed to assess the choice of antibiotic therapy by the general practitioner.

Keywords: infections, antibiotics, respiratory tract, rural,

Complications rate of minimally invasive treatment of chronic venous disease at 1-month follow up

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Background: Chronic venous disease (CVD) is a progressive condition that affects a significant percentage of the population. Clinical manifestation of CVD differs between the patients: from asymptomatic patients with esthetic problems only like varicose veins(VV) to the very severe stages (including venous leg ulcer) that significantly decrease the quality of life. Traditional surgical treatment has been a leading method in invasive VV management for many years. Nonetheless, minimally invasive treatment thrived in the 21st century and overtook open surgery.

The aim: The aim of this study was to assess the rate of complications in patients undergoing minimally invasive treatment of saphenous vein insufficiency utilising endovenous laser ablation combined with simultaneous sclerotherapy of the tributaries.

Materials and methods: 28 patients who suffered from CVD, with clinical manifestation raging from II to IV degree in CEAP classification underwent minimally invasive treatment with use of EVLA and concomitant foam sclerotherapy. In the next step at one month follow up (OMFU) after the procedure the rate of complications, including deep vein thrombosis, burns, pigmentation, neurological disorders, infection and pain score with use of visual analog scale(VAS) was assessed as well as ultrasound examination was completed.

Results: There was only one (4%) episode of deep vein thrombosis at OMFU. There were no burns detected at OMFU in comparison to 7,1% detected at one week follow up($p>0,05$). Pigmentation was observed in 33% of patients. There were no neurological disorders or infections in patients who underwent the procedure. The average VAS at OMFU was 0.4 while at one week follow up was 1($p<0,05$).

Conclusions: Despite the fact that minimally invasive treatment of CVD is not completely deprived of complications, it occurs to be a safe and very promising option of treatment. Not only can patients return to normal activity right after the procedure but also are free from bothersome complications of traditional surgical treatment

Keywords: chronic venous disease, laser ablation, foam sclerotherapy, complications

Does prior SARS-CoV-2 infection increase the risk of adverse effects after mRNA vaccination (BNT162b2)

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Background: The COVID-19 pandemic has caused major changes in society. The prolonged lockdown led to economic collapse in many countries. Because of this reason, vaccination against Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is the only hope that may reduce spread of the virus.

The aim: This study aimed to assess the relationship between the severity of adverse effects after COVID-19 vaccine and prior SARS-CoV-2 infection.

Materials and methods: 578 physicians vaccinated with two doses of BNT162b2 were included in the study. Via a form on the Google Form platform data about past SARS-CoV-2 infection and observed adverse effects after taking the vaccination were collected.

Results: The most common adverse effects were local symptoms (pain at the injection site, limitation of mobility of the upper limb). Pain at injection site occurred in 96,2% of cases after first dose of vaccination. Systemic symptoms (weakness, myalgia, fever) appeared less frequently however after second dose occurred statistically significantly more often than after the first one ($\chi^2 = 121.99, p > 0.001$). Statistically, symptoms appeared more often after the first dose in the group of doctors with previous SARS-CoV-2 infection ($\chi^2 = 10.85, p = 0.001$). Moreover, in this group, the severity of symptoms after first dose was greater ($p > 0.001$). However, an inverse relationship was observed after second dose of the vaccination ($p > 0.001$).

Conclusions: The severity of symptoms after the first dose of the vaccine is greater in people who had been infected with SARS-CoV-2 in the past than people not suffering from COVID-19, but after second dose this relationship is reversed.

Keywords: vaccine, adverse effect, Covid19, BNT162b2 Pfizer-BioNTech

Hospitalization due to carbon monoxide poisoning as a problem of social medicine in paediatrics

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Background: During the heating periods, there are more and more cases of carbon monoxide poisoning throughout the country, including among children. Carbon monoxide poisoning is a significant problem in social medicine in Poland because its occurrence is often related to the socio-economic status of families that use faulty heating devices or materials that are not approved for combustion. The most important measures to improve the safety of users of heating devices include, among others, programs for effective maintenance or replacement of devices with new ones and the use of carbon monoxide and smoke detectors.

The aim: The aim of this study was to analyze the data on hospitalization due to carbon monoxide poisoning among children and adolescents in the years 2010-2021.

Materials and methods: The material consisted of statistical data on hospitalization due to carbon monoxide poisoning for 2010-2021, obtained from the Department of Paediatrics, Faculty of Health Sciences in Katowice, Medical University of Silesia in Katowice and literature data on the discussed health problem. Statistical analysis was performed with the use of Microsoft Excel and Statistica 13.3.

Results: The total number of hospitalizations due to the toxic effect of carbon monoxide (T58) in 2010-2021 was 306. The mean hospitalization time over the years decreased by 38%. The largest number of hospitalizations took place in 2017 (46), and the lowest in 2021 (7). This currently means a decrease in the number of cases by 85%.

Conclusions: It would be advisable to implement interdisciplinary educational activities for children and adolescents in the management of suspected carbon monoxide poisoning, as well as to intensify activities supervising the safety of installations, especially during heating periods.

Keywords: carbon monoxide poisoning, social medicine, children and adolescents, paediatrics

Laboratory markers for the use of various methods of oxygen supplementation in COVID-19

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Background: The severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2) infection resulted in significant worldwide morbidity and mortality, leading to a huge burden on healthcare. In Poland, the number of people who became sick is almost 6 million, and the number of deaths is 115000.

The aim: The aim of our study was to evaluate the results of laboratory tests performed on patients on admission to the hospital between groups of patients requiring and not requiring oxygen supplementation, and to find predictive laboratory indicators for the use of high-flow nasal oxygen therapy (HFNOT)/continuous positive airway pressure (CPAP)/bilevel positive airway pressure (BPAP).

Materials and methods: We retrospectively analysed the data of consecutive patients hospitalised in the Pulmonology Department of the Temporary COVID Hospital in Poznan from February to May 2021. On admission to the department, the patients had a panel of laboratory blood tests.

Results: The study group consisted of 207 patients with a mean age of 59.2 ± 15.0 years of whom 179 (72%) were male. During hospitalisation, oxygen supplementation was required by 87% of patients. The most common method of oxygen supplementation was the nasal cannula. Patients requiring oxygen supplementation and/or the use of HFNOT/CPAP/BPAP had lower lymphocyte counts and higher levels of urea, C-reactive protein, D-dimer, troponin, glucose, lactate dehydrogenase (LDH) as well as higher white blood cell and neutrophil counts. The parameter that obtained the highest area under curve value in the receiver operator curve analysis for the necessary use of HFNOT/CPAP/BPAP or CPAP/BPAP was LDH activity.

Conclusions: Among the basic parameters assessed on admission to the temporary hospital, LDH activity turned out to be the most useful for assessing the need for CPAP/BPAP active oxygen therapy. Other parameters that may be helpful for predicting the need for HFNOT/CPAP/BPAP are serum levels of urea, D-dimer and troponin.

Keywords: SARS-CoV-2, laboratory tests, HFNOT, CPAP, BPAP

Perinatal outcomes in newborns of mothers with gestational diabetes – the retrospective analysis.

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Background: Diabetes mellitus is one of the most common metabolic disorders complicating the course of pregnancy. Currently, it is estimated that gestational diabetes accounts for nearly 90% of all diabetes cases in the course of pregnancy. What is important, gestational diabetes has been associated with an increased risk of long- and short-term complications, both for the mother and the newborn.

The aim: The aim of this study was to evaluate data concerning outcomes of neonates born to mothers with gestational diabetes (GDM). The results were compared between newborns assigned to two groups due to the kind of maternal treatment - only diet (GDM G1) vs diet and insulin therapy (GDM G2).

Materials and methods: Medical records of neonates hospitalised after birth in Department and Clinic of Neonatology, Wrocław Medical University, were analysed. The data comprised records of newborns born at term or near term in 2017-2021. The statistical analysis was performed with significance level set at $\alpha = 0.05$, using the parametric Student's t-test, the non-parametric U-Mann-Whitney test, or the Kruskal-Wallis ANOVA, and the Chi-square test (χ^2).

Results: A total of 646 medical records was analysed. There were 247 (38.2%) newborns in GDM G1 group and 399 (61.8%) newborns in GDM G2 group. The study groups differed significantly ($p < 0.05$) in length of hospitalisation, incidence of cardiological abnormalities and the way of feeding during hospitalisation. There were no statistically significant differences ($p > 0.05$) between the groups in the results concerning neonatal anthropometric measurements, general condition after birth, abnormalities in ultrasound examinations, incidence of oxygen therapy and intensity of jaundice.

Conclusions: Maternal management of gestational diabetes is not the main determinant of neonatal outcomes, but the level of glycemic control is an important factor affecting neonatal outcomes. Postnatal neonates' outcomes might be affected by other perinatal factors, including concomitant maternal diseases.

Keywords: gestational diabetes mellitus, neonates, perinatal outcomes

Post-discharge occurrence of Surgical Site Infections after hip or knee alloplastic surgery based on national data from Poland

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Background: Alloplastic is the most common procedure that improves the functioning of patients, directly increasing their quality of life. Thus, infection is a serious factor complicating the subsequent management of the prosthesis and the patient.

The aim: The aim of the study was a retrospective analysis of factors increasing the risk of post-burst surgical site infection (SSI).

Materials and methods: The analysis was carried out on the basis of an anonymized database possessed by the National Health Found for 2017. The database included 56,068 patients undergoing hip replacement surgery (HPRO) and 27,457 patients undergoing knee replacement surgery (KPRO), who completed 18 years of age.

Results: In our data, the incidence rate of SSI was 0.92% for HPRO and 0.95% for KPRO.

The main risk factors for hip SSI were male gender (OR=1.349; 95%CI 1.120-1.625), medication for hematopoietic System diseases (OR=2.166; 95%CI 1.800-2.605), musculoskeletal system diseases (OR=1.219; 95%CI 1.002-1.484) and nervous system diseases (OR=1.337; 95%CI 1.108-1.614). Strongly increasing the risk was also intensive care unit (ICU) hospitalization and antibiotics for discharge were increasing the risk (OR=2.034; 95%CI 1.066-3.879 and OR=3.483; 95%CI 2.712-4.474, respectively).

Conclusions: The full incidence rate of SSI in Poland is much higher than in other countries in OECD reported by ECDC. The study showed a definite benefit of preoperative/postoperative rehabilitation on the risk of SSI, hence diseases of the nervous and musculoskeletal systems define a group that, just like patients with diabetes, should be properly prepared for the procedure.

Keywords: Alloplastic, orthopedics, hip, knee, SSI

Prevalence and risk factors of diastasis recti abdominis in early postpartum

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Background: Diastasis recti abdominis (DRA) occurs among 34% at gestation week 21, and among 32,6% women after 1 year postpartum.

The aim: The aim of this study was to determine the prevalence of DRA and verify the factors affecting DRA in early postpartum.

Materials and methods: On the 3rd day after delivery 82 women from the Obstetrics Ward were qualified for the study. The women filled in a questionnaire, and a palpative examination of the rectus abdominal muscle was performed. DRA was diagnosed when the distance between the medial edges of the rectus abdominis muscle was greater than 2 fingerbreadth. The Chi2 test, the t-test, and regression analysis were used for statistical analysis.

Results: The mean age of the women was 31.3 ± 4.5 . DRA on the 3rd day postpartum occurred in 78% of women. DRA was diagnosed among 93% of women who gave birth by caesarean section (CC) and among 64% after vaginal delivery ($p=0.002$; $\beta=1.627$, 95%CI: 0.916 to 2.339). DRA occurred in 79.2% of primiparous women and 75.9% of multiparous women ($p=0.735$). 90% of women with DRA in pregnancy still have it postpartum ($p=0.3$). Only 24% of women visited a physiotherapist during pregnancy. Among women with DRA, the mean child's weight was 3463.9 ± 568.8 , while in women without DRA, the mean child's weight was 3135.6 ± 429.4 ($p=0.026$). 90.3% women with constipation had DRA ($p=0.036$; $\beta=0.351$, 95%CI: -0.385 to 1.087). 91.4% of women who had pubic symphysis pain during pregnancy had DRA in the first days of puerperium ($p=0.01$; $\beta=0.601$, 95%CI: -0.195 to 1.387).

Conclusions: Women after CC are more likely to develop DRA in the first days of puerperium. The greater weight of the child increases the risk of DRA. Other factors that increased the risk of DRA in the first few days of puerperium were: diagnosis of DRA in pregnancy, pubic symphysis pain in pregnancy, and constipation. No relationship was found between DRA and postpartum posture, the number of deliveries, and increased abdominal oblique muscle tone. Unfortunately, still few women visit physiotherapist during pregnancy.

Keywords: diastasis recti abdominis, pregnancy, physiotherapy, postpartum, women's health

Primary vaccinations of children during the COVID-19 pandemic

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Background: In addition to many diagnostic and treatment procedures, the COVID-19 pandemic has also limited the preventive actions, which include the immunization schedules. In order to reduce the level of spread of SARS-CoV-2, the implementation of vaccinations program among children has been significantly limited.

The aim: The aim of the study was to evaluate the vaccination schedule during the COVID-19 pandemic.

Materials and methods: The study was conducted in a selected clinic (Krakow, Poland) that takes care of 1,982 children aged 0-19. The analysis of the number of vaccinations was carried out for the years 2019-2021, based on the annual reports (MZ-54). Vaccinations that were evaluated included: DTP, MMR, PCV and seasonal vaccination against influenza. The collected data was analyzed by descriptive statistics and the Chi-square test.

Results: Vaccination for the particular diseases in the group of younger children was higher than in the older children e.g. PCV in 2019-2021, which was 82.4% - 89.3% in the group of 2-year-olds ($p = 0.26$), as was the administration of the first dose of the MMR vaccine 78.8% - 84.8% ($p = 0.22$) did not differ significantly in the subsequent analyzed years. It was different in the group of older children. Booster vaccination with DTP and MMR differed significantly in 2019-2021. The biggest difference was observed in the group of 5-year-olds, whose vaccination coverage for DTP and MMR decreased twice by 51% in 2019 vs 24.2% in 2020 ($p < 0.001$). The number of DTP vaccinations at the age of 13 also decreased: 74.4% in 2019 vs. 29.7% in 2020 ($p < 0.001$) and 18 years: 51.7% in 2019 vs. 30.1% in 2020 ($p < 0.001$).

Conclusions: The COVID-19 pandemic has significantly influenced the implementation of the immunization program. Nevertheless, prioritizing vaccinating children up to 3 years old has protected the youngest population from contagious pathogens. However, the backlog in vaccinating older children must be complemented.

Keywords: vaccination, COVID-19, children, primary healthcare

The change of non-oedematous body mass versus prognosis in patients with HFrEF

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Background: Diseases of the cardiovascular system are the first cause of death in developed countries. Heart failure is one of the most significant challenges in medicine, both in Poland and all over the world. It is defined as a set of typical subjective symptoms, such as lower limb edema, shortness of breath, reduced exercise tolerance, which may include variations in physical examination: peripheral edema, scars over the lungs, widening of the jugular veins. Cardiac cachexia is an unintentional loss of 5% non-injurious body mass. Sarcopenia is a condition characterized by low skeletal muscle mass, low handshake strength, low physical fitness and slow gait rate.

The aim: The aim of the study is to assess the relationship between the change in non-oedematous body mass and the prognosis of patients with heart failure.

Materials and methods: The research material consists of 1029 patients with heart failure who were included in the Prospective Heart Failure Register maintained in the Third Department of Cardiology of the Silesian Center for Heart Diseases in Zabrze since 2003. The collected data was subjected to statistical analysis in Microsoft Excel 2013 and Statistica 13.

Results: The highest mean values of ejection fraction of the left ventricle were observed in patients with weight gain, and the lowest - in patients who lost more than 5% of body weight. The lowest probability of survival is characterized by people with heart failure who have lost more than 5% of their body weight.

Conclusions: Both weight loss over 5% and weight gain are associated with worse prognosis and increased mortality of the subjects. We should strive to normalize body weight and prevent the development of cardiac cachexia and sarcopenia as factors significantly worsening prognosis of patients with heart failure.

Keywords: heart failure, cardiovascular diseases, sarcopenia, cardiac cachexia, body mass changes

The Neutrophil Extracellular Trap formation and its link with thrombosis in lymphoproliferative disorders

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Background: Neutrophil Extracellular Trap formation (NETosis) is a type of programmed cell death. Citrullinated histone H3 (CH3) has been discovered as a marker of NETosis activity. A link between NETosis and cancer-associated thrombosis (CAT) has been described in solid tumors. Venous thromboembolic events (VTE) are common complications in patients with lymphoproliferative disorders (LD) as multiple myeloma (MM) and lymphoma.

The aim: The aim of the study was to investigate CH3 as a marker of NETosis activity and its role in CAT in patients with newly diagnosed LD.

Materials and methods: We prospectively analyzed 65 patients with LD (Hodgkin Lymphoma n=14, Non-Hodgkin Lymphoma (NHL) n=16 and MM n=35) qualified for systemic therapy in 2019-2021. Before the treatment we performed anthropometric and blood measurement: complete blood count, coagulation and biochemical parameters and collected blood sample for CH3 assessment and then observed subjects for symptoms of CAT.

Results: Median observation time was 325 (20-1012) days. There was 7 VTEs: 6 in MM, 1 in NHL patients. Subjects with VTEs had lower body mass index (21 vs. 25; $p=0,041$) than those without VTEs. In both groups plasma CH3 levels were comparable (900 vs. 951 pg/ml; $p=0,98$). The entire cohort presented positive correlation of CH3 with serum $\beta 2$ -microglobulin ($r=0,59$; $p<0,001$). In MM group we observed positive correlation of CH3 and body weight ($r=-0,351584$; $p=0,045$) and with $\beta 2$ -microglobulin ($r=0,57$; $p<0,001$) and negative with hemoglobin ($r=-0,33$; $p=0,049$).

Conclusions: Higher CH3 levels in patients with advanced phase of MM may suggest a link between NETosis and MM progression, although it requires further investigation. Contribution of NETosis in CAT in LD patients require research on larger population.

Keywords: Lymphoproliferative Disorders, Thrombosis, Neutrophil Extracellular Trap

The usage of e-cigarettes in adolescents, as a modern pediatric problem

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Background: E-cigarettes are electronic nicotine dispensing systems in the form of an aerosol. Their popularity among youth is growing at an exceedingly fast pace.

The aim: Presentation of the growing problem, which is the increase in the frequency of using e-cigarettes among youth.

Materials and methods: In the spring of 2021, a nationwide, anonymous online survey was conducted. 10.388 children took part in this study - 55,6% girls and 44,4% boys aged 12-18 years.

Results: Among the surveyed people, 79,3% of people declared themselves non-smokers. The remaining adolescents stated that they were smokers. 1.275 people reported smoking within the last 30 days, forming 90% of all smokers (12.3% of the entire sample). The share of current vapers was 84.7% of all users of e-cigarettes (1,546 children, 14.9% of all respondents). 608 youth declared that they smoked only traditional cigarettes (5.9%), 897 people used (8.5%) only e-cigarettes and 667 people (6.4%) were dual users. The share of boys was higher in the group of e-cigarette users compared to those who did not use any tobacco products in the last 30 days. The allocation of people using e-cigarettes was higher in the group of people in technical secondary school. The share of people exercising frequently was higher in the group of those who only used e-cigarettes compared to those who smoked only traditional cigarettes.

Conclusions: The problem of the usage of e-cigarettes by teenagers is essential. Because of the data presented, it is crucial that pediatricians screen adolescents for e-cigarette or related product use in the last 30 days. It is significant to educate primarily doctors dealing with adolescents and then patients about the potential damage these devices can cause to a young body. It is possible that increasing the awareness and sensitivity of pediatricians to the phenomenon of using electronic cigarettes among adolescents will make them mention e-cigarettes as stimulants in the interview, along with alcohol and traditional cigarettes.

Keywords: E-cigarettes, adolescents

Virtual reality in dentistry – pilot study

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Background: Anxiety preceding dental appointment is a common problem among both children and adult patients. It is frequently the reason of avoiding visits what often results in poor oral health and deterioration of general well-being. There is a number of methods regarding patients' relaxation as well prior the appointment as amid one, virtual reality among them.

The aim: The aim of the study was to assess the readiness and preferences of patients in term of visual content embedded in virtual reality that can be performed during dental treatment and to analyse the choices of respondents depending on gender, age or frequency of dental visits.

Materials and methods: The study was carried out among 100 adult dental patients while they waited for their appointment in the waiting room. Interviewees completed the multiple-choice, uncompelled questionnaire containing 4 questions.

Results: The results show that the most frequently chosen answer was projection of landscapes (40%) or an interactive journey like beach walk or mountain trekking (35%). No differences were observed between men and woman, in both groups projection of landscapes was the most common answer. The vast majority of interviewees (87%) was willing to try virtual reality during dental treatment while the remaining 13% did not want to experience virtual reality at all.

Conclusions: In conclusion, most of the participants were eager to try virtual reality amid dental appointment and they rather chose calm and relaxing contend instead of interactive quizzes or games. It is promising that dental patients are willing to be ready to try out innovative technologies in the fight against dental anxiety.

Keywords: dental treatment, virtual reality, dental anxiety

SESSION OF GYNECOLOGY AND OBSTETRICS



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The impact of physical activity before and during pregnancy on the risk of GDM and type of delivery

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Background: Physical activity is a crucial element of human health at every stage of life. The ACOG recommends 20-30 minutes of exercise per day on most days of the week. Physical activity during pregnancy has been shown to influence perinatal outcomes.

The aim: The study aimed to determine the benefits of physical activity before conception and during pregnancy for both the woman and the fetus.

Materials and methods: The research data were anonymously collected using an author cross-sectional survey. The study group included 961 women. The respondents' knowledge was estimated via a series of questions about physical activity during the 6 months before conception and in each trimester of pregnancy, length of pregnancy, term of delivery, type of delivery, GDM, weight gain during pregnancy, and newborn body weight.

Results: The results show that the major impact on the course of pregnancy and newborn well-being has physical activity during the 6 months before pregnancy. Among the women who participated in the study, 73% were less physically active (< 90 minutes per week) and 27% were physically active (> 90 minutes per week) 6 months before conception. The results show that gestational diabetes occurred in 14,1% of less physically active and in 6,9% of physically active ($p=0,0025$). Moreover, 38% of less physically active women gained too much weight during pregnancy compared to 30,9% of physically active ($p=0,0413$).

Physical activity in the first trimester reduced the risk of Cesarean Section. 37,6% of less physically active during the first trimester and 29,4% of physically active had CC due to medical indications ($p=0,0306$).

Conclusions: Physical activity in the period before conception is crucial to gestational diabetes occurrence. Physical activity during the first trimester impacts the type of delivery.

Keywords: physical activity, pregnancy, gestational diabetes

Changes in the expression profile of mRNAs related to histaminergic system in endometrioid endometrial cancer

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Background: Research has indicated higher concentrations of histamine and polyamine in endometrioid tissue in comparison with healthy tissue.

The aim: The aim of this study was to evaluate changes in the expression patterns of messenger RNA (mRNAs) related to the histaminergic system in endometrial samples and whole blood in women with endometrioid endometrial cancer.

Materials and methods: The study group consisted of 30 women with endometrioid endometrial cancer qualified for hysterectomy (G1 well-differentiated, 15 cases; G2 moderately differentiated, 8 cases; and G3 poorly differentiated, 7 cases). The control group included 30 women with no neoplastic changes during routine gynecological examinations. The molecular analysis consisted of the microarray analysis of mRNAs and miRNAs related to the histaminergic system, reverse-transcription quantitative polymerase chain reaction (RTqPCR).

Results: From among 22,277 mRNAs present on the HG-U133_A2 microarray slide, 65mRNAs are connected with the histaminergic system. It was observed that two mRNAs specifically differentiate the G1 and G3 samples from the control, while one gene was characteristic for the G3 samples. On the other hand, HRH1, HRH3, and SLC23A2 were transcripts that differentiated samples of endometrioid endometrial cancer independent of G from the control. HRH1 (G1 vs. C= +1.98; G2 vs. C= +2.14; G3 vs. C= +2.75) HRH3 (G1 vs. C=+2.74; G2 vs. C= +6.14; G3 vs. C= +5.75) SLC23A2 (G1 vs. C= +2.01; G2 vs. C= -3.45; G3 vs. C= +2.77).

Conclusions: The selected mRNA transcripts seem to be promising goals for molecularly targeted therapies in the context of endometrioid endometrial cancer.

Keywords: endometrial cancer, histaminergic system, mRNA, microarray

Effects of different surgical treatment methods on the quality of life among women with breast cancer

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Background: Breast cancer is the most common malignancy in women. It can also occur in men although at a much lower frequency. Survival rates in the population with breast cancer have been steadily increasing. Factors contributing to reduced mortality include an earlier detection of cancer, availability of various treatment methods, and a better understanding of the disease. Recent reports have indicated that the assessment of the quality of life (QoL) is an essential tool for estimating the burden of various diseases.

The aim: The aim of this study was to assess differences in the quality of life among women undergoing breast-conserving surgery, total mastectomy, and mastectomy with immediate reconstruction

Materials and methods: A systematic review of the literature was conducted to investigate the relationship between different surgical treatment methods and the quality of life among women with breast cancer. The search was performed using the PubMed database and the following keywords: "breast conserving therapy" OR "BCT" OR "mastectomy" AND "quality of life" AND "sexuality". The results were restricted to articles in English and Polish published in 2010 and including patients older than 18 years.

Results: The literature search yielded 22 articles, 10 of which showed significant differences. Ten reviewed publications showed significant differences in the postsurgical quality of life depending on the therapeutic method. Breast-conserving therapy was associated with the best physical, sexual, and psychological outcomes. Mastectomy with reconstruction was also linked to satisfying results in terms of the quality of life. However, it was reported to be less preferred by patients. Total mastectomy showed the least positive results for the sexual and physical aspects of the quality of life.

Conclusions: Surgical treatment was generally associated with positive outcomes in terms of the physical and psychological well-being of women with breast cancer. However, patient satisfaction was the highest among women treated with breast-conserving surgery.

Keywords: Mastectomy, Breast-conserving therapy, Reconstruction, Quality of life

Foreign bodies inside us – LARC and vaginal disc use predictors and knowledge among college-aged women

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Background: The choice of contraceptive method is a complex process. A particular group of methods are those that require mechanical interference with the woman's body. For some it will be an insurmountable barrier and for others a chance to enjoy a successful sex life without fear of pregnancy. Recognizing the factors that influence their use will allow us to identify target groups, increase awareness and spread knowledge about them.

The aim: The aim of this study is to assess trends and knowledge of LARC and vaginal disc use, identify predictors associated with their use and analyze the decision-making process for dual-method use in a population of college-aged women.

Materials and methods: A total of 700 female students aged 19-25 years were surveyed. A self-administered questionnaire containing 44 questions in the form of a web-based survey shared among peers in online forums. Women who indicated IUD, implant, vaginal disc or injection as their method of pregnancy prevention were asked about their experiences with these methods and about their use of barrier methods at the same time.

Results: Only 19 participants (2.71%) answered all the questions about LARC and vaginal disc correctly. Medical students had the best knowledge (<0.0001). Out of 55 LARC and vaginal disk users (7.86%), 47 female students (76.4%) report that their quality of life has improved. The most frequently used method among those requiring body interference is the vaginal disc (38.1%) and the least frequently used is the hormone injection (0.1%). Sources of knowledge were: Internet (38.2%), gynecologist (34.5%), and friends (16.4%).

Conclusions: Participants' knowledge of LARC methods and vaginal disc is insufficient. Out of all students, medical ones have the best knowledge. These contraceptives are not the most frequently chosen in the population of student age woman. Most LARC and vaginal disc users do not use barrier methods at the same time. Fear of pregnancy is the most common factor for dual method use.

Keywords: LARC, vaginal ring, contraception, dual method

Knowledge about vaccination against COVID-19 and complications among pregnant women in Poland

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Background: SARS-CoV2 infection poses a significant health risk to pregnant women.

The aim: The aim of the study was to assess the knowledge about vaccination against COVID - 19, contraindications and complications after COVID-19 infection among pregnant women in Poland.

Materials and methods: The anonymous, structured web-based questionnaire contained 30 authoritative questions about sociodemographic data, trimester of G, comorbidities, possible adverse reactions, reason for reluctance to vaccinate and complications of having COVID-19 during pregnancy. The survey was conducted from 08/02/2022 to 08/04/2022.

Results: A total of 947 respondents, mean age 29,59 (\bar{I} 4,14) years were included. Comparing educational level, those with higher education were 2.7 times more likely than others to allow the desire to be vaccinated at a later date 38.3% vs 18.8%, $p=0.002$. In addition, these individuals were more knowledgeable about post-infection complications (64% vs 50% respectively, <0.0001). Talking to a doctor about vaccination positively influenced women's vaccination during pregnancy compared to women who were not talked to by a doctor (78.2% vs 56.0%, <0.00001). Those living in a city of more than 100 000 inhabitants declared that 78.4 % of the respondents had been vaccinated, 64.5 % of those living in smaller towns and 62.4 % of those living in villages. Higher vaccination rates were observed in the group of respondents who drew their knowledge about vaccination from health care providers compared to those who did not seek information from them (chi-square tests 75.6% vs 56.4%, <0.0001 and 78.2% vs 68.6%, <0.0001 respectively).

Conclusions: The knowledge about COVID – 19 is not sufficient in the group of pregnant women. The involvement of the physician has a crucial impact on prevention, who by informing patients about the possibility of vaccination, having up-to-date medical knowledge, providing reliable information about complications, has a direct impact on the decision to vaccinate the patients under his care.

Keywords: COVID-19, pregnancy, survey, vaccination

Pharmacological induction of misoprostol miscarriage in stillbirth. Factors influencing a complete miscarriage

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Background: Misoprostol is a drug commonly used to induce miscarriage in still-life pregnancies.

The aim: The purpose of our study was to investigate the factors influencing the speed and effectiveness of misoprostol abortion that does not require subsequent curettage of the uterine cavity.

Materials and methods: The retrospective study was conducted in 2021 in the Department of Gynecology, Obstetrics of the UCK im. K. Gibińskiego in Katowice. In the data analysis the following factors were taken into account: gestational age, misoprostol dosage regimen, presence of comorbidities and baseline laboratory results. Data were obtained from the analysis of patients; medical histories and analyzed in Statistica software.

Results: The study included a group of 91 women in the mean age $32,5 \pm 5,2$ with established stillbirth. All patients ($n = 91$) were qualified for pharmacological induction of miscarriage with misoprostol. 18 patients (19.7%) received only one dose of misoprostol, 38 (41.8%) received two doses, 24 (26.4%) received three doses, 11 (12.1%) received four doses. It was shown that 27 subjects (29.7%) did not require subsequent curettage of the uterine cavity. In this study, patients who experienced a misoprostol-induced complete miscarriage had a statistically significantly lower gestational age than patients who required curettage (8.33 vs. 9.72; $p = 0.029$). Adherence to strict time limits for the administration of misoprostol according to the current schedule did not show any significance ($p > 0.05$). The remaining examined factors did not have a significant effect on the effectiveness of complete emptying of the uterine cavity with misoprostol.

Conclusions: Age of stillbirth is relevant to the effect of misoprostol. The lower gestational age, the more effective is a total miscarriage.

Keywords: miscarriage, misoprostol, gestational age

Recognition of ophthalmological indications of childbirth by caesarean section among myopic women

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Background: The belief that natural childbirth in myopic patients can irreversibly aggravate quality of visual acuity is still common among society. In Poland the most common ophthalmologic indication to terminate pregnancy by caesarean section is myopia (57%), whereas in most cases natural labour does not have an impact on vision's quality. In 2014 Polish Ophthalmological Society released guidelines regarding ophthalmological indications for pregnancy termination by caesarean section.

The aim: The objective of the study was to verify the awareness of ophthalmological contraindications of natural labour among Polish women with myopia.

Materials and methods: The original, anonymous, online survey was performed. The survey, distributed on social media, included nineteen, both open and closed questions. The data were analysed separately for each participant and in selected comparative groups, including myopic women in general, women affected by other visual impairments and women that had already given birth.

Results: The study included 409 women with myopia. Participants were asked if they agree that refractive error is a contraindication of natural labour - 304 respondents (74,33%) agreed at least at some point with this sentence. Myopia was regarded as the most popular contraindication (160 answers - 52,63%), supposedly worsening the visual acuity irreversibly. Only 6 respondents (1,47 %) gave answers that were corresponding to the official indications. 139 (34,15%) respondents claimed that it had been suggested to them (by family, friends, Internet and 53 women advised by a physician) that there might be possible complications in the future. Only 12 women underwent a caesarean section due to ophthalmologic indications of whom 7 due to myopia.

Conclusions: As the recognition of ophthalmological conditions predisposing to caesarean section is still low among myopic women in Poland, it is of utmost importance for ophthalmologists and gynaecologists to educate women about real medical contraindications of natural labour.

Keywords: myopia, caesarean section, delivery, awareness, ophthalmology

**SESSION
OF
INTERNAL MEDICINE**



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HIV elite controllers – clinical characteristics

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Background: Elite Controllers (ECs) are a small group (<1%) of HIV+ patients, whose endogenous control of HIV-1 viremia can occur despite the lack of antiretroviral therapy (ART). They have a stable CD4+ cell count>400cells/μl and maintain a low Viral Load (VL). ECs form a heterogeneous group, with unexplained mechanism causing a lack of progression of HIV infection. Genetic factors are considered as one of the causes. It's not clear that the benefits of ART outweigh the risk in ECs. Polish AIDS Society's Recommendations, EACS and BHIVA don't refer to ECs individually, but indicate the necessity of treatment in all HIV+. The American DHHS strongly advises ART in ECs with disease progression.

The aim: The study aimed to analyze the ECs admitted to our department in the 2001-2021.

Materials and methods: We analyzed all clinical and laboratory data of n=5 HIV+ patients. Inclusion criteria: CD4+ cell count>400 cells/μl, VL<5000 copies/ml. Exclusion criteria: AIDS.

Results: We studied n=5 patients (M/F=3/2), mean age 39,2 yrs and mean duration of HIV-1 infection 9,16 yrs. The route of infection was uncertain in n=3, in n=2 was heterosexual. All patients had low VL (max. 4609 copies/ml), in n=2 it was undetectable. Nobody developed an opportunistic infection and the CD4+ count remained within the range of 404-1147 cells/μl (N:430-1590 cells/μl). We confirmed sexually transmitted diseases: n=1 syphilis, n=1 central nervous system syphilis/HBV and n=1 HBV. These patients suffered from n=1 hypertension, n=1 diabetes mellitus type 2, n=2 depression and n=1 alcoholism. In n=3 cases ART was initiated, n=1 patient interrupted ART several times. This patient had recurrent cutaneous candidiasis. It was noted that ART suspension caused worsening of skin lesions and glycemic control.

Conclusions: ECs forms a heterogeneous group with various concomitant diseases. Treatment of ART should be discussed with each patient to assure them of the benefits of this decision. ART in ECs should not be stopped or interrupted.

Keywords: HIV, antiretroviral therapy, elite controllers

Varicose vein medical treatment – what about drugs?

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Background: Chronic venous diseases CVD are among the most common vascular disorders. Their clinical manifestation involves the occurrence of subjective and objective symptoms and signs. Pharmacotherapy is one way of treating patients with CVD and can be used alone or as an part of combined treatment. A large number of drugs and supplements, as well as varied indications for phlebotropic drugs in the registration documentation impede the use of pharmacotherapy in clinical practice.

The aim: The purpose of the study was to compare the information available to the patient with the current guidelines justifying the use of pharmacological treatment in defined indications.

Materials and methods: The study analyzed the groups of phlebotropic drugs and supplements available in Poland dedicated to patients with CVD. The analysis included flavonoid preparations, saponins, synthetic products and glycosaminodlycans. Based on registration records included in the registration documents and information in leaflets, the range of indications for use was determined for each of the analyzed preparations. Afterwards the obtained data were related to currently proposed guidelines for CVD defining the indications for this type of treatment.

Results: Firstly, 6 groups of venoactive drugs and a group of supplements registered in Poland for indications related to treatment of CVD were identified. Among the available drugs, the highest compliance of the registered indications with current guidelines was found in the horse chestnut extract, ruscus spinensis, micronised purified flavone fraction and calcium dobesilate. In the remaining groups of drugs, it is worth noting the large discrepancy between registered indications, as well as clinically relevant discrepancies between indications for the same molecules by different manufacturers.

Conclusions: Despite the widespread availability of venoactive drugs in Poland, their clinical use is based on limited scientific evidence or is not reflected in the clinical studies performed or guidelines available.

Keywords: chronic venous diseases, medical treatment

Comparison of two methods for assessment of body composition

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Background: Assessment of body composition gains the clinical attention, especially in heart failure or elderly patients. The information on lean body mass may help the administration of non-pharmacologic measures or enable a risk stratification in frail, sarcopenic patients. The skinfold measurement method was validated in a young population, whereas BIA method is contraindicated in pacemaker patient.

The aim: Considering these limitations we aimed to compare those methods in a wide age range study group.

Materials and methods: We have compared two methods of body composition assessment: three point skinfold measurement with Jackson-Pollock formula and bioelectric impedance using Seca mBCA 528 analyzer. We have enrolled nine patients from the FRAPICA cohort (aged 65 – 82 years), and six volunteers (aged 22 – 55 years), mean age was 54.5 ± 22.0 years. There were 13 men and two female participants. Their mean height was 1.75 ± 0.07 m, mean weight was 83.7 ± 14.4 kg, and mean BMI was 26.8 ± 5.1 kg/m². We have measured patient's lean body mass using two above mentioned methods in fasting state, and have compared both methods using the Bland-Altman analysis.

Results: The mean difference between both methods is almost zero and majority of the rest of the differences falls within 95% of the examined population.

Conclusions: Both methods can be used interchangeably. It is noteworthy that skinfold measurement method can be reliably applied in elderly, frail population or in a pacemaker patients.

Keywords: body composition, lean body mass, fat body mass, skinfold measurement, bioelectric impedance

Assessment of liver fibrosis using FibroScan and FIB-4 calculator in patients with liver steatosis

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Background: Determining the degree of fibrosis is essential for evaluating patients with liver steatosis because it is closely related to disease prognosis. Whereas the gold standard in the assessment of liver fibrosis remains liver biopsy, non-invasive methods like FibroScan or FIB-4 calculator are of great importance in everyday clinical practice.

The aim: To determine the cohesion between fibrosis assessment via FibroScan and the use of fibrosis index (FIB-4), which is a calculator determining the probability of fibrosis on the basis of age, aminotransferases and platelet count.

Materials and methods: 190 patients (with diabetes mellitus or obese ones without carbohydrates disorders) with liver steatosis underwent a FibroScan assessment and FIB-4 calculation. The stage of fibrosis in FibroScan is categorized as F0 (none) to F4 (advanced) whereas FIB-4 score is expressed as "advanced fibrosis excluded", "further investigation" and "advanced fibrosis likely".

Results: On the basis of FIB-4 calculator, 144 patients were categorized as "advanced fibrosis excluded", which corresponded to the low stage of fibrosis in FibroScan and amounted to 1 (1-2) (median and interquartile range 25-75 %). "Further investigation" according to FIB-4 was advised for 36 patients, whose median and interquartile range 25-75 % stage of fibrosis was 1 (1-2) based on FibroScan. 10 patients were assessed by FIB-4 as "advanced fibrosis likely" which corresponds with median and interquartile range 25-75 % stage of fibrosis 2.5 (1.75-3.25) on the basis of FibroScan.

Conclusions: FIB-4 seems to be a valuable tool in everyday practice allowing for a good prediction of liver fibrosis especially in less advanced stages of fibrosis. Identification of patients with advanced liver fibrosis using FIB-4 calculator in our study seems to be less precise due to higher interquartile range. However interpretation of this data should be done with cautions because of a small sample of patients with "advanced fibrosis likely" identified by FIB-4. Further studies are needed.

Keywords: liver fibrosis, liver steatosis, FibroScan, FIB-4

A comparison of the infection's course and antibiotherapy in patients with and without diabetes mellitus

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Background: There are patients with various infections in everyday medical practice. Some of them, besides underlying disease, have comorbidities, like diabetes mellitus (DM), which can determine the course of infection.

The aim: Comparing the course of infection and its treatment in patients with and without DM.

Materials and methods: There were analyzed 180 patient's medical history, who were hospitalized in the year 2021 in Internal Medicine, Autoimmune and Metabolic Diseases of Uniwersyteckie Centrum Kliniczne in Katowice, because of various infections (47% women and 53% men). The analysis includes age, sex, clinical diagnosis, DM's treatment, the type of antibiotic therapy, the length of hospital stay and the laboratory parameters. We used Statistica programme.

Results: The most frequent reasons of hospitalization in both of the groups were: pneumonia in the course of COVID-19 (35.5% of diagnosis in the patients with DM and 33.7% in the patients without DM) and urinary tract infections (26.3% of diagnosis in the patients with DM and 19.2% in the patients without DM). The most commonly used antibiotics in both of the groups were B-lactams. They were given to 59.2% of the patients with DM and 57.7% of the patients without DM. The most often chosen was third-generation cephalosporin, 66.7% and 85%, respectively followed by quinolones (40.8% vs. 41.3%). During the hospitalization, 20% of the patients died. (21% of the patients with DM and 19.2% of the patients without DM), although this relation wasn't statistically significant. There were compared the glucose values. The median was 123.5 mg/dl (156 mg/dl in the patients with DM and 107 mg/dl in the patients without DM). The values were statistically significant.

Conclusions: Although many of the complications of DM are well known, the course of infection and its treatment don't differ significantly in the patients with, and without DM. Despite that, each patient should be considered individually, though, so the chosen treatment constitutes as an optimized, effective therapy.

Keywords: diabetes mellitus, infection, antibiotic, pneumonia, urinary tract infection

Clinical manifestation of hepatitis A virus genotype-1A infection

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Background: Hepatitis A virus is one of the world's most common pathogens causing fecal-oral and person-to-person contact transmitted disease. Six genotypes have been described, with only genotypes I–III circulating in humans. Nausea, fatigue, and dark urine may indicate the disease. Symptoms are usually accompanied by elevated liver enzymes. In Haesun Yun's publication in Korea the frequency of clinical features are various – nausea (63.7%/57.6%, $p>0.05$), fatigue (50.6%/55.6%, $p>0.05$), dark urine (22.4%/31.4% $p=0.025$), fever (51.4%/60.4%, $p=0.045$) for genotypes IA/IIIA respectively. Another study written by Dahanayaka et al. shows the incidence of hyperbilirubinemia (98.3%/100%) in Sri Lanka for HAV genotypes IA/IIIA respectively.

The aim: This study aimed to examine the clinical symptoms at the moment of admission to our department in patients with HAV genotype IA.

Materials and methods: We analyzed the medical history of $n=59$ patients admitted to our department from January 2017 to January 2018. The characteristics included: age, symptoms, laboratory tests, and duration of hospitalization. The genotype was determined by isolation of RNA and amplification of HAV genome region VP1/P2A.

Results: We detected genotype IA of HAV in all serum samples. The mean age of admitted individuals was 33.0 years and their mean period of hospitalization lasted 7.0 days. Most patients $n=52$ (88.1%) complained of hyperbilirubinemia at the moment of admission. Nausea $n=35$ (59.3%), fatigue $n=31$ (52.5%), dark urine $n=30$ (50.8%) were also frequently reported. Other symptoms include abdomen ache, vomiting, fever, diarrhea, stool discoloration, and itching. The itching was the rarest one $n=3$ (5.1%). All patients had an elevation of liver enzymes ALT, AST, GGTP, and bilirubin.

Conclusions: In HAV genotype IA infection hyperbilirubinemia and itching were the most often and rarest clinical manifestations respectively. Genotyping of the HAV may be relevant in the evaluation of the course of the infection.

Keywords: hepatitis A, genotype, clinical manifestation

Correlation of TnI concentration and inflammatory markers in patients after liver transplantation

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Background: Liver transplant recipients are at risk of developing cardiovascular complications. There is a need to determine new biomarkers that could be helpful in assessing this risk. They may include cardiac troponins or NT-proBNP, although the results for troponins are not conclusive. One of the markers of inflammation and early transplant rejection is serum free light chains (sFLC). So far, there have been no studies assessing the usefulness of sFLC determination in the risk stratification of cardiac events in transplant patients.

The aim: The aim of the project was to assess the correlation between exponents of myocardial function and sFLC in liver recipients.

Materials and methods: A retrospective study was performed among 31 patients, aged 45±14 years, who underwent liver transplantation. The concentration of κ and λ sFLCs in the serum was determined using Cobas c501 by Roche. The concentration of NT-pro BNP and TnI were determined using Dimension EXL by Siemens. The tests were performed on the day of organ transplantation and 2-3 months after the procedure.

Results: On the day of transplantation the median serum: NT-pro-BNP was 128 pg/ml, TnI 0.0170 ng/ml, FLCs κ 33.58 mg/l, FLCs λ 15.85 mg/l, and κ/λ ratio 1.7. Two-three months after liver transplantation median concentrations of NT-pro-BNP and TnI were respectively 140.0 pg/ml, and 0.0225 ng/ml. The median FLCs κ , λ concentration, and κ/λ ratio were respectively 45.60 mg/l, 14.71 mg/l, and 2.1. There was a statistically significant increase in concentration of TnI ($p=0.0428$) and FLCs κ ($p=0.0370$) between both measurements. Three months after the transplantation, we showed a correlation between concentration of TnI with FLCs κ ($p=0.0004$), κ/λ ratio ($p=0.0013$), and concentration of NT-pro-BNP with FLCs λ ($p=0.0023$).

Conclusions: Based on our results, we can conclude that damage to the heart muscle as a result of liver transplantation is associated with an increase in FLCs κ production.

Keywords: FLCs, TnI concentration, NT-pro-BNP concentration, liver transplantation

Gastrointestinal adverse events of metformin treatment in patients with type 2 diabetes mellitus

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Background: Metformin is the first choice drug in the treatment of type 2 diabetes mellitus (T2DM) but it may lead to gastrointestinal (GI) adverse events (AEs) limiting its use. These side effects are thought to affect up to 20 % of patients, but evidence regarding GI AEs risk in patients treated with metformin compared to other antidiabetic drugs, and factors associated with metformin intolerance is limited.

The aim: The objective of the study was to assess the risk of GI AEs related to metformin treatment in patients with T2DM and establish factors associated with metformin intolerance.

Materials and methods: PUB MED/CINAHL/Web of Science/Scopus were searched from database inception until 08.11.2020. Randomized controlled trials (RCTs) enrolling patients with T2DM, which randomized to treatment with metformin and another antidiabetic drug or placebo, were included. A meta-analysis and meta-regression of RCTs have been performed.

Results: From 5315 eligible publications, we identified 199 potentially eligible full-text articles from an electronic search and reviewed for evaluation of eligibility. Finally, 71 RCTs were included in the meta-analysis. Metformin was associated with higher risk of abdominal pain (RR=1.49, $p=0.0001$), diarrhea (RR=4.039, $p=0.002$), and nausea (RR=2.608, $p=0.0001$) compared to control. Randomized evidence indicates different risks depending on the comparator. The meta-regression analysis revealed that the risk of bloating (coefficient=-0.89, $p=0.76$) and diarrhea (XR: coefficient=-0.344, $p=0.0437$) was higher in patients treated with immediate-release (IR) compared to extended-release (XR) formulation.

Conclusions: The risk of GI AEs, such as abdominal pain, nausea and diarrhea, is increased in T2DM patients treated with metformin compared to other antidiabetic drugs. There is a higher risk of bloating and diarrhea with metformin IR than with metformin XR formulation and GI AEs risk is independent of metformin dosage.

Keywords: metformin, adverse events, gastrointestinal, diarrhea, type 2 diabetes mellitus

High efficacy of chemo-free treatment for relapsed and refractory acute lymphoblastic leukemia

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Background: Acute lymphoblastic leukemia (ALL) is estimated to occur in 1.3 per 100,000 individuals annually. ALL usually affects children but may also be observed in adults, where the incidence increases with age. Adult ALL is characterized by treatment resistance and poor prognosis; therefore, new therapeutic modalities remain an unmet need. Blinatumomab (BLINCYTO®) - a bispecific T-cell-engaging antibody is highly promising option, already approved for therapy in refractory and relapsed (r/r) ALL. Single immunotherapy - BLINCYTO® - is administered as a 28-day intravenous continuous medication, bridging patients to allogeneic hematopoietic stem cell transplantation (allo-HSCT).

The aim: The aim of the study was to assess the effectiveness and safety of BLINCYTO® in patients with r/r ALL.

Materials and methods: The study group consisted of 15 patients (6 females, 9 males; aged 25-72) treated with BLINCYTO® for ALL in the following leukemia phases: late relapse (n=5), primary resistance (n=5) and positive measurable residual disease (MRD; n=5).

Results: Amongst 5 patients with late relapsed ALL, BLINCYTO® resulted in 4 complete remissions (CR), followed by allo-HSCT. CR was achieved in 3/5 patients with refractory disease. 3 out of 5 MRD-positive patients eradicated MRD. Seven patients temporarily stopped BLINCYTO® infusion due to infections (n=4), neurotoxicity (n=2) and thrombosis (n=1). One patient permanently discontinued BLINCYTO® as a consequence of severe neurotoxicity. In total, treatment with BLINCYTO® allowed to achieve CR in 10 ALL patients, who then proceeded to allo-HSCT.

Conclusions: Treatment with BLINCYTO®, resulting in a high proportion of CR in r/r ALL setting, may serve as a bridge to allo-HSCT. Side effects are manageable.

Keywords: Blinatumomab, treatment, ALL, relapsed, refractory, allo-HSCT

Number of patients with diabetes and emergency hospitalization rate in the COVID-19 era

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Background: Since 08.12.2019, the COVID-19 pandemic impacted healthcare utilization worldwide.

The aim: The objective of this retrospective analysis of a large hospital discharge database was to compare the number of patients with diabetes (DM) admitted to hospital and rates of emergency hospitalizations during four months (December-March) of three pandemic waves (2019-2022) with the same months in the previous years (2015-2018).

Materials and methods: The number of patients and mode of admission of patients with DM who were hospitalized in the Department of Internal Medicine and Diabetology in Zabrze in the years 2015-2022 were analyzed.

Results: In the year 2015/2016, 144 patients with DM were hospitalized of which 24% urgently; in the year 2016/2017, 141 patients with DM were hospitalized of which 30% urgently; in the year 2017/2018, 130 patients with DM were hospitalized of which 21% urgently; in the year 2018/2019, 135 patients with DM were hospitalized of which 33% urgently; in the year 2020/2021, 200 patients with DM were hospitalized of which 87.5% urgently; in the year 2021/2022, 139 patients with DM were hospitalized of which 90.6% urgently. At the beginning of the COVID-19 era (the year 2019/2020), 93 patients with DM (78 with T2DM and 15 with T1DM) were hospitalized, of which 27% urgently. The number of patients with DM hospitalized in 2019/2020, when compared to the previous years (2015-2018) was 31%; 28%; 34%; and 36% lower, respectively, but it increased more than three times in years 2020/2021 and 2021/2022.

Conclusions: The first wave of the COVID-19 pandemic significantly lowered the number of patients with DM admitted to hospital when compared to the previous years, whereas the percentage of patients admitted urgently was comparable. In the subsequent waves of the pandemic, the number of hospitalized patients increased, together with the increase of the number of urgent hospitalizations.

Keywords: Diabetes mellitus, COVID-19

Safety and effectiveness of antifibrotic therapy in patients with idiopathic pulmonary fibrosis

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Background: Idiopathic pulmonary fibrosis (IPF) is an incurable, progressive lung disease that occurs mainly in the elderly, most often in men. There are two antifibrotic drugs available for the treatment of IPF under the drug program - nintedanib and pirfenidone, which are to slow down the disease progression. Qualification for the treatment as part of the drug program is carried out in accordance with the criteria specified in the guidelines of the National Health Fund (NFZ).

The aim: Evaluation of the effectiveness and safety of antifibrotic therapy in patients with IPF.

Materials and methods: 34 patients (24 men and 10 women) with IPF were enrolled in the study. 16 patients were treated with nintedanib and 18 with pirfenidone. In the study group were assessed: forced vital capacity (FVC) and diffusion lung capacity for carbon monoxide (DLco) at the time of enrollment in the program and during treatment, as well as the assessment of side effects, including hepatotoxicity.

Results: Out of 34 patients entering treatment, 17 are still continuing treatment. 2 patients discontinued the drug program due to disease progression defined as a decline in FVC% > 10% from baseline, and another 2 due to treatment intolerance. 10 patients died - 2 because of exacerbation of the disease and 8 died from other reasons. 3 patients resigned. Hepatotoxicity did not lead to discontinuation of therapy in any of the patients.

Conclusions: Antifibrotic treatment with nintedanib/pirfenidone in patients with IPF is safe and effective. These drugs are tolerated rather well by patients and the hepatotoxicity is usually mild and does not lead to the discontinuation of antifibrotic therapy.

Keywords: idiopathic pulmonary fibrosis (IPF), pirfenidone, nintedanib, anti-fibrotic drugs

Serum procalcitonin levels and other blood test markers in patients diagnosed with malaria

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Background: Procalcitonin is a peptide precursor of calcitonin, the level of which rises in a response to a pro-inflammatory stimulus. Measurement of PCT can be used as a marker of severe sepsis and it grades well with its degree.

The aim: To analyze serum levels of PCT, CBC and other blood tests in malaria patients.

Materials and methods: Data of 16 patients diagnosed with malaria (9M, 7F) admitted to the Department of Infectious and Tropical Diseases and Hepatology in the years 2016-2021. The results of laboratory tests on the day of the admission were considered.

Results: The mean age was 36,7 years and patients were returning from Sub-Saharan countries (13; 81,2%) and Asian countries (3; 18,8%). They were diagnosed with *P. falciparum* (75,0%), *P. vivax* (2, 12,5%) and in 2 patients (12,5%) the species of *P. spp.* was not determined. Mean parasitemia was 3,58% (0,1%-18%). Mean PCT level was 9,6 ng/ml (0,05-36,85 ng/ml), elevated in 62,5%. (reference: <0,5 ng/ml). Mean level of CRP was 105,9 mg% (normal up to 10,0mg%), increased in 87,5%. Mean PLT was 133,1 G/L (normal 150-450 G/L), ranging from 17 to 327 G/L. 10 out of 16 (62,5%) patients had depletion of PLT. D-dimers were elevated with mean value of 7266,0 ng/ml (normal: <500 ng/ml) and with the highest value of 28756,0 ng/ml. The INR were normal in 100%. Serum levels of AlAT and AspAT were elevated in 62,5% of patients with mean values of 113 IU/L (elevated in 6 of 16 (37,5%)) and 105 IU/L (elevated in 7 of 16 (43,8%)) respectively.

Conclusions: Procalcitonin levels varied greatly and in majority, they did not achieve significantly elevated values thus increased PCT level would not be an accurate marker for recently contracted malaria. In our study, most of the investigated markers and tests were within normal limits with the exception of elevated CRP, AlAT, AspAT and D-dimer values. Due to that, all patients with fever and elevated PCT, CRP, AlAT, AspAT, D-dimer levels coming from malaria-endemic regions should be considered as potentially infected.

Keywords: malaria marker, procalcitonin

The prevalence of peripheral and cardiac autonomic neuropathy in patients with diabetes - the preliminary data

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Background: The most common microvascular complication is peripheral neuropathy (PN). In Poland, its prevalence estimation was performed in the years 2007-2009 where it was indicated that this complication may affect 25% patients with type 1 diabetes (T1DM) and 27% of those with type 2 diabetes (T2DM). Cardiac autonomic neuropathy (CAN) is estimated to affect 9.6% of patients with T1DM and 5.4% patients with T2DM in Poland and it corresponds with the data from world registries. The presence of diabetic neuropathy is a significant predictor of cardiovascular diseases in diabetic patients so it is important to diagnose patients with these complications in order to be aware of cardiovascular risk.

The aim: The aim of the study was to assess the prevalence of PN and CAN in 1000 patients with diabetes.

Materials and methods: This study is planned to include 1000 consecutive patients with diabetes treated in Diabetology Centre in Zabrze. The present, preliminary analysis includes 83 patients studied from October 2021 to April 2022. The presence of peripheral neuropathy and CAN was assessed with the Michigan Neuropathy Screening Instrument and Ewing's battery with the use of DiCAN respectively.

Results: Based on DiCAN result patients were qualified to the following groups: normal pattern in the mean age (MA) of 40,62(n=29;34,9%), early involvement (n=10;12%;MA=55,5), atypical pattern (n=32;38,6%;MA=57,03), severe involvement (n=8;9,6%;MA=59). In contrast, 4 (4.8%) patients had definite involvement (MA=63,5). In relation to peripheral neuropathy 28 (33,7%) patients experienced at least one of the following: vibration, temperature, pain, touch disturbance in at least one limb.

Conclusions: The prevalence of CAN seems to be comparable to the reports from the previous study but the PN prevalence is lower. It must be kept in mind that this analysis is just preliminary and more patients are needed to be studied.

Keywords: diabetes, cardiac autonomic neuropathy, peripheral neuropathy

**SESSION
OF INVASIVE CARDIOLOGY
AND CARDIOTHORACIC SURGERY**



Klub 30
**Polskiego Towarzystwa
Kardiologicznego**



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Large vessel coronary artery perforation treated by covered stents

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Background: Coronary artery perforation can occur during percutaneous coronary intervention, this serious but not very often side effect is treated with covered stents. Data regarding the clinical outcomes are scarce. I would like to present outcomes from my publication.

The aim: The aim was to evaluate the procedural, 30-days and 1-year outcomes after coronary artery perforation treated by covered stent implantation.

Materials and methods: This registry included data of patients with coronary artery perforation treated by covered stent implantation. The primary endpoint was the composite of major adverse cardiac events defined as cardiac death, target lesion revascularization and myocardial infarction. All stents were implanted into a vessel of minimum 2 mm diameter and were delivered to the perforated segment and rest of treatment was in accordance with the recommendations of the clinical practice guidelines. Lesions were defined according to the classification proposed by the American College of Cardiology/American Heart Association, The three-stage Ellis classification and TIMI in all patients. Baseline clinical characteristics data are shown as means and standard deviation or numbers and percentages. Kaplan-Meier curves were used to present the unadjusted time-to-event data. Categorical data were analyzed with the Chi-square or Fisher's exact test. The statistical analysis was performed using Medcalc.

Results: The registry included 119 patients. Successful sealing of the perforation was achieved in 99 (83.2%) patients. During the follow-up, 26 (26.2%) patients experienced major adverse cardiac events [7 cardiac deaths, 13 target lesion revascularizations, 11 MIs]. Stent thrombosis occurred in 6 (6.1%) patients. Periprocedural death occurred in eight patients.

Conclusions: The use of covered stents is an effective treatment of CAP. Patients should remain under a close follow-up due to relatively high risk of cardiac events.

Keywords: coronary artery perforation; clinical outcomes; covered stents; follow-up 1 year

Large Vessel Coronary Artery Perforation Treated with Covered Stent Implantation: Comparison between Polytetra

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Background: Coronary artery perforation is a rare complication, which occurs during percutaneous coronary intervention, some perforations are treated with covered stents. I would like to present outcomes from my publication

The aim: The aim was to evaluate 30-day and 1-year clinical outcomes after PCI complicated by coronary artery perforation and treated with covered stents such as GraftMaster or Papyrus

Materials and methods: Two types of covered stents were evaluated: GraftMaster and Papyrus. Technological differences between the stents are graft material and stent design. The primary endpoint was composite of major adverse cardiac events defined as cardiac death, target lesion revascularisation and myocardial infarction assessed at 30 days and 1 year from the index procedure. The secondary endpoints were stent thrombosis and the individual events of the primary composite endpoint. Outcome data were obtained from the central database of the National Health Fund Service of the Ministry of Health, asserting follow-up completion for all patients. Data were anonymised at the level of each centre, merged into a single database, and statistically analysed with tests like Shapiro-Wilk, Levene's t, the student's, Welch's t, The Mann-Whitney u, Cochran-Armitage, Pearson's chi-squared, Fisher's. Lesions were defined according to the classification proposed by the American College of Cardiology/American Heart Association, The three-stage Ellis classification and TIMI in all patients.

Results: Significantly lower rate of target lesion/vessel revascularisation were confirmed in the Papyrus group in 30-day follow-up. At one year, differences remained similar between stents for major cardiac events, a trend towards a lower rate of target lesion restenosis, MI and stent thrombosis and higher for cardiac death was observed in the Papyrus group.

Conclusions: The use of Papyrus is associated with lower rates of target lesion/vessel revascularisation at 30-day follow-up with a similar albeit insignificant trend at one year of follow-up.

Keywords: coronary artery perforation; clinical outcomes; covered stents; PTFE and

Characteristics and outcomes of patients consulted by a multidisciplinary pulmonary embolism response team

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Background: Pulmonary embolism (PE) is the third most frequent acute cardiovascular condition worldwide. PE response teams (PERTs) have been created to facilitate treatment implementation in PE patients. The Centre for the Management of Pulmonary Embolism (CELZAT) in Warsaw was established in 2017.

The aim: The main goal of CELZAT is to improve patient's prognosis by developing a model of interdisciplinary, comprehensive care for patients with PE, with particular focus on the population of patients with contraindications to standard pharmacological treatment, who require complex qualification for the interventional treatment. Here, we report on the 5-year experience of CELZAT regarding the characteristics and outcomes of the consulted patients.

Materials and methods: Patients diagnosed with PE between September 2017 and December 2021 were included in the study. Clinical and treatment data was obtained from medical records. Patient outcomes were assessed in hospital, at 1- and 12-month follow-up.

Results: There were 235 PERT activations. The risk of early mortality was low in 51 patients (21.8%), intermediate-low in 83 (35.3%), intermediate-high in 80 (34.0%) and high in 21 (8.9%) patients. Anticoagulation alone was the most frequently administered treatment in all patient subgroups (altogether 84.7%). Systemic thrombolysis (47.6%) and interventional therapy (52%) were the prevailing treatment options in high-risk patients. The in hospital mortality was 6.4%. The adverse events during 1-year follow-up included 5 deaths, 2 recurrent venous thromboembolism (VTE) and 2 minor bleeding events.

Conclusions: Our initial 5-year experience showed that the activity of the local PERT facilitated patient-tailored decision making and the access to advanced therapies, with subsequent low overall mortality and treatment complication rates, confirming the benefits of PERT implementation.

Keywords: pulmonary embolism, pulmonary embolism response team, PERT, catheter-based therapies

Clinical characteristics and predictors of in-hospital mortality among patients undergoing pericardiocentesis

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Background: Percutaneous pericardiocentesis (PP) belongs to life-saving procedures in cardiac tamponade, while it may also serve as diagnostic procedure in patients with recurrent pericardial effusion.

The aim: The aim of the study was to evaluate the clinical characteristics and predictors of in-hospital mortality among patients subject to PP.

Materials and methods: This retrospective study comprised 208 consecutive patients [109 women, 52.4%; median age of 66 (58; 76) years] who underwent 231 PP in Upper-Silesian Medical Center in Katowice between 2011 and 2021. Inclusion criteria involved patients submitted to PP. Exclusion criteria involved data incompleteness regarding the aetiology and outcome. The primary endpoint was in-hospital mortality.

Results: The most common indications for PP were neoplastic disease (23.1%), idiopathic effusion (14.42%), coronary artery perforation during percutaneous coronary intervention (PCI; 13.9%), viral pericarditis (11.1%), cardiac electronic device implantation (10.6%), catheter ablation (8.7%) and post-pericardiectomy syndrome (5.8%). Overall, iatrogenic cause was the most common indication for PP (41.8%). The median volume of pericardial fluid was 550 (330; 850) ml. In-hospital death was reported in 11 patients (5.3 %). Univariate analysis revealed that in-hospital death was predicted by PCI-related aetiology ($p<0.0001$), history of pulmonary embolism ($p=0.007$) and sudden cardiac arrest ($p=0.032$), lower pericardial drainage volume ($p=0.037$), right bundle branch block ($p=0.007$), cardiogenic shock ($p=0.003$), packed red blood cells transfusion ($p=0.023$). Logistic regression indicated that PCI-related aetiology (OR 76.1, $p<0.001$), history of pulmonary embolism (OR 17.9, $p=0.03$) and cardiogenic shock (OR 14.7, $p=0.004$) were independently associated with in-hospital mortality (AUC 0.895).

Conclusions: Iatrogenic aetiology represents the most frequent indication for PP. PCI-related coronary artery perforation confers the greatest risk of in-hospital death.

Keywords: pericardiocentesis, cardiac tamponade, in-hospital mortality, pericardial effusion

Clinical characteristics of patients with ECG patterns suggestive of high-risk coronary anatomy in NSTEMI-ACS

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Background: ECG patterns suggestive of high-risk coronary anatomy are indications for urgent invasive approach in non-ST-segment elevation acute coronary syndromes (NSTEMI-ACS).

The aim: To estimate clinical characteristics of NSTEMI-ACS subjects associated with Wellens' syndrome, de Winter sign or ST-segment depressions by ≥ 1 mm in ≥ 6 classical ECG leads with simultaneous ST-segment elevation in aVR and/or V1.

Materials and methods: Out of 187 pre-screened NSTEMI-ACS subjects hospitalized in our center, 93 patients (40 women and 53 men, mean age 68 ± 11 years) with complete records including admission ECG and coronary angiography during the index hospitalization, entered the final analysis. Out of 93 patients, 58 subjects had significant culprit stenosis or occlusions of the left main coronary artery (LMCA) or the proximal/middle segment of the left anterior descending artery (LAD). Clinical characteristics of patients exhibiting any of the high-risk ECG patterns was compared to their counterparts with significant lesions in LMCA or proximal/middle LAD without any of the high-risk ECG patterns.

Results: Among 58 patients with significant culprit lesions in LMCA or LAD, 17 (29%) exhibited one of the high-risk ECG patterns: Wellens' syndrome ($n=9$), de Winter sign ($n=2$) or multiple ST-segment depressions ($n=6$). Clinical characteristics were comparable in 17 NSTEMI-ACS patients with the high-risk ECG patterns and their 41 counterparts, except for significantly higher serum potassium on admission in women with the former (4.5 ± 0.4 vs. 4.1 ± 0.3 mmol/l, $p=0.027$ for Fisher LSD test), which was not observed in men (4.1 ± 0.3 vs. 4.4 ± 0.5 mmol/l, $p=0.3$) (p for interaction by ANOVA: 0.016).

Conclusions: Since ECG patterns suggestive of high-risk coronary anatomy are relatively frequent in patients with NSTEMI-ACS and culprit lesions in LMCA or LAD, their early recognition is of clinical importance. Further studies are warranted to validate our preliminary observation of higher serum potassium in women with any of the high-risk ECG patterns.

Keywords: Wellens' syndrome, de Winter sign, high-risk ECG patterns

Efficacy and safety of the AngioSeal and ProGlide vascular closure device in patients submitted to CA

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Background: Vascular closure device allow for rapid closure of femoral artery in patients subject to coronary angiography (CA) and percutaneous coronary intervention (PCI), obviating the need for prolonged compression and facilitating early ambulation.

The aim: The aim of the study was to evaluate the rate of arterial puncture site vascular complications using the AngioSeal and ProGlide vascular closure systems on femoral arteries in contrast to traditional pressure dressing in patients undergoing CA.

Materials and methods: This retrospective case-control study covered 60 patients (median age 72.5 years, 60% men) who underwent CA via femoral or radial approach. The use of vascular closure device was left to the discretion of attending physician. The study group comprised 25 patients (Angioseal was used in 24 patients, Proglide in 1 patient), while classic compression (control group) was used in 35 patients. Primary endpoint was the onset of hematoma, pseudoaneurysm, prolonged bleeding, arterial-venous fistula or arterial dissection or acute limb ischemia.

Results: Vascular complications were reported in 8 patients (13.3%), including 2 pseudoaneurysms, 2 femoral hematoma, 2 prolonged bleeding and 2 arterial dissections. The rate of vascular complications was comparable between study (n=4, 16%) and control group (n=4, 11.4%; relative risk [RR] 0.71; 95% confidence interval [CI] 0.20-2.59, p=0.61). Patients with vascular complications more frequently underwent CA via femoral approach (P=0.013), had higher prevalence of atrial fibrillation (50% vs. 17.3%, p=0.04), had a trend towards higher rate of PCI (p=0.07).

Conclusions: Based on this small exploratory study, the use of vascular closure device in case of femoral approach does not reduce the rate of vascular complications. Radial approach should be the preferred option of vascular access site.

Keywords: coronary angiography, percutaneous coronary intervention, vascular closure device

Implantable cardioverter-defibrillator patients' antiarrhythmic interventions - in one sites 10 years follow-up

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Background: Pharmacotherapy and conventional catheter ablation procedures remain inadequate in some patients treated for ventricular arrhythmia after cardioverter-defibrillator (ICD) implantation. Recently, stereotactic arrhythmia radioablation (STAR) has been introduced to treat patients with life-threatening arrhythmias and frequent ICD interventions.

The aim: The objective of this study was to analyze the population of patients who received ICD therapy in the Department of Electrophysiology and Heart Failure, Upper Silesian Medical Center, between 2010-2021 years to assess how many of them are candidates to benefit from STAR.

Materials and methods: The study population comprised 1424 patients whose available clinical data were examined using documentation of hospital admissions and visits to an outpatient clinic.

Results: Out of all patients 1136 (79.78%) were men, and 288 (20.22%) were women. The mean implanting age was 64.14 (SD=11.43) years. There were 1103 (77.46%) patients with ischemic heart disease (IHD), of which 861 patients (60.46%) suffered from myocardial infarction (MI) before implantation. Primary prevention of sudden cardiac death (SCD), according to ESC 2021 heart failure guidelines, was the reason for implantation in 1014 (71.21%) patients, while secondary prevention in 410 (28.79%) patients. IHD was more prevalent in patients with primary prevention than secondary prevention of SCD indications, 81.26% vs 68.05%. 271 (26.73%) patients implanted due to primary prevention of SCD experienced ventricular tachycardia or ventricular fibrillation with adequate in-device treatment, including anti-tachycardia pacing or electric shock. In this group, 234 patients were men (86.35%), IHD was present in 207 patients (76.38%), and MI was present in 163 patients (60.15%).

Conclusions: Male gender, IHD and previous MI seem to predict the need to consider advanced antiarrhythmic therapies such as STAR. It applies to patients treated with ICD with indications of both secondary and primary prevention of SCD.

Keywords: Implantable cardioverter-defibrillator (ICD), ventricular arrhythmia, sudden cardiac death (SCD)

Incidence of Atrial Heart Rate Episodes (AHRE) in CRT-D recipients. A single-centre, retrospective observation

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Background: Patients with heart failure with reduced ejection fraction (HFrEF) are at risk of atrial arrhythmias. Despite many efforts the occurrence and significance of AHRE remains unclear.

The aim: To evaluate the occurrence of AHRE in patients CRT-D recipients. It included clinical evaluation and the impact of AHRE on death and survival analysis.

Materials and methods: The study included 52 patients (47 males, 64.6 ± 8.5 years, LVEF $27 \pm 7\%$, QRS width 157.1 ± 25.3 ms) who underwent CRT-D implantation at 1st Chair and Clinic of Cardiology of Medical University of Silesia in Katowice between 01.01.2012 and 31.12.2018. The follow-up time ranged from 135 to 4286 days (mean 1990 days; SD 776 days) and included at least 5 visits at clinical dispensary.

Results: Episodes of VF were recorded in 6 patients and episodes of VT in 18 patients. In total, ventricular arrhythmia was present in 18 patients (34.62%). The VT/VF group was younger (mean 60.9 vs. 66.05 years; $p=0.04$) and heavier (mean 95.2 kg vs. 83.5 kg; $p=0.02$). Differences in LA area (34.8cm^2 vs 28.71 ; $p=0.07$), Haemoglobin concentration (14.13 g/dl vs 13.49 mg/dl ; $p=0.08$) were close to statistical significance. During follow-up, 19 patients died. The occurrence of VT/VF had no impact on survival ($p=0.26$).

Conclusions: During 5.5-years observation, the occurrence of AHRE in CRD recipients was 63%. We did not show meaningful differences in patients with AHRE events and patients without these AHRE incidents. The AHREs incidents did not affect the patient survivability.

Keywords: AHRE, CRT-D

Long-term outcomes of DEB versus DES in chronic coronary syndrome patients with in-stent restenosis.

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Background: There is limited data on the optimal revascularization strategy in patients with chronic coronary syndrome (CCS) in-stent restenosis (ISR).

The aim: To compare the long-term outcomes of patients treated with either a drug-eluting stent (DES) or a drug-eluting balloon (DEB) for DES-ISR in CCS.

Materials and methods: The registry was used to retrospectively identify patients with ISR who received either a DES or a DEB in CCS. The primary endpoint was target lesion revascularization (TLR).

Results: Out of 119 patients (mean age 65 years, 81% male) with ISR, 59 (49.6%) were treated with a DES and 60 (50.4%) with a DEB. Median follow-up was 3.0 years. Patients receiving DES compared with DEB had more hypertension (96.6% versus 86.7%, $p=0.05$), hyperlipidemia (89.8% versus 75.0%, $p=0.03$) and family history of coronary artery disease (49.2% versus 30.0%, $p=0.03$). Left ventricular ejection fraction was greater in DEB group 50(IQR40-55) versus DES 45(IQR40-50), $p=0.03$. There were no significant differences between groups in terms of types of ISR. During follow up, TLR occurred in 4 (6.7%) of patients who received DEB and 2 (3.4%) patients treated with DES (hazard ratio [HR], 0.37; 95% confidence interval [CI], 0.06-2.07; $p=0.262$). The incidence of cardiac death ($p=0.452$), target vessel-myocardial infarction ($p=0.775$), myocardial infarction ($p=0.967$) and device-oriented composite end point ($p=0.452$) were similar in both groups.

Conclusions: This registry of a real-life data revealed similar long-term outcomes of DES and DEB in DES-ISR regarding TLR, myocardial infarction, cardiac death, and device-oriented composite end point.

Keywords: in-stent restenosis, PCI, DEB, DES

Low body mass index is adversely associated with 4-year survival in patients treated with TAVR

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Background: Conflicting results have been reported regarding the impact of body mass index (BMI) on outcome after transcatheter aortic valve replacement (TAVR).

The aim: To assess the impact of BMI on long term mortality after successful TAVR.

Materials and methods: Out of 445 consecutive pts treated between 8/2009 and 10/2017 within the single-center, prospective ANIN TAVR Registry (Warsaw, Poland), there were 432 pts [median 83.0 years of age, 63.4% female] with device success (97.1%) as per VARC-2. Pts were categorized by BMI into: low (<20), normal/overweight (20-30), and obese (>30).

Results: Median follow-up was 29.3 (15.8-53.1) months with 1-year follow-up in all pts. Among 432 pts, 18 had low BMI (4.2%); and 102 (23.6%) were obese. There was a higher % of females in the obese group (74.5%) compared to the low BMI (59.9%) or normal/overweight (61.1%) pts ($p=0.029$). Also, there was stepwise increase in frequency of DM among low BMI, normal/overweight, and obese (11.1% vs 31.1% vs 59.8%; $p<0.001$). Baseline AVA and aortic gradients were similar, but LVEF% < 35% was more frequent among low BMI (11.1%) versus 9.0% among normal/overweight and 2.0% among obese ($p=0.053$). Pre-dilation was more frequent for low BMI (83.3%) vs 59.0% in normal/overweight vs 55.9% in obese ($p=0.090$). Whereas an VARC-2 safety endpoint was recognized with the same frequency among studied groups (27.8% vs 27.2% vs 26.5%), the 1-year mortality rates were highest for low BMI, intermediate for obese pts, and lowest for normal/overweight pts (27.8% vs 18.6% vs 10.9%, $p=0.026$, respectively).

Conclusions: Low BMI was adversely associated with 4-year survival after TAVR. Higher frequency of impaired LV ejection fraction and moderate paravalvular leak found in multiple locations may also explain higher long-term mortality in patients with low BMI. Conversely, obese subjects who also had a higher long-term mortality compared to normal/overweight pts were predominantly women and more often diabetic.

Keywords: Cardiology, Invasive Cardiology

The impact of “pace and ablate” treatment strategy on quality of life in patients with permanent AF and CHF

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Background: Atrial fibrillation (AF) and chronic heart failure (CHF) are frequently co-existing morbidities. Moreover, both AF and CHF can cause and exacerbate each other and despite optimal medical treatment, both of these conditions are associated with frequent hospitalizations and worsened quality of life, thus posing a therapeutic challenge. Pace and ablate (PacAb) treatment strategy has been shown to be effective in maintaining a controlled ventricular rate, leading to improved quality of life and fewer hospitalizations.

The aim: The study aimed to evaluate the impact of pace and ablate treatment strategy on quality of life (QoL) and the number of 1-year hospitalizations in patients with permanent AF un CHF.

Materials and methods: A retrospective longitudinal study analyzing medical records of patients who were treated using PacAb treatment strategy from 2019 to 2021 was conducted in Latvian Centre of Cardiology, Pauls Stradins University Hospital. A QoL questionnaire consisting of 10 questions was administered to consented patients. Microsoft Excel for Microsoft 365 MSO and IBM SPSS 22 Statistics were used for data collection and statistical analysis.

Results: In the study population of 41 patients, 29 (70.7%) were male and 12 (29.3%) were female. The mean age was 67 (± 10.7 SD, range 46 – 87) years. The mean number of 1-year hospitalizations before PacAb was 4.4, median = 5.0, and after PacAb – mean = 0.24, median = 0, there was a statistically significant difference between both groups ($p < 0.001$). The mean health-related QoL, using a scale of 0 to 10 before PacAb was 2.6 (range 0 to 5), median = 2, and after PacAb – mean = 7.2 (range 3 to 10), median = 8, there was a statistically significant difference between both groups ($p < 0.001$). Thirty-seven patients (90.2%) would repeat the treatment and would like the treatment to be offered earlier.

Conclusions: Pace and ablate treatment strategy improves QoL and reduces the number of 1-year hospitalizations in patients with permanent AF un CHF.

Keywords: Atrial fibrillation, chronic heart failure, pace and ablate

The nitrosative stress in rats with heart failure maintained on a normal fat or high-fat diet

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Background: It is confirmed that the high activity of inducible Nitric Oxide Synthase (iNOS), which leads to nitrosative stress, is crucial in the pathogenesis of Heart Failure with Preserved Ejection Fraction (HFpEF). High-fat diet (HFD) stimulates general inflammation which modulates the activation of iNOS. Besides, there are concerns associated with role of HFD in inducing HFpEF.

The aim: The project aimed to assess the amount of iNOS in heart muscle and serum NT-proBNP derived from rats after HFD implementation and/or with Heart Failure with Reduced Ejection Fraction (HFrEF) induced by myocardial infarction (MI). Our aim was to determine if HFD alone can induce HFpEF and to find a correlation between nitrosative stress and both types of HF.

Materials and methods: Experiments were conducted on 29 male rats. Two types of diets were applied: normal-fat Diet (NFD) and HFD. Two types of surgery were performed: Sham Operation (SO) and standard ligation (HF). Four groups were obtained: NFD-SO (control group, N=7); NFD-HF (N=8); HFD-SO (N=6); and HFD-HF (N=8). Levels of iNOS and NT-proBNP in prepared samples were measured using Western Blot and ELISA methods.

Results: Concentrations of NT-proBNP in NFD-HF and HFD-HF were greater than in control group [$p < 0.05$]. NT-proBNP levels were similar between HFD-SO and control. iNOS concentration was significantly higher in HFD-HF than in control group.

Conclusions: The coexistence of both MI and HFD stimulates nitrosative stress. However, separately MI and HFD are insufficient to induce nitrosative stress measured by iNOS concentration. HFD alone does not lead to HFpEF. The last indicates that there is a need to create better models of HFpEF.

Keywords: heart failure, iNOS, fat diet, obesity, nitrosative stress

The relationship between the frequency of PPI after TAVI and the distance between the AV ring and the IVS

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Background: Severe aortic stenosis is one of the most common valvular heart diseases in adults. It has been treated with transcatheter aortic valve implantation (TAVI) for 20 years. TAVI is indicated in non-operative patients and in patients with high and intermediate risk of surgical treatment. Recently, patients >75 years old, with low risk of surgery and in whom procedure can be performed through the femoral artery are also eligible for TAVI. Some patients after TAVI require permanent pacemaker implantation (PPI). This depends on the interaction of implanted prosthesis with the cardiac conduction system

The aim: The aim of this paper is to assess the frequency of PPI and to evaluate impact of the distance from the annulus of the aortic valve to the muscular part of IVS.

Materials and methods: The study was based on data from the TAVI-Zabrze registry. The study included 76 patients (mean age 77, 65.8% males) who were implanted with Evolut R/Pro self-expanding valves by Heart Team I. Patients were divided into three groups depending on the distance from the annulus of the aortic valve to the muscular part of IVS: group I = 18 patients (23.7 %) with distance to IVS <3 mm, group II = 25 patients (32.9 %) with distance to IVS >3 mm and <6 mm and group III = 33 patients (43.3 %) with distance to IVS >6 mm.

Results: The frequency of PPI after TAVI was 9.2% (7 patients). In group I in 2 patients (11.1%) pacemakers were implanted, in group II in 4 patients (16%) pacemakers were implanted and in group III in 1 patient (3%) pacemaker was implanted. There was no difference in the frequency of PPI between study groups. There was also no difference in the frequency of PPI between groups I and II (gr. I + gr. II) (2+4) and group III (1), as well as between group I (2) and groups II and III (gr. II + gr. III) (4+1).

Conclusions: The frequency of PPI in patients after TAVI with self-expandable valves is low - 9.2%. Significant correlation was not observed between IVS distance and PPI rate.

Keywords: aortic stenosis, transcatheter aortic valve implantation (TAVI), pacing system

SESSION OF NEONATOLOGY AND PEDIATRICS



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Supratentorial cavernous malformations in children indications for surgical intervention postoperative outcome

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Background: Cavernous malformations (CM) are vascular pathologies occurring in the CNS. While the risk of symptomatic CM bleeding remains relatively low, the precise evaluation of indications for surgical treatment seems desirable.

The aim: This study aimed to determine the indications for surgical treatment of pediatric CMs and evaluate postoperative short and long-term outcomes.

Materials and methods: A retrospective analysis of the medical charts was performed to select and analyse pediatric patients who underwent surgical treatment of supratentorial CM in the Department of Pediatric Neurosurgery in Katowice between 2010 and 2021.

Results: A total of 22 patients (7 male, 15 female) with a mean age of 11 years were included. The most common presenting symptoms were seizures (55%), followed by focal neurological deficits (32%), headaches (27%), vomiting (23%), and impaired consciousness (18%).

Patients were qualified for surgical CM removal due to symptomatic haemorrhage (45%), drug-resistant seizures (27%), neurological deficits (13%), and headaches (4%). In two individuals (9%), lesions were found incidentally and subsequently removed due to parents' preferences. Clinical improvement occurred in 21 patients (95.5%) during the hospital stay. One patient (4.5%) experienced transient worsening of his hemiparesis, acquired aphasia, and NCVII paresis. No rebleeding was observed during the entire follow-up period (mean 42 months). All patients, who presented with neurological deficits, eventually improved. Patients admitted with drug-resistant seizures experienced improvement either in the severity or frequency. Moreover, 67% of individuals were free of seizures since the surgery.

Conclusions: Symptomatic haemorrhage and drug-resistant seizures constituted the most prevalent indications for CM surgery. Both the prevention of further rebleeding and seizure control can be successfully achieved through the surgical treatment of CM. During surgical intervention, complete removal of the pathology should always be aimed for.

Keywords: cavernous malformation, pediatric neurosurgery, supratentorial, seizures, haemorrhage

The analysis of clinical course of acute pancreatitis in children

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Background: Acute pancreatitis is a multifactorial, complicated inflammatory process which involves the organ and the tissues around it. In children, the most common causes of acute pancreatitis are abdominal trauma, infections (mostly viruses), systemic diseases, bile duct diseases and genetic mutations.

The aim: The retrospective analysis of causes, clinical picture, complications and treatment of acute pancreatitis in children.

Materials and methods: We retrospectively analysed medical records of 44 children hospitalized in the Department of Paediatrics, Medical University of Silesia in Katowice, between 2019 and 2021.

Results: The analysis includes 44 children (age 2-18, average 10.9 years, 50% boys, 22/44-50% girls) with diagnosed pancreatitis, hospitalized in the years 2019-2021. The most common causes of the acute pancreatitis were: idiopathic (16/44- 36.4%), genetic (10/44-22.7%), biliary (9/44, 20.5%) and anatomical defects (5/44, 11.4%). The genetically determined causes were the following: mutation: SPINK1 in 4/44 children, the PRSS1 mutation in 3/44 patients and CPA1 mutation in 1/44 child. 9/44 (20.5%) of children were overweight. Fifteen (34.1%) children had more than one episode of acute pancreatitis during the considered period. The complications were observed only in 8/44 (18.2%) children: the peripancreatic fluid collections (6/44, 13.6%), pancreatic necrosis (3/44, 6.2%), infection of necrotic area, inflammatory infiltration and pseudocysts (1/44 each, 2.3%).

Conclusions: Taking into account previous data from the Gastroenterology Unit, the number of children diagnosed with acute pancreatitis increased over time. The most frequent causes are genetic predispositions, infections and cholelithiasis. Acute pancreatitis should be considered in every case of stomach ache, vomiting and jaundice in children.

Keywords: pediatrics, acute pancreatitis

Clinical course of the celiac disease among patients hospitalized in 2019-2021

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Background: Nowadays, the number of children diagnosed with celiac disease is systematically growing. This phenomenon is mainly caused by the possibility of accessible diagnostics as well as increased awareness of symptoms related to the disease.

The aim: The aim of the study was to evaluate the clinical picture, results of laboratory tests, and diagnostic imaging presented by patients with diagnosed celiac disease in the Gastroenterology Unit.

Materials and methods: After performing the retrospective analysis of medical data, 37 patients hospitalized in the Gastroenterology Unit were included, with a significant predominance of girls (83,78%). The patients were 1-17 years old - the mean age was 8,7 years. The inclusion criteria were the diagnosis of celiac disease in the period from Jun 2019 to Oct 2021.

Results: Symptoms from the alimentary tract (diarrhoea, body mass/growth deficiency, abdominal pain) were presented by 21 patients (56,76%), whereas the group of 16 patients (43,24%) presented no symptoms at all. These patients were among risk groups therefore screening for celiac disease was made. In 16 children, comorbidities occurred, with type 1 diabetes being the most frequent. Moreover, 15 children had decreased BMI for their age, which indicates malnutrition. Additionally, normal weight was noted in 22 cases (59,46%), and overweight in 2 patients. Abnormalities in blood tests were detected in 33 patients. Iron deficiency appeared in 6 of them, of which 3 presented associated anaemia. Decreased albumin levels occurred in 3 cases, in 2 also accompanied by decreased total protein. Finally, 8 of 11 patients tested for vitamin D level presented its deficiency.

Conclusions: Following the observed incidence of celiac disease, it seems advisable to test children with abdominal symptoms for celiac disease, especially among risk groups. Early identification of the disease and implementation of the dietary treatment prevents the development of complications.

Keywords: celiac disease, pediatric patient, children, food intolerance

Comparative analysis of clinical presentation in de novo diagnosed patients with inflammatory bowel disease

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Background: Crohn's disease (CD) and ulcerative colitis (UC) are two types of inflammatory bowel disease (IBD). Both usually present at young age and strongly influence patients' quality of life.

The aim: The study aimed to analyze and compare anthropometric data and the clinical picture of CD and UC over 13 years among newly diagnosed patients in the Department of Gastroenterology and Pediatric Hepatology.

Materials and methods: 74 patients with CD and 90 patients with UC were analysed. They were divided into four groups according to the date of diagnosis and type of the disease. The first group consisted of 37 patients diagnosed in 2008-2011 with CD (Group A), the second - 37 patients diagnosed in 2018-2021 with CD (Group B), the third - 33 patients diagnosed in 2008-2011 with UC (Group C) and the fourth - 57 patients diagnosed in 2018-2021 with UC (Group D). Among the subjects following data were gathered: gender, age, weight, height, BMI, duration of symptoms prior to diagnosis, location and disease activity. Statistical analysis was performed using the Statistica program.

Results: Considering patients diagnosed in 2018-2021 (group B and D) CD was more common in boys (67,57% vs 32,43%) while UC was more common in girls (61,40% vs 38,60%). In groups A and B, mean weight SDS and BMI-SDS were lower than in groups C and D. Duration of symptoms before diagnosis was shorter in group C than in group A (5 vs 10 months) and in group D than in B (6 vs 11). Severe activity of CD at the time of diagnosis was higher in group A than in group B (35,14% vs 5,41%). All of the above results were statistically significant $p < 0.05$.

Conclusions: UC is diagnosed faster than CD possibly due to more alarming symptoms such as lower gastrointestinal bleeding and this has not changed over the years. Patients diagnosed with CD have lower bodyweight and BMI than patients diagnosed with UC. The diagnosis of severe Crohn's disease activity over 13 years has decreased significantly probably because of better pediatric care and faster diagnosis.

Keywords: Crohn's disease, ulcerative colitis, inflammatory bowel disease

Evaluation of the effectiveness of The MiniMedTM 780G AHCL system after 6 months of use

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Background: The MiniMedTM 780G Advanced Hybrid Closed-Loop system consists of a manual and an automatic mode. This technology is believed to have become a breakthrough among the currently available methods of insulin therapy but will it help to achieve recommended glycemic targets after 6 months of use?

The aim: The aim of the study was to perform analysis of glycemic metrics in patients with type 1 diabetes (T1D) treated with the AHCL Medtronic system at the beginning of the use of this technology and after 6 months.

Materials and methods: Database from the MiniMedTM 780G system included records of 50 patients (mean age 12.34 ± 5.54 years) with T1D duration 5.2 ± 3.35 years, who have been using AHCL system for at least 6 months. Only users with the sensor use value above 70% were included in the study. Data from the first 2 weeks of the MiniMedTM 780G system use were compared to another 2 weeks after 6 months of using AHCL system.

Results: During 6 months of using The MiniMedTM 780G system patients maintained proper metabolic control in terms of both sensor glucose average, GMI and CV, which remained unchanged ($p > 0.05$). Auto mode use increased from 91.9% to 96.6% ($p < 0.05$).

Conclusions: After six months of using The MiniMedTM 780G system, patients have achieved recommended glycemic targets.

Keywords: The MiniMedTM 780G system, Type 1 Diabetes

Neutropenia following intravenous immunoglobulin therapy in pediatric patients with immune thrombocytopenia

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Background: Immune Thrombocytopenia (ITP) is an acquired autoimmune disorder characterized by a low platelet count. It has been observed that some children with ITP treated with intravenous immunoglobulin (IVIg) developed neutropenia.

The aim: The aim of the study was to investigate the association between IVIg and neutropenia in pediatric ITP.

Materials and methods: The retrospective cohort study involved 123 children (79 girls, 44 boys) with ITP, aged $8,03 \pm 4,55$ (0,8-17,9) years (mean \bar{x} SD; range) who underwent IVIg therapy in the Department of Hematology and Pediatric Oncology in Zabrze between April 2014 and December 2021.

Results: The mean total dose of IVIg was $1,7 \pm 0,48$ g/kg BW. Median platelet count on admission reached 18 000/ μ L. Significant increase in platelet level was observed usually on the first (67,5%) or second (20,3%) day after initial administration of IVIg. After the course of IVIg, neutropenia was observed in 50 subjects (40,7%). 29 of them (58%) were diagnosed with mild, 14 (28%) with moderate and 7 (14%) with severe neutropenia. The neutropenia occurred mostly (54%) on the first day after administration of IVIg. None of the subjects had a significant infection during or immediately after the neutropenic episode. There was a positive correlation between the onset of neutropenia and lower age of patients ($p < 0,05$). The pretreatment neutrophil count in a group with IVIg-induced neutropenia was significantly lower than in the patients without neutropenia ($p < 0,05$). Decrease in the neutrophil count was more distinct in the group of patients with neutropenia. There was no significant correlation between the occurrence of neutropenia and gender of the patients, total IVIg dose size or platelet count on admission ($p > 0,05$).

Conclusions: Intravenous immunoglobulin therapy in children with ITP can lead to neutropenia. However, patients get noticeable benefits from IVIg therapy and neutropenia in this case tends to be a transient, self limiting condition.

Keywords: immunologic thrombocytopenia, intravenous immunoglobulins therapy, neutropenia

Primary hypertension - a prevailing model of hypertension in children, single center study

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Background: While in adults primary hypertension (PH) is a dominant model of hypertension (HTN), in children HTN used to be attributed to underlying causes. Nowadays PH seems to be a growing concern in pediatric population. This phenomenon is linked to the obesity epidemic although the pathogenesis of PH seems to be multifactorial.

The aim: The aim of the study was to determine the proportion of PH, secondary hypertension (SH) and white coat hypertension (WCH) among children sent to referral center due to HTN established during routine health care and being diagnosed according to the guidelines of the Pediatric Section of the Polish Society of Hypertension based on 2016 European Society of Hypertension recommendations.

Materials and methods: The retrospective review conveyed 275 patients (median age=13,42, range 0,33-18y) with no history of conditions underlying SH who were admitted to Pediatric Nephrology Ward in Zabrze, Poland between 2016 and 2021 with HTN established upon office measurements. According to diagnostic recommendations screening included: confirmation of HTN or WCH with use of ambulatory blood pressure monitoring or multiple automatic measurements, evaluation of organ damage (left ventricular hypertrophy, albuminuria), basic laboratory tests to exclude SH, as well as anthropometric measurements adjusted to percentiles.

Results: WCH was recognized in 28,9% (n=80, median age=14,17, range 5,42-17,92y, boys 63,75%). HTN was confirmed in 70,1% (n=195, median age=14,58, range 0,33-18y, boys 67,69%). PH was diagnosed in 82,56% (n=161, median age=14,67, range 2,42-17,92y, boys 70,19%) while SH 17,44% (n=34, median age=14,085, range 0,33-18y, boys 55,88%). There were 173 patients with excessive body weight (BMI \geq 90th percentile) - 45 with WCH, 109 with PH and 19 with SH.

Conclusions: Our study indicates on PH as the most common type of HTN in children diagnosed for HTN recognized during routine health care. This phenomenon is combined with excessive body weight.

Keywords: hypertension, children, primary hypertension, secondary hypertension, white coat hypertension

Quality of life in children with inflammatory bowel disease during the Covid- 19 pandemic

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Background: Inflammatory Bowel Disease (IBD) is a chronic condition which may impair the quality of life (QoL) in paediatric patients. The assessment of the patient's life quality is particularly important to determine whether the available treatment is sufficient.

The aim: This study aimed to assess the QoL of children with the IBD compared to healthy children and relate this to the current pandemic.

Materials and methods: The study compared 34 children with the IBD (study group) with 77 healthy children (control group), using the PedsQL general questionnaire. In both groups children's responses were compared with their parents' responses. The IMPACT-III specific questionnaire was used to assess the QoL of the IBD patients. A self-administered questionnaire was developed to assess the impact of the pandemic on the QoL.

Results: The QoL of the control group was mostly comparable to the IBD patients except school functioning. QoL of the control group differ from the study group (348.5 ± 99 vs 385.7 ± 77.4 respectively) Emotional functioning was lower in children with Crohn's Disease then in patients with Colitis Ulcerosa (289.8 ± 83.3 vs 375 ± 96.5 respectively). QoL assessed by the parents of the control group was higher than QoL assessed by the children in all dimensions. All of the above results were statistically significant $p < 0.05$. In 20.59% of the IBD children (acc. to their parents) and 38.24% of the IBD children (acc. to the children), the pandemic had a positive impact on the disease control. In 35.29% of the IBD children (acc. to the children) and 17.65% (acc. to the parents), the pandemic eased the coping with the symptoms of the disease. The healthy children, 32.47%, and the IBD children, 32.35%, thought that the pandemic had negatively affected their contact with peers.

Conclusions: The QoL of children with IBD doesn't differ significantly from that of the unaffected children, which suggests that the available treatment is sufficient. The ongoing pandemic has made it easier for many IBD children to cope with the disease.

Keywords: Quality of life, Inflammatory bowel disease, IMPACT-III, Covid-19 pandemic, children

Retrospective analysis of risk factors and clinical course of cholelithiasis in children

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Background: Cholelithiasis is a rare disorder in pediatric population. In most cases, the course is asymptomatic, but in some patients biliary colic symptoms, cholestasis and/or acute pancreatitis are observed.

The aim: The study aims to identify risk factors, clinical course and complications of cholelithiasis in pediatric patients.

Materials and methods: The medical history of 49 children, aged from 6 months to 17 years (mean age 12,9 years) hospitalized at Department of Pediatrics with diagnosis of cholelithiasis was analyzed. The following data was evaluated: age, sex, BMI, comorbidities, clinical presentation, laboratory and imaging tests results and treatment.

Results: The study group was represented by 34/49 (69,4%) females and 15/49 (30,6%) males. Trend in the annual number of diagnosed patients is increasing. Among participants 19/49 (38,8%) of them were obese with BMI >97pc. Symptomatic cholelithiasis were present in 98% (48/49) of cases. Most common symptoms were abdominal pain (44/49, 91,7%), vomiting (25/49, 51%) and jaundice (15/49, 30,6%). 26/49 (53,1%) of patients presented with cholecystolithiasis, 8/49 (16%) of them had choledocholithiasis and 14/49 (28,6%) of them presented with both conditions. 11/49 (22,4%) of patients had acute pancreatitis. The most frequent abnormal laboratory findings were increased parameters of cholestasis : GTP (95,7%), total bilirubin (67,4%), ALP (63,9%) and aminotransferases: AlAT (93,5%), AspAT (89,1%). Endoscopic retrograde cholangiopancreatography (ERCP) was performed in 17/49 (34,7%) of patients. Complications of cholelithiasis included acute pancreatitis, cholecystitis, cholangitis, hepatitis, and an empyema of the gallbladder.

Conclusions: There is an increasing incidence of cholelithiasis in pediatric population. Female patients with obesity are more often affected. This condition should be considered in the differential diagnosis of abdominal pain, cholestasis and acute pancreatitis.

Keywords: cholelithiasis, children

The analysis of the level of vitamin D3 in the children with T1D – a retrospective, population-based, single-center study

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Background: In the children, including those with type 1 diabetes (T1D) the deficiency of vitamin D3 commonly occurs and its level changes seasonally in the year.

The aim: To analyse the level of vitamin D3 in the children with T1D.

Materials and methods: There was a database of 1148 records collected, including age and level of vitamin D3 of all the patients hospitalized in the year 2021 in Children's Diabetes and Pediatrics Department (regional center for pediatric diabetes care), Upper-Silesian Child Health Care Centre in Katowice (age 1-21; 55% boys).

Results: The median level of vitamin D3 in the whole group was 23.74 ± 14.72 ng/ml. 34% of them had deficiency (<20 ng/ml). The difference between sexes was significant ($p=0.02$; boys: 24.54 ± 17.36 ng/ml and girls: 23.03 ± 10.50 ng/ml). There was also a significant difference ($p<0.01$) between the children aged 2-10 (32%; 26.99 ± 12.04 ng/ml) and the patients aged 11-21 (68%; 21.88 ± 15.63 ng/ml). The median of the level of vitamin D3 was changing seasonally significantly ($p<0.01$), including spring (21 March-21 June) 22.17 ± 20.25 ng/ml, summer (22 June-22 September) 28.34 ± 11.07 ng/ml, autumn (23 September-21 December) 22.02 ± 14.19 ng/ml and winter (22 December-20 March) 20.07 ± 11.02 ng/ml.

Conclusions: In the children with T1D deficiency of vitamin D3 often occurs. Seasons of the year, sex and age may have an impact on the vitamin's D3 level.

Keywords: T1D, diabetes, vitamin D3

SESSION OF NEUROLOGY AND NEUROSURGERY



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A short characteristic of the bladder dysfunction in multiple sclerosis patients

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Background: Bladder dysfunction is a common symptom and one of the most disabling aspects of Multiple Sclerosis. Dysuric disorders can occur more often as the disease continues. It may be overlooked by the neurologists leaving these troublesome symptoms untreated.

The aim: There is little information about prevalence of neurogenic bladder symptoms in the Polish population of patients with MS. Our goal was to set the number of the occurrence of these symptoms and set awareness about it.

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 contained basic information about the patient and his bladder problems. We also used two tests: ABSST and King's Health Questionnaire to evaluate the impact of dysuric disorders on patients' quality of life. During our study we also examined motor functions of patients by using two tests: 9 pin test and 25 steps test. We plan to link the obtained data with the quality of life scale, an interview on the professional situation and the features of progression in the MRI examination. The work did not require the approval of the bioethics committee.

Results: 34 stationary surveys, ABSST and King's Health Questionnaires (KHQ) were distributed, 30 (88,2%) of them were completed and turned back. 10 of the patients (33,3%) reported bladder dysfunction symptoms on their own via stationary survey. The ABSST scale indicated that 14 of the patients (46,7%) presented at least one highly severity sign of bladder dysfunction and 7 among them (23,3%) had more than one. The KHQ shows that in 3 patients (10%) severity of urinary symptoms had significant impact on their normal activities.

Conclusions: Bladder dysfunction and dysuric disorders are significant problem in MS patients and should not be overlooked. Recognition and proper treatment is needed to prevent the development of more severe dysfunction.

Keywords: multiple sclerosis, bladder dysfunction,

Assessment of cognitive functions in PD and ET patients with pharmacoresistant tremor after thalamotomy

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Background: Tremor is one of the most common symptoms of Parkinson's Disease (PD) and essential tremor (ET). The first line of treatment is pharmacotherapy. It can sometimes be ineffective or contraindicated. In such cases, surgical treatment is an option. Deep Brain stimulation (DBS) or thalamotomy are among the commonly used methods.

The aim: The purpose of our observational study was to assess the impact of unilateral Gamma Knife thalamotomy on psychological functions in ET and PD patients.

Materials and methods: We included 20 patients with PD (n=10) or ET (n=10) with pharmacoresistant tremor. The mean age was 63.5 (+/-9.5), 16 male and 4 female. They underwent psychological assessments before (n=20); 12 months (n=20), and 24 months (n=11) after the procedure. Mini-Mental State Examination, CLOX, Tower of London, Benton Judgment of Line Orientation test, Adverse Childhood Experience, The Wechsler Adult Intelligence Scale, Rey Auditory Verbal Learning Test, Boston Naming Test, and Beck's Depression Inventory tests were performed. Friedman's ANOVA and Wilcoxon's signed-rank test were used to compare the outcomes.

Results:

There were no serious adverse events related to the procedure reported in our study. Statistical analysis revealed no significant change ($p < 0.05$) in performed psychological tests in 2-year follow-up.

Conclusions: We conclude that Gamma Knife thalamotomy does not deteriorate the mood or cognitive functions of the patients treated due to tremor associated with PD or ET in a 2-year follow-up. It may be a safe and efficient way of treating pharmacoresistant tremors for patients who are not qualified for DBS procedure.

Keywords: thalamotomy, GammaKnife, Parkinson's disease, tremor,

Inflammatory cytokines in CSF depending on vitamin D concentration, among patients with de novo RRMS

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Background: Multiple sclerosis (MS) is an autoimmune, chronic inflammatory disease of the central nervous system (CNS). The most common clinical course is the relapsing-remitting (RRMS). Among many pathogenic factors, vitamin D deficiency is associated with increased risk of developing MS both from an environmental and genetic point of view.

The aim: The study was aimed to verify connections between CSF cytokines levels (IP-10, MIP-1a, MIP-1b, RANTES, IL-1b, IL-6, IL-8, IL-17A) and concentration of vitamin D in patients diagnosed with RRMS.

Materials and methods: We enrolled 100 patients to the study group with de novo diagnosed RRMS and 112 patients without neurodegenerative diseases to the control group. The median and interquartile range (IQR) of age: study group 42,5 (16); the control group 41 (16). The RRMS group contained n=75 (75%) females; the control group n=97 (86,6%) females. Concentrations of cytokines have been measured using Bio-Plex Assay and compared between the groups.

Results: Compared to the control group, levels of IP-10, MIP-1b, IL-6 and RANTES were significantly higher in a study group. Considering the level of vitamin D, in the RRMS group, the concentration of MIP-1a, MIP-1b, IP-10, IL-1b, IL-6 and IL-8 was higher in patients with hypovitaminosis ($p < 0,05$). Between both groups was no statistically significant difference in IL-17A level. The control group had no statistically significant difference cytokines concentration depending on vitamin D levels, but shown upward trends in CSF of patients with vitamin D deficiency.

Conclusions: The observed changes in the concentration of pro-inflammatory cytokines, depending on the level of vitamin D, endorse the concept that vitamin D deficiency should be considered as an important factor in the development of MS. Evaluation of mechanisms of this action could lead to our understanding of how hypovitaminosis D initiate immune system dysregulation and permit of novel approaches to treat and prevent MS.

Keywords: multiple sclerosis, MS, vitamin D, cytokines, RRMS, CSF

Migraine Headache In Younger and Older Adults: Similarities and Differences

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Background: A migraine is a common neurological disease that causes a variety of symptoms, primarily a pulsatile, recurring pain that usually affects one side of the head. The prodromal symptoms include migraine aura, what can be described as visual, sensory or motor disturbances just before a migraine attack. There may be differences in the frequency and intensity of migraine headache episode depending on age group.

The aim: The aim of the study was to investigate if there are differences in migraine headache between people belonging to two different age groups - younger adults before the age of 40, and older ones aged 40-70.

Materials and methods: A total of 352 responses collected from November 8, 2021 to April 26, 2022 among people of all ages struggling with migraine headache were analyzed. The questionnaire included questions about the characteristics of pain, its frequency, and the type of accompanying symptoms. Data concerning ocular symptoms, vision defects and their appropriate correction, and various ways of coping with migraine headache was also collected. The results among people under and over 40 years old were compared. Statistical analyzes were performed with the significance level set at $p < 0.05$ and the chi-square test and t-test were used.

Results: The analysis of the survey results indicate that with age, the subjective intensity of headache, the duration of a migraine attack, and the frequency of accompanying visual symptoms increases. Among people over 40 years of age, pain was more often unilateral, located on either side of the head, while in the group under the age of 40, pain was mostly bilateral, located near the temples. Younger respondents less frequently consulted doctors for their headaches and the accompanying symptoms, and used prophylactic medications more often. The study found that age had little correlation with the type of visual symptoms that occurred during pain episode.

Conclusions: Migraine headache is different in patients at different ages.

Keywords: migraine, headache, ophthalmology, visual aura, migraine aura

Occurrence of cardiovascular diseases: risk factors in patients with multiple sclerosis

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Background: Multiple sclerosis (MS) is the most common immune-mediated inflammatory demyelinating disease of the central nervous system. It is considered that the pathophysiology of MS may interact with the occurrence of cardiovascular diseases (CVDs). CVDs are the leading cause of death globally, but the implementation of prevention and early diagnosis allows to begin proper management with counselling and treatment. Regarding that fact, it is important to determine the possible relation between the occurrence of these pathologies and MS.

The aim: This study aimed to assess the prevalence of cardiovascular risk in MS patients after diagnosis and compare them with the non-MS population to consider whether patients affected with multiple sclerosis require a more developed CVDs prevention programme.

Materials and methods: An anonymous survey was carried out between December 2021 and February 2022 among the patients of the Department of Neurology of Medical University of Silesia in Zabrze and online. Questionnaires contained questions regarding CVDs risk factors such as past cardiovascular diseases, diet or physical activity. Additionally, a questionnaire for a study group contained questions regarding MS, the age of onset and management of the disease.

Results: The total of 207 subjects were enrolled in the study. The study group consisted of 106 subjects (males constituted 22.64%), while the control group consisted of 101 subjects (males constituted 30.69%). The mean age was 43,74±12,1 years old in the study group and 40,2±12,3 years in the control group. The majority (59%) in the study group had a relapsing-remitting clinical course. The study showed that moderate alcohol consumption was higher in the control group (59,41% vs. 16,98%). There were no differences in the prevalence of other cardiovascular risk factors between MS patients and the control group.

Conclusions: Results showed that MS patients do not have an increased risk of cardiovascular disease compared to the control group.

Keywords: cardiovascular disease, demyelinating diseases, multiple sclerosis, CVDs risk factors

Relevance of neurophysiological monitoring for the resection of intramedullary spinal cord tumors in children

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Background: The utility of intraoperative neurophysiological monitoring (IONM) in spinal procedures in the pediatric population has been described in a limited number of research papers, chiefly focusing on spinal deformities and tethered cord surgery. To date, little data exists on the utility of IONM in the resection of pediatric intramedullary spinal cord tumors (IMSCTs).

The aim: The purpose of this study was to evaluate the reliability of motor evoked potentials (MEP), somatosensory evoked potentials (SSEP), and D-wave monitoring as predictors of postoperative neurological deficits in pediatric patients undergoing resection of intramedullary spinal cord tumors.

Materials and methods: We performed a retrospective analysis of the pediatric patients who underwent resection of IMSCTs between March 2010 and April 2021 with an IONM. IONM alerts were recorded and correlated with patients' clinical status at discharge.

Results: 23 pediatric patients were included. MEP and SSEP were successfully elicited in all patients, while D-wave monitoring was feasible for 14 of them (60.9%). Significant IONM alerts occurred in 6 individuals (26.1%) with monitorable MEP and SSEP and 2 patients with monitorable D-waves (14.3%). The sensitivity, specificity, positive predictive value, and negative predictive value accounted for 100%, 81.8%, 20%, 100% for MEP, 100%, 92.3%, 50%, 100% for D-wave, and 50%, 81%, 20%, 94.44% for SSEP, respectively. Both MEP ($p<0.001$) and D-wave monitoring ($p<0.001$) accurately predicted postoperative motor deficits, while SSEP failed to provide significant accuracy regarding sensory deficits ($p=0.491$). Gross-total tumor resection was performed in 29.4% of patients without IONM alerts and 33.3% of patients with IONM alerts, indicating that IONM alerts did not limit the EOR ($p=0.0857$).

Conclusions: MEP and D-wave monitoring can be perceived as reliable IONM modalities in pediatric IMSCTs surgery. Caution is needed with the implementation of SSEP to guide surgical decisions.

Keywords: Intraoperative neurophysiological monitoring, Motor evoked potentials, D-wave, Spinal cord tumors.

Supratentorial brain tumors in infants - symptomatology and postoperative outcomes

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Background: Brain tumors are uncommon intracranial lesions in infants, with an incidence of 1.1 per 100 000 live births. Additionally, they constitute significant diagnostic and therapeutic dilemma.

The aim: This study aimed to determine the clinical presentation and postoperative outcomes in infants with supratentorial brain tumors.

Materials and methods: A retrospective review of the medical records was performed to extract infants, who underwent surgical resection of supratentorial brain tumor in the Department of Pediatric Neurosurgery in Katowice between 2002-2022. Patients initial symptoms, extent of resection, histopathological type of the tumor as well as early and delayed outcomes were evaluated. Clinical state on the follow up examination was assessed using modified Rankin Scale (mRS), and grouped into favorable (mRS 0-2), and unfavorable (mRS 3-5).

Results: A total of 30 infants (16 female, 14 male), who underwent 56 surgical procedures were included. The mean age was 5.6 months. Presenting symptoms included bulging fontanel (n=15, 50%), apathy (n=11, 37%), and neurodevelopmental disorders (n=10, 33%). The most common pathologies were choroid plexus tumors (n=11, 37%), followed by ependymomas (n=5, 17%). Perioperative complications occurred in 22 patients (39%), including subdural hygromas (n=13, 43%), and focal neurological deficits (n=11, 37%). Patients were followed-up for a mean time of 35.6 months. Favorable outcomes (mRS 0-2) were present in 20 children while unfavorable in 10 cases. 5 patients died due to major complications.

Conclusions: Supratentorial brain tumors in infants present with non-specific symptoms, which appear late, when the tumor causes increased intracranial pressure. Surgical treatment is associated with a substantial morbidity and mortality.

Keywords: postoperative outcomes, pediatric neurosurgery, supratentorial brain tumors in infants

Symptoms, complications and vaccination rates in COVID-19 patients diagnosed with multiple sclerosis

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The aim: The aim of the study was to examine prevalence, symptoms, complications and vaccination rates of COVID-19 among patients diagnosed with multiple sclerosis compared to the control group.

Materials and methods: The questionnaire was completed in total by 95 Poles which 49 were patients diagnosed with multiple sclerosis (39 females, 10 males, average age 40.6±11.2 (mean±SD)) and 46 people with history of SARS-CoV-2 infection in the past (19 females, 27 males, average age 42.1±18.8). The survey included questions about the year of diagnosis, medications administered to treat MS, the COVID-19 vaccine, symptoms, post-covid complications and exacerbations of multiple sclerosis. Same for the control group but without MS related questions. Data was analysed with descriptive statistics, t-test, and chi-square test.

Results: 55% patients with MS underwent SARS-CoV-2 infection. Dominant symptoms of COVID-19 infection were similar in both groups as well as complications with exception of loss of smell and taste, dyspnoea and chest pain which were negative in MS group. The analysis of frequencies of post-covid complications (41% vs 67 %) and vaccination rates (unvaccinated: 27% vs 11%) in covid-positive groups revealed that differences are significant. There is a trend comparing SM-covid positive and negative group in which 36% of patients were administered natalizumab for their SM treatment opposed to 11% in SM-covid negative group.

Conclusions: There are significant differences between frequencies and types of post-covid complications comparing patients diagnosed with and without MS. Patients with MS are more reluctant to take the covid vaccine so it is important to address the vaccine safety concerns with vaccine-unsure MS patients. There is need of further research concerning plausible protective role of natalizumab in preventing SARS-CoV-2 or other viral infections.

Keywords: Multiple sclerosis, covid, vaccination, epidemiology

The „sweet" Parkinsonian – an association between glucose metabolism impairment and course of the Parkinson's

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Background: Parkinson's disease (PD) is a neurodegenerative disease affecting over 1% of the population above 65 years. It manifests by the motor symptoms including bradykinesia, muscular rigidity, resting tremor, postural impairment, and non-motor symptoms as well. Many studies have been concerned about the interplay between PD and diabetes mellitus (DM). It has been suggested glucose metabolism impairment increases the risk of development and a worse course of PD.

The aim: The aim of this study is to explore the impact of impaired glucose metabolism on the course of PD.

Materials and methods: A retrospective study was performed by analyzing 469 clinical data of consecutive patients diagnosed with PD hospitalized from 2019 to 2021 in the authors' ward. The study group comprised 404 patients (159 females and 249 males, aged 35-86). The patient's clinical condition was assessed by: BMI, MDS-UPDRS, Hoehn-Yahr scale, MMSE, CDT and BDI. Data on current anti-parkinsonian treatment and laboratory results (fasting glycemia, lipid panel, TSH, homocysteine and vitamin D3 levels) were also collected.

Results: In the study group, 51 patients were diagnosed with DM; 161 patients had prediabetes, and 192 patients presented no glucose metabolism impairment. Diabetic patients were older than prediabetic patients (71.9 vs 66.13 years) but presented shorter PD duration than other groups (6.8 vs 10.8 vs 9.10 years). Diabetic patients had higher MDS-UPDRS part III ON ratings (23.15 vs 16.01 vs 14.0 vs 18.19) and higher BDI score (11.7 vs 7.01 vs 7.0 vs 7.8). As expected, there were differences in fasting glycemia (127.34 vs 110.12 vs 91.9 mg/dl). Diabetic patients showed lower HDL-C (50.18 vs 60.19.6 vs 57.818 mg/dl), higher LDL-C (105.63 vs 85.8143 vs 78.3147 mg/dl) and higher BMI (28.72 vs 31.31 vs 25.95 vs 24.38 vs 25.33 vs 25.84 kg/m²) compared to other groups.

Conclusions: Our study confirms the relation between DM and the worse course of PD, as well as emphasizes the need for early glycemic control, treatment and screening for mood disorders in diabetic patients with PD.

Keywords: Parkinson's disease (PD), diabetes mellitus (DM), glucose metabolism impairment

The value of simple neuropsychological tests to assess disease activity in patients with multiple sclerosis

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Background: Multiple Sclerosis (MS) is a demyelinating neurological disease of the central nervous system (CNS). In addition to the well-described sensory and motor symptoms, cognitive disorders appear in the chronic course. In clinical practice, neuropsychological examination is rarely done. It leads to an underestimation of disability due to cognitive impairment and yet it significantly reduces the quality of life of patients.

The aim: The aim of the study is to demonstrate the possibility of quick neuropsychological tests, readily available to every physician, which characterize cognitive disorders in MS.

Materials and methods: Our study was carried out in the Department of Neurology of Medical University of Silesia in Katowice. A total of 30 MS patients (19 female and 11 male) were included in the study with a median age of $40 \pm 13,1$ years. The mean duration of the therapy was $7,39 \pm 6,5$. All patients were physically fit (EDSS <4) and had disease modifying treatment. Neuropsychological state was assessed using SDMT, TRAIL, ACE-III, Hamilton Depression Scale. This work did not require the approval of the bioethics committee.

Results: The following test results were obtained: in the SDMT test, 83% (25/30) of patients did not reach the norm for their age and years of education. The median score in ACE-III was $89,6 \pm 8,37$. Both TRAIL-A and TRAIL-B showed deficiency (appropriately >78 seconds and >278 seconds) in 33% (10/30). 43% (13/30) patients could be diagnosed with depression with Hamilton Depression Scale.

Conclusions: Majority of patients with MS suffer from cognitive impairment. They require observation and diagnostics in this field. Due to their easy availability, the tests used serve this purpose. Physicians and neurologists should be aware of this problem.

Keywords: Multiple sclerosis, cognitive impairment, quality of life, neuropsychological testing

**SESSION
OF NONINVASIVE
CARDIOLOGY I**



Klub 30
**Polskiego Towarzystwa
Kardiologicznego**



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Fragmented QRS incidence in standard electrocardiogram in patients with systemic lupus erythematosus

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Background: In systemic lupus erythematosus (SLE), various cardiac involvement is common. It may be associated with disease severity, but it may also be asymptomatic.

The aim: Our goal was to assess the presence of a new electrocardiographic parameter in SLE patients i.e. fragmented QRS (fQRS) – indicator of a scar, diffuse injury or conduction system disturbances.

Materials and methods: We studied 77 patients with SLE and 40 healthy controls. Accurate patients' ECG assessment was performed manually under expert supervision. Among other evaluations, we examined fQRS incidence according to worldwide accepted Das' criteria. Disease severity was estimated by SLICCC/ACR DI score.

Results: Patients with SLE and controls were in the same age group (45.0±14.2 vs 47.2±9.6 yrs, $p=0.39$), women constituted 88.3% and 85.0% of studied groups. In SLE median of SLICCC/ACR-DI score was 4.0 (0-8), median of disease duration was 9.0 (1-35) yrs. and no symptomatic pericarditis or myocarditis were observed.

Mean value of LVEF in both groups was similar (65.1 vs 65.8%), hypertension incidence in SLE was 48.1%, and SLE patients presented prolonged corrected QT interval (432 vs 400 ms, $p<0.0001$). It is worth noting that fQRS occurred commonly in SLE and rarely in healthy controls: in 29 (37.7%) and 3 (7.5%) of subjects, respectively ($p<0.00001$). The most often fQRS in SLE was additional R wave (in 17), and later notched R (in 16), and notched S (in 8) - in some patients different fQRS coexisted. In SLE fQRS were similarly frequent irrespective of QTc prolongation and diseases severity or duration.

Conclusions: Patients with SLE present a very high incidence of fQRS, which is much more common than in healthy subjects. It is possible that fQRS may be considered an additional marker of heart involvement in this rare disease. In our study no relationship between fQRS and longer SLE duration or more advanced disease was observed.

Keywords: ECG, fragmented QRS, systemic lupus erythematosus

Analysis of differences in clinical parameters, comorbidities and the incidence of selected defects among patients with valvular heart disease with regard to age

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Background: There is very limited research on the differences caused by age in clinical parameters and comorbidities in patients with valvular heart disease (VHD).

The aim: Assessment of the differences caused by age in patients with VHD with the analysis of selected clinical parameters, comorbidities and the incidence of individual valve defects.

Materials and methods: Medical histories of 680 patients with valvular heart disease were subjected to a retrospective analysis.

Results: The mean age of our study group was 69,18 (SD=12.52) and the mean age of males was significantly lower compared to females ($p<0.001$). In the group with aortic stenosis the mean age was significantly higher than in the rest of the database ($p<0.005$), the same applied to patients with tricuspid regurgitation ($p<0.009$). Patients that had undergone procedures such as PCI or CABG had significantly higher mean age ($p=0.006$ and $p=0.004$ respectively). In terms of cardiac implantable electrical devices: the mean age of patients with ICD was higher, but the difference was not significant ($p=0.066$), those with pacemakers were significantly older ($p<0.001$). As it comes to medication there were statistically significant differences in the mean age of the groups taking: dabigatran, apixaban, ACEI/ARB and statins ($p=0.015$; $p=0.042$; $p=0.027$; $p=0.006$ respectively). Patients that were active smokers had lower mean age than the ones that denied smoking at the time of admission ($p<0.001$). Statistically significant difference in the mean age was observed in the group that have had previous history of myocardial infarction - they were older than those who haven't had a heart attack ($p=0.004$). Patients that demonstrated symptoms of heart failure were significantly older than patients without those ($p=0.003$).

Conclusions: We observed significant differences caused by age in selected clinical parameters, comorbidities and pharmacotherapy in our studygroup. However, more studies are needed to elucidate fully the differences that age makes in patients with VHD.

Keywords: Valvular heart disease, comorbidities, pharmacotherapy

Clinical characteristics of atrial flutter and its response to pharmacological cardioversion with amiodarone

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Background: Although less common than atrial fibrillation (AF), atrial flutter (AFI) is associated with comparably increased risk of ischemic stroke and is thought to be relatively refractory to pharmacological cardioversion (PC).

The aim: The aim of the study was to evaluate the clinical characteristics and management of patients with AFI and to evaluate the efficacy of PC of AFI with amiodarone in comparison to atrial fibrillation (AF).

Materials and methods: This retrospective study covered 222 consecutive patients (median age 68 (62; 75) years, 65.3% men) with AFI consulted in the emergency department of Upper-Silesian Medical Center between 2015 and 2018. In the nested case-control study, 59 control patients with AF, matched in terms of age and sex with 60 AFI patients, were subject to PC with amiodarone. Exclusion criteria comprised age < 18 and lack of data concerning conversion to the sinus rhythm (SR). Primary endpoint was return of SR confirmed in 12-lead ECG.

Results: AFI population was characterized by median CHA2DS2-VASc score of 3 (2; 4), median duration of episode of 72 h (16; 120) and 57.2% prevalence of oral anticoagulation use. Left ventricular ejection fraction (LVEF) < 50% was present in 38.7% of patients. The analysis revealed that 36% of patients with AFI were initially subject to PC, 33.3% to electrical cardioversion and 40.5% to catheter ablation (24.3% - ad hoc; 16.2% - delayed). In comparison to AF group, AFI cohort had comparable use of oral anticoagulation ($p=0.91$), lower LVEF ($p<0.001$), lower estimated glomerular filtration rate ($p=0.022$) and higher troponin level ($p=0.004$). The efficacy of PC with amiodarone was significantly lower in AFI than AF group (39% vs. 65%, relative risk (RR) 0.60, 95% confidence interval (CI): 0.41-0.87, $p=0.007$).

Conclusions: AFI patients share greater burden of comorbidities than AF patients, while efficacy of PC in AFI is low. Prompt referral for catheter ablation of AFI is requisite.

Keywords: atrial flutter, pharmacological cardioversion, amiodarone, electrical cardioversion

Discrete subclinical abnormalities in patients with preserved left ventricular ejection fraction

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Background: Endothelial dysfunction accompanies cardiovascular (CV) risk factors and is a well-recognized predecessor of atherosclerosis. Endothelial dysfunction appears to associate with heart failure with preserved left ventricular (LV) ejection fraction (HFpEF) by both hemodynamic and metabolic mechanisms. Renal insufficiency predisposes to both endothelial dysfunction and HFpEF.

The aim: Our aim was to estimate possible associations between endothelial, renal, hemodynamic and metabolic parameters in patients undergoing routine coronary diagnostics, who do not meet the current definite criteria of diastolic dysfunction and HFpEF.

Materials and methods: Exclusion criteria included significant coronary artery disease, atrial fibrillation, EF <50%, estimated glomerular filtration rate (eGFR) <45 mL/min per 1.73 m², more than mild valvular heart disease, and overt diastolic dysfunction or HFpEF. Endothelial function was estimated by EndoPAT (as reactive hyperemia index [RHI]), insulin resistance by HOMA-IR, LV function by tissue Doppler, and systemic arterial compliance (SAC) by echocardiography.

Results: Twenty seven patients entered the final analysis. Average mitral annular systolic velocity (S'), a tissue Doppler-derived marker of preclinical LV systolic dysfunction, correlated negatively with indexed left atrium area and log(HOMA-IR), whereas positively with mean early mitral annular diastolic velocity (E'), eGFR, and SAC. EF was unrelated to any of the above parameters. RHI was positively associated with eGFR.

Conclusions: Discrete subclinical impairment of LV function develops in parallel with the degree of insulin resistance, peripheral arterial stiffening, and renal insufficiency already in subjects prior to the onset of definite diastolic dysfunction and HFpEF. As renal dysfunction and endothelial dysfunction were also interrelated, our preliminary findings suggest the importance of aggressive preventive measures to prevent both chronic renal disease and heart failure.

Keywords: Endothelial function, left ventricular dysfunction, insulin resistance, renal insufficiency

Influence of different therapeutic interventions on thrombus resolution in the left atrial appendage

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Background: Thrombus in LAA is the most prevalent source of cardioembolic events. There is no robust evidence regarding the efficacy of different interventions that aim to dissolve the LAA thrombus.

The aim: To determine the characteristics of patients with a diagnosis of a thrombus in the left atrial appendage (LAA) based on transoesophageal echocardiography (TOE) and the influence of various therapeutic strategies on achieving LAA thrombus resolution.

Materials and methods: The data of 31 patients with atrial fibrillation (AF) or flutter, hospitalized in the Department of Cardiology, Congenital Heart Diseases, and Electrotherapy SUM, who were diagnosed with a thrombus in the LAA with TOE, were analyzed. TOE tests were performed on the GE VIVID 95 device. In 22 patients the influence of the applied pharmacological strategy on thrombus resolution was assessed.

Results: Initially 25 patients used novel oral anticoagulants (NOACs) and 12 used vitamin K antagonists (VKAs). After the diagnosis of a thrombus, VKA was abandoned in the highest percentage of cases. In order to dissolve the thrombus, it was decided to replace VKAs with NOACs or change the type of NOACs (10 patients), alternatively, low molecular weight heparin was administered (10 patients). Thrombus resolved in 12 patients. Most often, no thrombus was found in repeated TOE in patients treated with NOACs, but no statistically significant differences were found between the selected strategies ($p=0.566$). The thrombus dissolution was significantly more frequent in patients with paroxysmal AF compared to patients with permanent AF (58% vs. 42%, $p=0.049$).

Conclusions: Various therapeutic approaches were used once a thrombus had been detected in the LAA. Most of the patients that had thrombus resolution were treated with NOACs, however, no significant differences between treatment regimens were found.

Keywords: thrombus, left atrial appendage, atrial fibrillation, echocardiography

CMR of the heart – the diagnosis and activation of the myocardium in patients with acute cardiac inflammation.

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Background: The diagnosis of acute myocarditis is complex, hence the diagnosis is often made based on a deficient panel of tests and examinations. CMR is a recognized diagnostic method.

The aim: The aim of the study is to evaluate the use of CMR in diagnosis of acute myocarditis and refer CMR results to the degree of damage to the myocardium.

Materials and methods: A retrospective, single center analysis was performed on a population of 83 patients hospitalized due to acute myocarditis between 2015 and 2021 in the I Cardiology Department of GCM in Katowice. The value of LVEF in CMR was evaluated as well as the presence of myocardial edema and the cardiac segmentation of LGE CMR. It was all then analyzed in relation to levels of TnT, CK-MB, NT-proBNP and CRP.

Results: Out of 83 patients (mean age 38,4; F/M:15/68;mean concentrations:TnT0,56 µg/ml;CK-MB23,7 IU/l,CRP41,3 mg/l) diagnosed with acute myocarditis in 36(43,3%,mean age 39,6;F/M:8/28;mean concentrations:TnT0,37µg/ml;CK-MB20,6IU/l,CRP17,4mg/l) CMR was performed during the hospitalization. In the remaining 47 patients the diagnosis was made without CMR- they were characterized by significantly higher TnT levels (0.7µg/ml),CK-MB(27.5IU/l) and CPR(60.8mg/l). The mean LVEF on CMR was 51.8%, of which LVEF>55% was found in 18 (50%). Myocardial edema was demonstrated in 26 (72%) patients. LGE was present in 35(97.2%) patients.The number of involved segments ranged from 6-10 in 10 (28.6%) and 11-16 in 25(71.4%) patients. There were no significant correlations between LVEF,number of myocardial segments with LGE,presence of myocardial edema and TnT,CK-MB or CRP levels.

Conclusions: Although CMR is significant in the diagnosis of acute myocarditis it's not essential therefore not fully used. Current use refers to patients with less pronounced symptoms suggesting the diagnosis. In patients with mild clinical courses of myocarditis diagnostic markers of myocardial damage are not related to the severity of changes observed on CMR.

Keywords: CMR, myositis, LGE, LVEF, myocardial necrosis markers, myocardial edema

Diagnosis of wide QRS complex tachycardia based on 3 channel Holter recordings

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Background: Ventricular tachycardia is an arrhythmia that up to this day remains a diagnostic challenge because it requires differentiation with aberrated supraventricular tachycardia, which oftentimes proves difficult. There are algorithms like VT-score, Brugada, Vereckei helpful in confirmation of ventricular origin of the arrhythmias, but they are prepared for standard 12-lead ECG recordings. However there are no algorithms for 3 channel Holter ECG recordings, which are the most common diagnostic tool.

The aim: To assess whether it is possible to diagnose ventricular tachycardia based on 3 channel ECG using indicators chosen by authors.

Materials and methods: The study was based on 154 ECG Holter recordings, including 144 VT and additionally 10 SVT for comparison, from patients with implanted ICD. Following indicators were assessed for all three channels: duration of QRS, VT cycle, atrioventricular dissociation, positive concordance and negative concordance. For each channel separately: type R, type QS, RS > 100ms, RS duration and notch in the proximal and distal parts of R, Q>R, QR>100 ms.

Results: Parameters occurred with following frequency: atrioventricular dissociation 37.5%, negative deflection 18.6%, type R in I 16.6%, type QS in I 37.9%, RS > 100ms in I 15.9%, notch in the proximal part of R in I 14.5% and distal part 17.2%, type R in II 17.9%, type QS in II 31.7%, RS > 100ms in II 19.3%, notch in proximal part of R in II 16.6% and distal part 18.6%, type R in III 29.7%, type QS in III 44.1%, notch in proximal part of R in III 19.3% and distal part 29.7%, Q>R in III 10.3%. Average duration of QRS 146.7 ms, average VT cycle 456.1 ms, average RS time in I 100 ms, average RS time in II 105 ms, average RS time in III 0 ms.

Conclusions: The confirmation of ventricular origin of tachycardia based on 3 channel ECG Holter recordings proves to be difficult and further analysis of SVT recordings for comparison is required.

Keywords: VT, Holter, ECG

Baseline creatinine level and long-term outcome in patients with heart failure undergoing CRT

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Background: Renal dysfunction is an independent predictor of mortality in patients with heart failure (HF). Data on the long-term outcome of cardiac resynchronization therapy (CRT) in patients with chronic kidney disease is scarce due to the underrepresented of these patients in clinical trials of CRT.

The aim: To determine outcome and mortality predictors in patients with HF and elevated creatinine level treated with CRT.

Materials and methods: The study population consisted of 1059 consecutive patients with CRT implanted between 2002 and 2019 in a tertiary care university hospital, in a densely inhabited, urban region of Poland (949 subjects [89.6%] with CRT-D; 110 patients with CRT-P [10.4%]; 832 men [78.6%]).

Results: The median creatinine level before CRT implantation was 96 $\mu\text{mol/L}$ (10th and 90th percentile: 67-160). We divided all CRT patients into quartiles per creatinine level: I <79 $\mu\text{mol/L}$, II 79 to <96 $\mu\text{mol/L}$, III 96 to <118 $\mu\text{mol/L}$, and IV >118 $\mu\text{mol/L}$. During the median follow-up of 1661 days (10th and 90th percentile: 323-3995), mortality rates for quartiles I-IV were 36.8, 44.9, 60.1, and 71.7%, respectively ($p < 0.05$). The creatinine level >118 $\mu\text{mol/L}$ appeared to be an independent risk factor for death (HR 1.004, 95%CI 1.003-1.006, $p < 0.001$). On multivariable analysis, lower left ventricular ejection fraction (HR 0.97, 95%CI 0.95-0.99, $p = 0.04$), higher NT-proBNP level (HR 1.00, 95%CI 1.0001-1.0005, $p = 0.04$), and diabetes treated with insulin (HR 1.64, 95%CI 1.07-2.53, $p = 0.02$) were independent risk factors for death in quartile IV. The mortality rate in those with creatinine level >118 $\mu\text{mol/L}$ and left ventricular ejection fraction $\leq 20\%$ was 88% during the observation.

Conclusions: Mortality rates in CRT recipients with elevated creatinine level >118 $\mu\text{mol/L}$ is significantly higher compared to those with creatinine in a normal range and reaches 70%. More than 85% of CRT recipients with HF, creatinine level >118 $\mu\text{mol/L}$ and left ventricular ejection fraction $\leq 20\%$ die within 4.5 years since CRT implantation.

Keywords: creatinine, heart failure, cardiac resynchronization therapy

Does the type and location of ischemic stroke affect HRV and apnea parameters in ECG Holter recordings?

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Background: Ischemic stroke is the most common type of cerebrovascular disease. Autonomic dysfunction is frequently observed after such ischemic events. Analysis of heart rate variability (HRV) is a non-invasive method to estimate autonomic nervous system (ANS) mechanisms engaged in heart rhythm control. Obstructive sleep apnea (OSA) may also be related to disturbances in ANS activity.

The aim: The analysis of the heart rate variability and obstructive sleep apnea parameters in patients with different types and locations of acute ischemic strokes.

Materials and methods: 339 patients were studied and 300 were finally included (137 M, age: 69,1±12,2). This study population was divided into 3 groups TACI, non-TACI (PACI, POCI) and RIND/TIA. Clinical data and Holter results were collected retrospectively from a 3 years period (2018-2020). The following parameters were assessed from Holter recordings: HRV: SDNN, rMSSD, pNN50 (entire recording, night and day period). Apnoea-hypopnea index (AHI) was also calculated.

Results: TACI patients were characterized by lower values HRV parameters than nTACI and RIND groups. SDNN 87±32 vs 111,6±33ms vs 121,2±44,7 (p=0,15), respectively. For rMSSD 25,6±10,5 vs 39,1±3 vs 31,7±33ms (p=0,02), respectively. For pNN50 5,2±4,8 vs 9,9±12,6 vs 7,6±13 ms (p=0,09), respectively. TACI patients were characterized by higher values AHI than nTACI and RIND groups: 22,7±21,9 vs 17,5±16 vs 11,5±10,1 (p=0,066) respectively. TACI patients had lower values of HRV and higher AHI than the rest of the groups. RIND patients had the lowest AHI among the researched population.

Conclusions: Type and location of acute ischaemic events may affect the central part of ANS and may be responsible for changes observed in HRV and AHI parameters.

Keywords: ischemic stroke, ECG Holter, apnoea-hypopnea index, HRV

CHA2DS2-VASc score – new fortuneteller for NSTEMI patients...how about STEMI?

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Background: The CHA2DS2-VASc score is used to estimate the risk of ischemic stroke for non-valvular atrial fibrillation. Components of this acronym, for example, hypertension (HTN) and diabetes mellitus (DM), are known risk factors for cardiovascular disease such as STEMI, but most importantly, premature death. Our recent study suggests that CHA2DS2-VASc score may have prognostic value in the estimation of the 5-year survival of NSTEMI patients.

The aim: To determine the effectiveness and usefulness of the clinical application of the CHA2DS2-VASc score in the prediction of 5-year survival among patients with STEMI.

Materials and methods: The retrospective observational study included 150 patients (50% female, median age of 73) hospitalized at 1st Chair and Clinic of Cardiology, Medical University of Silesia in Katowice (01.01.2013 - 31.12.2016). Inclusion criteria considered age between 65-80 years and STEMI diagnosis. Patients with a history of cancer were excluded. The analysis covered clinical characteristics and five-year survival of STEMI patients.

Results: Death was reported in 77 (51.3%) patients within 5 years since the STEMI episode. Baseline characteristic of STEMI patients presented significantly higher the CHA2DS2-VASc score (median 5 vs 4; $p=0.01$) in subpopulation who died during follow-up. The group in which death was recorded presented significant differences on Killip-Kimball class IV (32.5% vs 1.4%; $p<0.0001$) on admission as well as DM (45.5% vs 26.0%; $p=0.01$) and infarction related ventricular arrhythmias (27.3% vs 6.9%; $p=0.001$).

Conclusions: Worse prognosis in STEMI patients is of multifactorial origin. CHA2DS2-VASc score may be used as risk factor for death in this population.

Keywords: CHA2DS2-VASc, STEMI, NSTEMI, 5-year survival

Fragmented QRS and prediction of paroxysmal atrial fibrillation episodes

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Background: Fragmentation of QRS complex (fQRS), which seems to be related to the presence of abnormalities in the myocardium, may be an indicator or the trigger of paroxysmal atrial fibrillation (AF).

The aim: Analysis of the presence of fQRS in patients with acute ischemic stroke using a 7-day, two-channel Holter ECG.

Materials and methods: A cohort of the 95 consecutive patients (52% M; age: 60.2 ± 15 years) with embolic stroke of the undetermined source was observed prospectively for at least 2 years. 35 (37%) patients had total anterior circulation infarct stroke (TACI), and 60 (63%) had a nonTACI, defined as LOCI, POCI or PACI. 7-day Holter ECG recordings were analysed. The presence of proximal and distal QRS fragmentations was verified separately for the first and the second channel and for both the first and the second channel combined. The primary composite endpoint was a recurrent ischemic stroke and/or confirmation of atrial fibrillation during the follow-up.

Results: The frequency of fQRS in patients with TACI ($n=16$; 46%) and non-TACI ($n=22$; 37%) was comparable to the frequency of non-fQRS in patients with TACI ($n=19$; 54%) and non-TACI ($n=38$; 63%). The endpoint was observed in 14 patients. The presence of fQRS was more frequent in patients with the endpoint: 9 patients (64%) vs 35 patients (43%), $p=0.12$.

Conclusions: The presence of fQRS may be a risk factor for recurrent ischemic stroke or atrial fibrillation.

Keywords: fragmented QRS, paroxysmal atrial fibrillation episodes, cardiac arrhythmia, ECG Holter monitoring

Correlation between 6-minute walk distance and selected clinical parameters in patients with hypertrophic cardiomyopathy

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Background: Hypertrophic cardiomyopathy (HCM) is a genetically determined cardiac disease characterized by left ventricular (LV) hypertrophy. Although many patients are asymptomatic, some of them report exercise intolerance that impairs the ability to carry out activities of daily living. To objectively evaluate functional capacity in patients with cardiopulmonary diseases, the 6-minute walk test (6MWT) is used. A distance of fewer than 300 meters is associated with a poor prognosis.

The aim: Our study aimed to assess the correlation between various clinical, biochemical and echocardiographic parameters and the distance of 6MWT (6MWD) in patients with HCM.

Materials and methods: We enrolled 90 HCM patients, (54 (60%) of men, mean age $51,8 \pm 14,8$ years, who had performed 6MWT. We evaluated the relationships of selected parameters such as age, body mass index (BMI), NYHA class, heart rate (HR), N-terminal prohormone of brain natriuretic peptide (NT-proBNP) plasma level, left ventricle ejection fraction (LVEF), left atrium (LA) dimension, maximal wall thickness (MWT), maximal left ventricle outflow tract (LVOT) gradient and 5-year risk of sudden cardiac death (SCD) with the distance of 6MWT. The data were collected retrospectively based on medical records.

Results: The mean result of 6MWD was $417,8m \pm 120,0m$. 31 (34%) patients covered a distance of less than 400m. Moderate negative correlations were shown between 6MWD and NYHA class (R Spearman = -0,5; p -value <0,05) as well as age (R Spearman = -0,44, p -value <0,05). The correlation with NT-proBNP plasma level was found to be weak (R Spearman = -0,24; p -value <0,05). There were no significant correlations observed in terms of BMI, HR, LVEF, LA dimension, MWT, and maximal LVOT gradient.

Conclusions: Objective 6MWT can complement a comparable indicator with subjective NYHA classification to assess functional capacity in patients with HCM. Echocardiographic parameters seem not to link with 6MWD. However, age should be taken into account while interpreting the results of 6MWT.

Keywords: Hypertrophic cardiomyopathy

HCM-AF Risk Score – clinical application in the prediction of 2 and 5-year clinical outcome of Polish patients

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Background: Hypertrophic cardiomyopathy (HCM) is a genetic disease causing variety of life-threatening complications. Atrial fibrillation (AF) in HCM population constitutes an important step in progression of the disease. Recently developed tool – HCM-AF Risk Calculator validated in American population allows accurate prognosis of AF occurrence in HCM patients.

The aim: To assess clinical application of HCM-AF Risk Score in the prediction of 2 and 5-year clinical outcome of Polish patients with HCM.

Materials and methods: The retrospective cohort study included 54 consecutive patients with HCM (52% female, median age 59) and baseline sinus rhythm diagnosed at the 1st Chair and Clinic of Cardiology, Medical University of Silesia in Katowice in 01.01.2013 - 31.12.2016. Analysis involved clinical characteristics, laboratory tests, echocardiography, Holter monitoring, 2- and 5-year clinical outcome (total mortality, re-hospitalization, ICD implantation, heart failure (HF) regarding the baseline HCM-AF Risk Score.

Results: According to HCM-Risk Score stratification 2 patients (3.7%) from analyzed cohort had low, 3 patients (5.6%) had intermediate, and 49 patients (90.1%) had high risk of AF. Both in low and intermediate-risk groups one patient developed AF, all patients survived, and no patients presented HF progression within 2-year and 5-year follow-up. Whereas in high-risk group AF has been detected in 24 (48.9%) patients within 2-year-follow-up and 31 (63.3%) patients within 5 year-follow-up, total mortality was 46.9% and HF progression was significant, and. Moreover, in explicitly distinguished subgroup of extremely high risk of AF (HCM AF Risk Score>45) 16 patients (84.2%) in 2-year-follow-up and 19 (100%) patients in 5 year-follow-up developed AF.

Conclusions: HCM-AF Risk Score seems to be useful in both prediction of AF occurrence and clinical outcome in HCM patients. Polish HCM population is characterized by relatively high HCM-Risk Score coexisting with high AF occurrence thus AF screening should be obligatory in this group.

Keywords: hypertrophic cardiomyopathy, atrial fibrillation, HCM-AF

**SESSION
OF NONINVASIVE
CARDIOLOGY II**



Klub 30
**Polskiego Towarzystwa
Kardiologicznego**



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Associations of clinical characteristics and aortic complex morphology of patients with bicuspid aortic valve and aortic stenosis or regurgitation

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Background: The bicuspid aortic valve (BAV) may predispose to structural and functional complications, such as aortic stenosis (AS), aortic regurgitation (AR) and aortopathy.

The aim: To compare clinical characteristics and aortic complex morphology of patients with AS and AR, based on BAV.

Materials and methods: Over 59 consecutive patients with BAV (61.0% males, mean age 61.0±15.3 y.o.), hospitalized during 3 years period (2019-2021) in 1st Department of Cardiology, SUM were assessed in this study: 37 patients with AS and 22 patients with AR. Clinical characteristics, TTE and TEE examinations findings were analyzed.

Results: Clinical characteristic revealed significant differences between BAV patients presented AS and AR: patients with AS were older (mean age 67.5±10.7 vs 47.5±14.8 y.o., $p=0.009$), with lower percentage of males (59.5 vs 95.5%, $p<0.001$), diameters of ascending aorta were smaller (annulus 23±3 vs. 27±3 mm, aortic sinus 35±5 vs. 41±5 mm, STJ 29±5 vs. 35±5 mm, $p=0.021$) and aortopathies appeared less frequently (24.3 vs. 59.1%, $p=0.012$; overall 37.3%), including ascending phenotype (16.2 vs. 22.7%, $p=0.036$; 18.6% overall) and root phenotype (5.4 vs. 31.8%, $p<0.001$; 15.3% overall). The fused BAV phenotype constituted the majority of examined cases (86.5 vs. 77.3%, $p=0.006$; 83.1% overall), primarily with right-left cusp fusion (54.1 vs. 59.1%, $p<0.001$; 55.9% overall). The 2-sinus BAV was observed in 8.5% patients (5.4 vs. 13.6%, $p=0.001$), primarily the anterior-posterior phenotype appeared more frequently among AR patients (2.7 vs. 13.6%, $p<0.001$). The TTE and TEE examinations revealed more calcifications in AS (86.5 vs. 31.8%, $p<0.001$), generally of severe intensity.

Conclusions: Patients with BAV and severe AS or AR presented two different clinical phenotypes regarding on the type of pathology. The fused BAV morphology does not determinate the development of AS or AR. Aortic complex differences between AS and AR patients regard the 2-sinus BAV, valve calcification and aortopathy.

Keywords: bicuspid aortic valve, aortopathy, aortic stenosis, aortic regurgitation, echocardiography

Frailty syndrome is associated with increased respiratory and renal dysfunction

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Background: Frailty syndrome is a state of decreased physiological reserve and increased vulnerability to different stressors. Frail patients have worse prognosis. Comorbidities and dysfunction of other systems might worsen the prognosis further in this peculiar patient population. There is less evidence on function of respiratory and urinary systems in frail patients with coronary artery disease.

The aim: The aim of the study was to assess the prevalence of comorbidities and function of respiratory and urinary systems in frail patients with diagnosed coronary artery disease.

Materials and methods: We have enrolled 173 patients aged ≥ 65 years, in whom coronary artery disease was confirmed angiographically. Frailty was assessed according to Fried frailty scale. Comorbidities were recorded from patients' medical charts. Peak expiratory flow (PEF) and forced expiratory volume in 1 second (FEV1) were measured with Asmaplan 1 peakflowmeter (Vitalograph, Ireland). Renal function was expressed as estimated glomerular filtration rate (eGFR) from Cockcroft-Gault formula.

Results: 43 patients presented at least three out of five Fried traits and were considered as frail. Frail and non-frail patients have comparable prevalence of comorbidities like hypertension, atrial fibrillation, valvular heart disease, stroke/TIA, PAD, COPD, hyperlipidemia, diabetes, renal failure, and malignancy. Frail patients have however significantly reduced PEF (240 \pm 114 vs. 337 \pm 126 L, $p=0.0001$), FEV1 (1,61 \pm 0,6 vs. 2,36 \pm 2,1 L/sec, $p=0.04$) and eGFR (49.1 \pm 11.7 vs. 66.4 \pm 22.3ml/min, $p=0.01$).

Conclusions: Impaired function of respiratory and urinary systems in frail patients may be the reason for increased risk in these patients. There is a need to adjust the cardiovascular risk in order to reduce the incidence of complications arising from the combined dysfunction of the kidneys, lungs and cardiovascular system in patients with frailty syndrome.

Keywords: frailty, cardiovascular risk, kidney disease, respiratory dysfunction

Functional tricuspid regurgitation influences the efficacy of electrical cardioversion of atrial fibrillation

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Background: Tricuspid regurgitation (TR) is a well-known negative prognostic factor for different cardiovascular diseases. Functional TR (fTR) may be secondary to atrial functional mitral regurgitation (afMR) - a result of left atrium (LA) and mitral annular dilatation and insufficient leaflet remodeling especially in patients with atrial fibrillation (AF), and it may influence the effectiveness of rhythm restoration procedures.

The aim: To assess efficacy of electrical cardioversion (ECV) in AF in relation to the presence and degree of fTR in patients with afMR.

Materials and methods: A retrospective analysis included 430 consecutive patients with AF on optimal medical therapy undergoing ECV. Based on transthoracic echocardiography (TTE) 354 (82.3%) patients with mitral regurgitation (MR) were distinguished; 181 (51.1%) presented with afMR (left ventricle ejection fraction $\geq 50\%$, LA dilatation) and constituted a study group. The group was divided into 31 (17.1%) patients without fTR and 150 (82.9%) patients with fTR: 102 (68%) with mild, 38 (25.3%) with moderate and 10 (6.7%) with a severe degree of fTR. Patients with severe or organic MR were excluded from the study. Clinical characteristics, the efficacy of ECV, amount of energy and applied pharmacological treatment were analyzed in relation to the presence and degree of fTR.

Results: Patients with afMR and fTR had a greater incidence of chronic obstructive pulmonary disease ($p=0.02$) and metabolic syndrome ($p<0.01$), as well as a greater diameter of the right atrial area ($p<0.01$) compared to patients with isolated afMR. ECV efficacy was lower in afMR patients with fTR in comparison to patients with isolated afMR (86% with fTR vs 93.6% without fTR; $p=0.04$) and it was unrelated to the degree of fTR. The energy required for ECV did not vary irrespective of the presence ($p=0.19$) and degree of fTR ($p=0.35$).

Conclusions: The presence of fTR reduces the efficacy of ECV in patients with AF and afMR. The degree of fTR does not influence the ECV efficacy.

Keywords: functional tricuspid regurgitation, atrial fibrillation, electrical cardioversion

The relationship between increased air pollution expressed as PM 10 concentration and the frequency of percutaneous coronary interventions in patients with acute coronary syndromes-a seasonal differences

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Background: Long-term exposure to fine particulate air pollution is associated with higher mortality. I would like to present outcomes from my publication.

The aim: The aim of the presented study was to assess the relationship between air pollution expressed as particulate air matters less than 10 μm (PM10) and acute coronary syndromes.

Materials and methods: In this observational study, we selected regions with low pollution according to PM10 (non-polluted) 6 cities and 5 cities with the highest pollution, based on the data published by the Chief Inspectorate for Environmental Protection concerning the entire year 2017. The occurrence of percutaneous coronary interventions in patients with acute coronary syndromes was matched according to the location. Data were obtained from the ORPKI Polish National dataset. Analysing the period from January to December 2017, the number of patients undergoing angioplasty in monitored catheterization laboratories and the mean daily concentration of PM10 in all selected cities were calculated for each day. We wanted to compare the frequency of PCI in acute coronary syndromes which concerned the patients living in those locations. Patients' clinical condition at admission to hospital and before PCI was assessed with the use of Killip-Kimball class. In the current nomenclature and for the purpose of the presented study, acute coronary syndromes consist of two types of acute myocardial infarctions: non-ST-segment elevation myocardial infarction and segment elevation myocardial infarction and unstable angina.

Results: It was proven that for both groups, the rise in PM10 pollution levels is connected with the increased frequency of PCIs in patients with. Moreover, we calculated that in the non-polluted and polluted regions, the increase in PM10 concentration by every 1 $\mu\text{g}/\text{m}^3$ causes 0.22 and 0.18 additional angioplasties per week, respectively.

Conclusions: The study shows that the increase in air pollution expressed as PM10 concentration and winter time influences the frequency of ACS-related PCIs.

Keywords: Air pollution . Acute coronary syndromes . Percutaneous coronary interventions . Seasonal difference

The lipid goals attainment in patients with cardiovascular diseases– still low therapy or lower target levels?

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Background: The European Society of Cardiology and the European Atherosclerosis Society (ESC/EAS) have recently published guidelines for prevention of cardiovascular disease (CVD). Hypercholesterolemia is a primarily modifiable cause of atherosclerotic CVD. Recent registries (POLASPIRE/ EUROASPIRE) have shown relatively low rates of lipid goals attainment.

The aim: We aimed to assess the primary and secondary goal attainment in patients with various CV risk.

Materials and methods: This retrospective analysis included data of 250 consecutive patients hospitalized between January to May 2021.

The study group consisted of 93 women and 157 men (age 67.44 \pm 11.6) and it was divided into five subgroups based on the category of CV risk with appropriate lipid targets (ESC 2021 Guidelines). Afterwards, we have analyzed the database from 2016 (420 patients) with the attainment of the therapeutic goals according to the previous ESC Guidelines.

Results: The CV risk subgroups were as follows: 5 patients with low (L), 4-moderate (M), 15-high (H), 194-very high (VH) and 32 with extreme (E) CV risk. The most common diseases were coronary artery disease (72%), heart failure (44.4%), DM type 2 (40%) and acute myocardial infarction (26.8%). Lipid goals attainment in the study group was as follows, LDL-C goal: 75%(M), 40%(H), 26.8%(VH), 15.63%(E), 27.2%(all together); non-HDL-C: 100%(M), 44.44%(H), 35.57%(VH), 18.75%(E), 34.8% (all together) and 25.2%(LDL-C and non-HDL-C). However, the 2016 study group showed the following target rates: 34% (LDL-C goal), 39% (non-HDL-C goal) and 35% (both goals) among patients with VH risk ($p < 0.05$). Among 2021 group, 208 patients were treated with statins-atorvastatin: 150; 81 (dose < 40 mg), 64 (40-79 mg), 5 (≥ 80 mg), rosuvastatin: 57; 17 (< 20 mg), 29 (20-39 mg), 11 (≥ 40 mg), simvastatin: 1; ezetimibe: 7, fibrate: 3, inhibitor PCSK-9: 0.

Conclusions: The lipid goal attainment in patients with VH risk is still low and far from the expected. A more intensive treatment and follow-up are needed as the current therapeutic goals remain a challenge.

Keywords: hypercholesterolemia, LDL-C, non-HDL-C, therapeutic goals, CVD, lipid-lowering drugs

Changes in the ECG in patients with pulmonary embolism

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Background: Pulmonary embolism (PE) is the third most common cause of mortality from cardiovascular causes, which makes it a major clinical challenge. Some ECG parameters can be helpful in diagnosis and differentiation, but there are no abnormalities that clearly confirm PE.

The aim: Analysis of changes in the ECG for PE and relationship to clinical course of disease.

Materials and methods: This is a retrospective, single-centre study, which involved 78 patients (pts; mean age: 65.2 \pm 17.2 yrs) with PE. Presence of thirteen ECG abnormalities associated with PE, including tachycardia, right bundle branch block (RBBB), ST-segment changes, was assessed in the admission electrocardiogram.

Results: At least one ECG abnormality was found in 57 pts (73.1%). The mean heart rate (HR) was 90 \pm 21 bpm. Tachycardia (HR > 100 bpm) was present in 22 pts - 28.2%. Right axis deviation was found in 10 pts (12.8%). Inversion of T waves in V2-V6 leads was the most common finding (30 pts – 38.5%). S1Q3T3 pattern appeared in 19 pts (24.4%). Right bundle branch block (RBBB) occurred in 8 pts (10.2%). ST-segment depression in I, aVL, V5-V6 leads was present in 11 patients. ST elevation in III, aVR and V1 leads was found in 6, 6 and 5 patients respectively. Patient with at least one ECG abnormality had higher HR (91.3 \pm 22.1 vs 72.7 \pm 9 bpm; p=0.003), lower arterial oxygen saturation (91.2 \pm 6.9 vs 97.2 \pm 1.8%; p=0.006), higher troponin level (0.1 \pm 0.2 vs 0.02 \pm 0.03 ng/ml; p<0.001), shorter pulmonary acceleration time (75.3 \pm 25.4 vs 94.9 \pm 27.8 ms; p=0.01) compared to subjects with normal ECG. McConnell's sign, shock and thrombolytic treatment were observed only in patients with abnormal ECG (17pts, 9 pts and 9 pts, respectively), p<0.05.

Conclusions: The majority of patients with PE had at least one ECG abnormality. Inversion of T waves in V2-V6 leads was the most common finding. Presence of ECG changes was related to more severe course of disease.

Keywords: pulmonary embolism, electrocardiography, tachycardia, S1Q3T3, RBBB

Does secondary tricuspid regurgitation influence the survival among patients with HFrEF?

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Background: Heart failure is a significant public health challenge. Worldwide, over 23 million people suffer from this disorder. Approximately 50 % of those people suffered from heart failure with reduced ejection fraction (HFrEF). A functional tricuspid regurgitation (fTR) is common in particular in patients with left-sided heart diseases (LVD). fTR is usually a result of multifactorial disorder, can impair heart function and worsen a patients' survival. Nonetheless, the impact of fTR on survival in patients with HFrEF without LVD still requires particular evaluation.

The aim: The aim of this paper is to assess the influence of moderate to severe fTR on survival among patients with HFrEF without severe LVD.

Materials and methods: The study was based on a single-center registry of patients with HFrEF (n=2731). The data were collected between 2009 and 2015 in a referential cardiovascular center. Patients with severe LVD were excluded from the research. The study population counted 2435 patients. Moderate and severe fTR was present in 465 patients. Absent or mild fTR was observed in 1970 participants. Out of these 1970 patients, 465 patients were randomly chosen for analysis.

Results: Patients with moderate to severe fTR in HFrEF had significantly higher age, more female sex, more frequent atrial fibrillation, as well as more frequent chronic kidney disease. Kaplan-Meier survival curves showed that 12-month all-cause mortality was over twofold higher in the fTR group than in the non-fTR group (21,2% vs 8,1%). Age, GFR, anemia, LVEF (%), and fTR in Cox regression analysis were identified as the most important factors for mortality in patients with HFrEF without LVD.

Conclusions: The survival in patients with HFrEF without severe LVD may be affected by moderate to severe fTR. fTR was determined as an independent echocardiographic parameter of an increased 12-month all-cause mortality in patients with moderate to severe fTR.

Keywords: tricuspid regurgitation, heart failure with reduced ejection fraction, echocardiography

Mean platelet volume (MPV) and major adverse cardiac events (MACE) in patients with chest pain

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Background: Rapid indication of patients with chest pain of high risk of major adverse cardiac events (MACE) is crucial in the emergency department.

The aim: The aim of the study was to analyse if routine laboratory measures beyond cardiac troponin (cTn) may be helpful in this setting.

Materials and methods: Consecutive patients with chest pain undergoing routine diagnostic pathway were prospectively enrolled to the study. Basic clinical history and laboratory parameters were collected. Patients were followed-up for 3 months for the incidence of MACE (death, non-fatal myocardial infarction [MI] and repeat revascularization).

Results: The total of 436 patients with complete admission laboratory measures (cTnT, full blood count, creatinine, urea, electrolytes, lipid profile, bilirubin, transaminase) were available for analysis. Overall, 15 patients (5.0%) experienced MACE. From all basic laboratory tests, mean platelet volume (MPV) was a risk factor of MACE at 3 months (HR 1.42, 95%CI 1.06-1.90, $p=0.18$ for MPV and HR 2.96, 95%CI 1.06-7.76, $p=0.04$ for the cutoff of 9 fl, $p=ns$ for higher cutoffs). Patients with high MPV (> 9 fl) had higher rate of MACE than others (7.2% vs. 2.6%, $p=0.031$). In ROC analysis MPV with the the cut-off 9 fl was predictive of mace with sensitivity 0.77 and specificity 0.54 (AUC 0.62, Log rank $p=0.03$). The significance of MPV for prognosis of MACE decreased when combined with other commonly considered laboratory risk factors.

Conclusions: Considering short term risk assessment in patients with chest pain, MPV reveals potential utility as a single risk factor for MACE.

Keywords: mean platelet volume, major adverse cardiac events

Fragmented QRS complex as a predictor of mortality and sudden cardiac death

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Background: According to the many studies the relationship between fragmentation of the QRS complex (fQRS) and higher risk of death and sudden cardiac death (SCD) might be found. However, fragmentation was analyzed from standard 12-lead ECG recordings.

The aim: Analysis of the fQRS presence in the population of patients after myocardial infarction with ICD implanted in primary or secondary prevention, and without ICD. In our study fQRS was assessed from the 2 or 3 channel 24-hour Holter recordings.

Materials and methods: The study population consisted of 174 patients, ICD group was followed-up for at least 2 years. Population was divided into three subgroups: without ICD (38 patients, age: 62±10 years, 11% females, MI), with ICD primary prevention (29 patients, age: 59±9 years, 10% females, p-ICD) and ICD secondary prevention (107 patients, age: 63±9 years, 12% females, s-ICD).

Results: The trend towards more frequent QRS fragmentation was observed in patients with ICD secondary prevention than in p-ICD or MI patients: channel 1 - 40%, 34%, 37%, respectively; channel 2 - 36%, 28%, 34%, respectively; channel 3 - 34%, 48%, 21%, respectively.

Conclusions: Patients with ICD implanted in secondary prevention are more likely to have a fragmented QRS than patients with the ICD primary prevention and without ICD. Data from the follow-up will be prepared soon.

Keywords: fragmented QRS complex, sudden cardiac death, ECG Holter monitoring

Left ventricle involvement in arrhythmogenic right ventricle cardiomyopathy – the baseline and follow-up data

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Background: Arrhythmogenic right ventricular cardiomyopathy (ARVC) is a disease, characterized by replacement of myocardium with fat and fibrous tissue. The process affects right ventricle but may also involve the left one.

The aim: The aim of the study was to evaluate the prevalence of left ventricle involvement at the baseline and in a long-term follow-up in patients with ARVC.

Materials and methods: In a single centre study, 35 patients, newly diagnosed with ARVC (25 males (71.4%); mean age of diagnosis: 42.9±15.6 years; LVEF 54.4±6.9%; RVEF 32.5±10.4%) were analyzed retrospectively and after follow-up period (11.7±7.5 years); n=21; 7 patients died during the follow-up; 7 patients lost from the observation). Ventricles' morphology and function were assessed by echocardiography. Patients were divided according to the left ventricle involvement into: left ventricle affected and non-affected subgroups.

Results: At baseline none of ARVC patients presented the left ventricle involvement. After the follow-up period the left ventricle involvement was observed in 5 (23.8%) patients. Progression of echocardiographic abnormalities was observed and included: RVEF reduction > 5% (n=8), LVEF reduction > 5% (n=5), left atrium enlargement > 5mm (n=6). Left ventricle affected subgroup showed higher percentage of patients with impaired LVEF (60% vs 25%) and RVEF (60% vs 50%) at baseline and after follow-up period (for left ventricle: 100% vs 31.3%) than left ventricle non-affected subgroup. Right ventricle akinetic/dyskinetic aneurysms were found: at baseline in 6 (28.6%), after follow-up period in 16 (76.2%) patients. Higher percentage of patients with akinetic/dyskinetic right ventricle aneurysms were observed in left ventricle affected subgroup than in left ventricle non-affected subgroup: at baseline (20% vs 31.3%) and after follow-up period (100% vs 56.3%).

Conclusions: ARVC is a dynamic process and in long-term follow-up the left ventricle pathology is present almost in 25% of patients and coexists with more advanced heart dysfunction.

Keywords: arrhythmogenic right ventricular cardiomyopathy, echocardiography, right ventricle aneurysms

Incidence of sustained ventricular arrhythmias after CRT-D implantation. A single-center, retrospective study

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Background: Cardiac resynchronization therapy defibrillator (CRT-D) is used to treat patients with heart failure with reduced ejection fraction (HFrEF) who are at an increased risk of cardiovascular incidents, especially ventricular arrhythmias: ventricular tachycardia (VT) and ventricular fibrillation (VF)

The aim: To explore the occurrence of ventricular arrhythmias in patients with CRT-D. The study covered fundamental clinical analysis and the impact of VT/VF incidents on the death and survival rate of the patients.

Materials and methods: The study included 52 patients (47 males, 64.6±8.5 years, LVEF 27±7%, QRS width 157.1±25.3 ms) who underwent CRT-D implantation at 1st Chair and Clinic of Cardiology of Medical University of Silesia in Katowice between 01.01.2012 and 31.12.2018. The follow-up time ranged from 135 to 4286 days (mean 1990 days; SD 776 days) and included at least 5 visits to a clinical dispensary.

Results: Episodes of VF were recorded in 6 patients and episodes of VT in 18 patients. In total, ventricular arrhythmia was present in 15 patients (28.8%). The VT/VF group was younger (mean 60.9 vs. 66.05 years; $p=0.04$) and heavier (mean 95.2 kg vs. 83.5 kg; $p=0.02$). Differences in LA area (34.8cm² vs 28.71; $p=0.07$), Haemoglobin concentration (14.13 g/dl vs 13.49 mg/dl; $p=0.08$) were close to statistical significance. During follow-up, 19 patients died. The occurrence of VT/VF had no impact on survival ($p=0.26$).

Conclusions: Incidence of post-implantation VT/VF did not affect the patient survival rate.

Keywords: CRT-D, VT, VF

ECG criteria in identifying patients with atypical left ventricular hypertrophy

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Background: Hypertrophic cardiomyopathy is a disease in which left ventricular wall thickness is increased. These patients frequently fulfill ECG criteria of LVH, however it does not concern all of them.

The aim: The aim of the study was to assess ECG criteria of LVH in patients with suspicion of HCM as a screening method for advanced differential diagnostic tests.

Materials and methods: Retrospective analysis of overall 85 consecutive patients (pts) (age: 55.22±15; 60%M) with suspicion of HCM hospitalized in a tertiary cardiology centre between 2010-2022 was performed. ECG records were analysed and the presence of 8 different LVH criteria was verified.

Based on the ECG criteria of LVH the population was divided into two subgroups: 59 patients with ECG-LVH (age: 55.56±15; 59.32%M) and 26 patients without ECG-LVH (age: 54.77±15; 57.69%M).

Results: In group with ECG-LVH 92.16% had LVMI > norm (HCM 94.87%, with atypical hypertrophy 83.33%), 20.33% patients were diagnosed with amyloidosis/Fabry disease.

In group without ECG-LVH 83.33% had LVMI > norm (HCM 88.33%, with atypical hypertrophy 83.33%), 34.61% patients were diagnosed with amyloidosis/Fabry disease. Population without ECG-LVH had an extended medical history, 34% had an MRI scan and 15% had free light chains in plasma/urea marked.

Conclusions: Tentative evaluation of ECG criteria of LVH among patients with suspicion of HCM , allowed to extract patients in whose cases expanded diagnostic is necessary. Patients, who did not fulfill ECG criteria of LVH, more often required extended examinations, which were resulting in diagnosis of amyloidosis or Fabry disease.

Keywords: Hypertrophic cardiomyopathy, electrocardiography, cardiac hypertrophy, atypical hypertrophy

SESSION OF PHARMACY AND CLINICAL PHARMACOLOGY



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Acetylsalicylic Acid induces cell death in 3D melanoma model

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Background: Amelanotic melanoma remains one of the most aggressive types of melanoma due to the late detection and high invasiveness of the tumor. Nowadays, research focuses on investigating new chemoprevention methods and adjuvant therapy agents against melanoma cells. Acetylsalicylic acid is daily used by many groups of patients and current research shows that it may exert an anticancer potential.

The aim: The aim of this study was to evaluate the anticancer properties of Acetylsalicylic acid on 3D tumor models derived from C32 amelanotic melanoma cell line.

Materials and methods: We used C32 cell line to growth 3D cell models of the melanoma tumors. Further we treated them with 1 mM acetylsalicylic acid and evaluated the cell death type depending on the localization of the cells in the tumor model. We used confocal microscopy studies and supported our microscopy data with viability (MTT), caspase-3 activation and ATP assays. Western-Blot studies were used to analyze the molecular mechanism of cell death induction and molecular dynamics studies to show a model of the process.

Results: We observed necrosis in the central part of the tumor model after treatment with the drug for 24 h. By the interaction with acetylsalicylic acid, PFKFB3 kinase is being inhibited in the cells, which lead to the necrotic death of the cells. The drug binds to the same cavity and interacts with the same amino acids as the selective inhibitor of the kinase, thus may be considered as the inhibitor of the oncogenic enzyme.

Conclusions: Acetylsalicylic acid induces necrosis in amelanotic melanoma tumor model via the inhibition of PFKFB3 kinase. Due to the high efficacy of the inhibition, further studies are needed to evaluate its potential against melanomas.

Keywords: amelanotic melanoma, acetylsalicylic acid, chemoprevention, cancer therapy

Assessment of the podophyllotoxin derivatives: KL-1, KL-2 and KL-3 on HaCaT and PBMC cells

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Background: Podophyllotoxin (PPT) is a plant-derived inhibitor of cell proliferation. It is used in the treatment of anogenital warts during HPV infection. Current researchers are also focusing on its anti-cancer properties. The high toxicity makes it impossible to administer PPT intravenously or orally. In our research, we used 3 derivatives: KL-1, KL-2, and KL-3 with an additional benzothiazole group.

The aim: In our study, we compared the toxicity of derivatives KL-1,2,3 and PPT at lower concentrations than before. Our aim was to compare how the three derivatives affect the normal cells of the human body like HaCaT and PBMC. Additionally, we assess the process of apoptosis and necrosis. Previous studies have shown their effectiveness on particular cancer cell lines.

Materials and methods: We performed our research on the human keratinocyte line (HaCaT) and on the peripheral blood mononuclear cell (PBMC). We tested them with PPT (Sigma Aldrich) and, KL-1,2,3 synthesized in cooperation with the Department of Chemistry at the University of Warsaw. We assessed the cell viability (PrestoBlue Assay) and apoptosis/necrosis (Annexin V assays) mechanisms in five different concentrations: 0,05µM; 0,1µM; 0,5µM, 1µM, and 5µM.

Results: Each of the PPT derivatives shows lower toxicity than parental PPT at the corresponding concentrations on HaCaT and PBMC lines. The results of IC₅₀ were also significant, our tests indicated higher values for KL-1,2,3 compared to PPT. In Annexin V apoptosis and necrosis assay, KL1,2,3 didn't induce either apoptosis or necrosis at lower concentrations, whereas PPT lead to an increase of apoptosis and necrosis markers.

Conclusions: The higher values of IC₅₀ for derivatives indicated lower toxicity on HaCaT and PBMC in comparison to PPT. The increased number of markers of apoptosis and necrosis is another confirmation of the higher toxicity of PPT itself. Preliminary results could suggest the possibility of the systemic use of our derivative. That encourages us to extend our research.

Keywords: podophyllotoxin derivatives, HaCaT, PBMC, toxicity

Changes in glycosylation profile as a potential glioblastoma multiforme marker – a pilot study.

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Background: Glioblastoma multiforme (GBM) is one of the most aggressive brain tumors which is difficult to treat due to its infiltrative character and strong variability. Since all the treatment attempts to prolong the life of patients are not effective, it is necessary to search for new biomarkers and target points for future therapies. Glycosylation is an important, post translational process of protein modification which has a significant impact on behaviour of cancer cells, their interaction and adhesion. Aberrant glycosylation has been closely linked to the progression of cancer and modulation of immune response like antigenic site masking or escape from immunological surveillance.

The aim: The aim of the study was to analyze protein N-glycosylation profile of three GBM cell lines in order to identify their glycan epitopes.

Materials and methods: Three human GBM cell lines were studied: commercial (T98G) and two primary lines: HROG02 (GBM IV) and HROG17 (GBM after relapse). Cells were exposed to: Temozolomide (TMZ), Amitriptyline (AMI), high glucose concentration in culture medium and were cultured in hypoxic conditions (3% O₂ in atmosphere). Glycomic analysis was carried out using MALDI-ToF-MS technology.

Results: The studied cell lines had different profiles of glycosylation. As compared to control, the more marked changes were induced by exposition of GBM cells to AMI or concomitant administration of AMI and TMZ. In T98G, HROG02 lines an increased relative expression of complex N-glycans and downregulation of a relative abundance of oligomannose species was observed. Whereas, in HROG17 line the strongest effects was induced only after its exposition to AMI+TMZ.

Conclusions: Our study highlights the potential significance of glycans as biomarkers for personalised and more effective therapy of GBM. We suggest that cognition of changes in N-glycosylation profile in primary GBM lines may be useful for better assessment of GBM progression. Further in vitro and in vivo studies are required to study this problem in detail.

Keywords: glycosylation, glycome, tumor markers, glioblastoma, amitriptyline, temozolomide

Glycomic analysis was carried out in cooperation with Jagiellonian University.

Development of antidiabetic herbal mixture composition

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Background: Diabetes is one of the most frequently diagnosed diseases of civilization as a consequence of bad eating habits, reduced physical activity, or the use of stimulants. Phytotherapy is becoming a supplement or alternative to the typical diabetes treatment.

The aim: The aim of this study was to investigate the antidiabetic and antioxidant effects of common ingredients of commercially available herbal infusions for diabetes. Based on the results of the study, a blend composition was developed and re-tested.

Materials and methods: The seven raw materials chosen for the study were aronia berry, blueberry leaf, cinnamon bark, goat's rue, mulberry leaf, nettle leaf and bean pods. The infusions were obtained by pouring 2.0 raw materials over 150 ml of water. In order to evaluate the antidiabetic effect, in vitro studies, including inhibition of α -glucosidase and α -amylase were performed. Aiming to evaluate antioxidant activity four methods (ABTS, FRAP, CUPRAC, DPPH) were used. The same methods were used to assess the finished mixture.

Results: Based on the results obtained, aronia berry, blueberry leaf and cinnamon bark were selected as the raw material with the best activity. The raw materials were mixed in proportion to ensure taste appeal and the tests were repeated. The developed mixture inhibits α -glucosidase $IC_{50}=0.114 \pm 0.008$ mg/ml, whereas the activity of acarbose is $IC_{50} = 3.435 \pm 0.406$ mg/ml, but no α -amylase inhibition. The created mixture has a strong antioxidant activity – IC_{50} for FRAP, CUPRAC, DPPH and ABTS reached 94.349 ± 0.920 μ g/ml, 168.433 ± 6.053 μ g/ml, 257.865 ± 0.463 μ g/ml, 40.681 ± 1.132 μ g/ml respectively, whereas the activity of ascorbic acid is CUPRAC $IC_{0.5} = 18.153 \pm 0.773$ μ g/ml, FRAP $IC_{0.5} = 9.179 \pm 0.290$ μ g/ml, DPPH $IC_{50} = 8.500 \pm 0.591$ μ g/ml, ABTS $IC_{50} = 4.266 \pm 0.131$ μ g/ml.

Conclusions: The research has shown that this mixture has antidiabetic and antioxidant potential. The use of herbal mixtures can support the treatment of the early stages of diabetes.

Keywords: diabetes, herbal medicine, oxidative stress, α -glucosidase, α -amylase

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The influence of caffeic acid solid dispersion preparation on its solubility and antioxidant activity

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Background: Caffeic acid (CA) is a phenolic acid with antioxidant, neuroprotective, anti-aging and anti-inflammatory potential. The limitation of its pharmacological use is its low water solubility.

The aim: The study aimed to enhance CA water solubility by solid dispersions preparation and determine its influence on antioxidant activity.

Materials and methods: The systems of CA and excipients (Soluplus, HP- β -CD, Kollidon VA 64, HP- γ -CD, Eudragit L100, PEG 6000, Pluronic F-127, Gohsenol EG-05PW) were prepared in a 1:1 mass ratio by freeze-drying and ball milling methods. The CA and polymers solutions were frozen under -20°C and then lyophilized. The micronization was performed in four five-minute cycles with 30 RPM, each separated by five-minute breaks. The interactions between CA and excipients were studied with X-Ray Powder Diffraction (XRPD) and Fourier-transform infrared spectroscopy (FTIR). The solubility was determined by High-Performance Liquid Chromatography (HPLC) method after 24 hours at 25°C . Antioxidant properties were studied with DPPH (2,2-diphenyl-1-picrylhydrazyl), ABTS (2,2'-Azino-bis(3-ethylbenzothiazoline-6-sulfonic acid)) and CUPRAC (cupric ion reducing antioxidant capacity) assays.

Results: The water solubility of pure CA was determined as $303.27 \pm 6.22 \mu\text{g/ml}$. The most significant increase in solubility was determined in freeze-dried CA-HP- β -CD solid dispersion – $1298.02 \mu\text{g/ml}$. Further greatest solubility enhancements were observed in micronized systems with HP- γ -CD, Soluplus, and Kollidon VA 64, sequentially $1212.96 \mu\text{g/ml}$, $1172.25 \mu\text{g/ml}$, and $1067.62 \mu\text{g/ml}$. The antioxidant assays confirmed remarkable CA properties. The IC_{50} values of caffeic acid were $360.85 \pm 6.15 \mu\text{g/ml}$ in DPPH assay, $84.52 \pm 2.12 \mu\text{g/ml}$ in ABTS assay, and the $\text{IC}_{0.5}$ value in CUPRAC assay was $37.88 \pm 2.50 \mu\text{g/ml}$.

Conclusions: Caffeic acid was determined as an effective antioxidant. These results confirmed that freeze-drying and ball mill micronization could enhance caffeic acid water solubility.

Keywords: caffeic acid, antioxidant activity, solubility

This study was supported by the grant OPUS from the National Science Centre Poland UMO-2020/37/B/NZ7/03975.

The impact of various antioxidants on the antiproliferative effect of caffeine towards GBM cells

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Background: Glioblastoma is one of the poorest prognosis brain tumors with a median survival of only about 15 months. Previous in vitro studies have demonstrated the antiproliferative effects of caffeine towards U-87 MG glioma cells. Caffeine significantly affects the level of oxidative stress in the cell, exhibiting pro-oxidant or antioxidant properties depending on the concentration. It is believed that reactive oxygen species (ROS) are tumor-promoting factors. On the other hand, accumulation of ROS in cancer cells induces apoptosis.

The aim: The aim of this study was to evaluate the effect of ascorbic acid - a substance with documented antioxidant properties, on the antiproliferative effect of caffeine against U87-MG glioblastoma cells.

Materials and methods: The study was performed on U-87 MG GBM cells. WST-1 test was used to assess cell proliferation. ROS levels and morphological evaluation were performed by confocal microscopy with the use of Hoechst 33342 and CellRox reagents. In all performed analysis ascorbic acid at concentration of 1 µg/ml was applied.

Results: The highest decrease in survival of U87-MG cells was observed at each time point (24 h, 48 h, 78 h) for the caffeine solution at concentration of 4 mM. The addition of vitamin C solution does not increase cell survival. The confocal analysis showed that caffeine increases the amount of ROS in the cells, while vitamin C reverses this effect. Furthermore, microscopic analysis showed that caffeine caused significant changes in U-87 MG cell morphology, shrinkage and loss of intercellular contact. Interestingly. The addition of vitamin C only slightly prevents the observed caffeine-induced morphological changes.

Conclusions: Caffeine in GBM cells causes pro-oxidative effect and a decrease in cell survival. Addition of vitamin C reverses the effect associated with an increase in ROS levels but does not reduce the decrease in survival of U-87 MG cells. The antiproliferative effect of caffeine against glioblastoma cells does not depend on the induction of oxidative stress.

Keywords: caffeine, glioblastoma multiforme, reactive oxygen species, vitamin C

Impact of BH3 mimetic MIM1 on the viability of melanoma cells cultured in the presence of moxifloxacin

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Background: Malignant melanoma is the most dangerous skin cancer. The disease has a very high mortality rate. For this reason, new and more effective treatment strategies are constantly being sought. Moxifloxacin is an antibacterial drug from the fluoroquinolone group. MIM1 is a specific low molecular Mcl-1 protein inhibitor that is able to induce Mcl-1-dependent cancer cells death.

The aim: The aim of the study was to determine the effect of moxifloxacin and MIM1 as well as their mixtures on cell viability and mitochondrial potential in A375 amelanotic and G361 melanotic melanoma cells.

Materials and methods: Cell viability was determined by WST-1 colorimetric assay. The mitochondrial potential was assessed using NucleoCounter NC-3000 image cytometer.

Results: Moxifloxacin, MIM1 and their mixtures decreased the viability of analysed melanoma cells. The response intensified in a dose- and time-dependent manner. The highest decrease was observed after exposure of cells to MIM1 and moxifloxacin mixture at the highest analysed concentration (97.6% for A375 and 96.7% for G361 melanoma cells). Moxifloxacin and MIM1 alone significantly reduced the mitochondrial potential of amelanotic A375 and G361 melanoma cells. This effect significantly intensified when melanoma cells were exposed to MIM1 and moxifloxacin mixture (MIM1 25 μ M + moxifloxacin 500 μ M). At this exposure conditions the percentages of depolarized melanoma cells was found to be 46% (for A375) and 31% (for G361). Simultaneously, incubation of cells with MIM1 and moxifloxacin mixture resulted in increase of late apoptotic - DAPI-positive cells.

Conclusions: The obtained results revealed the potential synergistic effect of both studied compounds which may result from the ability of MIM1 and moxifloxacin to interact with Mcl-1 protein. Moreover, the study consist the basis for further in vitro and in vivo studies with MIM1 and moxifloxacin as a new treatment strategy for malignant melanoma.

Keywords: BH3 mimetic, melanoma, moxifloxacin, MIM1

Evaluation of homeostasis of normal skin cells cultured in the presence of tigecycline

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Background: Tigecycline is a chemically modified derivative of minocycline. Previous research have shown that minocycline forms complexes with melanin polymers. Drug-melanin complexes can cause accumulation of the antibiotic in pigmented tissues (e.g. skin), which is associated with a higher risk of toxic side effects. It should be assumed that tigecycline, due to its similar chemical structure, may exhibit similar effects.

The aim: The aim of this study was to evaluate the cytotoxicity of tigecycline against normal skin cells.

Materials and methods: Two cell lines were used for in vitro studies: human epidermal melanocytes and human dermal fibroblasts. The experimental panel included evaluation of cell viability as well as analyses of cell cycle, DNA fragmentation, intracellular levels of reduced thiols and mitochondrial potential.

Results: Conducted research revealed that tigecycline decreased the viability of both analysed cell lines. The analysis of the number of melanocytes showed that these cells are characterized by a higher sensitivity to the tested drug. Moreover significant increase in the relative value of G0-G1/S indicates cell cycle arrest and accumulation of cells in the G0/G1 phase. Furthermore, tigecycline has been shown to significantly damage melanocyte DNA, causing a fundamental increase in the number of these cells in the sub-G1 phase. In addition, the tested antibiotic contributed to an increase in the percentage of cells with lowered content of reduced thiols. Tigecycline also caused an increase in the number of melanocytes with reduced mitochondrial membrane potential. For fibroblasts, the increase was not significant.

Conclusions: Melanocytes proved to be more sensitive to tigecycline than fibroblasts. This is probably due to the fact that this antibiotic is able to form complexes with melanin, which is located inside melanocytes. This results in an increased concentration of tigecycline in pigmented cells, and thus an increased biological effect of tigecycline and a greater risk of adverse reactions.

Keywords: cytotoxicity, fibroblasts, melanin, melanocytes, tigecycline

SESSION OF ORTHOPEDICS AND PHYSIOTHERAPY



Ogólnopolskie Studenckie
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Comparison of the influence of foam rolling and static stretching on the flexibility of American football play

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SUM

Background: As a contact sport, American football requires high physicality of the players. Explosive strength and power are very important in specialized training as well as in strength and conditioning preparation. Ensuring proper regeneration and maintaining adequate flexibility and range of motion allow to minimize the risk of injuries and performing strength tasks in the most efficient way.

The aim: The aim of the study was to compare the effect of foam rolling and static stretching on the flexibility limitations caused by American football specificity and the strength tasks.

Materials and methods: 34 American football players of the Silesia Rebels Katowice team, aged 16 to 34 years (average: 23.74 years; SD: 4.801) were examined. The following tests were performed: Toe-touch-test (TTT), TTT with plantar flexion of the foot, TTT with dorsal flexion of the foot and the sit&reach test. The subjects were randomly divided into 3 groups. 12 people were part of the group performing static stretching protocol, 12 people were performing foam rolling protocol and 10 people were in the control group. The tests were repeated after the completion of the 4 weeks protocols. Throughout the study, all the players participated in the team practice.

Results: Control group results improved on the TTT with dorsal flexion of the foot and sit&reach test. The results of the foam rolling and static stretching groups improved in each of the performed tests. The level of improvement of results in the group performing foam rolling was higher only in the sit&reach test. Improvement in both foam rolling and static stretching groups was greater in each of the tests than in the control group.

Conclusions: Foam rolling as well as static stretching allow to prevent the appearance of flexibility limitations resulting from the specificity of specialized training in American football.

Keywords: foam rolling, static stretching, American football

Physical activity in the group of women working in modeling in relation to WHO recommendations

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Background: In the modeling profession, keeping the dimensions and proportions of a body, required by modeling industry is a key factor. Models, besides a properly balanced diet should also take care of regular physical activity.

The aim: The aim of the study was to examine the frequency and type of physical activities done by women working in modeling and to compare them to the latest recommendations of WHO.

Materials and methods: The study included 100 women models, including 98 of Polish and two of Ukrainian origin. The required data was collected with use of a dedicated questionnaire created in the Google Forms application.

Results: Weekly, 97% of the surveyed women undertook physical activity. The most frequently declared forms were: gym workout 44%, jogging 18% and yoga 11%. More than one form of activity was declared by 11% of respondents. Physical activity less than 3 times a week was declared by 31% of respondents, while 69% of surveyed women did it at least 3 times a week.

Conclusions: The surveyed group declared undertaking physical activity exceeding WHO recommendations. The vast majority of respondents declared to be active more than 3 times a week. According to WHO recommendations, one should perform 150-300 minutes of moderate-intensity exercise per week. Almost half of the respondents most often chose gym workout. Strengthening trainings are recommended at least twice a week for additional health benefits.

Keywords: modeling, physical activity, WHO

Assessment of radiological parameters outcomes in surgical management of distal radius fractures

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Background: Fractures of the distal radius are one of the most frequently treated fractures in orthopedic practice, accounting for approximately 20% of fractures observed in the emergency room. Regardless of the treatment chosen, one of the main goals of treatment is to improve outcomes by restoring of the wrist anatomy.

The aim: The aim of the study was to analyze the methods of surgical fixation of distal radius fractures and to measure radiographic parameters in order to understand the different methods of treatment in restoring the correct morphology.

Materials and methods: The study group consisted of 41 cases of 40 adult patients, men (20%) and women (80%), treated at the Department of Orthopedics and Traumatology of the Upper Silesian Medical Center in Katowice in 2019. Patients were classified based on the AO/OTA Classification. Pre- and postoperative radiological parameters of 37 patients with a distal radius fracture were examined, analyzed and compared. Radial inclination (RI), radial height (RH) and volar tilt (VT) were analyzed. All patients underwent surgery.

Results: Of the 41 fractures, 18 were stabilized with the Kirschner wires, 18 with a locking compression plate (LCP), and 5 with external stabilizers. 72% of category A fractures were repaired with Kirschner wires and 65% of category C1 and C2 fractures with LCP. The mean preoperative measurements were: RI 14.2o, RH 8.7 mm, VT -6o and postoperative, respectively 18.5o, 10.3 mm and 7o. In 76% of patients improvement of radiological parameters were reached. The normal values of measured parameters were observed in 78% after Kirchner wires methods, in 71% with LCP and in 100% when external fixation were used.

Conclusions: Surgical treatment of a distal radius fracture offers a wide range of fracture stabilization. Radiological measurements showed high success rate both in Kirchner wires method and LCP method. In the light of clinical practice, the choice of surgical treatment depends, however, on many factors.

Keywords: radius fracture, radiological measurments, surgery

An analysis of injuries sustained during offshore sailing in international sailors

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Background: Sailors are at risk of acute injuries from direct impact, which can result in lacerations, contusions, and fractures, as well as chronic injuries from repetitive activities: hiking, sweating the ropes and steering. Understanding mechanisms and risk factors may allow to introduce measures reducing their occurrence.

The aim: To determine the epidemiology of injuries sustained during offshore sailing and search for possible risk factors for injuries.

Materials and methods: A retrospective study of self-reported injuries was performed using a survey developed on Google Forms. The questionnaire shared on online groups gathering international sailors was filled in by 70 respondents. Inclusion criteria were sailing on offshore waters at least once in 2019. Data on sustained orthopaedic injuries, their frequency, severity, mechanism, location and contributing factors were collected. The survey regarded cruises with injuries and also without. Acquired data were analysed statistically using the following tests: double-tailed exact Fisher, Shapiro-Wilk, Levene and U-Mann Whitney.

Results: 70 sailors from 17 countries reported 79 cruises, among which 14 were with injury. 5/26 (19.23%) of women who took part in the study were injured, compared to 9/44 (20.45%) among men, $p=0.999$. Average number of days spent sailing were 74.79, SD = 77.44 for people who were injured and 51.37, (SD = 47.14) for those who weren't ($p=0.64$). The most frequent type of injury was skin laceration/cut (21.4%) and the most often injured part of body was hand (42.8%). The majority of cases occurred on midship (35.7%). Almost 50% of injuries were sustained while using ropes. The most common contributing factors reported by sailors were inattention/distracted (26.3%) and difficult weather conditions (36.8%).

Conclusions: Multifactorial nature of sustained injuries poses a challenge in implementing effective safety measures. There is a need for further studies conducted on a larger group of offshore sailors to develop evidence-based prevention strategies.

Keywords: offshore sailing, injuries, safety measures

Mountain tourism of young people – motives and their determinants

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Background: The landscape and natural values

The aim: It was decided to investigate the motives of mountain hiking by young people and selected variables that may be related to these motives.

Materials and methods: 63 people were examined - 47 women (74.60%) and 16 men (25.40%) aged 15-28 (mean: 20.16; SD = 2.16). The research tool was a questionnaire, consisting of a metric part, containing questions about sex, age, region of the place of residence. above average), past sports activity and current activity, as well as self-esteem of activity - in comparison with peers (much smaller, smaller, the same, bigger, much bigger). The closed-ended questions about the motives included the answers to: social, building strength and endurance, pleasure, health, taking care of appearance and personal achievement. The link to the survey was placed on the Google drive, which ensured anonymity, and was sent to e-mail addresses known to the authors.

Results: 25.40% of the respondents did not practice mountain tourism. Neither sex ($\chi^2 = 0.38$; $p = 0.5335$) nor place of residence ($\chi^2 = 0.42$; $p = 0.5141$) differentiated this fact. The most common motives for mountain tourism were: pleasure (74.60%), social (50.59%) and health (36.51%). The respondents hiked in the mountains most often with friends (31.75%) and family (25.40%). Comparing the subjects who walked to the mountains with those who did not walk to the mountains showed no differences in age ($p = 0.7047$), financial status ($p = 0.4725$) and current activity (0.0852).

Conclusions: Mountain tourism is quite a common form of activity for young inhabitants of southern Poland. Gender, age, financial status and place of residence do not affect this practice. The main motives for practicing it are hedonistic.

Keywords: mountain tourism, motives, determinants of practicing

SESSION OF PSYCHIATRY AND SEXOLOGY



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Impact of COVID-19 pandemic on student's sexual functioning

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Background: COVID-19 pandemic, by introducing prevention strategies, such as general lockdowns, increased the risk of isolation that could affected sexual health of individuals and couples. Young people, students, who are still building their sexuality, were especially exposed to COVID-19 pandemic consequences.

The aim: The aim of this study was to analyze female and male students sexual problems and complaints that could be a result of lockdowns during COVID-19 pandemic.

Materials and methods: 131 students were eligible for this retrospective questionnaire-based study. The invitation, to take part in the web-based survey, was advertised in social media (Facebook and Instagram). Female sexual function was assessed by FSFI - Female Sexual Function Index and males - by using polish version of IIEF-15 - International Index of Erectile Function Questionnaire. Respondent were asked to fill those scale as a measure of the present sexual function, and retrospectively, sexual function during COVID-19 pandemic.

Results: 65,65% (n=86) of participants were female with mean age 21.51, whereas 34,35% (n=45) were males with mean age of 21.37 years. The mean score in FSFI during lockdown was 24.75 and post pandemic score in FSFI – 28.38, $p < 0.0001$. 47,67% of women (n=41) scored below 27.55 points in FSFI when asked about sexual life during pandemic, what indicates the presence of sexual problems. However, 34,9% of female (n=39) scored below cut-off point for sexual problems when asked about sexual life after lockdowns. IIEF - 15 showed mild erectile dysfunction in 8 (17,18%) participants during lockdown and in 5 (12,2%) post lockdowns time ($p < 0.05$).

Conclusions: COVID had major impact on students sexual life.

Keywords: sexuality, sexual problems, sexual life, COVID-19 virus, sexual health, SARS-CoV-2 pandemic

Alexithymia as a risk factor for Internet addiction in adolescents and young adults with ASD

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Background: Recently, alexithymia has become the subject of intensive research. It is considered to be a complex personality structure, often correlated with the autism spectrum. There is an ongoing discussion regarding its inclusion in the clinical picture of ASD. On the other hand, Internet addiction is an increasing problem, therefore it is not surprising that researchers are progressively more interested in this issue and wish to look for risk factors, and eventually - methods to eliminate them. An increased incidence of addiction, including addiction to the Internet, has been repeatedly reported in people with ASD.

The aim: The aim of our research is to evaluate alexithymia as a risk factor for both Internet addiction and ASD.

Materials and methods: The study group consisted of young Polish people aged between 11 and 35 ($n = 229$), including women ($n = 167$; 73%), men ($n = 53$; 23%) and non-binary people ($n = 9$; 4%). The project used the latest accessible questionnaires in the Polish validated version: AQ (Autism Quotient), TAS-20 (Toronto Alexithymia Scale), IAT (Internet Addiction Test). Among the respondents, 15 have claimed receiving an official diagnosis of ASD, while 26 people have shown a significantly increased intensity of autistic features in the AQ questionnaire.

Results: An elevated risk of Internet addiction has been observed in the population of people displaying higher levels of alexithymic traits. However, in the populace of people with ASD, there was no significantly higher frequency of Internet addiction.

Conclusions: This indicates that the prior assumption that individuals with ASD are prone to Internet addiction results from the more frequent occurrence of the typical manifestation of alexithymia in these people.

Keywords: alexithymia, internet addiction, Autism Spectrum Disorder

Are asexuals still living in the shadow? A view at Polish people's knowledge of asexuality.

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Background: Asexuality is defined as lack of sexual attraction to people, not exhibiting sexual behaviours and, most importantly, self-identifying as an asexual person. Since the early 2000s AVEN has been raising awareness about this sexual minority. Nevertheless, asexual people can still face discrimination and misunderstanding in our society.

The aim: The aim of our study was to analyse the level of Polish people's awareness about asexuality among general and medical students' population. We compared the results between different genders as well as medical and non-medical populations.

Materials and methods: Our study was based on an online questionnaire filled out anonymously. The survey consisted of 28 questions which concerned respondents' knowledge and its sources, their personal opinions and socio-demographic characteristics. Knowledge was measured by giving points for correct answers.

Results: Out of 2292 respondents, 1303 were female (56.8%), 909 male (39.7%) and 80 non-binary (3.0%). Women and non-binary persons tended to rate the level of their knowledge more accordingly than men ($p < 0.05$). There was no correlation between average number of points and being a medical student ($p > 0.05$). As for the definition of asexuality, for non-binary individuals self-determination as an asexual was significant, when for men it was lack of sexual attraction. Non-binary persons and women were less likely to end the relationship with an asexual than men (66.0%, 38.7% and 30.7% respectively; $p < 0.05$). Among genders, men were much more likely to claim that asexuals need treatment (16.6% vs 5.7% in women and 3% in non-binary). Interestingly, 39.4% of respondents agreed that asexual people face discrimination in Poland, whereas 36.4% disagreed.

Conclusions: According to their answers, women and non-binary people tend to be more open and knowledgeable than men in terms of asexuality and asexual relationships. Being of medical background does not influence one's awareness of asexuality. There is a need for education in this field.

Keywords: asexuality, sexual minority, sexual orientation

Did the COVID-19 pandemic kill the sexual life of Polish young adults?

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Background: In 2020 COVID-19 pandemic quickly began to influence every aspect of life. Because of change in everyday habits, potential health vulnerability and isolation, the well-being of many people was at risk. One of the aspects of life which may have been affected was sexual life.

The aim: The aims of the study were: 1. Comparison of sexual functioning of Polish young adults (18–27 years of age) before and during COVID-19 pandemic 2. Identification of factors which may influence sexual function.

Materials and methods: The research was conducted using a two-part online questionnaire which contained 14-item CSFQ scale (version F-C and M-C) related to the time of COVID-19 pandemic and before. 541 participants were qualified for the study (418 female and 123 male).

Results: In general, there was no significant difference in overall sexual functioning before and during the COVID-19 pandemic. Concerning specific aspects of sexual life, during the pandemic women functioned better in terms of pleasure and reaching orgasm, while men performed worse in terms of erection and ejaculation. Significantly more men were in the norm of sexual functioning before (98%) and during the pandemic (95%) compared to women (85% and 88% respectively). Relationship status, sexual orientation, residency, religiosity or attending online university classes did not alter sexual functioning. In women working from home was correlated with better sexual functioning before the pandemic but with worse sexual functioning during the pandemic. Although overall functioning of most people was good, many of them functioned below the norm in some aspects of sexual life both before and during the pandemic.

Conclusions: Some aspects of sexual life were affected by the pandemic, but not the sexual life overall. Even if the overall sexual functioning of a person is normal, its specific aspects may require care. Female gender and working from home may influence sexual functioning. More research is needed to establish the role of work-life balance in sexual life of women.

Keywords: sexual activity, sexual functioning, COVID-19 pandemic

Emotional intelligence and social skills in woman suffering from certain mental disorders

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Background: The definition of emotional intelligence could be defined as a set of abilities determining use of one's emotions to solve problems or a set of skills determining the efficacy of processing emotional information one has received. Social skills are complex skills determining efficacy of dealing with specific social situations, acquired by people through social training.

The aim: In our study we aimed to determine whether there was any correlation between those two measurable sets of skills and the type of certain mental disorders that women participating in our study suffered from. Namely schizophrenia, bipolar affective disorder and recurrent depression.

Materials and methods: We have tested 87 women aged 18-80. In our study we have used standardized psychological tests such as INTE for emotional intelligence and KKS for social skills. INTE questionnaire consists of 33 items of self-describing nature, the truthfulness of which is assessed by the respondent on a five-point scale. KKS test not only provided us with general score but also gave us specific scores regarding one's abilities in social exposure, situations requiring assertiveness and situations of close interpersonal contact. It consists of 90 items which of 60 are diagnostic reflecting one's social skills.

Results: There are significant, strong connections between emotional intelligence and social skills ($r=0,72$) and individual components of social skills such as competences determining the effectiveness of behavior in intimate situations ($r=0,85$), competences determining the effectiveness of behavior in situations of social exposure ($r=0,9$), competences determining the effectiveness of behavior in situations requiring assertiveness ($r=0,86$)

Conclusions: The results indicate that emotional intelligence may be important protective factor against degradation of social functioning, which is significant consequence of the disease in each group of patients

Keywords: schizophrenia, CHAD, depression, emotional intelligence, social skills

How do people from different religions perceive psychiatric patients?

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Background: One of the many problems that psychiatric patients have to face on a daily basis is stigmatisation. This process affects many people, regardless of religion.

The aim: The aim of this study is to assess the level of religiosity and its impact on perceived devaluation and deterioration of psychiatric patients among Internet respondents.

Materials and methods: The study was conducted using an authors' survey, which was spread using online media. The survey consisted of questions assessing factors such as sociodemographic status, including the country of origin. The respondents defined their religious affiliations. The next part was composed of standardized psychometric tools: Religious Involvement Scale (RIS), Spirituality Questionnaire (SQ) and Perceived Devaluation and Discrimination Scale (PDD).

Results: The study group was composed of 308 respondents, the majority were women and residents of countries with high HDI. An analysis of the SQ scale showed that women obtained an average lower score than men ($-2,506$, $p=0,047$). No differences were found between atheists and various religions' followers in perceiving devaluation and deterioration of psychiatric patients. However, among believers, an inverse relationship was observed between this phenomenon and the level of religiosity. Feeling of inner peace ($p=0,006$), life satisfaction ($p<0,001$), security ($p<0,001$) and friendliness of the surrounding world ($p<0,001$) were the strongest factors in reducing the degree of expected stigma.

Conclusions: Women express a lower level of religiosity. An influence of religious belief on perceived devaluation and deterioration of psychiatric patients has not been reported, however it has been proved that a higher level of spirituality is connected with a lower perception of the aforementioned stigmatisation. It seems necessary to conduct more studies in hope of achieving a better understanding of this phenomenon.

Keywords: psychiatry, religion, stigma, discrimination, religiosity

Sexual behavior in young Polish women.

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Background: Contemporary society is going through a series of changes resulting in gradual detabooisation of sex life. Nevertheless, an open discussion about women's sexual preferences and sexual scripts is still a rarity.

The aim: The aim of this study was to analyze female sexual behaviors and sexual scripts among young Polish women.

Materials and methods: 160 women age between 18 and 35 years were included in this questionnaire-based study, conducted online between March and April 2022. The survey contained 153 questions. The population was divided into subgroups based on age, sexual orientation, place of residence, education level, religion, and marital status. The subgroups were compared in-between.

Results: Mean age of the respondents was 23.5 years. 80.6% (n=129) were in a relationship. 82.5% of the respondents were sexually active in the last four weeks. The frequency of sexual intercourse per week was 2.34. 76.9% (n=123) respondents declared masturbation, 56.9% (n=91) reported to watch pornography. The most preferred sexual behaviors were vaginal sex, BDSM, and oral sex.

Conclusions: Young Polish women in the vast majority have an active, sex life and are in stable relationships. Vaginal (traditional) sex, is preferred, but a significant percentage of respondents declare a broader range of sexual behaviors.

Keywords: female sexual behavior, sexual life, pornography, BDSM, sex patterns,

The effect of pre-gestational maternal depression on the apelinergic system of adolescent offspring

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Background: Depressive episodes accompanying many women in reproductive age are associated with chronic mild stress (CMS). Research indicates that in case of pregnancy these behaviors can affect proper development of offspring. State known as pre-gestational stress is connected with social and mood disorders in the offspring. Apelin is the protein occurring in the heart and the brain and, along with its receptor (APJ), is responsible for signaling in stress-related emotional responses.

The aim: The aim of the study was to assess the expression of the apelinergic system in the offspring born to mothers with depression induced by CMS and to highlight the differences between both sexes.

Materials and methods: The study was carried out on 14 Sprague Dawley rat dams and their offspring. Rat dams were randomized into two groups: 1) subjected to CMS to introduce depression (n=7), and 2) control rat dams (n=7). Behavioral tests (splash test and open field test) and apelin and APJ receptor mRNA expression (RT-PCR analysis) were assessed on 98 adolescent offspring, derived from control dams (control offspring; CO, n=45) and depressed dams offspring (depressed offspring; DO, n = 53).

Results: Behavioral studies have shown the development of depressive-like behavior (splash test - shorter self-grooming time, $p < 0.001$) and anxiety-related behavior (open field test - shorter cumulative duration in the center, $p = 0.008$), in DO. Moreover, expression of apelin mRNA was significantly higher in the cerebellum ($p=0.005$) and the heart ($p<0.001$) in DO compared to CO. Including gender, the female DO had significantly higher expression of apelin mRNA in the cerebellum ($p=0.027$) and APJ receptor mRNA in the heart ($p<0.001$) compared to the female CO, while male DO had significantly increased expression of apelin ($p<0.001$) and APJ receptor mRNAs ($p=0.033$) in the heart in comparison with male CO.

Conclusions: The response on the maternal chronic pre-gestational stress in offspring is connected with apelinergic system and dependent on sex.

Keywords: apeline, APJ, pre-gestational depression, chronic mild stress

The evaluation of occurrence depressive symptoms among students and impact on the use of specialist help

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Background: Depression is one of the most common mental disorder. It can affect everybody, independently of age, education or economic status. Students belong to a special group, which is highly exposed to depressive symptoms. Unrecognized, untreated depression has a bad influence on quality of young people's life.

The aim: The aim of the study was the evaluation of occurrence depressive symptoms among students of various faculties and their impact on the use of specialist help.

Materials and methods: The study was conducted using an online questionnaire consisting of 28 original questions and the standardized Beck Depression Scale. The questions included in the questionnaire concerned the intensity of stress related to studies, forms of coping with stress, using the help of specialists and the impact of the epidemiological situation on their mental health. The questionnaire was made available on internet forums. 311 responses from the respondents were obtained. The students participating in the study were between 19 ÷ 27 years old.

Results: No symptoms of depression were found in 131 (42.12%) students, mild depression in 79 (25.4%), moderate depression in 45 (14.47%) and severe depression in 56 (18%). Among the fields of study, the highest average score on the Beck depression scale was obtained by people from the humanities. 41.16% of students consulted a specialist when they suspected depression. A statistically significant correlation was demonstrated between the study burden and the occurrence of depressive symptoms ($p = 0.00001$).

Conclusions: Students are a group in which depressive disorders are common. A big problem is the lack of consultation with a specialist. There should be an emphasis on education in the field of knowledge about depression and increasing the availability and universality of consultations with specialists.

Keywords: depression, mental health, Beck Depression Inventory

The influence of healthy lifestyle on the course of schizophrenia

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Background: Patients suffering from schizophrenia have a higher risk of premature death. An unhealthy lifestyle contributes to increased risk of cardiovascular diseases, metabolic syndromes, suicides among them. In addition to the use of selected therapy with a restriction metabolic risk has become important to influence non-pharmacological factors such as proper diet, introducing the principles of a healthy lifestyle. A diet rich in fiber, the DASH diet, the Mediterranean diet may become beneficial in terms of lowering parameters metabolic, cardiovascular and immune related to premature mortality in schizophrenia.

The aim: The goal of our work is to pay attention to the impact of a healthy lifestyle on the improvement of the quality of life of patients suffering from schizophrenia and reducing their chances of premature death.

Materials and methods: In our study, we assessed the influence of diet, nutritional knowledge and lifestyle on parameters of metabolic syndrome (cholesterol, triglycerides, glucose), in patients with schizophrenia.

Results: In the results we have found positive co-relations between unhealthy diet and lifestyle and lack of knowledge on proper nutrition and increased parameters of metabolic syndrome.

Conclusions: Dietary intervention may become one of the therapeutic goals in schizophrenia.

Keywords: schizophrenia, lifestyle, diet, mortality, psychiatry, metabolic syndrome

The relationship between ego-resiliency and anxiety, depression, and life satisfaction during pandemic

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Background: The COVID-19 pandemic was associated with multiple stress factors which affected the mental health of the Polish population. During severe crises, people are vulnerable to experience depression, anxiety, and decreased well-being or life satisfaction. Ego-resiliency is a set of traits that promote healthy adaptation to life's vicissitudes during crises or traumatic and stressful situations. It consists of two components – optimal regulation (OR) and openness to life experiences (OL). The task of OR is to maintain the stability of personalities, whereas OL is responsible for the flexible modification to changing conditions. A better understanding of the protective role of ego-resiliency in the development of depression and anxiety may help maintain mental health in crises.

The aim: The aim of the study was to assess the relationship between ego-resiliency (and its components) and depression, anxiety as well as life satisfaction during the COVID-19 pandemic.

Materials and methods: A total of 604 Polish participants took part in an online survey. The ego-resiliency, anxiety, depression, and satisfaction with life were measured with the following tests: Ego-resiliency Scale, Hospital Anxiety and Depression Scale, and Satisfaction with Life Scale. The data were analyzed using Statistica 13.3.

Results: The study revealed a significant negative correlation between the intensity of ego-resiliency and the severity of depressive and anxiety symptoms. The same correlation was found in relation to the OR subscale. The intensity of ego-resiliency also correlated positively with the intensity of satisfaction with life.

Conclusions: Individuals with a high level of ego-resiliency might experience a lower intensity of anxiety and depressive symptoms during crises such as the COVID-19 pandemic. Additionally, individuals with a high level of ego-resiliency might exhibit a higher level of life satisfaction.

Keywords: ego-resiliency, depression, anxiety, life satisfaction, pandemic

SESSION OF PUBLIC HEALTH AND HEALTHCARE I



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Mental health and antidepressants intake among pharmacy students in Poland

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Background: Although awareness regarding mental health has increased, suicide remains the main cause of death among people between ages 15 and 29. Depression is one of the major disorders globally, and it is estimated that 5% of adults suffer from it. First symptoms appear usually in late teens to mid-20s.

The aim: The aim of the study was to determine the scale of depression and usage of antidepressants among Polish pharmacy students.

Materials and methods: The study involved 392 students from 11 Medical Universities. The original questionnaire contained 17 questions about mental disorder symptoms, as well as drugs and stimulants used. Survey was conducted online using student groups on Facebook. Results were analysed with the use of Microsoft Excel and STATISTICA v. 13.3.

Results: Majority of research participants (76%) claimed that they suspected having a mental disorder in the past, with only 33% being diagnosed. A link was observed between suicidal thoughts and the university the study participants attended. 95% of students observed depressed mood, 87% suffered from decreased activity and 82% had reduced ability to concentrate. 32% participants declared that they were taking antidepressants. 69% of them experienced adverse reactions, which led 19% to resign from treatment. Fluoxetine was the most common substance that students stopped taking due to adverse effects. Among 126 students who were taking prescribed antidepressants, 57% were taking drugs in order to improve their mood. On the other hand, only 40% were using over-the-counter medications, with older students more likely to use OTC treatment for mood elevation.

Conclusions: Though many students experience symptoms that could point to depression, only a minority is seeking professional help, and even fewer students are systematic about antidepressants intake. Raising awareness about both mental health and the significance of regular medication should be an important learning point for future pharmacists.

Keywords: mental health, antidepressants, mental disorders, pharmacy students, drugs

Metallic trace elements in lipsticks commercially available on Polish market – health risk assessment

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Background: In recent years, the security of cosmetics is increasingly recognized as a worldwide public health concern. Metallic trace elements (MTEs) are one of those pollutants that can have a negative impact on human health. Cadmium, lead, arsenic and nickel are toxic elements whose spectrum of action on living organisms is very wide, from contact allergy to carcinogenic effects. MTEs in lipsticks can enter the body via dermal absorption and oral ingestion, especially when worn for long time periods. It has been estimated that if lipstick is used on average twice daily the lipstick user ingests about 24–40 milligrams of product a day, which is about 8–15 grams per year.

The aim: The aim of the study was to assess the contamination of lipstick samples collected from Polish market, considered in the aspect of consumer exposure to heavy metals such as Cd, Pb, As and Ni.

Materials and methods: The research material consisted of 31 samples of lipsticks. The concentrations of Cd, Pb, As and Ni were determined by the electrothermal atomic absorption spectrometry (ETAAS) method. Non-carcinogenic health risk assessment of MTEs in lipsticks was estimated based on US EPA guidelines.

Results: The obtained concentration range of the analyzed elements was as follows: Cd - <LOQ–0.14 mg/kg (mean value: 0.07 mg/kg), Pb - <LOQ–2.53 mg/kg (mean value: 0.90 mg/kg), As - 4.20–83.36 mg/kg (mean value: 26.86 mg/kg), Ni - <LOQ–155.84 mg/kg (mean value: 37.70 mg/kg).

Conclusions: According to the Regulation (EC) No 1223/2009 of the European Parliament and of the Council of 30 November 2009 on cosmetic products, cadmium, lead, arsenic and nickel are prohibited substances in cosmetic products. The results of this study indicate that more attention should be paid to products that are used directly in contact with humans skin, especially with the mouth from which they can be eaten. Of particular concern are the high concentrations of arsenic in the tested lipstick samples.

Keywords: lipsticks, heavy metals, health risk assessment, ETAAS

Noise Assessment in primary schools

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Background: Children between the ages of 7 and 15 are primary school students and they spend a good part of the day at school. Their stay at school should meet hygiene requirements to be safe and healthy. One of the most common harmful factors in schools is noise. School noise, characterized by high sound pressure levels, can adversely affect the health and well-being of students 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 primary schools during classes.

Materials and methods: The sound pressure level was measured with a sonometer in 6 primary school buildings located in 2 cities of Silesian Voivodeship. The A sound pressure level was measured in classrooms and corridors during the presence of children, with the windows open and closed. 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 breaks and meals.

Results: The average A sound pressure level measured during various classes and activities exceeded 57 dB. The highest average A sound pressure level of 82 dB (range 79-86 dB) was measured during physical education classes. The impact of external noise on the acoustic situation inside the classes was insignificant because the A sound pressure level measured with the windows open was on average higher by 2 dB.

Conclusions: The source of noise in primary schools is mostly students. The more children were present in the break, the louder it was. Noise in schools depends on: the type of activity, age group and class size. The health consequences of noisy classrooms can affect both students and teachers.

Keywords: exposure, noise, school, students

Influence of interpersonal relationships on the mental health of medical students in Poland

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Background: Interpersonal relationships have a significant impact on our well-being and general mental health. There is also a key impact of relations with other people among students, especially as they start to live independently in a new social environment.

The aim: The aim of this study was to determine the impact of relations between people on the occurrence of depression, anxiety and drowsiness among medical students in Poland. The identification of risk factors would significantly improve the prevention, diagnosis and the treatment.

Materials and methods: To collect the data, an original on-line questionnaire was created. It contains 4 parts: interpersonal relations, Beck's depression test, GAD-7 general anxiety questionnaire and Epworth Slippiness Scale. The results have been developed in Statistica software. 2339 correctly completed questionnaires were obtained.

Results: 69.75% of subjects had good/rather good relations with co-tenants, 5.04% - bad or definitely bad. 85% of participants have good relations with parents. 65.63% of students were satisfied with their social relationships, while 71.91% with their friendships. Poor relations with family, co-tenants and poor social and friendship assessments have indeed been linked to a higher level of depression, higher levels of anxiety and also increased level of slippiness. This was particularly evident in those who identified themselves as being introverts.

Conclusions: As studies have shown, problems in human interactions result in measurable effects in depression and anxiety. It seems useful to organize support for young people and to pay attention to acquiring social competences equally with medical knowledge.

Keywords: Medical students, mental health, interpersonal relationships

Toxic elements in food dyes – is there anything to be afraid of?

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Background: Dyes are commonly used in the food industry. Their goal is to give the food the right color. The specificity of individual dyes varies. They are divided into natural and synthetic and can be of plant, mineral and even animal origin. Synthetic dyes undoubtedly have many advantages. First of all, they are durable, they can be used to give the food the optimal color without any problems, and they are also much cheaper than most natural dyes. However, the problem is that some synthetic food dyes can be harmful to our health, especially those that contain elements such as cadmium, lead, arsenic or nickel in their composition.

The aim: The aim of the study was to assess the contamination of food dyes samples collected from Polish market, considered in the aspect of consumer exposure to heavy metals such as Cd, Pb, As and Ni.

Materials and methods: The research material consisted of 16 samples of synthetic food dyes. The concentrations of Cd, Pb, As and Ni were determined by the electrothermal atomic absorption spectrometry (ETAAS) method. Non-carcinogenic health risk assessment of MTEs in food dyes was estimated based on US EPA guidelines.

Results: The obtained concentration range of the analyzed elements was as follows: Cd - <LOQ–0.08 mg/kg (mean value: 0.06 mg/kg), Pb - <LOQ–3.23 mg/kg (mean value: 2.9 mg/kg), As - <LOQ –176.96 mg/kg (mean value: 37.18 mg/kg), Ni - <LOQ–8.36 mg/kg (mean value: 6.42 mg/kg). The highest concentrations of the examined elements were recorded in pink and red dyes.

Conclusions: Consuming too much food dye containing contaminants could pose a health risk. Children are the group that consumes the most "colorful" foods, and therefore are the most exposed to the negative impact of toxic pollutants such as heavy metals.

Keywords: metallic trace elements, health risk assessment, food dyes, ETAAS

Dental Phobia in Adults studying at Medical Faculties

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Background: Phobias of the public population may take different forms and could be of different origins and underlying causes. One that prevails amongst different populations and is thought to be common, is Dental phobia. It is known that dental phobia plays a key role in delaying the treatment of some patients, who avoid the dental clinic. This delay indirectly contributes to the rapid progression of dental disease, and the worsening of the oral health of said patients.

The aim: The aim of this study is to assess the prevalence of dental phobia in medical faculties, where medical knowledge and education are controlled factors, and to pinpoint triggers of dental phobia in order to tailor fit methods of anxiety alleviation.

Materials and methods: The method used in assessment was a questionnaire consisting of 21 questions, which was distributed anonymously amongst the students in medical and dental faculties of the Medical University of Silesia in Katowice, Poland.

Results: The results of this study indeed showed a great prevalence of varying degrees of dental anxieties amongst students of the medical faculties by assessing not only symptoms, but also triggers. It was found that certain triggers found in the dental clinic contributed greatly to the patient's phobia. These included factors such as the long waiting period, drilling sounds as well as the fear of injections. Such results automatically suggested solutions to the causes found in dental phobic patients.

Conclusions: In conclusion, this study confirmed the hypothesis in that dental and medical faculty students are just as prone to the anxiety caused by the dental chair. Thus, considering solutions for this issue must be of the utmost importance to dentists while dealing with such patients. Effective methods of alleviating dental anxieties include, but are not limited to, listening to music and sharing fears during the visit. These methods must be used more frequently in order to promote dental care for patient's avoidant of dental treatments, in order to restore dental health.

Keywords: phobia, anxieties, hygiene, avoidant

Patient awareness of the use of hormonal contraception and its drug and food interactions

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Background: The correct use of hormonal contraception is extremely important in terms of the effectiveness and safety of drugs administration. Possible interactions with food and other drugs may significantly reduce the absorption and activity of oral contraceptives, resulting in reduced efficacy and safety of pharmacotherapy.

The aim: The aim of this study was to test awareness and knowledge of the interaction of oral hormonal contraception with other medications and food.

Materials and methods: Data was collected through an online survey distributed via social networks. Respondents with different levels of education, age range and place of residence were assessed.

Results: The study showed that about 70% of the respondents use contraception, of which about 60% use hormonal contraception and the vast majority take an oral form of contraception. More than half of respondents are aware of the interactions between antibiotics used simultaneously with hormonal contraception. Approximately about 50 % of the respondents were not aware that the use of this group of drugs together with activated charcoal, St. John's wort infusion and grapefruit juice reduces their activity. Furthermore, most of the respondents declared that they were not aware of possible interactions with antiepileptic, antituberculosis, antifungal and antipyretic drugs.

Conclusions: In conclusion, most patients are aware of the significant interaction of contraceptives with antibiotics. Interactions with St. John's wort infusion and grapefruit juice are also widely known. However, the obtained results show that patient education on combinations of commonly used compounds and drugs – especially hormonal contraception, should be provided to the majority of the population in order to increase the effectiveness of oral contraceptive use. This issue consists an important aspect for the development of pharmaceutical care, in the field of effectiveness and safety of pharmacotherapy.

Keywords: hormonal contraception, contraception, drug interactions, food interactions

The patients' knowledge about depression in society and effective pharmacotherapy and position Pharmaceutical

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Background: Depression is becoming the more common problem in society which shouldn't be ignored. It appears as complex of syndromes such as: chronic feelings of sadness and despondency, loss of interest in activities you once enjoy. The pharmacotherapy is one of the most effective way of treatment so the patient's knowledge about the illness and therapeutic options consists the key of success.

The aim: The aim of the work was to analyse the state of knowledge about possible ways of the treatment, drugs interaction and the position of pharmacists in this process.

Materials and methods: An anonymous e-based survey was performed. The conclusions

were based on the comparison of answers of people from different age ranges and education.

Results: About 80% people think that depression is shameful, hidden and should be consulted with a specialists as the most effective way of treatment. The major group of participants don't realise that somatic symptoms are part of disease. More than half of respondents know that over-the-counter drugs (OTC) aren't as much effective as drugs prescribed by the doctor. It appears that most of respondents don't know a lot about the active pharmaceutical ingredients and interactions between other drugs which are used in coexisting diseases. In the case of OTC drugs the respondents don't have the knowledge about possible interactions between their active compounds and anticoagulants and antiallergic drugs. Moreover, about 30% of people don't know that OTC drugs used in depression couldn't be administer in the case of children. More than half of respondents is willing to discuss the problem concerning patient's health condition in the separate pharmaceutical care room and feel the need of the Pharmaceutical Care development.

Conclusions: The project gave us an opportunity to provide the need of education in that problem because as the results show there are areas which should be improved with the help of pharmacists.

Keywords: depression, drugs interactions, OTC drugs, Pharmaceutical Care

Knowledge of medical students about lymphedema. Is there lymphatic oedema present in the students community?

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Background: Lymphedema is a pathology resulting from impaired lymphatic drainage from tissues. Lymphedema can occur as an idiopathic disease as well as in some other clinical conditions including filariasis patients or breast cancer patients. It can also be a result of radiotherapy or a complication of obesity.

The aim: To assess the knowledge and attitude toward lymphedema. This study aimed to discuss the importance of spreading knowledge about lymphedema, the risk factors and methods of treatment.

Materials and methods: The knowledge of the medical students about lymphedema was checked on the base of the dedicated questionnaire including sociodemographic questions, test of knowledge and lymphedema self-diagnosis. The survey study was conducted from February 2022 to April 2022. It included medical students from Medical University of Silesia in Katowice. The survey was sent individually thanks to dean's office mailing system.

Results: The questionnaire was filled by 137 medical students from year 1 to 6. There is no student who has subjectively assessed own knowledge about lymphedema very well. Prevailing 48,2% of students (n=66) said that their knowledge is average. Moreover 56,9% of students (n=78) claimed that they have never heard about lymphatic oedema during their university classes. Barely 7,3% (n=10) correctly pointed filariasis as the main reason of lymphedema in the world. Unfortunately 54,7% of students (n=75) pointed diuretics as the main method to treat lymphedema. The further analysis of the results of the study questionnaire are pending.

Conclusions: The results revealed that the knowledge of medical students about lymphedema – risk factors and methods of treatment is insufficient. This topic should be discussed properly to provide the best care for patients and prevent lymphedema in the medical students community. Appropriate education of medical students is essential.

Keywords: lymphedema, survey, obesity, prevention, treatment

Knowledge of Polish society about screening of cancers

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Background: Annually a hundred thousand Poles die because of cancer related diseases. The biggest death toll is caused by lung cancer. Despite the fact that screening programmes are widely available, numerous of cancers are still diagnosed as late stage tumors.

The aim: The purpose of the study was to investigate knowledge of Polish society about screening of cancers available in Poland. Moreover, researchers wanted to emphasize that even though people know about these programs, they aren't willing to participate.

Materials and methods: Study was conducted via internet poll. Participants had to respond to 21 questions, part of them were multichoice ones. Data was collected during the first quarter of 2022. Process of designing the survey was supervised by the Department of Oncology and Radiotherapy, SUM.

Results: 189 women, 59 men took part in the study, who were between 17 and 75 years old. Majority of participants had at least a bachelor degree, however most of them were not connected with the field of medicine. Our research showed that 70% of participants knew about the possibility of conducting screening of cancers but almost 90% weren't right about how often one of the most common check ups such as the pap test should be performed. More than a half of participants had a history of cancers among their relatives, nonetheless only one third had performed screening.

Conclusions: The results point out that participants tend to show common knowledge about screening programmes. In case of more detailed questions, partakers didn't provide the proper answer. Members of the research team believe that dissemination of knowledge and encouragement to participate in preventive examination of cancers may lead to more effective diagnostics and reduction of mortality rate.

Keywords: cancer, screening programmes, prevention, oncology, internet poll

Are we sleeping well? Related to the article of daily prevention of adult users

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Background: Sleep is an inseparable element of a properly functioning organism and health prophylaxis. It is a physiological need necessary to maintain a person's psychophysical balance. The essence of sleep is to provide the body with regeneration, e.g. through the processes of memory consolidation and hormonal regulation. Deficiency as well as poor sleep habits can lead to negative consequences for mental and physical health.

The aim: To evaluate sleep habits and factors influencing sleep quality in adults.

Materials and methods: The research was conducted with the use of two tools: an original and standardized questionnaire. The questions concerned sleep hygiene and the relationship between sleep and gender, their health, well-being, and the level of daily stress.

The snowball method was used to select the test group. 770 people took part in the study, including 466 women and 304 men aged 18-65 years. Most (60%) of the respondents had higher education and were employed.

Results: The respondents rated their sleep quality at the level of 6 points on a 10-point scale, while men rated it statistically lower. The respondents fall asleep in front of the TV, use electronic devices before going to bed, eat meals shortly before going to bed and sleep irregularly during the week of work / study during the weekend.

The study also showed that the work performed affects, especially in the case of women, problems with falling asleep in a situation when a person postpones an unsolved matter for the next day or something important is about to happen in their life.

Conclusions: The undertaken sleep hygiene behaviors are insufficient to ensure continuity, comfort and effectiveness of rest and regeneration. Include content related to correct sleep habits in health education.

Keywords: sleep, sleep hygiene, sleep quality, sleep disorders

Problems with accepting one's own body as a result of irregularities in the course of the child's health check

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Background: The child's health check is carried out every two years during the course of school education and has specific requirements regarding its course and appropriate time frames. Tests should take place in conditions that are comfortable for the patient, with the right to intimacy. Otherwise inappropriate conditions may contribute eating disorders or intensify it. Communication between the child and the nurse and between the child and the doctor is very important. Health education of staff should be included in the course of medical studies and in periodic additional training courses.

The aim: The aim of the study was to assess the impact of the health balance of a child in primary school on the perception of their own body in the future.

Materials and methods: The survey was conducted in 2021 among children aged 11-15 attending primary school, and 136 children participated in it (66 girls and 70 boys). The study was voluntary and anonymous. The consent to conduct the research was expressed by the headmaster of the school, parents and children. An original questionnaire was used.

Results: The health check of the child was carried out in inappropriate conditions. Testing without the possibility of covering (without the possibility of covering with a curtain and isolating from the rest of the group) - 35.3% of children declared 34.6% were uncomfortable during the course of the study, including 10.3% underweight, 3.7% overweight and 20.6% of children with correct body weight.

Conclusions: The study showed that the child's health balance was carried out in conditions unsuitable for children, both for people with normal body weight and with incorrect body weight. During the study, some children heard unpleasant comments about their body, which contributed to stress and negative emotions and may result in an incorrect body image or eating disorders. Health education of doctors, nurses, parents, and children is a necessary for the examination to run properly and raise no doubts.

Keywords: health balance, education, screening test, children

SESSION OF PUBLIC HEALTH AND HEALTHCARE II



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Health of inhabitants and the intensity of street lighting

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Background: Light pollution adversely affects the fauna and flora adapted to living in the dark, astronomical observations of the sky and, above all, the health of the population. It can cause fatigue, decreased libido, frequent headaches, depression, obesity, poor sleep quality and even cancer.

The aim: The aim of the study was to analysis the impact of street light intensity on the health of the inhabitants.

Materials and methods: The study was carried out among residents of 2 similar towns, one with typical street lighting, the other being a dark sky park. Among the inhabitants, the Polish version of the WHOQOL-BREF standardized questionnaire and author's questionnaire consisting of 12 questions.

Results: 272 respondents took part in the study; 98 (36%) men and 174 (64%) women. The mean age of the respondents was 47 ± 10.3 years. Depression or neurosis was diagnosed in 12% of the inhabitants of the dark sky park compared to 22% of the inhabitants of the control town. Only 4 residents (2.9%) exposed to lower intensity of street lighting complained of headaches. Sleeping pills consumption, headaches, cardiovascular disease, and decreased libido were statistically more frequent among the inhabitants of the control town than among the inhabitants of the dark sky park. The mean sleep time of the test group was 7.46 hours, while that of the control group was 7.39.

Conclusions: The length of sleep did not depend on the intensity of street light in the places examined. However, the inhabitants of the control town were statistically more likely to consume sleeping pills. The incidence of depression and neurosis, as well as cardiovascular diseases (eg hypertension), was statistically more frequent among people living in the town with typical street lighting.

Keywords: artificial light, light pollution, dark sky

Respiratory symptoms, allergies and environmental risk factors in the prevalence of childhood bronchial asthma

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Background: In Poland, asthma is diagnosed in 5-10% of the paediatric population. Differences in the clinical picture of the paediatric group, in relation to the history of the disease, are related to its cause, e.g., exogenous and endogenous exposure to an environmental factor.

The aim: Analysis of the association between respiratory symptoms, allergy, and exposure to environmental factors and the prevalence of bronchial asthma among the pediatric population.

Materials and methods: A cross-sectional study was conducted in a group of 995 children attending primary schools in the province of Silesia in 2018-2019. A group sampling method was used to select the sample. The research tool was an anonymous questionnaire, developed based on the form used in The International Study of Asthma and Allergies in Childhood (ISAAC). Analyses were performed using Statistica 13.0; $p < 0.05$.

Results: Asthma was diagnosed in 88 subjects (8.8%). The most common allergies were pollen allergy (19.1%), house dust (13.1%). 19.35 children had hay fever and 18.1% had atopic dermatitis. These allergies and allergic diseases were statistically more common in children with asthma. The most frequently reported respiratory symptoms were dry cough in the last 12 months (22.4%) and wheezing ever (20.7%) and were statistically significantly more frequent in children with ever diagnosed asthma than in those without. A similar prevalence of asthma was observed in children exposed (8.9%) and unexposed (8.8%) to tobacco smoke, in children with (9.0%) and without pets (8.7%). Children with traces of mould or dampness in their homes were more likely to have asthma (11.3%) than children without such exposure (8.2%), but the differences were not statistically significant.

Conclusions: Allergies and respiratory symptoms are more common in children with bronchial asthma. Exposure to tobacco smoke, the presence of pets, and the presence of mold in the home did not affect the prevalence of asthma.

Keywords: bronchial asthma, paediatric population, allergy, environmental factors, symptoms

„Helpful muzzles"? – women’s knowledge, regarding protective masks and their stance on pandemic restrictions

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Background: The SARS-CoV-2 pandemic has forced governments of countries all around the world to introduce restrictions and preventive measures as means of combatting rising infection rates and hospitalizations. Despite scientifically proven effectiveness, many people have viewed these actions negatively. This has contributed to lower adherence and therefore, further spread of the disease.

The aim: Our goal was to identify women’s level of knowledge, regarding usage of protective masks and their stance on SARS-CoV-2 related restrictions.

Materials and methods: Total of 386 women participated in the study, aging from 15 up to 80 years old ($\bar{x}=31,32\pm12,34$). We have employed an original questionnaire consisting of several questions regarding the topic at hand. The study was fully voluntary and anonymous.

Results: Only about 50% (200; 51,81%) of surveyed women stated that mask usage was helpful in restricting the spread of SARS-CoV-2 virus and more than 25% (106; 27,46%) used to wear masks improperly. What is more, almost 23% (88; 22,8%) of surveyees believed that wearing masks had a negative impact on people’s health and just 21% (81; 20,98%) of participants thought that masks help protect a wearer from infection. Nearly 60% (220; 56,99%) of inquired women acknowledged that they felt tired with mandatory restrictions. Moreover, as many as 40% (156; 40,41%) of respondents considered restrictions to be too strict for most of the pandemic. Nevertheless, some women did believe that the restrictions were not stark enough (68; 17,68%).

Conclusions: Women’s knowledge regarding usage of protective masks proved to be incomplete. Most of surveyed individuals believed that the restrictions were too strict and exhausting. Creation of educational programs concerning benefits of restrictions and their inevitable role in pandemic control is necessary in order to increase awareness and prepare society for possible future emergencies.

Keywords: restrictions, SARS-CoV 2, women, masks

Analgetic usage and level of knowledge in population of 18 to 25 years old

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Background: Analgesics or painkillers are wide group of drugs used by an overall population to reduce pain. The drug chosen is also determined by the type of pain, judged by its duration, localization, character and level. Analgesics are classified based on their mechanism of action. Various analgesics, such as many NSAIDs, are available over the counter in Poland and other countries, whereas various others are prescribed drugs leading to the substantial risks and high chances of overdose, misuse, and addiction in the absence of medical supervision.

The aim: To evaluate, which analgetic are used most frequently in the young population (18-25), as well as level of knowledge of this group on the analgesics side effects.

Materials and methods: This study was conducted as a survey research among group of people age 18 to 25, mostly students of different faculties.

Results: NSAIDs were most frequently used in population between 18 to 25 y.o., followed by non-opioid analgetic and opioid drugs. OCT drugs are used more frequently by this age group. Almost half of researched population uses analgesics once or less than once in a month. Most of participants uses analgetic when their pain level reaches between 3 to 10 in a VAS. When it comes to opioid drug, vast majority do not use them as an analgesic. Opinion on analgetic side effects differ widely.

Conclusions: Analgetic are widely used in population of 18 to 25 years old, with NSAIDs being mostly used drugs. As most participants did not suffer from chronic pain it can be understood, that usage of opioid drugs is relatively low. Most of participants were aware of potential side effects on different systems, yet knowledge on precise effect of painkillers on human organism should be propagated to prevent potential risks and chances of overdose, misuse and addiction.

Keywords: analgetic, pain, NSAIDs, painkillers

Beliefs and hesitations among vaccinated and unvaccinated adult Polish population - the survey

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Background: The topic of vaccination against Covid-19 is still controversial among the public. Despite the passing of time, part of the population is still unvaccinated and/or unsure of the vaccination effects on quality of life and health.

The aim: To assess the impact of the public's and beliefs and hesitations about vaccination against Covid-19 on the decision to vaccinate, a survey was conducted.

Materials and methods: The survey consisted of 29 questions about the lifestyle of respondents, education status, economical status, and several statements about vaccination itself. The survey was conducted between 01.2022 - 02.2022. A total of 7018 adult Poles completed questionnaire: 76,9% women, 22,4% men. Among the studied population 5742 persons (81.8%) were vaccinated against Covid-19 [VAC] and 1276 (18.2%) were not vaccinated [NotVAC].

Results: Government actions during the pandemic acted as a disincentive for 30% of population under the study and encouraging for only 4.4%. The 41.5% of population expressed the need of deeper and better information regarding the immunizations. 41.3% (2371) VAC hesitated to vaccinate due to a lack of information on the long-term effects of vaccination against Covid-19. The reason for the uncertainty was concern about severe vaccine reactions for 32.1% (1845) VAC. For 44,2% (2536) VAC who completed the survey, none of the above-mentioned issues raised their doubts. For 43.7% (557) NotVAC, the possibility of obtaining a covid passport acted as an incentive to vaccinate. 38.7% (494) NotVAC thought about vaccination because of fear of severe disease, and 33.2% (423) were afraid of serious post disease complications. 11% (141) NotVAC admitted that they were under pressure from the employer However, 26.6% (339) NotVAC answered that they were equally confident of their decision.

Conclusions: The research results show that many of the issues still remain unexplained or misunderstood by the respondents. More effort should be made to explain to people what concerns them about vaccination against Covid-19.

Keywords: Covid-19, vaccination, Sars-COV-2

Comparison of haematological parameters in patients before and during the COVID-19 pandemic

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Background: The COVID-19 pandemic in Poland and the introduced systemic procedures have often resulted in limited access to healthcare for the general population.

The aim: This retrospective study aimed to assess the impact of the epidemic on the health of a representative group of Polish patients. The comparative analysis uses parameters of peripheral blood counts, which are considered a laboratory test strongly correlated with the broadly understood "public health".

Materials and methods: A retrospective comparative analysis was conducted for 11 Complete Blood Count with Differential (CBC- DIFF) parameters. The experimental group consisted of laboratory results of 77101 patients in the period from May to December 2020, during the first and second waves of the pandemic in Poland. The control group consisted of the results of 85742 patients from the same period of 2019. Haematological parameters were determined by the routine method on a Sysmex XN-2000 analyzer.

The statistical analysis was performed using Microsoft Office Excel 2017 and Statistica 10. Mean and standard deviation (SD) were calculated for all parameters. The student's t-test was used to verify the statistical significance of differences between both groups. p-value <0.05 was considered statistically significant.

Results: It has been shown a significantly lower hemoglobin concentration (Hb), hematocrit value (Ht), red blood cell count (RBC) and significantly higher count of leukocytes (WBC), neutrophils (Neut), immature granulocytes (IG) and red blood cell distribution width (RDW) in hospital patients during an epidemic, compared to the control group (p<0.05).

Conclusions: The presented comparative analysis of the cumulative results of peripheral blood counts of hospital patients may indicate that the COVID-19 epidemic had a negative impact on public health in Poland.

Keywords: COVID-19 pandemic, haematological parameters, hospital population

Evaluation of awareness of the students of Medical Sciences Faculty in Katowice about contagious diseases risk

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Background: Practicing medical professions is associated with exposure to many harmful factors. The SARS-CoV-2 pandemic made many health professionals aware that their work could cause permanent health damage, including the risk of death.

The aim: To evaluate collected information among students of Faculty of Medical Sciences in Katowice at Medical University of Silesia, about awareness of the risk of infection with various types of pathogens.

Materials and methods: A special survey-containing 14 questions was prepared, including questions about different factors causing contagious diseases, which allowed to collect information regarding students' knowledge about potential infectious pathogens - bacteria and viruses. In addition the survey included questions about SARS-CoV-2 vaccine. Survey was drawn up to assess degree of awareness. Group of respondents included 220 students: 2-year (105) and 3-year (115) students.

Results: Students' awareness about being eventually affected by viral diseases is bigger than awareness of being affected by bacterial infections. Most of the respondents were aware of the risk of getting infected by HCV(196) and HIV (195), only 101 respondents picked an answer concerning risk of the infections by hemorrhagic viruses. In a matter of bacterial pathogens, students are aware of the risk of infections by *Clostridioides difficile*(154) and *Mycobacterium tuberculosis* (150). The smallest group (82) is conscious of a danger from multidrug resistant rods, including carbapenemase-producers. Majority of the responders were vaccinated for SARS-coV-2(216). COVID-19 pandemic, for most of the participants (155) caused some reflections about working in the medical profession.

Conclusions: Most of the interviewed students are aware that the profession they will perform in the future will associated with exposure to pathogen. However knowledge about some types of pathogens, is quite small, so it is worth increasing awareness, of the students and candidates for studies on what pathogens may be exposed in their future work.

Keywords: exposure of pathogens, viruses, bacteria, awareness, SARS-CoV-2, vaccine

Markers of vascular endothelial damage in COVID-19 convalescents

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Background: Coronavirus disease (COVID-19) is caused by the SARS-CoV-2 virus. Primarily, COVID-19 affects the respiratory system, leading to coughing, shortness of breath and fever. Numerous patients, who recovered from COVID-19, have reported chronic loss of taste and smell, and some have suffered from heart palpitation and chest pain. It has been found that, in many cases, COVID-19 may develop into post-COVID syndrome, which can result in cardiovascular disease.

The aim: The aim of the study was to assess whether COVID-19 convalescents are more likely to develop cardiovascular and thromboembolic disease caused by endothelial dysfunction.

Materials and methods: The study group consisted of 200 patients, who had been infected with SARS-CoV-2 virus and did not report any other diseases. The control group was composed of 79 people, who were not affected by the virus. All members were objectively healthy people between ages of 18 and 65, who had not been prescribed permanent medication. In addition, all patients qualified for blood donation, were blood donors registered in Regional Blood Center in Warsaw. The concentration of C-reactive protein (CRP) and N-terminal B-type natriuretic propeptide (NT-proBNP) were determined in all patients using a highly sensitive method. The tests were performed on the Dimension EXL analyzer using turbidimetric and chemiluminescent immunoassays.

Results: For study group, the median of CRP concentration was 2.4 mg/dl, whereas for the control group it was 2.5 mg/dl. The median for NT-proBNP in COVID-19 convalescents was 22 pg/ml, for control group – 19 pg/ml. The differences between examined groups were statistically insignificant.

Conclusions: In the group of people without any comorbidities, COVID-19 did not increase the likelihood of cardiovascular disease, expressed as an elevation in the concentration of CRP or NT pro-BNP.

Keywords: COVID-19, C-reactive protein , B-type natriuretic peptide, the cardiovascular disease, SARS-CoV-2

The effect of surgical mask wear time on their microbial purity in the era of the Sars-CoV-2 pandemic

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Background: The ongoing pandemic since 2020 has undoubtedly changed our lives in many ways. Personal protective equipment has never been used on such a large scale. Frequent hand disinfection, social distancing, wearing masks and disposable gloves have become an everyday occurrence.

The aim: There have already been a lot of studies that proved the negative effects of prolonged covering of the mouth and nose on facial skin condition. Since the start of the pandemic, we observed an increase of oral infections, cracked lips, and acne exacerbations. A properly worn mask covers the nose and mouth, which prevents the inhaled and exhaled air from exchanging with the environment. The purpose of this study was to evaluate the effect of mask wearing time on the number of isolated bacteria and to identify microorganisms isolated from surgical masks.

Materials and methods: In this research a total of 40 masks were tested. The study group consisted of young women aged 20 to 25 years. Half of the masks were worn for 30 minutes, while the others were worn for more than 6 hours. The imprints of the inside areas of the masks were then made on total microbial count identification medium and Sabouraud medium - for fungal and mold culture growth. Next, the bacteria from each dish were isolated for microbial identification. The species of the strains was confirmed by assessing their phenotypic features such as: type of hemolysis, production of coagulase and catalase. What is more, the Oxoid Staphytest Plus test, the API Staph and the API NE tests were also performed. For the identified strains, the sensitivity to selected antibiotics was also determined.

Results: Statistical analysis indicated that the differences in bacteria count between the masks worn for 30 minutes and 6 hours were significant.

Conclusions: Exhaled microorganisms are deposited on the inside of the mask, thus receiving direct contact with the skin. In addition, humidity and heat favor the excessive growth of the physiological flora of the skin.

Keywords: Sars-CoV-2, surgical masks, microbial purity

The level of air pollution and the number of cases and deaths from COVID-19 in selected cities in Poland

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Background: Air pollution affects not only the occurrence of cardiovascular diseases, but also the course of SARS-CoV-2. Particulate matter (PM) is an indicator of air pollution and a serious health hazard. It has been suggested that there is a correlation between the severity and spread of the COVID-19 virus and the level of air pollution.

The aim: The aim of the study was to determine whether there is a relationship between the number of cases and deaths from SARS-CoV-2 and the level of PM2.5, PM10, SO2 and NO2 in selected Polish cities in 2020.

Materials and methods: The number of SARS-CoV-19 cases and virus-related mortality as well as the levels of PM2.5, PM10, SO2 and NO2 were obtained from publicly accessible sources (Ministry of Health, Chief Inspectorate of Environmental Protection), compiled into a database and analysed using Statistica 13.3 software package.

Results: It can be concluded that there are statistically significant differences in the levels of air pollution between selected cities in Poland. No general variance was observed between the number of deaths and the intensity of air pollution between selected cities, with a statistically significant difference appearing only between Katowice and Warsaw over the course of the year. In Katowice, number of coronavirus-related deaths correlated with certain months rather than the level of air pollution. A positive correlation of mortality and SO2 was observed in Gdańsk.

Conclusions: In all of the observed cities in Poland, time was the main factor influencing death. As months passed, the number of deaths increased. While the number of deaths from COVID-19 in selected Polish cities seems to be independent from the levels of air pollution: PM 2.5 and PM10 as well as NO2 nad SO2, a strong positive correlation in Katowice indicates the seasonality of the disease. Our study suggests that air pollution may not be a major factor in COVID-19-related mortality, but it should be remembered that it does have an impact on respiratory diseases.

Keywords: SARS-CoV-2, Air pollution, Polish cities

What do medical students not consider to be a risk factor for arterial hypertension?

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Background: Hypertension has been the leading cause of cardiovascular death for years. One of the reasons for the high prevalence of this disease is insufficient knowledge about its causes.

The aim: This survey study looked at the proportion of students who had misconceptions about classical and non-classical risk factors for hypertension.

Materials and methods: To this study were included 356 medical students (71.1% women; 28.9% men). The study used an original questionnaire consisting of closed questions. The study was conducted as a quantitative method, using the CAWI technique. The study group was divided into 1st-3rd year (pre-clinical years) and 4th-6th year (clinical years) students.

Results: In the group of students of clinical years, the most frequently incorrect knowledge concerned the risk factors of hypertension, such as: hypertension in parents (3.2%), daily smoking of electronic cigarettes (5.5%), passive smoking (10.1%), irregular sleep (17.9%), obstructive sleep apnea (13.3%), periodontitis (32.8%), consumption of energy drinks (10.1%), aging of the body (7.0%), smog (18.7%), environmental noise (25.0%), use of hormonal contraception (21.9%) and eating foods containing licorice (16.4%). Compared to students of pre-clinical years, the knowledge was significantly increased in the case of the following factors: sedentary lifestyle ($p=0.039$), daily smoking of electronic cigarettes ($p=0.002$) and aging of the body ($p=0.041$).

Conclusions: We conclude that the knowledge of students on non-classical risk factors for hypertension is insufficient. The knowledge about some risk factors was significantly greater among the students of clinical years.

Keywords: arterial hypertension, students' knowledge

The influence of the COVID-19 pandemic on the habits and health of medical students

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Background: The pandemic of COVID-19 have had a major influence on the life of medical students.

Not only did their social habits change because of isolation but also their daily eating habits, physical activity and general psychological wellbeing. It is worth emphasizing that almost every change in lifestyle has an indirect influence on one's physical health, including BMI (Body Mass Index) change.

The aim: The purpose of this work is to present the change in habits because of the pandemic and what impact it may have on the health and psychological wellbeing.

Materials and methods: The anonymous online questionnaire was conducted on the group of 45 medical students of Silesian Medical University, aged 19-29 years old, using google forms. It consisted of 36 questions regarding height, weight change, the quantity and quality of meals, drinking and smoking habits along with physical activity routine.

Results: Results were calculated based on the first 45 answers, though the data is still being collected. Almost half of the participants (48%) declared increase in weight during the isolation period of pandemic. The data was compared by calculating the change of BMI for each participant. The rise in BMI correlates with much less steps taken daily (53%) and with considerably more appetite for snacks during pandemic period. Although the number of meals was greater during pandemic period, there were richer in vegetables and more often done by oneself. The results showed that more time spent in front of monitor during pandemic ties well with lower motivation and less effective learning (56% of participants) for exams.

Conclusions: The study presented that pandemic in fact changed some of the habits of participants and many of these correlated with increase in BMI, such as greater number of meals and snacks during pandemic. However, taking into consideration the fact that the meals were healthier during pandemic than after it, the change in weight may have been the result of the less amount of physical activity.

Keywords: COVID-19 pandemic, influence, BMI, health

Rational antibiotic therapy. The patients' knowledge about basic principles of proper antibiotic use

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Background: Antibiotics are commonly used by the patients with a medical prescription as well as drugs over-the-counter. Non-compliance with the rules of rational antibiotic therapy leads to undesirable changes of therapeutic properties, causes loss of the potency, and severely compromises safety and efficiency of pharmacotherapy. Misuse of antibiotics accelerates the emergence and dissemination of antibiotic resistance.

The aim: The aim of the study was to examine the knowledge about the basic principles of rational use of the antibiotics.

Materials and methods: An anonymous based survey was performed. Data were collected during the two months (March/April 2022). Answers of people from different age ranges and education were the basis for conclusions.

Results: The research shows that 50% of respondents used antibiotic at least once over the past year. The worrying problem is that as many as 46,8% of interviewees had prescribed other antibiotic due to lack of effectiveness of the first-line medication. Over 36% of survey respondents claim that they have finished their antibiotic therapy before the time advised by the doctor. More than 74% of surveyed declares knowledge about positive effect of using dairy product containing live bacterial cultures but as many as 52,1% do not know that dairy products can severely impair drug absorption.

Conclusions: Majority of respondents are aware of their lack of knowledge about proper use of antibiotics and willing to take advantage of pharmaceutical advice regarding the antibiotic therapy as part of Pharmaceutical Care.

Keywords: antibiotic therapy, Pharmaceutical Care, proper use of antibiotics

**SESSION
OF RADIOLOGY,
RADIODIAGNOSTICS
AND NUCLEAR MEDICINE**



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Comparative analysis of single MRI sequences in assessing the extent of visual pathway lesions in NF1 patients

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Background: Neurofibromatosis type 1 (NF1) is an autosomal dominant disease which appears in 1:2500 to 1:3000 live births. Among numerous signs, the increased risk of developing benign or malignant tumours is observed. One of the possible lesions is optic pathway glioma (OPG) which occurs in 15% children with NF1. The gold standard for assessment the extent of OPG is Magnetic resonance imaging (MRI).

The aim: An attempt to evaluate the usefulness of a single sequences in head MRI examination in the assessment of changes in the visual pathway in NF1.

Materials and methods: The evaluation covered comparative studies - control MRI of 10 patients with visual pathway involvement over the course of NF1, a total of 27 studies. Baseline and follow-up examinations were analysed for each patient.

Results: Due to the diffuse nature of the lesions and the subjective assessment of single scans it was not possible to select one or more sequences that would determine the best possible evaluation of the extent of the lesions.

Conclusions: A singular sequence cannot be selected for the visual assessment of lesions - the importance of each sequence varies with the clinical context.

Keywords: NF1, OPG, MRI, neurofibromatosis type 1, optic pathway gliomas

Evaluation of breast MRI indications before and after the introduction of MDT in Latvia

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Background: Magnetic resonance imaging (MRI) of the breast is a tool that helps to detect and characterise breast disease, assess the extent of local disease, evaluate response of treatment and guide localisation. Substantiated indications are required to perform this examination. In 2019 there was an introduced Multidisciplinary team (MDT) that consists of radiologist, pathologist and surgeon. The main target of MDT is to evaluate if a patient needs any additional examinations, including MRI.

The aim: Aim of this study was to evaluate indications of breast magnetic resonance imaging before and after the introduction of MDT.

Materials and methods: Retrospective study of patients who underwent MRI of breast. Data was collected in two identical time periods before and after MDT introduction. A total of 232 cases were collected. Breast MRI indications was systematised according to The European Society of Breast Imaging, The European Society of Breast Center Specialists and The American College of Radiology guidelines.

Results: Of all patients, who underwent breast MRI breast cancer were diagnosed – to 37 patient (35,2%, 95% CI: 22-40%) before, and to 84 patients (66,1%, 95% CI: 60-77%) after MDT introduction. Indications for breast MRI are significantly different in these two patient groups ($p < 0.001$). Main indications before MDT introduction were lesion characterisation (44%) and determination extent of the disease (27%). Main indications after MDT introduction were - determination extent of the disease (49%) and lesion characterisation (20%). According to quantitative difference between diagnosed breast cancer cases and difference between indications for breast MRI in different patient groups before and after MDT, MRI scans were more targeted after the introduction of MDT ($p = 0.003$).

Conclusions: Since every patient case has been considered by MDT, MRI examinations were more targeted. That reduces queues on MRI, reduces emotional stress on patients and allows patients to receive treatment more quickly when it's needed.

Keywords: breast MRI, Multidisciplinary team, indications for MRI

MRI of the head in children with suspected epilepsy - analysis of 20 studies

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Background: Epilepsy is defined as a brain disorder characterized by an enduring predisposition to generate epileptic seizures and by the neurobiologic, cognitive, psychological, and social consequences of this condition.

The aim: Assessment of the diversity of brain morphological changes in children with suspected epilepsy.

Materials and methods: Twenty head MRI examinations performed in children with suspected epilepsy were assessed.

Results: Patients' diagnoses presented a diverse group of lesions in the imaging examination. In 10 patients, the MR image was within the normal range, with no noticeable changes in the brain. In the remaining 10, single focal lesions were found, including neuroglial cyst, cortical dysplasia in 2, asymmetry and reduced volume of hippocampus in 2, CNS defect in 2, Chiari 1 syndrome in 1, CNS tumor in 2. Due to the time of year, most of the children studied had exudative and inflammatory changes in the paranasal sinuses or the temporal bone pyramids.

Conclusions: MRI is the gold standard in the diagnosis of children with suspected epilepsy. The analyzed group notes the diversity of changes or the lack of tangible changes in children with suspected epilepsy.

Keywords: epilepsy, magnetic resonance imaging,

The defensive approach in diagnostics – are frequent imaging examinations justified?

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Background: Medical community is currently struggling with a phenomenon called "defensive medicine", aimed at reducing the risk of litigation due to malpractice. In this manner, an excessive use of diagnostic imaging poses a threat, not only to patients, often unnecessarily exposed to radiation, but also negatively affects the quality of healthcare – increasing the radiologists' workload and costs of such procedures.

The aim: The aim of our study was to analyze the correlation between the number of performed head CT examinations and the radiological results, along with the information contained in the referrals in search for the evidence of over-performing such tests. There are no current reports on the above-mentioned subject.

Materials and methods: For the purpose of the research, 1160 referrals for head CT examinations were analyzed retrospectively, including the following parameters: sex, age, type of scan (C-, C+, angio-CT) and its result. The content in the referral was also analyzed and assigned to an appropriate category based on a diagnostic target (1-6) or its lack (0). Pathologies identified by the radiologist in CT results were classified into the appropriate category (1-4), regarding the severity of changes.

Results: Analysis of the CT results has shown that the vast majority of patients haven't manifested any signs which would indicate an emergency – 633 out of 1160 patients showed no deviations or had chronic, asymptomatic lesions. It was also demonstrated that as many as 855 referrals (73.71%) constituted group 0 in terms of lack of diagnostic target of a specific pathology.

Conclusions: Over a half (55,09%) of head CT examinations, ordered as a matter of urgency, showed no emergency condition. Unnecessary exposure to radiation may cause tumours such as thyroid cancer and non-Hodgkin lymphomas and increases the risk of cataracts. Furthermore, the financial aspect and an increase in workload related to the excessive use of diagnostic imaging have a devastating impact on healthcare and healthcare professionals.

Keywords: defensive medicine, diagnostics, computed tomography, radiation exposure

Value of MRI in the differentiation of Dandy-Walker malformation - image analysis of selected cases

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Background: Assessment of the posterior cavity is more challenging for the imaging methodology as compared to the supratentorial structures. The suspicion of changes made on the basis of ultrasound requires verification. The computerized tomography scan poorly analyzes the posterior cavity structures, a precise evaluation of the morphology of the defect is possible, however, using the magnetic resonance imaging (MRI). Dandy Walker syndrome (DWS) is a congenital defect of the posterior cavity characterized by underdevelopment and inversion of the cerebellar worm, enlargement of the posterior cranial fossa with inversion of the confluence of sinuses position and enlargement of the IV ventricle. In addition to the typical image of DWS, there is also a variant and spectrum of the syndrome varying in terms of the extent of anatomical abnormalities.

The aim: The aim of the study is to analyze the anatomical abnormalities of the brain occurring in the typical syndrome as well as variant and spectrum of Dandy-Walker in the MRI of the head in a group of selected pediatric patients.

Materials and methods: A retrospective analysis of MRI results was performed in a selected group of 11 children, 6 boys and 5 girls, aged 2 months to 10 years. On the basis of the obtained MR images, it was possible to differentiate DWS by analyzing individual anatomical elements in the radiological images. All of them were examined in The Independent Public Clinical Hospital no. 6 of the Medical University of Silesia in Katowice according to the repeatable protocol of MR head examination with the 1.5T Artist GE apparatus, images analyzed at the dedicated aw3.2 station.

Results: The diversity of the picture indicates a more frequent occurrence of the Dandy-Walker variant than of the typical syndrome or spectrum.

Conclusions: Magnetic resonance imaging should be considered the gold standard in the diagnosis of central nervous system defects, especially the posterior cavity, as it allows for the morphological differentiation of this group of diseases.

Keywords: MRI, Dandy-Walker, children's cerebrum, posterior cavity defects

SESSION OF SURGICAL SPECIALITIES



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Endovascular treatment of the transplant renal artery stenosis

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Background: Transplant renal artery stenosis (TRAS) is one of the most common complications occurring after transplantation. It is highly related to the resistant hypertension and graft dysfunction.

The aim: We aimed to evaluate risk factors of TRAS and outcomes of its endovascular treatment.

Materials and methods: 17 patients (age 52 \pm 13) who underwent the endovascular renal artery angioplasty between 2016 and 2021 were enrolled. The retrospective analysis included i.a.: clinical and biochemical parameters, imaging studies (ultrasonography, angio-CT, angiography), treatment modalities, as well as donor characteristics.

Results: Resistant hypertension or impaired graft function with TRAS diagnosis was an indication for the treatment in 9 and 7 cases, respectively. One patient was asymptomatic. The mean time between kidney transplantation and endovascular treatment was 25 \pm 46 months [1,8 – 180]. Basing on patient's medical history and stenosis morphology, 4 patients were diagnosed with fibromuscular dysplasia and 3 with renal artery kinking. Depending on the stenosis characteristics stenting (10 cases) or balloon angioplasty (6 cases) was performed. All patients were on the multi-drug antihypertensive therapy prior to the intervention (3 \pm 1 drugs) and the angioplasty improved a blood pressure control with decreased number of medications (2 \pm 1, $p < 0,05$). In early and long term observation the serum creatinine levels have not improved significantly (177 \pm 75 before intervention vs 173 \pm 76 1 week after vs 173 \pm 84 two months after). Amount of the angiographic contrast agent did not correlate adversely with change of the creatinine levels in the perioperative period. Symptomatic restenosis was diagnosed in 3 cases; 8, 17 and 24 months after angioplasty and was successfully treated with an endovascular reintervention.

Conclusions: Endovascular management of TRAS is a simple, effective, safe and reproducible method of treatment. Clinical outcomes depend on the initial symptoms with satisfactory results in controlling resistant hypertension.

Keywords: renal artery stenosis, transplant, hypertension

Lower limb compression therapy - do we do it right?

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Background: Lower limb ulcers are a common disease in the adult population and their incidence more than triples in people over the age of 65. One of the main used treatments for this condition is compression therapy of the limbs using various types of bandaging, the choice of which is often controversial.

The aim: The aim of the study was to compare the results of pressure measurements under the bandage obtained with the use of short stretch and long stretch bandages.

Materials and methods: Short stretch and long stretch bandages were used for the research. The pressure under the bandage was measured using the Kikuhime HPM-KH-01 device. The manometer was placed for each of the series comparing the two types at the points: B (3 cm above the medial malleolus), B1 (the apex of the gastrocnemius muscle), C (the greatest circumference of the lower leg's medial side), with the starting pressure within the range of 40–45 mmHg in the supine position. For each of the points, the pressure was measured at rest and after a 5-minute walk, in the standing and lying position, as well as the maximum pressure obtained during exercise.

Results: In the study, a greater difference in the pressure was found between the standing position and the supine position, both at rest and after a 5-minute exercise, for short stretch bandages, for all tested points. Moreover, a greater difference was demonstrated between the maximum pressure obtained in the 5-minute walk test and the pressure at rest in the supine position for short stretch bandages for all tested points. The above results indicate a higher compression pressure achieved with the short stretch bandaging system compared to the long stretch system, which is important for the effectiveness of the treatment of leg ulcers.

Conclusions: The diverse properties of bandages and compression systems depending on the degree of their extensibility significantly affect the possibility of obtaining adequate expected pressure values

Keywords: compression bandages, compression therapy, wound healing

Body mass index (BMI) and the incidence of postoperative complications following distal pancreatectomy

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Background: The body mass index (BMI) of patient may influence the incidence of postoperative complications. An elevated BMI can have impact through its metabolically complex implications on the development and prognosis of postoperative outcomes.

The aim: The aim of this study is to assess the association between body mass index (BMI) and the prevalence of early postoperative complications in patients undergoing distal pancreatectomy (DP).

Materials and methods: In our analysis, we included the data of patients that underwent DP in the Department of Gastrointestinal Surgery between 2018 and 2021 (n=84). We collected preoperative data, information about the type and length of surgery, and the prevalence and types of complications occurring up to 30 days following the surgery. The data were analysed using the IBM® SPSS® software.

Results: The average BMI was 25,9 (SD: 4.1), higher for patients with postoperative complications at 26.7 (SD: 3.9), and 25.4 (SD: 4.1) for patients without complications ($p=0.14$). The median length of hospitalization was 10 days (IQR: 6), 13 days (IQR: 9) for patients with complications and 9 days (IQR: 3) for patients without complications. 33 (39%) of patients had recorded any postoperative complications within 30 days from the surgery. The most common reported complications were fluid collection in 18 (21%) patients, in most cases clinically insignificant radiological findings, 8 (10%) postoperative fistulas (6 being grade B fistulas), and 4 (5%) wound infections. There were 6 (7%) recorded relaparotomies and the mortality rate was 1 in 84 patients (1%). Analysis of variables using Chi-square test indicates statistically significant relationship between BMI > 25 and the incidence of post-operative complications ($p<0.05$).

Conclusions: BMI seems to be a good indicator of increased odds of postoperative complications in patients following DP. Assessment of BMI should be used as an additional tool along others in order to provide better postoperative monitoring, management, and care of patients.

Keywords: body mass index, BMI, distal pancreatectomy, complications

Characteristics of pancreatic postinflammatory hemorrhagic cysts

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Background: Pancreatic postinflammatory hemorrhagic cysts (PPHC) are usually complications of acute and chronic pancreatitis. Rare subtypes of them are hemorrhagic cysts which can occur due to erosion of closed placed arteries.

The aim: The aim of this study is to analyze risk factors, treatment and outcome in patients with PPHC.

Materials and methods: We performed a retrospective analysis of 8 patients with PPHC treated in the Department of Digestive Tract Surgery in Katowice, between January 2016 and December 2021. We collected data about etiology of cyst, imaging examination, risk factors, size, type and complications of surgery.

Results: All patients were men. Mean age was 47 ± 11 (28-61) years. Most common localization of the cyst was the pancreatic tail (37.5%). The largest size of cyst in CT was 181 ± 121 (32-400)mm. The most common etiology of the cyst was acute pancreatitis (75%), followed by chronic pancreatitis. All patients needed surgical intervention. A lot of them had high preoperative risk due to being highly qualified on the ASA(American Society of Anaesthesiology) scale. 25% of them had ASA 4. PPHC were treated by marsupialization 5(62.5%) and distal pancreatectomy 3(37.5%). During surgery 2 (25%) patients needed transfusion. Mean time of hospitalization was 19.7 days. Postoperative morbidity was 12.5% and mortality was 0%. One patient (12.5%) had acute cardiovascular failure after marsupialization.

Conclusions: Acute pancreatitis was the most common etiology of pancreatic hemorrhagic pseudocysts. Pancreatic tail was the most frequent location of PHC. Patients with pancreatic hemorrhagic pseudocysts need hospitalization and invasive treatment. Some patients require blood transfusions. Surgical treatment is associated with low morbidity and mortality rate.

Keywords: pancreatic pseudocyst, hemorrhagic cyst

Colorectal cancer before and in the COVID-19 era

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Background: The COVID-19 pandemic has disrupted health care services worldwide including diagnostics and treatment of colorectal cancer (CRC).

The aim: This study was conducted to determine whether the global pandemic has had an impact on the quality of treatment of the CRC patients in the single clinic.

Materials and methods: We retrospectively reviewed the clinical data of 140 (65 women;75 men) CRC patients of the Department of Digestive Tract Surgery in Katowice. Control group (pre-COVID) consists of 75 patients admitted between March 1, 2019 and March 1, 2020. The research group (COVID era) comprised 65 patients admitted between March 1, 2020 and March 1, 2021. The analyzed group included patients diagnosed with malignant neoplasms of colon (n=96), rectosigmoid junction (n=7) and rectum (n=37) that underwent either laparoscopic (n=68) or open (n=72) surgery. To estimate the quality of provided care we used factors such as cancer staging based on Classification of Malignant Tumors (TNM), number of days from diagnosis to operation and postoperative morbidity and mortality.

Results: Study showed that the percentage of patients in stage 0 has decreased in favor of the percentage of stage IV patients during the COVID era. In stage 0 were 16% (n=12) of patients pre-COVID and 1,6% (n=1) of patients in COVID era. There were 14,7% (n=11) of pre-COVID patients and 17,7% (n=14) of COVID era patients in stage IV. The average time between diagnosis and treatment was 89±75,99 (range 2-427) pre-COVID and 83±69,37 (range 1-298) days in COVID era, respectively. Postoperative morbidity rates were similar: 8% (n=6) in pre-COVID and 6.15% (n=4) in COVID era. Postoperative 30-day mortality in both groups was 0%.

Conclusions: Despite the problems that the COVID-19 pandemic caused for the healthcare system, its impact on colorectal cancer care in studied clinic was limited. The global pandemic has led to patients being diagnosed at a more advanced stage of CRC, which may affect their final prognosis.

Keywords: COVID-19, colorectal cancer, colorectal surgery, general surgery, health resources

Comparison of hand-sewn and stapled esophagojejunal anastomosis in total gastrectomy for gastric cancer

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Background: Mechanical stapling is a commonly used alternative to hand-sewn technique for esophagojejunal anastomosis in total gastrectomy. Some studies report reduction in the duration of surgery, along with lower incidence of anastomotic leakage and higher rate of strictures in the stapler group.

The aim: The aim of this study was to compare short and long-term surgical outcomes between the groups with stapled and conventional esophagojejunal anastomosis.

Materials and methods: The study included 72 adult patients (44 men and 28 women) with gastric cancer, who underwent total gastrectomy using stapled (44 cases) or hand-sewn (28 cases) anastomosis in the Department of Digestive Tract Surgery in Katowice between May 2018 and December 2021. The duration of the surgery, length of hospital stay, post-operative mortality and surgical complications, including the occurrence of anastomotic leakage and stenosis were analyzed.

Results: The mean age of patients was 65 ± 10 (42-85) years. Most procedures (98.6%) were elective. Five (6.9%) patients underwent palliative gastrectomies, and two (2.8%) patients had previous Billroth II resection. There were no significant differences in age, laboratory test results, American Society of Anesthesiologists (ASA) class, duration of the surgery, blood loss, length of postoperative hospital stay and cancer staging among the groups. Early postoperative complications rates were 9.1% (4/44) in stapler group and 17.9% (5/28) in hand-sewn group ($p=0.27$). The most frequent complication was anastomotic leakage - two cases in each group (4.5% and 7.1%, respectively, $p=0.76$). Mean follow up time was 1.8 ± 0.9 (0.3-3.6) years. During this period the anastomotic stricture occurred in 7 (15.9%) of 44 cases with stapled anastomosis, and in 5 (17.9%) of 28 cases with hand-sewn anastomosis ($p=0.52$).

Conclusions: There was no significant difference in mortality, morbidity and operation time. The results indicate that stapled and hand-sewn anastomosis are equivalent.

Keywords: gastric cancer, esophagojejunal anastomosis, stapled anastomosis, hand-sewn anastomosis

Gastric cancer before and after the novel coronavirus disease (COVID-19) outbreak

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Background: Since the beginning of the COVID-19 pandemic, we observed a limited access to healthcare. This problem concerned also patients with gastric cancer, and may have reduced the chances of early detection of the disease.

The aim: The purpose of this study was to investigate the impact of COVID-19 pandemic on the diagnosis and treatment of patients with gastric cancer.

Materials and methods: We retrospectively reviewed the clinical data of patients with gastric cancer admitted to the Department of Digestive Tract Surgery in Katowice. Patients were divided into two groups, depending on the time period.

Results: A total of 109 patients (70 men and 39 women) were included in this study - 54 classified into the COVID-19 group (03.2020-12.2021) and 55 into the pre-COVID-19 group (05.2018-02.2020). The following procedures have been performed: total gastrectomy (n=76, 69.7%), esophagogastric resections (n=15, 9.2%), subtotal gastrectomy (n=8, 7.3%), partial gastrectomy (n=4, 3.7%) and an exploratory laparotomy with surgical biopsy (n=11, 10.1%). Furthermore, 8 patients (7.3%) underwent palliative gastrectomy. There was no significant decrease in the number of resections with curative intent during COVID-19 pandemic (n=45, 83.3% during vs. n=45, 81.8% before, p=0.83). We also did not find any between-group differences in terms of the length of hospital stay, surgery duration, postoperative complications rate, the tumor/node/metastasis classification. However, there were more patients with pathological complete response following neoadjuvant chemotherapy in pre-COVID-19 group (n=6, 10.9% vs. n=2, 3.7%). We observed two (1.8%) in-hospital deaths due to the surgical complications, all among patients with advanced cancer (T3 and T4b) in COVID-19 group.

Conclusions: The COVID-19 did not affect the number of curative resections for gastric cancer and patients' histopathological outcomes.

Keywords: gastric cancer, COVID-19, pandemic, diagnosis, treatment

Histopathological features of adenosquamous carcinoma of the pancreas

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Background: The adenosquamous carcinoma (ASC) of the pancreas is a rare histopathological subtype of the pancreatic cancer. ASC shows microscopical features of glandular and squamous differentiation.

The aim: To describe histopathological features of ASC diagnosed in Dept. of Pathomorphology and Molecular Diagnostics, Medical University of Silesia, Katowice and to compare samples diagnosed in biopsy and resection specimens.

Materials and methods: Forty ASC cases were retrieved from an institutional prospective database of pancreatic specimens. Histopathological features of the in-house ASC cases were described in the context of the literature data.

Results: The diagnosis of ASC was made in 26 males and 14 females. The median age of the patients was 62.1 y. Seventeen cases were diagnosed in biopsy specimens, and 23 cases were recognized in pancreatic resection specimens. ASC were localized in pancreatic head (47.5%) and distal pancreas (40%) (in some biopsy cases the exact tumor site was not provided). Synchronous liver metastases were documented in 10 (25%) cases. In resection cases, median tumor diameter was 42 mm, and regional lymph node metastases were detected in 18 (78%) cases. A component of undifferentiated carcinoma was found in 3 cases (resection specimens only (13%)). Patients with ASC diagnosed in resection and biopsy samples did not differ in terms of sex, age and tumor localization. Biopsy cases were enriched in poorly differentiated (G3) cancers. Frequency of synchronous liver metastases was significantly higher in patients diagnosed in biopsy specimens.

Conclusions: ASC is an aggressive type of pancreatic cancer, frequently diagnosed at the stage on non-resectable disease. The tumor stage is also usually advanced in the resectable disease. Presence of a component of undifferentiated carcinoma in a proportion of cases may contribute to unfavorable prognosis of ASC.

Keywords: adenosquamous cancer, pancreatic cancer, histopathological features

Influence of intraoperative blood loss on postoperative complications in patients after distal pancreatectomy

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Background: Distal pancreatectomy (DP) is the standard treatment for symptomatic benign, premalignant, and malignant lesions in the pancreatic body and tail. Postoperative complications greatly increase amount of resources needed to treat patients. Despite recent advances in surgical techniques, blood loss is an important factor associated with postoperative outcomes in pancreatectomy.

The aim: Analysing the relationship between intraoperative blood loss and frequency of postoperative complications in patients who underwent distal pancreatectomy.

Materials and methods: We retrospectively reviewed clinical data of 65 patients (26 men, 39 women) who underwent distal pancreatectomy in the Department of Gastrointestinal Surgery in Katowice, between May 2018 and November 2021.

Results: 24 of 65 (37%) patients undergoing DP had postoperative complications during hospitalization. The most common complication was postoperative intraabdominal fluid collection (PAFC) - 13 patients (20%). The second most common complication were pancreatic fistulas - 11 patients (17%) - 5 type A fistulas and 6 type B fistulas. Mean blood loss during the operation was 385 ± 328 ml. Mean blood loss for patients without complications was 340 ± 321 ml, and with complications 460 ± 333 ml. The difference was statistically significant ($p=0.038$). The relationship between intraoperative blood loss of at least 400 ml and occurrence of postoperative complications proved to be statistically significant ($p=0.01$). Mean hospitalization time for patients with intraoperative blood loss of ≥ 400 ml was 12 days (median = 8,5 days) and for patients with <400 ml was 10 days (median = 8 days). The difference was not statistically significant ($p=0.14$). 2 patients (3%) were reoperated. Mortality rate was 0%.

Conclusions: Current results suggest that higher intraoperative blood loss is associated with higher frequency of postoperative complications, however it is unknown whether intraoperative blood loss is a risk factor in itself.

Keywords: intraoperative blood loss, complications, distal pancreatectomy

Inguinal hernia repair – open vs laparoscopic approach

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Background: The surgical repair of inguinal hernia involves different techniques including laparoscopic totally extraperitoneal (TEP) method and open Lichtenstein repair.

The aim: Object of this study is to compare laparoscopic and open approach.

Materials and methods: The retrospective analysis of clinical data of 40 patients who underwent inguinal hernia repair in the Department of Gastrointestinal Surgery in Katowice, between June 2020 and January 2022. Twenty patients underwent TEP procedure and twenty patients underwent Lichtenstein operation.

Results: The median duration of operation was shorter in TEP compared to Lichtenstein group (97,5 vs 102,5 minutes). There is also a difference in patients' comorbidities: patients who underwent Lichtenstein had more often cardiovascular diseases (n=10, 50%), than patients' who underwent TEP (n=4, 20%). An older age (59.7 years vs 42.2 years) and higher body mass index (BMI) (26.3kg/m² vs 22.4kg/m²) were reported in patients undergoing Lichtenstein repair compared to TEP. There was a difference in postoperative complications between two groups: a higher number of perforation of the peritoneum (n=2, 10%) following TEP than Lichtenstein repair (n=0) and swelling of the wound (n=3, 15%) following Lichtenstein than TEP (n=0). Primary hernias were more often operated laparoscopic (n=17, 85%) than open approach (n=14, 70%). The median hospitalization time was shorter when patient underwent TEP procedure (2 days) than Lichtenstein (4 days).

Conclusions: The Lichtenstein operation is preferred in patients with cardiovascular diseases. TEP procedure is preferred in primary hernias and require shorter hospitalization. TEP procedure was performed in shorter median time than Lichtenstein).

Keywords: surgery, inguinal hernia, totally extraperitoneal, Lichtenstein

Surgical treatment of groove pancreatitis, indications and short-term results - single center experience

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Background: Groove pancreatitis (GP) is an extraordinarily rare type of chronic pancreatitis (CP), located between pancreatic head, duodenum and the common bile duct. The etiopathogenesis of GP is rather unclear. It is often misdiagnosed as pancreatic cancer. Most patients require pancreaticoduodenectomy (PD). PD is a surgery of choice and the Whipple procedure is the common technique at present.

The aim: The aim of this study is to show indications for surgery and short-term results of surgical treatment of GP in comparison to other types of CP.

Materials and methods: We retrospectively reviewed 27 patients' clinical data who underwent PD due to diagnosis of CP in the Department of Digestive Tract Surgery in Katowice between 2014-2021. We excluded patients diagnosed with neoplasms in histopathology. We collected such parameters as age, gender, imaging examination results, hospitalization time, postoperative morbidity and mortality.

Results: GP was diagnosed in 7 out of 27 (25.9%) patients with CP. Mean age of the patients with GP was 57,6 years (SD 10,64). There were 6 (85.7%) men and 1 (14.3%) woman. All underwent PD (42.9% Traverso, 57.1% Whipple technique). Average hospitalization time was 11,6 (min=1, max=18) days. Indications were based on the symptoms and imaging examination results. The most common indications in imaging examination were pancreatic head tumor (85.7%) and infiltration of the duodenum (28.6%). Complications were observed in 3 patients (42.9%) 1 pneumonia, 1 ulceration of the gastrointestinal anastomosis and 1 sudden cardiac arrest during surgery ended up with death. Three patients had ERCP and biliary prosthesis (42.9%) before surgery. Mortality has achieved 14.3%.

Conclusions: GP is a rare form of CP, most often occurring in the 5th or 6th decade of life with a predominance in males. Indications are nonspecific and similar to surgical treatment of classic CP. PD is the most common surgery for GP treatment. The final diagnosis of GP can be based just on analysis of histopathological examination results.

Keywords: paraduodenal pancreatitis (PDP), pancreaticoduodenectomy (PD), chronic pancreatitis (CP)