STUDENTS' SCIENTIFIC SOCIETY
JAGIELLONIAN UNIVERSITY
MEDICAL COLLEGE
CRACOW

Manuskrypt

IMSC

31ST INTERNATIONAL MEDICAL STUDENTS' CONFERENCE

Abstract Book

13-15.04.2023, Krakow

Contents Page

IMSC

HONORARY PATRONAGES

JAGIELLONIAN UNIVERSITY IN KRAKÓW

Rector of Jagiellonian University
Professor Jacek Popiel, PhD

JAGIELLONIAN UNIVERSITY MEDICAL COLLEGE

Vicerector of Jagiellonian University for Medical College
Professor Tomasz Grodzicki, MD, PhD

NACZELNA IZBA LEKARSKA

Chairman of Supreme Medical Chamber
Łukasz Jankowski, MD

Rzecznik Praw Pacjenta

Obundsman od Patiens' Rights
Bartłomiej Chmielowiec, MBA

Kraków

President of Krakow
Professor Jacek Majchrowski, PhD

Uniwersytecki Szpital Dziecięcy w Krakowie
ul. Wielicka 265, 30-663 Kraków

Director of Pediatric University Hospital in Krakow
Professor Wojciech Cyrul, PhD

SCIENTIFIC PATRONAGES

European Board & College Obstetrics and Gynaecology

European Society of Surgery E·S·S

Okręgowa Izba Lekarska w Krakowie 1893

PAN Polish Academy of Sciences

Societas Medicinae Internae Polona TIP 1906

Cochrane Polska

Polish Society of Orthopaedics and Traumatology 1928 A.D.

Polskie Towarzystwo Pediatryczne

PTNT

Fizjoterapia Polska

Polskie Towarzystwo Fizjoterapii

Polskie Towarzystwo Farmaceutyczne

Polskie Towarzystwo Położnych

U.R.S.I.

Polskie Towarzystwo Patologów Polish Society of Pathologists

Klub 30 Polskiego Towarzystwa Kardiologicznego

CMCR Centrum Medycyny Cyfrowej i Robotyki – UJ CM

Polskie Towarzystwo Chirurgii Kręgosłupa

Organizing Committee

Jerzy Krzeszowiak
Head of the Organizing Committee

Maciej Zając
Financial Manager

Julia Jurga
Head of Scientific Department

Dominika Kondyjowska
Head of Logistic Department

Jakub Rusinek
Competitions Coordinator

Natalia Zmysłowska
Social Program Coordinator

Justyna Sraga
Workshops Coordinator

Natalia Zamorska
Workshops Coordinator

Tomasz Kozioł
Sponsors Coordinator

Gabriela Kanclerz
Sponsors Coordinator

Paulina Smoła
Social Program Coordinator

IMSC

Scientific Committee

prof. Agnieszka Pac, PhD

prof. Marek Sanak, MD, PhD

prof. Przemko Kwinta, MD, PhD

prof. Grzegorz Kopeć, MD, PhD

prof. Marcin Kołaczkowski, PhD

prof. Mateusz Rubinkiewicz, MD, PhD

prof. Tomasz Brzozowski, MD, PhD

prof. Anetta Undas, MD, PhD

Marzena Ksel-Teleśnicka, MD

prof. Michał Nowakowski, MD, PhD

prof. Antoni Szczepanik, MD, PhD

prof. Agnieszka Olszanecka, MD, PhD

prof. Janusz Konstanty-Kalandyk, MD, PhD

prof. Karol Wierzbicki, MD, PhD

prof. Krzysztof Bartuś, MD, PhD

Małgorzata Konieczyńska, MD, PhD

prof. Jarosław Zalewski, MD, PhD

prof. Małgorzata Zwolińska-Wcisło, MD, PhD

prof. Jacek Czepiel, MD, PhD

prof. Stanisława Bazan-Socha, MD, PhD

prof. Dorota Cibor, MD, PhD

Karolina Piotrowicz, MD, PhD

prof. Marcin Barczyński, MD, PhD

Mirosław Dolecki, MD, PhD

prof. Mateusz Koziej, MD, PhD

Radosław Pach, MD, PhD

prof. Piotr Major, MD, PhD

prof. Maciej Siedlar, MD, PhD

prof. Dorota Drożdż, MD, PhD

prof. Małgorzata Sładek, MD, PhD

prof. Kinga Kowalska-Duplaga, MD, PhD

prof. Ewa Cichocka-Jarosz, MD, PhD

Aleksandra Furtak, MD, PhD

Agnieszka Kruszecka-Krówka, PhD

prof. Marcin Wiecheć, MD, PhD

prof. Klaudia Stangel-Wójcikiewicz, MD, PhD

prof. Inga Ludwin, MD, PhD

prof. Paweł Basta, MD, PhD

Agnieszka Rajtar-Ciosek, MD, PhD

Anna Wójtowicz, MD, PhD

prof. Maria Wróbel, MD, PhD

prof. Grzegorz Lis, MD, PhD

IMSC

prof. Krzysztof Gil, MD, PhD

prof. Jacek Jawień, MD, PhD

prof. Tadeusz Librowski, PhD

prof. Aleksander Mendyk, PhD

prof. Ewa Jasek-Gajda, MD, PhD

Filip Bolechała, MD, PhD

prof. Grzegorz Dyduch, MD, PhD

Ewa Rzepecka-Woźniak MD, PhD

prof. Henryk Liszka, MD, PhD

prof. Artur Gądek, MD, PhD

Tomasz Potaczek, MD, PhD

Agnieszka Wnuk-Scardaccione, PhD

Małgorzata Kulesa-Mrowiecka, PhD

prof. Iwona Malinowska-Lipień, PhD

prof. Ilona Nenko, PhD

prof. Mariusz Duplaga, PhD

prof. Aleksander Gałaś, MD, PhD

prof. Agnieszka Gniadek, PhD

prof. Andrzej Galbarczyk, PhD

Marcin Grysztar, MSc

Urszula Zwierczyk, Eng

Tomasz Kruszyna, MD, PhD

prof. Wojciech Turaj, MD, PhD

Małgorzata Lasota, PhD

Mirosław Dolecki, MD, PhD

Czesław Osuch, MD, PhD

Justyna Rymarowicz, MD, PhD

Bernadeta Chyrchel, MD, PhD

Aleksander Siniarski, MD, PhD

prof. Krzysztof Bryniarski, MD, PhD

Mateusz Gajda, MD, PhD

Agata Stalmach-Przygoda, MD

prof. Małgorzata Kloch, MD, PhD

prof. Małgorzata Bała, MD, PhD

Magdalena Koperny, PhD

Klaudia Proniewska, PhD, Eng

Piotr Walecki, PhD

prof. Grzegorz Tatoń, PhD

Justyna Hajto-Bryk, DMD, PhD

prof. Jacek Tarasiuk, PhD, Eng

Kornelia Kliś, MD, PhD, Eng

Joanna Zając, PhD

Elżbieta Paszek, MD, PhD

Marta Opalińska, MD, PhD

prof. Paweł Matusik, MD, PhD

Agata Schramm-Luc, MD, PhD

prof. Iwona Bodys-Cupak, PhD

prof. Maciej Pilecki, MD, PhD

IMSC

prof. Jacek Musiał, MD, PhD

prof. Michał Ząbczyk, MD, PhD

Katarzyna Holcmann, MD, PhD

prof. Katarzyna Szczeklik, DMD, PhD

prof. Grażyna Wyszyńska-Pawelec, DMD, PhD

prof. Piotr Fudalej, DMD, PhD

prof. Joanna Zarzecka, DMD, PhD

Magdalena Orczykowska, DMD, PhD

prof. Małgorzata Pihut, DMD, PhD

prof. Marcin Siwek, MD, PhD

Aleksandra Gorostowicz, MD

Wojciech Serednicki, MD

Jakub Stępniewski, MD, PhD

Jolanta Świerszcz, MD, PhD

Magdalena Mizera, MD

Łukasz Balcerzak, MD

Bernard Solewski, MD

Maciej Lis, MD

Robert Kupis, MD

Andrzej Jaworowski, MD, PhD

Maciej Krawczyk, PhD

Marcin Gadocha, PhD

Magdalena Zawada, PhD

Anna Dyrka, PhD

Dorota Link-Lenczowska, PhD

Katarzyna Klaś, MSc

Marek Siuta, MSc

Alicja Kamińska, PhD

Karolina Walas, MSN

Wiktoria Wieczorek-Stawińska, MD

Bartosz Janik, PhD

Lusine Khachatryan, MD, PhD

Wojciech Rożdżeński

Paweł Moskal, MD

Marcin Wojnarski

Weronika Piórek

Michał Piotrowski

Joanna Cieślik

Paweł Siomionka, MD

Maciej Frączek, MD

IMSC

ORGANIZERS

STUDENTS' SCIENTIFIC SOCIETY
JAGIELLONIAN UNIVERSITY
MEDICAL COLLEGE
CRACOW

Manuskrypt

Basic Sciences

Oral Session

Scientific Committee

prof. Tomasz Brzozowski, MD, PhD
prof. Krzysztof Gil, MD, PhD
prof. Grzegorz Lis, MD, PhD
prof. Jacek Jawień, MD, PhD
prof. Marek Sanak, MD, PhD
prof. Maria Wróbel, MD, PhD

Coordinators

Jagoda Sarad
Kamila Siuda

IMSC

Morphological changes of heart in 5-fluorouracil-induced cardiotoxicity model

Authors: Magdalena Król, Aleksandra Midro

Tutors: Prof. Krzysztof Gil, MD, PhD, Michał Jurczyk, MD, Kamil Skowron, MD, PhD

Affiliation: Department of Pathophysiology, Jagiellonian University Medical College, Kraków, Poland,

Introduction: Nowadays, 5-fluorouracil (5-FU) is a mainstay of chemotherapy regimens used to treat solid malignancies such as gastric or colon cancer. Nevertheless, it is also the second most common chemotherapeutic agent leading to cardiotoxicity. The clinical presentation of this adverse effect includes arrhythmias, coronary vasospasm and heart failure.

Aim of the study: The aim of our study was to use the magnetic resonance imaging (MRI) and histopathological examination to identify subtle morphological and functional changes in myocardium after administration of 5-FU and to find the correlation between these changes and the measured phosphate level.

Materials and methods: The study included 16 male Wistar rats randomly divided into 2 groups: the first one with 5-FU at a dose of 150mg/kg and the second one with 0,9% NaCl (the control group). Every rat got 4 doses of 5-fluorouracil. The MRI measurements were performed 3 days after last dose of 5-FU and the blood and tissue collection was performed 4 days after last dose of 5-FU.

Results: The measurements conducted during the MRI presented that the mean thickness of left ventricle muscle differed between both groups (1333,72µm in 5-FU group vs. 1929,18µm in control group, p=0,07). Similarly, the differences were observed in the mean thickness of right ventricle muscle (565,23µm in in 5-FU group vs. 607,25µm in control group, p=0,79) and in the End-Diastolic Volume (EDV) (0,51ml in 5-FU group vs. 0,48ml in control group, p=0,18). What is more, these changes were associated with an increase of the phosphate level in the group with 5-FU (2,366 Mmol/L vs. 1,998 Mmol/L in control group, p=0,05).

Conclusions: The study presented that the 5-FU-based chemotherapy results in morphological and functional changes of the myocardium. In the histopathological examination the ventricles of the myocardium were enlarged. Similarly, the MRI demonstrated that the end-diastolic volume (EDV) was significantly increased in the group with 5-FU. Moreover, the administration of 5-FU significantly increases the phosphate level. Presumably, this ATP breakdown to ADP and AMP is a consequence of energy processes dysfunctions that occur at the cellular level.

Rat adipose-derived stem cells (RADSC) as a vehicle to deliver 2 TNF-related apoptosis inducing ligand (TRAIL) into cancer microenvironment

Authors: Mateusz Gotowiec

Tutors: Wiktor Paskal, MD PhD, Prof. Paweł Włodarski, MD PhD

Affiliation: Department of Methodology, Medical University of Warsaw

Introduction: Adipose-derived stem cells (rADSC) play a multifaceted role in cancer metabolism and constitute a potential target for oncologic therapies. Local delivery of TNF-related apoptosis-inducing ligand (TRAIL) can limit tumour growth by selective binding to the death receptor (DR5) in cancer cells. In most healthy cells this pathway is blocked by decoy antagonists such as osteoprotegerin (OPG).

Aim of the study: This in-vitro study aimed to evaluate an oncologic treatment based on the

delivery of TRAIL-transduced rADSC to the vicinity of breast adenocarcinoma cells.

Materials and methods: A plasmid containing transgene was produced using the Cloning HD system (TakaraBio) based on Plvx-EF1a-IRES-PURO plasmid and amplified TRAIL gene from the Sprague-Dawley rat kidney. Lentiviral particles were produced using VSV-G Single Shots (TakaraBio) in human endothelial kidney cells. Susceptibility of rADSC and RBA (rat adenocarcinoma of the mammary gland) cells to exogenous TRAIL was tested using MTS Assay. Quantitative PCR and Western Blot analyses were conducted to confirm transgene overexpression and measure OPG and DR5 expression in both cell lines. Direct susceptibility of RBA cells to transduced rADSC was measured using exposure to supernatant of TRAIL-expressing rADSC. Data analysis was done using the student's t-test.

Results: Cells were successfully transduced, and TRAIL expression was 400-fold higher in transduced cells ($P<0.01$) than controls. The expression of TRAIL-dependent receptors was higher in rADSC (OPG – 30-fold ($P<0.01$) and DR5 - 6-fold ($P<0.05$)). RBA cells were partially susceptible to TRAIL – viability decreased to 80% with 50 ng/ml, while rADSC viability increased to 140% at the same concentration.

Conclusions: The results show that TRAIL-transduced rADSC can induce apoptosis in adenocarcinoma cells. Overexpression of TRAIL by rADSC also stimulates their growth leading to an increased cancer microenvironment penetration. Such active surveillance based on stable local production of anticancer cytokine can limit cancer recurrence when transplanted into the vicinity of cancer tissue.

The comparison between droplet digital PCR (ddPCR) and quantitative real-time PCR (RQ-PCR) in monitoring of BCR-ABL1 transcript level in chronic myeloid leukemia patients.

Authors: Agnieszka Cenda

Tutors: Prof. Tomasz Sacha M.D.,Ph.D., a , Dorota Link-Lenczowska, M.D. , b

Affiliation: aDepartment of Hematology, The University Hospital, Jagiellonian University Medical College, Cracow, Poland; b Laboratory of Molecular Diagnostics, Department of Hematological Diagnostic and Genetic, The University Hospital in Krakow, Poland

Introduction: Chronic myeloid leukemia (CML) is characterized and induced by BCR-ABL1 oncogene, with two most common variants : e14a2 and e13a2z. Quantitative real-time-PCR (RQ-PCR) methods are used to monitor BCR-ABL transcript levels. However, the standard RQ-PCR technique involves separate measurements of the target BCR-ABL1 gene and GUSB reference gene, require standard curves, and are susceptible to PCR inhibition. Recent studies indicated also RQ-PCR might revaluate the e13a2 and undervalue in e14a2 transcript level. The clinical importance of this finding is controversial. An optimized multiplex ddPCR should provide absolute quantification and more reliable results without the bias of different amplification efficiency of two transcript subtypes.

Aim of the study: The study aimed to compare e14a2 and e13a2 transcript levels assessed by two different methods ddPCR and RQ-PCR.

Materials and methods: 50pts with CML were included in the analysis with a median age of 52 (44.75 - 61.75). 409 blood samples were collected. ddPCR and RQ-PCR were used. Clinical

data and statistical analyses were performed. Comparisons were made between the e13a2 and e14a2 transcript levels. Logarithmically transformed variables were normally distributed and parametric tests were used to make comparisons.

Results: The e14a2: was detected in 34 (68%),and e13a2: in 14 (28%) pts; e13a2/e14a2: 2 (4%). 409 blood samples were collected with e14a2: 297 (72.62%); e13a2: 97 (23.72%); e13a2/e14a2: 15 (3.67%). We performed 414 BCR-ABL1 transcript level measurements. -log(DD-PCR) had higher values than -log(RQ-PCR) mean difference = 0.19 (95%CI 0.11 - 0.26). The e14a2 had higher values of -log(RQ-PCR). Moreover, ddPCR was more often detectable at 307 (74.15%) vs 251 (60.63%) P <0.001. Subgroup analysis has shown higher Pearson correlation coefficients for e14a2 subtype (0.918) compared to e13a2 (0.822).

Conclusions: RQ-PCR and ddPCR are strongly correlated. For the majority of "inter-method reliability" comparisons parameters are similar for e13a2 and e14a2 subtypes. However, both methods are stronger correlated in e14a2 subgroup and represent lower bias. The e13a2 group was characterized by a higher bias and lower correlation which may indicate a higher preference towards ddPCR test in this subgroup and suggest the discrepancy in the reliable estimation of the level of e13a2 transcript.

The effects of global and focal cerebral ischemia on lung mechanics in rats

Authors: Zaid Hammad, Ramez Alhaj Hussein

Tutors: Petra Somogyi PhD student, Dr. Ferenc Peták professor

Affiliation: Department of Medical Physics and Informatics

Introduction: Cerebral ischemia subsequent to cerebrovascular obstruction cause multiple organ dysfunction. Since the lungs are among the most affected organs, pneumonia leading to respiratory failure affects greatly life expectancy following stroke. Nevertheless, the consequences of ischemic stroke on lung function including respiratory mechanics have not been characterized.

Aim of the study: To develop an animal model that elicits the adverse pulmonary consequences of stroke and to reveal potential differences between global and focal cerebral ischemia. Moreover, to characterize the effects of cerebral ischemia on the mechanical properties of the: lung volume, airways and respiratory tissues.

Materials and methods: Three groups of rats were studied: i) global cerebral ischemia by bilateral common carotid occlusion (2VO, n=7), ii) focal brain ischemia by middle cerebral artery occlusion (MCAO, n=5), and iii) sham surgeries (C, n=6). Three days later, rats were anesthetized and mechanically ventilated. Airway resistance (Raw), tissue damping (G) and elastance (H) were determined by forced oscillations. Measurements were performed under end-expiratory pressure (PEEP) of 0, 3, and 6 cmH2O. Ischemic brain area was assessed with triphenyltetrazolium chloride (TTC) staining.

Results: TTC staining revealed focal ischemic infarct in the MCAO rats (20.0±5.0[SD]%) in contrast with minor injury in the 2VO group (0.40±0.80%) and no injury in the controls (0±0%, p<0.001). Respiratory mechanics exhibited no significant change in the 2VO rats, and Raw was not affected by MCAO or 2VO. However, MCAO caused significant elevations in G at PEEP 3 (717±82 vs. 1132±167 cmH2O/l in Groups C and MCAO, p<0.001) and H (2760±531vs. 3613±185 cmH2O/l, p<0.05), with differences remaining at other PEEP levels.

Conclusions: Global ischemia by 2VO does not cause detectable changes in respiratory mechanics. However, marked deteriorations in the respiratory mechanics developed after focal ischemia by MCAO, which impaired primarily the

tissue viscoelastic properties without affecting airway function.

Impaired Ischemic Preconditioning Effect Can Aggravate Myocardial Ischemia-Reperfusion Injury In Rats With Metabolic Syndrome

Authors: Miłosz Majka, Magdalena Kleszczewska, Katarzyna Czarzasta, Małgorzata Wojciechowska

Tutors: Katarzyna Czarzasta, Małgorzata Wojciechowska

Affiliation: Chair and Department of Experimental and Clinical Physiology CPR MUW

Introduction: Metabolic syndrome is a major contributor to cardiovascular diseases, such as atherosclerosis and coronary heart disease, and worsens the outcome of myocardial infarction (MI) by promoting ischemia-reperfusion injury. The lead paradigm of cardioprotection is ischemic preconditioning (IPC), consisting of brief periods of ischemia and reperfusion [3]. Among its potential mediators, adiponectin and leptin have received increased attention in recent years.

Aim of the study: This study aims to examine the impact of metabolic syndrome on IPC protection and assess the role of adiponectin and leptin.

Materials and methods: Male Sprague Dawley rats were fed standard (ND) or high-fat diets (HFD) for 8 weeks to induce metabolic syndrome. Then, we induced MI by occluding a coronary artery branch, followed by reperfusion. Two groups of HFD and ND rats underwent IPC, consisting of two 5-minute periods of ischemia and reperfusion. We determined the concentrations of adiponectin and leptin in blood and adipose tissue by ELISA tests. mRNA expression of adiponectin and leptin receptors (AdipoR1, AdipoR2, LepR) was measured in the heart using RT-PCR.

Results: The HFD diet resulted in the development of metabolic syndrome, including significant increase in visceral fat, glycemia and insulin resistance. The ischemia-reperfusion injury was significantly reduced in ND rats subjected to IPC, which was ineffective in HFD subjects. We observed an increase of leptin concentrations in plasma and adipose tissue of HFD subjects, but no differences in adiponectin concentrations. AdipoR1, AdipoR2, and LepR mRNA expression did not differ between the groups.

Conclusions: Our results indicate that metabolic syndrome induced by high-fat diet can lead to greater ischemia-reperfusion injury by inhibiting IPC protection. This may be related to a change in the adipokine profile, but further investigation is needed to determine the exact mechanism.

Evaluation of the relationships in the surgical anatomy of the transverse and oblique sinuses in preoperative planning for minimally invasive cardiac procedures

Authors: Daniel J. Rams, Jakub Batko, Wojciech Olejek, Michał Piotrowski

Tutors: Krzysztof Bartuś MD PhD Prof., Radosław Litwinowicz MD PhD DSc Associate Professor

Affiliation: SSG of Minimally Invasive and Experimental Cardiac Surgery

Introduction: Patient-specific, preoperative planning. This is when topography become a key element of procedural availability. In the literature, the topic of pericardial sinuses (PS), which is an active field of work in cardiac surgery, is mostly based on theoretical descriptions and

there is a lack of information on the surgical topography of the transverse (TS) and oblique (OS) sinus.

Aim of the study: The aim of the study was to determine whether the volume of TS and OS correlates with sex, age and total volume of the internal cavity of the heart (IC).

Materials and methods: Using 121 angio-CT examinations of patients scheduled for cardiac surgery - IC, TS and OS were examined at the same phase of the cardiac cycle. The statistical analysis was arranged as descriptive statistics, supported by the results of the Shapiro-Wilk test. Spearman's Rho test was used to test for correlation, while the U-Mann-Whitney test was used to assess sex differences. To establish a monotonic correlation for the sample analysed, the coefficient was set at a value greater than 0.252 with a power of 80% and a significance level of 5% (α, two-sided = 0.05; β = 0.2). Results are presented using the median (interquartile range) convention.

Results: The study population consisted of 46% women (W) and 54% men (M) with an age of 66.0 (12.0). The IC was 584.9 (247.3) mL. The TS volume was - W: 13.7 (6.3) mL, M: 15.8 (7.5) mL and total 14.8 (6.5) mL, while OS was - W: 7.0 (3.4) mL, M: 9.7 (5.7) mL and total 9.6 (5.3) mL. A monotonic positive correlation was observed between IC with TS (R=0.43; p=0.00) and OS (R=0.61; p=0.00). There was also a statistically significant difference between sex and volume for TS (p=0.01) and OS (p=0.00).

Conclusions: PS are difficult to detect in the physiological state due to their apparent filling. TS and OS were found to be positively correlated with IC. PS are statistically significantly greater in the male population. Further studies are needed to determine the clinical significance of the findings.

Cardiology & Cardiosurgery

Oral Session

Scientific Committee

prof. Agnieszka Olszanecka, MD, PhD

prof. Krzysztof Bartuś, MD, PhD

prof. Janusz Konstanty-Kaladnyk, MD, PhD

prof. Karol Wierzbicki, MD, PhD

prof. Jarosław Zalewski, MD, PhD

Małgorzata Konieczyńska, MD, PhD

Coordinators

Mateusz Kozioł

Anna Yevstifeieva

IMSC

Clinical characteristics and long-term outcomes of patients with heart failure with improved ejection fraction. First Polish report from LECRA-HF registry

Authors: Alicia del Carmen Yika, Natalia Kachnic, Aleksandra Karcińska, Jakub Furczyński, Michael Platschek

Tutors: Konrad Stępień MD,PhD; Karol Nowak, MD

Affiliation: Klinika Choroby Wieńcowej i Niewydolności Serca UJCM

Introduction: Heart failure with improved ejection fraction (HFimpEF) is a new subgroup of HF patients established by the newest ESC guidelines. However, their clinical characteristics and long-term outcomes remain insufficiently elucidated, especially among the Polish population.

Aim of the study: The aim of our study was to characterize these patients based on the single-centre Lesser Poland Cracovian Heart Failure Registry (LECRA-HF).

Materials and methods: Among 1186 patients enrolled in the LECRA-HF and hospitalized due to HF exacerbation (2009-2019), 340 (28.7%) were those with HF with reduced ejection fraction (HFrEF) who remained in treatment in our outpatient clinic. Based on the control echocardiography and following the new universal definition of HF, HFimpEF (61, 17.9%) and HFnon-impEF (279, 82.1%) groups were distinguished. Their baseline clinical characteristics and long-term overall mortality have been compared.

Results: Patients with HFimpEF were more commonly females (32.8 vs 14.7%, P<0.001), less often had diabetes (37.7 vs 54.2%, P=0.02), severe chronic kidney disease (0.0 vs 6.5%, P=0.03) and prior myocardial infarction (34.4 vs 53.1%, P=0.008). On admission HFimpEF patients presented less severe symptoms (NYHA III/IV: 78.7 vs 90.7%, P=0.008), higher values of LVEF (30 (25-35) vs 20 (15-28), P<0.001) and more frequent significant aortic stenosis (14.8 vs 3.9%, P=0.003). HFimpEF had lower levels of creatinine on admission (95 (79-118) vs 106 (88-138.5) µmol/l, P=0.003) along with its lower maximal values during hospitalization (97 (86-127) vs 115 (93-154) µmol/l, P=0.007). In the multivariate analysis, the HFimpEF diagnosis was independently predicted by the lower NYHA scale (P=0.045), non-ischemic HF etiology (P<0.001), lack of diabetes (P=0.033) and higher baseline values of LVEF (P<0.001). The long-term survival was significantly higher in HFimpEF than in HFnon-impEF (P=0.004). The independent mortality predictors among HFrEF were the lack of HFimpEF (P=0.033) and higher creatinine levels on admission (P<0.001).

Conclusions: The baseline clinical characteristic of HFimpEF is different from those with HFnon-impEF. HFimpEF constitutes an independent predictor of improved long-term outcomes.

AngioScore: an artificial intelligence tool to assess coronary artery lesions

Authors: Ewelina Błażejowska, Jakub Michal Zimodro, Adam Brzeski, Radoslaw Targoński

Tutors: Assistant Prof. Aleksandra Gasecka

Affiliation: Ewelina Blazejowska, Jakub Michal Zimodro, Aleksandra Gasecka - 1st Chair and Department of Cardiology, Medical University of Warsaw, Warsaw, Poland 2) Adam Brzeski, Tomasz Dziubich, Jaroslaw Parzuchowski - Faculty of Electronics, Telecommunications and Informatics Department of Computer Architecture, Gdansk University of Technology, Gdansk, Poland 3) Radoslaw Targonski - 1st Department of Cardiology, Medical University of Gdansk, Gdansk, Poland

Introduction: The SYNTAX Score is a coronary angiography-based scale used to determine the complexity of coronary artery disease and the risk associated with its invasive treatment. Currently, the SYNTAX Score is assessed with an online calculator available at www.syntaxscore.com. However, the evaluation process is subjective, depends on the experience of the physician, and requires manual input of all assessed parameters.

Aim of the study: We aimed to create an artificial intelligence-based tool that helps assess lesions objectively by determining the SYNTAX Score value. In partnership with the programmers from the Gdansk University of Technology, a prototype of an online application AngioScore was developed and trained to independently assess nine parameters of the SYNTAX Score (diseased segment, total occlusion, bifurcation, trifurcation, aorto-ostial lesion, severe tortuosity, length >20mm, heavy calcification, thrombus).

Materials and methods: Using AngioScore, two medical students independently evaluated 100 randomly selected coronary artery lesions. Once a student has marked the lesion on an angiogram derived from the 1st Chair and Department of Cardiology, Medical University of Warsaw, AngioScore determined an initial SYNTAX Score value. Next, a student identified parameters requiring manual correction and recorded their number. Statistical analysis was performed in a Microsoft Excel spreadsheet.

Results: 19% of the coronary artery lesions were assessed fully correctly. Of the remaining 81%, 42% required correction of 1 of 9 parameters, 38.3% - 2 parameters, 17.3% - 3 parameters, and 2.4% - 4 or more parameters. A median number of required corrections was 1 with a standard deviation of 1.04. Incorrectly assessed lesions were in the left anterior descending artery, right coronary artery, and circumflex branch of the left coronary artery (39.51% vs. 30.86% vs. 29.63%, respectively). Parameters that most often required corrections were: diseased segment (55%), bifurcation (33%), and severe tortuosity (23%). In 25 cases of bifurcations and 5 cases of severe tortuosity, the system assessed that the lesion did not exist when it did. In 6 cases of bifurcation and 2 cases of severe tortuosity, the system assessed that a lesion existed in case of no presence of the lesion.

Conclusions: The prototype of AngioScore showed promising results regarding the accuracy of determination of the SYNTAX Score value. Thus, further development of our tool may lead to a faster and more objective way to assess coronary artery lesions.

Does the left atrial appendage morphology correlate with stroke risk in patients with sinus rhythm?

Authors: Anna Sopel, Karolina Gutkowska, Zuzanna Sachajko, Anna Pyczek, Tomasz Renkas, Filip Baranowski

Tutors: Prof. Monika Komar MD, PhD

Affiliation: Jagiellonian University Medical College/Department of Heart and Vascular Diseases, John Paul II Hospital in Cracow

Introduction: Ischemic strokes without a well-defined etiology are labeled as cryptogenic, and account for 30-40% of strokes. The left atrial appendage (LAA) is the most typical origin for intracardiac thrombus formation when associated with atrial fibrillation. We examined whether LAA morphology detected with transesophageal echocardiography (TEE) constitutes a risk factor of thrombus formation and cryptogenic stroke in patients without atrial fibrillation.

Aim of the study: To correlate LAA morphology detected by TEE with the incidence of stroke/transient ischemic attack (TIA) in patients without atrial fibrillation.

Materials and methods: 110 consecutive patients (65 F, 45 M) with a mean age of 31.2 ± 17.2 (16-52) years with the history of cryptogenic cerebrovascular event (TIA/stroke) and normal sinus rhythm, without patent foramen ovale, who underwent TEEs, were analyzed. The diagnosis of stroke was defined as a new and abrupt focal neurological deficit, with neurological symptoms persisting for >24 hours, subsequently confirmed by computed tomography or MRI. A group of 110 healthy volunteers (65 F, 45 M), mean age of 32.2 ± 9.15 (16-52), matched for age and gender served as controls. All patients underwent TEE according to guidelines using commercially available instruments. Four morphologies were used to categorize LAA according to the literature: Cactus, Chicken Wing, Windsock, and Cauliflower.

Results: LAA morphologies distribution differed significantly between stroke group and the controls respectively: Cauliflower (66 [60%] vs 6 [5.5%]), Cactus (22 [20%] vs 30 [27.3%]), Chicken wing (12 [10.9%] vs 40 [36.4%]), Windsock (10 [9.1%] vs 34 [30.8%]), (p=0.0001). In a multivariable logistic model, Cauliflower morphology was found to be 73% more likely to have a stroke/TIA history (OR: 0.27, 95% CI: 0.05-0.93, p=0.021). In a separate multivariate model, we assessed the likelihood of stroke in other groups in relation to Cauliflower. Compared with Cauliflower, Cactus was 2.08 times (p=0.043), Windsock was 6.5 times (p = 0.021), and Chicken Wing was 4.0 times (p=0.024) less likely to have a stroke/TIA.

Conclusions: Patients with Cauliflower LAA morphology are more likely to have an embolic event even in case of sinus rhythm. If confirmed, this could have an impact on the anticoagulation management of patients with cryptogenic stroke/TIA.

Effect of statin therapy on long-term mortality among patients with myocardial infarction with non-obstructive coronary arteries (MINOCA)

Authors: Aleksandra Karcińska, Natalia Kachnic, Piotr Walczak

Tutors: Konrad Stępień MD, Jarosław Zalewski MD PhD

Affiliation: Students' Scientific Group, Department of Coronary Artery Disease and Heart Failure, Jagiellonian University Medical College, Krakow, Poland,

Introduction: Myocardial infarction with non-obstructive coronary arteries (MINOCA) is associated with the lack of visible atherosclerosis in coronary arteries. Current 2020 ESC Guidelines on the management of acute coronary syndromes state that statins may be beneficial to reducing all-cause mortality and major adverse cardiac events (MACE) among MINOCA patients. Although, the existing literature data remains conflicting, recent meta-analysis based on observational studies showed that statin therapy resulted in a reduction of MACE and mortality.

Aim of the study: We aimed to assess the effect of statin therapy on long-term mortality among MINOCA patients.

Materials and methods: 1011 patients were hospitalized between 2012 and 2017 with the diagnosis of MI based on clinical symptoms, electrocardiographic findings, and the evolution of myocardial necrotic biomarkers according to the universal criteria of MI. On admission, coronary angiography was performed in all patients to assess the existence of obstructive lesions in coronary arteries. 72 patients had lesions narrowing a coronary artery by less than 50% and were classified as MINOCA.

Results: Statins were used by 54 (75.0%) of MINOCA patients. Those treated with statins had a higher prevalence of hypertension (P=0.001), dyslipidemia (P<0.001), lower Killip class on admission (P=0.005) and a higher LVEF (P=0.019) than MINOCA not treated with a statin. At the time of the decision about statin therapy, LDL cholesterol level was higher in the MINOCA population with subsequently prescribed statins (P=0.008). Long-term mortality was significantly higher in MINOCA patients not treated with statins (17.7%/year versus 6.6%/year, P=0.009) compared with those treated with statins.

Conclusions: According to our results, statins should be routinely prescribed in the heterogeneous group of MINOCA patients. However, more research regarding that issue is needed.

HCM-AF Risk Score – clinical application in the prediction of 2 and 5-year clinical outcome

Authors: Jakub Roman, Daniel Gondko, Maria Stec, Agata Suleja, Wiktoria Kuczmik, Dominika Dziadosz

Tutors: prof. Katarzyna Mizia-Stec, MD, PhD

Affiliation: Students' Scientific Association of the Ist Chair and Department of Cardiology, Medical University of Silesia in Katowice, Poland,

Introduction: 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.

Aim of the study: 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

Poor knowledge about venous thromboembolism and anticoagulation is associated with worse prognosis during long-term therapy

Authors: Aleksandra Gołąb

Tutors: Professor Anetta Undas, MD, PhD and Assoc. Professor Dariusz Plicner, MD, PhD

Affiliation: 1 Faculty of Medicine and Dentistry, Pomeranian Medical University in Szczecin, 70-204 Szczecin, Poland; 2 Center for Research and Innovative Technology, John Paul II Hospital, 31-202 Krakow, Poland; 3 Department of Thromboembolic Diseases, Institute of Cardiology, Jagiellonian University Medical College, 31-202 Krakow, Poland; 4 Unit of Experimental Cardiology and Cardiac Surgery, Faculty of Medicine and Health Sciences, Andrzej Frycz Modrzewski Krakow University, 30-705 Krakow, Poland; 5 Department of Cardiovascular Surgery and Transplantation, John Paul II Hospital, 31-202 Krakow, Poland

Introduction: Patients with unprovoked venous thromboembolism (VTE) are at high-risk of recurrence after anticoagulation withdrawal and long-term anticoagulation is recommended, unless the risk of bleeding is unacceptably high. Recent evidence showed that knowledge about VTE and its therapy is insufficient in anticoagulated patients.

Aim of the study: We assessed whether low VTE patients' knowledge affects their clinical outcomes during follow-up.

Materials and methods: A total of 151 consecutive patients after unprovoked VTE (isolated deep-vein thrombosis [DVT], n=63), aged 51.8±15.7 years, were included to the final analysis. The modified Jessa AF Knowledge Questionnaire introduced by Konieczynska et al. in 2019 (16 questions, 4 answers possible) was used to assess the knowledge of VTE and anticoagulant therapy. The study endpoint was a composite of VTE recurrence and major bleeding, recorded during a median follow-up of 58.0 months.

Results: The median percentage of correct responses was 62.5% (interquartile range, 50.0%-75.0%). A weak correlation between age and percentage of correct responses was observed (r=-0.28, P<0.01). There were no other differences related to overall scores with regard to demographic and clinical variables, including the type of oral anticoagulants. Patients who had better knowledge about VTE in general, had higher scores while replying to the questions about oral anticoagulant therapy (r=0.25, P<0.01). The primary study endpoint occurred in 21 (13.9%) patients (2.9 per 100 patient-years), including 12 (7.9%) episodes of recurrent VTE: 6 (4.0%) isolated DVT and 6 (4.0%) DVT with concomitant pulmonary embolism (PE). Clinically relevant bleeding was observed in 10 (6.6%) patients. Lower baseline overall scores were associated with the primary outcome (mean, 55.0%±15.6% vs 64.4%±16.3%, P=0.01). More specifically, the patients who experienced primary outcome were less likely to know the definition of PE (47.6% vs 72.3%, P=0.02), that DVT can lead to PE (47.6% vs 80.0%, P<0.01) and DVT diagnosis (33.3% vs 60.0%, P=0.02). Patients who experienced VTE recurrence or major bleeding more frequently discontinued anticoagulation compared to the remainder (61.9% vs 11.5%, P<0.01).

Conclusions: Insufficient knowledge about VTE and anticoagulation therapy may negatively affect the prognosis in unprovoked VTE patients on anticoagulation, at least in part due to worse compliance.

Accessibility for diagnostic tests of acute pulmonary embolism in hospital wards in Poland

Authors: Marcel Walentek, Klaudia Zaczyńska, Julia Hypnar, Emilia Lis, Magdalena Cieślik

Tutors: Prof. Grzegorz Kopeć MD, PhD, Marcin Waligóra MD, PhD

Affiliation: Pulmonary Circulation Centre, Department of Cardiac and Vascular Diseases Jagiellonian University Medical College

Introduction: Acute pulmonary embolism (APE) is the third most frequent acute cardiovascular disease in Poland. If not diagnosed and treated promptly APE is characterized by high morbidity and mortality.

Aim of the study: We aimed to assess the accessibility to main diagnostic tests for APE in hospital departments in Poland.

Materials and methods: We sent a request to complete an internet-based questionnaire to head physicians of all hospital departments in three voivodeships: Małopolska, Świętokrzyskie and Podkarpackie. The questionnaire was prepared in cooperation with APE experts based on the Delphi methodology. We made comparisons of hospitals from smaller and larger localities (cut-off at 100 000 inhabitants) using the chi2 tests.

Results: The questionnaire was completed by 137 respondents from smaller (<100,000 inhabitants; N=52, 38%) and larger (above 100,000 inhabitants; N=85, 62%) localities. Most of them were working in the departments of cardiology (n=56, 40.9%), followed by internal medicine (n=20, 14.6%), and emergency care (n=15, 11%). Hospital emergency wards were present in 131 (95.6%) hospitals. The cardiology department was indicated as dedicated to APE by most respondents (n=62, 45.3%) but 48 (35%) hospitals did not have any dedicated facility to diagnose and treat the disease. No formal procedure was assigned to APE diagnostics in the majority (n=83, 60.6%) of hospitals. All respondents claimed to have a 24 hours a day, 7 days a week (24/7) access to laboratory testing of D-dimers and troponins. However a 24/7 access to imaging studies was limited: angio-CT, echocardiography, and compression ultrasonography were available in 84.7%, 63.5%, and 46.7% of hospitals, respectively.

The access to 24/7 angio-CT was similar in smaller (n=42, 80.8%) and larger (n=74, 87.1%) localities (p=0.32). However continuous availability of echocardiography or compression ultrasonography was lower in smaller versus larger localities (48.1% vs 72.9%, p=0.004).

Conclusions: The most unmet needs in hospital departments in Poland are a lack of formal procedures and a lack of dedicated departments for diagnosing a patient in APE. Additionally, we identified a limited 24/7 access to imaging test especially of echocardiography and compression ultrasonography especially in smaller localities.

Age related remodeling of the left atrial appendage neck as potential cause of left atrial appendage occlusion procedures complications

Authors: Jakub Batko, Daniel Rams, Wojciech Olejek, Jakub Rusinek

Tutors: Prof. Krzysztof Bartuś MD, PhD, Radosław Litwinowicz, MD, PhD, DSc

Affiliation: SSG of minimally invasive and experimental cardiac surgery

Introduction: The left atrial appendage neck is poorly described region of the left atrial appendage, with great clinical significance due to occlusion and closure procedures there

performed. There is lack of data describing its morphometry and age-related changes.

Aim of the study: The aim of this study was to evaluate age-related changes of the left atrial appendage neck morphometry.

Materials and methods: The left atrial appendage, its neck and left atrium were segmented and visualized from 200 (47% females, 66.5 ± 13.6 years old) angio- CT scans. Precise morphometrical parameters of the left atrial appendage neck were collected and correlated with patients age. Rho-Spearman rank correlation was calculated. $P<0.05$ and $r>0.197$ were evaluated as statistically significant.

Results: The central axis of the LAA neck was 14.7±2.3 mm. Mean area of the LAA neck walls was 856.6±316.7 mm2. Significant positive correlations between obtained morphometric parameters and patients age were found in central axis length ($r=0.22$, $p=0.002$), LAA transverse ($r=0.27$, $p<0.001$) and anteroposterior ($r=0.33$, $p<0.001$) orifice diameters, LAA transverse lobe entry diameter ($r=0.25$, $p<0.001$), as well as with area of the LAA neck surface ($r=0.24$, $p<0.001$), LAA neck free surface area ($r=0.21$, $p=0.003$) and LAA neck venal surface area ($r=0.20$, $p=0.005$).

Conclusions: The left atrial appendage neck age-related changes influence the most of clinically crucial parts of this region. Increase of the orifice and entry diameters may lead to occlusion device destabilization and fatal complications. Postoperative analysis of the left atrial appendage region should be performed and morphometrical analysis of the left atrial appendage neck routinely included.

Dentistry

Oral Session

Scientific Committee

prof. Piotr Fudalej, DMD, PhD
prof. Katarzyna Szczeklik, DMD, PhD
prof. Małgorzata Pihut, DMD, PhD
prof. Grażyna Wyszyńska-Pawelec, DMD, PhD
prof. Joanna Zarzecka, DMD, PhD
Magdalena Orczykowska, DMD, PhD

Coordinators

Paulina Orszulak
Anna Książek

IMSC

Application of an evaluation sheet to measure phantom teeth prepared for prosthetic crowns by dental students with an analysis of the preparation difficulty rating

Authors: Zuzanna Olejarczyk, Małgorzata Zając, Julia Janas, Aleksandra Marek, Joanna Waligóra

Tutors: dr n.med. Wioletta Bereziewicz, hab. dr hab. Jolanta Pytko-Polończyk

Affiliation: Katedra Stomatologii Zintegrowanej, Wydział Lekarski UJCM

Introduction: Teeth preparation for prosthetic crown is a challenge for dentist, because proper conduct of clinical procedures determines the long-term therapeutic success. Therefore, preparation of acrylic teeth by dental students plays a significant role in preclinical education. Proper teaching methods, striving to achieve the most optimal education process and facilitation of understanding individual stages of teeth preparation by students are key factors necessary to achieve positive results in future proceedings.

Aim of the study: The evaluation of the difficulty of phantoms teeth no. 16 for full-metal crown and no. 14 for full-ceramic crown preparation among the 3rd year Jagiellonian University dental students and the assessment of impact of technical measurements of preparated teeth on understanding of several parameters of the preparation.

Materials and methods: The study was attended by 36 students 3rd year Jagiellonian University dental students, who performed preparation of the tooth no. 16 for full-metal crown and no. 14 for metal-ceramic crown. Each student completed a questionnaire that included a subjective assessment of difficulty of each preparation and the individual measurements of preparated tooth considered as facilitation factors in better understanding of preparation precepts and tooth parameters. The measurement methodology was calibrated using a ruler, compass, protractor, pencil and paper sheet. The descriptive statistics were applied.

Results: The students evaluated preparation of tooth no. 16 and 14 as medium-hard from easy to hard. The most difficult element of the procedure was separating preparated tooth from adjacent one and assessment the convergence angle. The most helpful were well explained stages of preparation procedure and instructional video. More frequent stage inspections and a live preparation demonstration were cited as factors that could ease the work.

Measurements were the most helpful in understanding the smoothness of the prepared pillar walls and the height of the cusps. They were least helpful in understanding the continuity of the step edges.

Conclusions: The use of assessment forms in terms of tooth preparation for prosthetic crown in preclinical prosthetic classes can be effective tool for better control of students mistakes. Presented results suggest constant need to monitor system of education to obtain the highest quality teaching system and satisfaction of dental students and academic teachers.

Assessment of temporomandibular joint disorders in young adults with angle class II

Authors: Kacper Loster, Justyna Ciesińska

Tutors: prof. Aneta Wieczorek DDS, PhD; Jolanta E. Loster DDS, PhD

Affiliation: Koło Naukowe Norm Okluzji przy Katedrze Protetyki Stomatologicznej i Ortodoncji UJ CM w Krakowie, Katedra Protetyki Stomatologicznej i Ortodoncji UJ CM w Krakowie

Introduction: The literature provides little to no clear data concerning the occurrence of temporomandibular joint (TMJ) disorders depending on individual malocclusions.

Aim of the study: The aim of the study was to establish whether there exists a correlation between TMJ disorder and the position of incisor teeth in young adults with Angle class II.

Materials and methods: The study material consisted of plaster models of young adults and the results of clinical study of those people based on the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD). Models with diagnosed Angle class II were analyzed, occlusal area, overjet and overbite were measured.

Results: In the analysis there were included 37 models, in which 18 were diagnosed with class II/1 (with incisor protrusion), and 19 with class II/2 (with incisor retrusion). TMJ disorders were diagnosed in 12 patients including myofascial pain in 8 patients with angle class II/2 and 3 with class II/1. Disc displacement with reduction has been diagnosed in two articulations in both groups, and arthralgia has been diagnosed in one articulation in a patient with class II/2. Incisors retrusion increased the frequency of appearance of TMJ disorders (p=0.048).

Conclusions: Angle class II/2 predisposes to the appearance of temporomandibular disorders.

Mode of action of the modified lactoperoxidase system on Streptococcus mutans biofilms

Authors: Paweł Mamica, Kacper Klasa, Magda Lebiecka, Wiktoria Pepasińska

Tutors: Marcin Magacz MSc, Wirginia Krzyściak PhD

Affiliation: SSG of Laboratory Diagnosticians, Department of Medical Diagnostics, Faculty of Pharmacy Jagiellonian University Medical College

Introduction: Dental caries is becoming an increasingly serious problem for both health and society's wallet, as its occurrence is becoming more common and associated with the growing consumption of carbohydrates. There are indications that fluoride prophylaxis is insufficient which leads to the search for biomolecules with anti-cariogenic properties. One such molecule is lactoperoxidase (LPO), which is a heme enzyme secreted into saliva. Lactoperoxidase, together with its substrates of the (pseudo)halogenation cycle - H2O2 and thiocyanate ions oxidized to hypothiocyanate ions, forms one of the main systems involved in antimicrobial defense in the oral cavity.

Aim of the study: Evaluation of the anti-cariogenic effect of the modified lactoperoxidase system by utilizing alternative substrates against the Streptoccocus mutans biofilm

Materials and methods: The anti-cariogenic effect of the lactoperoxidase system on biofilms was evaluated by measuring the increase in biomass and by analyzing the activity of carbohydrate metabolism in the presence of various pseudohalide substrates SCN-, I-, and SeCN-. Biomass was determined utilizing crystal violet method. In the metabolic assaym

amperometric kinetic measurements were used to evaluate the glucose and sucrose consumption over time and the rate of lactate synthesis.

Results: Significant differences were found in the amount of biomass produced by S. mutans in the presence of the lactoperoxidase system. The most significant differences were observed for iodide. A decrease in the lactate production and a statistically significant reduction of sucrose consumption in biofilms in the presence of the lactoperoxidase system. In both analyses, the products of iodide enzymatical oxidation showed the strongest activity.

Conclusions: Conducted research points to decrease in biomass and lactate production is associated with sucrose metabolism inhibition. Oral hygiene products with the addition of the lactoperoxidase system seem to be a promising supplement to the classic fluoride prophylaxis of caries. Nevertheless further in vitro and in vivo research are necessary.

Saliva microcrystalization changes depending on the type of dental interventions and sccompanying factors

Authors: Vladyslav Niedelchiev

Tutors: ass. prof. Natalia Ilenko-Lobach, PhD

Affiliation: Faculty of Dentistry

Introduction: Nowadays, the study of oral fluid attracts the attention of dentists, because the changes in its microcrystallization reflect qualitative changes in the body, which helps in the patient treatment and recovery.

Aim of the study: To study and evaluate the type of microcrystallization of oral fluid in patients before and after dental treatment, depending on the type of intervention and the age of the patient, taking into account concomitant factors.

Materials and methods: 20 patients who came for treatment to the Poltava Regional Dental Clinic were examined. Green-Wermilion hygienic index, DMF index, gingivitis, and complex periodontal index were studied. During the research, the patient's age and gender, concomitant (chronic/congenital) diseases, and bad habits were determined. After the dental intervention, the material was collected again, followed by drying it in the air at room temperature for a day.

Results: After the dental treatment, diametrically opposite changes in the type of oral fluid microcrystallization were observed. In 55% of respondents, a decrease in the degree of crystallization after the dental intervention was found (category I). In 45% of the examined persons, an increase in the number of crystals was found (II category). This allows us to state that dental intervention changes the type of microcrystallization of oral fluid.

We divided all participants of the research into 3 subgroups depending on age. 1 subgroup - 8 people (40% of the examined), aged from 20 to 30 years. 80% of patients in this subgroup belong to the I category. Subgroup 2 – 4 patients (20%), aged 30 to 40 years. This group was divided between representatives of the I and II categories. Subgroup 3 – 8 people (40%) over 40 years of age. From this subgroup, the vast majority (63%) belongs to the II category.

11 patients in research (52%) - are smokers. 72.7% of them belong to the II category, which shows the smoking influence on the ability of oral fluid to form crystals.

Conclusions: The obtained data can be used for further patient recovery after dental interventions and for preventing the development of secondary complications.**dentistry & ENT - ORIGINAL**

Cephalometric assessment of upper airways measurements among young Polish adults with skeletal class II malocclusion

Authors: Alicja Protoklitow, Magdalena Lenarska

Tutors: Prof. Aneta Wieczorek, MD, PhD; Prof. Jolanta E. Loster, MD, PhD,

Affiliation: Students' Scientific Society of Occlusion Norms, Department of Prosthodontics and Orthodontics, Faculty of Medicine, Jagiellonian University Medical College, Kraków, Poland

Introduction: Skeletal class II malocclusion is a dentofacial deformity caused by a growth disorder of the bones frequently associated with mandibular retrusion relative to upper facial structures. These changes in craniomaxillofacial morphology may lead to a decreased width of the pharyngeal airway. People with obstructed upper airways are more likely to suffer from obstructive sleep apnea, a potentially fatal disease.

Aim of the study: Comparison of the width of the upper airways among the patients with skeletal class I and skeletal class II malocclusion.

Materials and methods: The 76 lateral cephalograms collected between 2011 and 2013 (study no.NN403589138) were analyzed. The subjects were young adults, volunteers from Poland, 17-19 years old, both sexes. The sample comprised radiographs from patients with skeletal class I and with skeletal class II malocclusion. The evaluation of upper airways measurements was performed using AutoCAD®. The obtained results were summarized in the table and statistically analyzed using the Statistica program.

Results: There is no statistically significant difference in measurements of upper airways among young Polish adults with skeletal class I and skeletal class II malocclusion. The results of the study showed no correlation between ANB angle and posterior airway space in both groups.

Conclusions: The results may suggest that skeletal class II malocclusion among the studied group of Polish young adults does not indicate a decreased width of pharyngeal airways. Research on a larger group is required. Further research using 3D imaging techniques should be considered.

Evaluation of cervical column deviation of adolescent subjects in correlation with the sagittal jaw relationship

Authors: Yana Yushchenko, Małgorzata Berowska, Magdalena Lekarska, Alicja Protoklitow

Tutors: Prof.A. Wieczorek DDS, PhD; M. Kulesa-Mrowiecka PT, PhD

Affiliation: Students' Scientific Society of Occlusion Norms, Department of Prosthodontics and Orthodontics, Faculty of Medicine, Jagiellonian University Medical College, Kraków, Poland

Introduction: Viscerocranium and cervical spine are contiguous structures, morphologically and functionally related, that exhibit interdependence with growth patterns. Research suggests that there may be a correlation between the position of the cervical spine and malocclusion which can be evaluated by measuring the ANB angle.

Aim of the study: Investigate whether there are significant differences in the position of the cervical vertebrae in adolescent subjects with a different skeletal class

Materials and methods: The study was a retrospective analysis of the data collected in 2011-2013 (study no. NN403589138 - the group of young adults, volunteers from Poland, 17-19 years old, both sexes). The sagittal jaw

relationship was assessed by measuring the ANB angle. The position of the cervical vertebrae was measured according to Langlade evaluation. All the measurements were performed using the AutoCAD® program on 149 lateral cephalometric radiographs selected from the mentioned database. Obtained results were summarised in the table and statistically analyzed using the Excel program. The final results were calculated with Spearman's rank correlation test.

Results: No gender dimorphism is observed in the occurrence of cervical column deviation.

There is a statistically significant correlation between ANB angle values and the deviation in measurements of:

1) the angle between the 1st vertebrae and the frankfurt plane

2) the distance between the base of the occipital bone and the highest spot on the spinous process of the 1st vertebra

The higher the deviation, the lower the ANB angle.

Conclusions: Considering the results, it can be assumed that there is a statistically significant correlation between the sagittal jaw relationship (ANB angle) and deviation in two measurements used to evaluate the position of the cervical spine. However further research focusing on those two measurements and a larger research group should be considered because the correlation was weak.

Feasibility of sublingual gland flap in the floor of the mouth and lower gingiva reconstruction

Authors: Agata Wieczorkiewicz, Sylwia Kozłowska, Joanna Kuczera

Tutors: Michał Gontarz DDS, PhD, Jakub Bargiel DDS, Krzysztof Śliwiński DDS

Affiliation: SSG of Cranio-Maxillofacial Surgery, Jagiellonian University Collegium Medicum in Cracow

Introduction: The reconstruction of oral cavity defects after ablative surgery is required to provide proper function and acceptable aesthetics. The reconstruction of intraoral defects is routinely performed by various local, regional and free flaps. The aim of the study was a retrospective analysis of the effectiveness of sublingual gland flap in the oral cavity soft tissue reconstruction.

Aim of the study: The aim of the study was a retrospective analysis of the effectiveness of sublingual gland flap in the oral cavity soft tissue reconstruction.

Materials and methods: The subjects of the analysis were 8 patients operated in the Department of Cranio-Maxillo-Facial Surgery in Cracow in 2022 and 2021, who underwent soft tissue defects reconstruction by sublingual gland flap. All patients (5 females and 3 males) suffered from oncological diseases. Average age was 63 years old. Frozen section examination of the gland was performed in each case before reconstruction. Reconstruction of the floor of the mouth was performed in 4 patients (50%) and lower gingiva in 4 patients (50%), respectively.

Results: Complete epithelialization with closure of the defect was achieved in 2 weeks on average. Necrosis of the flap was not observed. The follow up ranges from 4 to 28 months, 15 months on average.

Conclusions: Good reconstruction of small and medium sized defects of the floor of the mouth and lower gingiva can be achieved by sublingual gland flap.

Forensic Medicine & Pathology

Oral Session

Scientific Committee

prof. Grzegorz Dyduch, MD, PhD
Ewa Rzepecka-Woźniak, MD, PhD
Filip Bolechała, MD, PhD

Coordinators

Magdalena Śladowska
Lizaveta Vashchelina

IMSC

Methanol distribution in biological material from fatal intoxication cases from Silesia region (April-June 2022)

Authors: Julia Cieśla

Tutors: Marcin Tomsia PhD, Joanna Nowicka PhD, Małgorzata Głaz BSc, Elżbieta Chełmecka PhD

Affiliation: Students' Scientific Group of Forensic Medicine, Department of Forensic Medicine and Forensic Toxicology in Katowice, Medical University of Silesia

Introduction: Fatal methanol poisoning is an ongoing problem in forensic medical practice, as proved by the latest mass methanol poisoning in Poland recorded in the Silesia region between April and June 2022. Symptoms of methanol poisoning are non-specific and difficult to identify, and no tests exist that would rapidly detect methanol in the blood. Moreover, methanol distribution in different tissues after absorption is not well understood.

Aim of the study: The study aimed to quantify methanol and its metabolite, formic acid, distribution in body fluids and tissue samples collected during autopsy and to determine the correlation coefficients between methanol concentrations in the blood and body fluids or tissues.

Materials and methods: Study material (femoral blood, urine, vitreous humor, cerebrospinal fluid, bile, muscle, liver, kidney, brain, and spleen samples) was collected from 19 victims of fatal methanol poisoning (3 women and 16 men). Methanol and formic acid (its volatile form of methyl formate ester) concentrations were determined using a gas chromatography FID detector (Thermo Fisher Scientific Inc., Milan, Italy).

Results: The average post-mortem interval (PMI) value was 7.2 ± 3.4 days. Methanol concentrations in the blood statistically significantly correlated with their concentrations in other tissues. The same was noted for formic acid concentrations in the blood and other tissues, except for the kidneys. The highest value of methanol blood-to-tissue (body fluids) partition coefficient was found in the liver (1.27 ± 0.24) and the lowest in the urine (0.76 ± 0.09). No methanol was detected in the tissues of the deceased hospitalized after poisoning, except for one case where it was detectable in cerebrospinal fluid and brain tissue. In the same deceased, formic acid was detectable.

Conclusions: The study presents methanol distribution in different body tissues and formic acid presence for many days after methanol ingestion, which indicates that formic acid may play a role in methanol poisoning detection. We showed that it is useful to analyze methanol and formic acid concentrations in other tissues and body fluids that might be collected during extensive autopsy.

New classification scale for burn-related deaths based on the tissue trauma

Authors: Jadwiga Duda1, Wiktoria Ziolek1, Michał Okarski1, Wiktoria Hamouda1, Krystian Mirowski1

Tutors: dr hab. Tomasz Konopka2, MD. PhD.

Affiliation: 1Studenckie Koło Naukowe Medycyny Sądowej, Uniwersytet Jagielloński Collegium Medicum 2Zakład Medycyny Sądowej, Uniwersytet Jagielloński Collegium Medicum

Introduction: Burns are one of the common causes of deaths. In 2022 nearly four hundred people lost their lives in the fire, according to the National Headquarters of the State Fire Service of Poland. In forensic medicine the Crow-Glassman scale can be used to standardize the level of fire-related injuries. However it was

established almost thirty years ago and its reliability has been questioned multiple times.

Aim of the study: The aim of our study was to create a more precise tool for forensic medicine specialists to standardize the level of tissue trauma in fire-related events

Materials and methods: In our study we have used the photos and documentation provided by the Department of Forensic Medicine in Cracow to compare the cases and try to evaluate the common features of the cases. Then we tried to establish a new point scale based on the information we have gathered. The cases included in our study comes from years of 2017 to 2021, counting up to 153 cases of fire or heat related deaths at first walkthrough

Results: Based on the gathered information and trying to evolve the existing scale we created a new point one. It takes into consideration the features such as depth, vastness and intensity of the trauma as well as its colour and stiffness. We also included the destruction of internal organs, which was not included in the Crow-Glassman scale at all. We divided the body into parts like head, thorax, abdomen and pelvis, extremities and internal organs. Each part was marked with individual sub-scale and score, all the scores were summed up to establish overall score, that allows the case to fall into specific categories.

Conclusions: Our scale is more precise, includes more features and eliminates the subjectivity of the original scale. We believe that it can be a new useful tool for every forensic medicine specialist and in future it can contribute to establishing the opinion on the cause of death.

Suicide among adolescents: comparative analysis of periods 1992-2001 and 2012-2022

Authors: Gabriela Kanclerz, Gabriela Szypuła

Tutors: Tomasz Konopka MD, PhD

Affiliation: Jagiellonian University Medical College Students' Scientific Group of Forensic Medicine

Introduction: Adolescent suicide is an important social issue, which according to global data, grew after the COVID-19 pandemic. In Poland there are 9,2 psychiatrist per 100k inhabitants, which is the second lowest score in Europe and it may contribute to that problem.

Aim of the study: To investigate all suicide cases among children and adolescents. Cases where purposefulness of the act could not be proven were excluded. Incidence, methods, addictions, previous suicide attempts and psychiatric treatment were analyzed.

Materials and methods: We searched and analyzed the autopsy protocols from 1992-2001 and 2012-2022 gathered in the archives of the Department of Forensic Medicine in Cracow.

Results: In years 1992-2001 there were 53 cases of certain suicide in adolescences (mean 5,3 per year). Only 9 (17%) of suicides were girls. Age of the deceased varied from 13 to 18 with a median of 17. Most (30, 56,6%) of the suicides took place in or around the place of residence. Regarding the method of suicide, hanging was observed in 34 (64,15%), jumping from the height in 7(13,2%), jumping under the train in 6 (11,3%) and drug poisoning in 2 (3,8%) cases. Isolated cases of self-immolation, gunshot, electrocution and drowning have also been reported.

In the years 2012-2022 there were a total of 51 cases, most in 2020 and 2022, 20 (39,2%) of them were girls. Age of suicide varied from 10 to 18 with median of 16. If the method of suicide is

considered, hanging was observed in 31 (60,8%) of cases, jumping from the height in 8 (15,7%), jumping under the train as well as drug poisoning in 4 (7,8%) of them. Single cases of suicide by jumping from a height into water, gunshot, drowning and suffocation have been observed.

Conclusions: In comparison to years 1992-2001 nowadays there is similar amount of adolescent suicides, similar methods are also used. There is noticeable decrease in age of suicides and increase of girls' suicide. Adolescent suicide is still a major problem which should be properly adressed.

Analysis of the role of ezrin, radixin, moesin and merlin proteins in formation of entotic figures in cancer cells

Authors: Agata Gaweł

Tutors: Izabela Młynarczuk-Bialy MD, PhD

Affiliation: Histology and Embryology Students' Science Association, Department of Histology and Embryology, Faculty of Medicine, Medical University of Warsaw, Warsaw, Poland

Funding: Student Grant nr 1M15/1/M/MG/N/22, WUM

Introduction: Entotic cells are a subtype of cell-in-cell (CIC) figures found in tumor specimens. It is considered that entotic cells are capable of escaping the host immune system attack or anti-cancer drugs. Nevertheless, the mechanisms regulating the process of entosis are still unclear.

In our previous studies, we highlighted the important role of podoplanin (PDPN, a glycoprotein) as a modulator of entosis. We revealed that high expression of PDPN is associated with a decreased number of CICs. Intriguingly, we showed that knockdown of PDPN is also accompanied by altered activation of highly homologous FERM-family protein members: ezrin, radixin, moesin and merlin (known as ERM/NF2 proteins).

Aim of the study: Therefore, the aim of the presented study was to gain new knowledge regarding the role of ERM/NF2 in the process of entosis.

Materials and methods: In the study, cancer-derived (MCF7; breast and BxPC3; pancreatic) cells were used. In order to determine the effect of the ERM and merlin proteins on formation of entotic structures, the EZR, RDX, MSN and NF2 genes were knocked-down using designated siRNAs. Control cells were transfected with negative siRNA. To confirm the effectiveness of silencing, Western blot and RT-qPCR methods were used. Finally, cells were stained with fluorescent dyes and entotic figures were determined using confocal microscopy. The data were analyzed using GraphPad software.

Results: The obtained data revealed that lack of expression of radixin, moesin and NF2 significantly (by ~50%) reduces the frequency of formation of CICs in both tested cell lines. In contrast, depletion of ezrin, which was previously described as one of the drivers of entosis, resulted in a rather minor (~20%) decrease in the number of entotic cells. Moreover, it was found that most of the cells with depleted RDX, MSN and NF2 acted as the outer, rather than inner cell.

Conclusions: This is the first report showing the importance of not only ezrin, but also other FERM-family proteins: radixin, moesin and NF2, in the process of entosis, as high expression and increased activation of ERM/NF2 proteins likely promotes formation of entotic figures. We imply that ERM/NF2 proteins can act as a molecular hub controlling transduction of signaling necessary for formation of CICs.

Injury analysis of aircraft crash victims

Authors: Anna Kaczmarska, Piotr Juda, Łukasz Wójcik, Dawid Pajor, Milena Nowak

Tutors: Tomasz Konopka MD, PhD

Affiliation: Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Introduction: Aircraft crashes are relatively rare and usually involve accidents of light aircraft for amateur use, avionics, gliders, hang gliders, motorgliders, paragliders or light helicopters. Injuries encountered in victims of aircraft accidents show many similarities to the classic consequences of accidents at very high impact speeds and include multiple skeleton fractures: compression fractures of the spine, fractured epiphyses and shafts of lower limb bones, fragmented pelvic bones, organ tears at their fixation points, among others. In addition, an inherent feature of aircraft accidents are fires resulting from the explosion of fuel residues, therefore the bodies of accident victims are mostly carbonized, with soot in the bronchi of burned airways.

Aim of the study: The aim of the study was to analyze the injuries of victims of aviation accidents.

Materials and methods: Retrospective analysis of autopsy protocols of plane crash victims from the Department of Forensic Medicine in Cracow in the years 2002-2022 was conducted. We further searched for features that the bodies of victims had in common.

Results: After excluding subjects that did not meet our requirements, we obtained 33 cases in total. Among those we found 25 airplane crashes, 4 motor glider accidents, 2 glider accidents and one helicopter crash. We couldn't find information about the type of aircraft which was involved in the accident in one case. The injuries that emerged in each of the victims were typical results of direct impact forces. The most common were rupture of the liver (41.6%), heart (42.,4%), aorta (36.4%), and spleen (24.2%). Common bone traumas included fractures of the ribs (69.87%), skull (63.6%), pelvis (48.5%) and femur (36.4%). The other injuries to the skeletal system featured in some cases were typical fractures to the cervical spine, which occur to victims who violently tilt their heads back.

Conclusions: In most cases, the direct cause of death was extensive multi-organ injuries. The rupture of the heart and aorta in the victims could be attributed to the vertical force created by extreme bending over the seat belt. For some bodies, craniocerebral injuries or thermal burns simultaneously contributed to the cause of death.

Association between Ki-67 and clinical histopathological criteria in triple negative breast cancer patients

Authors: Annija Holstroma

Tutors: dr. Lubova Blumberga

Affiliation: Pauls Stradiņš Clinical University Hospital

Introduction: Triple negative breast cancer (TNBC) is more aggressive and with a lower rate of survival than other molecular breast cancer subtypes. Treatment is more difficult, because there is no effect of hormone and targeted therapy since this cancer subtype does not have estrogen and progesterone receptors and is HER2 protein negative. Breast cancer cells express protein Ki-67, which is a cellular proliferation marker and potentially could be used as a prognostic factor to predict the course of the disease and help with choosing the most suitable therapy.

Aim of the study: The aim of the study is to evaluate TNBC patient clinical and

histopathological findings with Ki-67 expression as a prognostic factor for the course of the disease.

Materials and methods: Retrospective study with 114 patients, who were treated in Pauls Stradiņš Clinical University Hospital Oncology Clinic from 2018-2020. Patients chosen in this study had histologically proven triple negative breast cancer and at the time of diagnosis had no distal metastasis. TNM, Grade, Miller Payne grading, oncomarker levels and disease-free survival were studied. Patients were divided in three groups depending on their Ki-67 values from biopsy reports (<15% - low, 16-45% - medium, >46% - high). Data was analyzed using IBM SPSS version 28.

Results: Using Pearson-Chi square test, statistically significant association was found between Ki-67 index and lymph node metastasis (p=0.023), CA15-3 levels (p=0.020) and disease-free survival (p=0.033), but Grade (p=0.493) and Miller-Payne grading (p=0.644) did not show significant results.

Conclusions: Ki-67 index association with lymph node metastasis and higher CA15-3 levels indicate a more complicated form of TNBC, and disease-free survival results were better in group with low Ki-67 index. Relation between Ki-67 and Grade or Miller-Payne grading did not show any statistical significance.

Differences in the choice of the method of committing suicide depending on gender and age

Authors: Marcin Skorupa, Łukasz Marczyk, Bartłomiej Cytlau, Kacper Gil, Joanna Augustyn, Aleksandra Łach

Tutors: Tomasz Konopka, Associate Professor, MD, PhD

Affiliation: Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Introduction: Suicide is a serious issue that affects all demographic groups. Suicides are defined as deaths where the underlying cause was intentional self-harm. Hanging is the most common suicide method in Poland for all genders and age groups.

Aim of the study: The study aims to examine if the choice of suicide method is dependent on gender and age.

Materials and methods: The study is based on a retrospective analysis of autopsy reports from the Department of Forensic Medicine in Cracow from 2001-2010. The study consisted of finding cases where the cause of death was suicide and analyzing the chosen method against the ages and genders of the deceased.

Results: 2074 suicide cases were collected from 2001-2010 autopsy books. Statistical analysis was performed using logistic regression in Excel's XLSTAT. The most common suicide methods were hanging (1524 cases; 1329 men and 195 women) and jumping (171 cases; 100 men and 71 women). Results of statistical significance, in terms of correlation with gender, were found for the following suicide methods: hanging [Odds ratio (OR): men (M) vs women (W)=3,4; Confidence interval (CI)=2,7-4,3; p<0,001]; drowning [OR: W vs M=4,1; CI=2,6-6,4; p<0,001]; jumping [OR: W vs M=4,1; CI=2,9-5,7; p<0,001]; poisoning [OR: W vs M=3,2; CI=2,1-4,9]. Age was found to correlate with jumping [OR=0,98; CI=0,97-0,99; p<0,001] and railroad accidents [OR=0,98; CI=0,96-0,99; p<0,001]. Suicides with firearm use were found only in the men's group (40 cases).

Conclusions: As shown in our research both age and gender have a significant influence on the choice of suicide method. Despite hanging and jumping being the most common method amongst both genders, the percentage layout varies significantly. It is worth noting that jumping has an unexpectedly big contribution

among women contrary to men. The fact that firearm is present only among males is rather consistent with a stereotype on the other hand. Age was found to be relevant in jumping and railroad accidents. In both cases the older victim is, the lesser the chance of choosing those methods.

Distribution of injuries in cases of self-immolation – retrospective analysis

Authors: Aleksandra Nosal, Wiktoria Wojturska, Zuzanna Buś, Katarzyna Klimaszewska, Aneta Kotlarek, Patrycja Jakubiec

Tutors: Tomasz Konopka MD, PhD

Affiliation: Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Introduction: Self-immolation is an unusual method of suicide by setting oneself on fire. In developed countries it makes up 0,06-1% of all suicides, whereas in developing ones it is more frequent (up to 40,3%). In European countries it occurs predominantly in middle-aged men and is often related with history of mental illness or substance abuse. The case of Jolanta Brzeska's death was the motivation for this analysis. The woman was found burned, which indicates a hypothesis of self-immolation. What was uncharacteristic is that part of the body clinging to the ground was not taken by fire.

Aim of the study: The aim of the study was to analyse the distribution of injuries in cases of self-immolation and to determine risk factors.

Materials and methods: Based on autopsy protocols from the Department of Forensic Medicine, Jagiellonian University in Cracow from 2000-2022, 17 cases of confirmed self-immolation were selected. We analysed epidemiological data as well as injuries and history of mental illness.

Results: Men committed suicide by self-immolation more often than women (82,4% vs 17,6%). Regarding age there are two main groups - in their 20's and people between 40-50 years old. Head was burnt in 88% of cases, chest in 82%, upper limbs in 88% and lower limbs in 88% (regardless of the size of a burn). There were 2 cases in which injuries were present only on lower limbs. Charing of the tissue occurred in 35% of cases. 47% of deceased had a history of mental illness and 24% had history of substance abuse. There was 1 case of a self-immolation of a person suspected of murder with extraordinary cruelty.

Conclusions: The study has shown that the distribution of injuries in the selected cases of self-immolation varies significantly, ranging from only one leg being affected to almost the whole body surface. The co-occurrence of injuries on different parts may be the result of covering a large surface of the body with accelerant or simple fire spread.

Freshwater shrimps – new factor behind injuries in victims of drowning

Authors: Magda Wojarska, Wiktoria Wojturska, Kateryna Shtohryn, Lidia Ziobro, Oliwia Boruta

Tutors: Tomasz Konopka MD, PhD

Affiliation: Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Introduction: For the last few years in the Department of Forensic Medicine of Jagiellonian University in Cracow atypical injuries have been found on bodies extracted from water. The common features of all wounds were punctate epidermal lesions. In some cases, they have been accompanied by the presence of small crustaceans on the cadavers. Further, crustaceans found on cadavers were identified

as Dikerogammarus haemobaphes, a species of freshwater shrimp. It came to the Vistula River region from the Black Sea. In the Department of Forensic Medicine tests confirming presence of human proteins in the digestive system of crustaceans were performed.

Aim of the study: To verify in which water reservoirs this phenomenon occurs, examine if it relates to the time spent by the cadaver in water, discover common features of the wounds caused by Dikerogammarus haemobaphes and assess the incidence.

Materials and methods: Autopsy protocols from the Department of Forensic Medicine of Jagiellonian University in Cracow between the years 2015-2022 were analysed. 203 cases of drowning victims were selected. The occurrence of injuries and their type were verified.

Results: In 5 of 203 cases, small crustaceans as well as epidermal lesions on exposed parts of the bodies were found. Similar injuries were present on 10 cadavers. Moreover, 10 victims of drowning were extracted from the Vistula River, whereas in 5 cases the bodies were located in other water reservoirs – 1 in the Dłubnia River, 1 in the Toporzysko River and 3 in field drains. There were no typical of Dikerogammarus haemobaphes injuries found on cadavers in a state of decomposition.

Conclusions: The distinctive epidermal lesions of cadavers extracted from water are the result of scavenging of a freshwater shrimp, Dikerogammarus haemobaphes. Such injuries were present only when the time from the death of the drowning victim to locating them was short. Shrimps broaden their radius of occurrence beyond the Vistula River and can be seen even in field drains.

Gynaecology & Obstetrics

Oral Session

Scientific Committee

prof. Paweł Basta, MD, PhD

prof. Inga Ludwin, MD, PhD

prof. Klaudia Stangel-Wójcikiewicz, MD, PhD

prof. Marcin Wiecheć, MD, PhD

Agnieszka Rajtar-Ciosek, MD, PhD

Anna Wójtowicz, MD, PhD

Coordinators

Marta Kłosek

Katarzyna Sekulak

Natalia Zamorska

IMSC

Angiogenic factors, uterine and umbilical artery Doppler indices in hypertensive disorders of pregnancy

Authors: 1 Emilija Struckute

Tutors: 2 Ruta Breiviene, 3 lect. Tatjana Maseliene

Affiliation: 1 Faculty of medicine, Vilnius University, Vilnius, Lithuania 2 Clinic of Obstetrics and Gynecology, Institute of Clinical Medicine, Faculty of medicine, Vilnius University, Vilnius, Lithuania 3 Clinic of Internal Diseases, Family Medicine and Oncology, Institute of Clinical Medicine, Faculty of medicine, Vilnius University, Vilnius, Lithuania

Introduction: The implication of placental growth factor (PlGF) and soluble fms-like tyrosine kinase-1 (sFlt-1) in diagnosis and management of hypertensive disorders of pregnancy (HDP) have been widely studied. However, uterine artery pulsatility (UtAPI) and resistency (UtARI) indexes as well as umbilical artery pulsatility index (UAPI), resistance index (UARI), and systolic/diastolic ratio (UA S/D) that are used to evaluate blood flow to fetal-placental unit have small evidence of use in diagnosis of HDP.

Aim of the study: The aim of our study was to compare sFlt-1, PlGF, sFlt-1/PlGF, uterine artery and umbilical artery dopplerometry in different types of HDP.

Materials and methods: 28 women with HDP participated in our research. 10 women with early onset preeclampsia (EO-PE), 9 with late onset preeclampsia (LO-PE) and 9 with gestational hypertension (GH). Uterine and umbilical artery Doppler sonography was performed in the second or third trimester of pregnancy, the same day as blood samples for sFlt-1, PlGF and their ratio were collected. Statistical analysis was accomplished using R Commander. The Kruskal-Wallis and one-way ANOVA tests were used to compare three independent variables.

Results: Significantly higher levels of sFlt-1 (p=0.006), sFlt-1/PlGF (p=0.005), UtAPI (p=0.001), UtARI (p=0.046) and lower levels of PlGF (p=0.008) were found in women with EO-PE, following LO-PE and GH. There was no significant difference in UAPI (p=0.09), UARI (p=0.059) and UA S/D (p=0.0569) between three groups. The median value of sFlt-1 in EO-PE was 8108 ng/L, LO-PE 8047 ng/L, GH 2546 ng/L. The median value of sFlt-1/PlGF in EO-PE was 280 ng/L, LO-PE 128 ng/L, GH 13,07 ng/L. The median value of PlGF in EO-PE was 23.75 ng/L, LO-PE 58.6 ng/L, GH 194.8 ng/L. The mean value of UtAPI in EO-PE was 1.808, LO-PE 1.09, GH 0.72, UtARI in EO-PE was 0.726, LO-PE 0.578, GH 0.53.

Conclusions: Angiogenic factors, uterine artery pulsatility and resistancy indexes, but not umbilical artery dopplerometry were significantly different in EO-PE, LO-PE and GH groups.

Stress level and pain control beliefs in women during physiological birth

Authors: Angelika Doroszewska, Anna Jaśkiewicz, Martyna Kutkowska, Katarzyna Błaszczak, Agnieszka Mróz

Tutors: dr hab. Anna Pilewska-Kozak; Katarzyna Kanadys PhD, prof. UM

Affiliation: Student Scientific Club of Midwifery Enthusiasts, Department of Obstetrics and Gynaecology Nursing, Faculty of Health Sciences, Medical University of Lublin

Introduction: Looking forward to the childbirth and the moment of delivery itself is a time accompanied by many emotions. Researches indicate that women are afraid of labor pain, among other things. Read's Wheel shows that pain causes anxiety, and anxiety intensifies pain. It is therefore important to reduce stressors during this time, and thus the level of pain experienced.

Aim of the study: Examining what level of stress women experience during physiological childbirth and what are their beliefs about pain control.

Materials and methods: The study included 109 women after physiological delivery hospitalized in the maternity ward of the Independent Public Clinical Hospital No. 1 in Lublin. The study was conducted using a diagnostic survey. An author's survey questionnaire and two standardized tools: Perceived Stress Scale - PSS10 and Beliefs about Pain Control Questionnaire - BPCQ were used.

Results: A high level of stress characterized 40% of the parturients, nearly one in three (31.2%) an average level, and 28.4% of respondents a low level. According to 39.1% of the women, pain level during labor was lower than during previous births. The majority (82.6%) of respondents used non-pharmacological methods of pain relief, and nearly half (49.5%) used pharmacological methods. For more than half (62.4%) of the respondents, labor pain was tiresome and exhausting, and for 28.4% of the women it was unbearable. The respondents were mainly characterized by internal location of pain control (the average for this domain was 14.86). The location of pain control defined as doctors and the influence of random events were at the same level (mean: 11.43 and 11.94, respectively).

Conclusions: Most parturients during physiological labor are accompanied by a high level of stress. It is conditioned by the intensity of the labor pain experienced. The participants in the study are mainly characterized by internal pain control. However, it dominates in parturients with a middle or junior high school level of education. The location of pain control also depends on the marital status of the respondents. Married women attribute less importance to incidental events than single women giving birth. There is a relationship between beliefs about pain control and the level of stress in women during physiological labor. The higher the intensity of perceived stress, the more the parturients attributed pain control to physicians.

The pregnancy in women after transcatheter closure of atrial septal defects

Authors: Karolina Gutkowska, Anna Sopel, Zuzanna Sachajko, Anna Pyczek, Filip Baranowski, Tomasz Renkas

Tutors: prof. UJ Monika Komar MD, PhD, DSc

Affiliation: SSG of Heart and Vascular Defects at the Department of Cardiac and Vascular Diseases, Jagiellonian University

Introduction: Percutaneous closure of ASD is increasingly performed during the last decade. Many women undergoing this procedure are in childbearing age but the information on the outcome of pregnancy in women with ASD after transcatheter closure is limited.

Aim of the study: Our aim was to investigate the magnitude and determinants of cardiac and obstetric complications during pregnancy in women with ASD after transcatheter closure.

Materials and methods: Consecutive 52 women with a mean age of 26.2 ± 16.1 (20-44) with ASD after transcatheter closure with the Amplatz Septal Occluder, were analyzed. A total of 52 women gave birth to 50 full-term healthy babies. In total there were 52 pregnancies, including 2 miscarriages (3.8%).Detailed recordings of each completed pregnancy (n=50, 28.2 ± 14.1 (11-359) months after transcatheter closure) were obtained. Cardiac events were defined as heart failure, stroke, TIA, arrhythmias, endocarditis; obstetric events as PIH, preeclampsia, eclampsia, HELLP syndrome, premature labor, postpartum hemorrhage; neonatal events as premature delivery, small-for-gestational age, fetal mortality, neonatal mortality.

Results: Cardiac events were observed during 10 % (n=5) of the completed pregnancies and included: supraventricular arrhythmias (n=4, 8

%) and right heart failure - shin oedema (n=1, 2%). None of these complications required hospitalization.

Severe obstetric complications during completed pregnancies were not observed except minor ones: moderate hypertension (n=4, 8%), prolonged bleeding (n=3, 6%), premature rupture of membranes (n=2, 4 %).

Women >30 years appear to be at greater risk for both cardiac and obstetric complications

Conclusions: Most ASD women tolerate pregnancy well after transcatheter closure with the Amplatz Septal Occluder with the risk of complications comparable to that in general population of healthy women. Maternal complications were seen more often in women >30 years.

Angiogenic factors, uterine and umbilical arteries Doppler indices in pregnancies complicated by fetal growth restriction and preeclampsia

Authors: 1 Emilija Struckute

Tutors: 2 Ruta Breiviene, 3 lect. Tatjana Maseliene

Affiliation: 1 Faculty of medicine, Vilnius University, Vilnius, Lithuania 2 Clinic of Obstetrics and Gynecology, Institute of Clinical Medicine, Faculty of medicine, Vilnius University, Vilnius, Lithuania 3 Clinic of Internal Diseases, Family Medicine and Oncology, Institute of Clinical Medicine, Faculty of medicine, Vilnius University, Vilnius, Lithuania

Introduction: Preeclampsia (PE) and fetal growth restriction (FGR) are pregnancy complications associated with placental dysfunction. FGR is more frequent in preeclamptic pregnancies compared to healthy pregnancies however relationship between PE and FGR is complex and not fully understood.

Aim of the study: The aim of our study was to asses the differences in angiogenic factors, preeclampsia risk factors, uterine and umbilical arteries Doppler indices between PE+FGR and PE groups.

Materials and methods: 19 women with preeclampsia of whom 5 with fetal growth restriction participated in our research. Uterine artery Doppler sonography was performed in the second or third trimester the same day as blood samples for sFlt-1, PlGF and their ratio were collected. Statistical analysis was accomplished using R commander program. The Mann-Whitney U test and Independent sample T-test were used for comparison of numerical variables between two independent groups.

Results: All women in PE+FGR group were nulliparous and none of them had obesity. Compared to PE group they were more likely to have in vitro fertilization, smoked before pregnancy and have gestational diabetes. Three of them had early-onset preeclampsia and two of them late-onset preeclampsia. Significantly higher sFlt-1 ($p=0.046$), sFlt-1/PlGF ($p<0.001$) and lower PlGF ($p=0.005$) were measured in PE+FGR group compared to PE group. However, there were no significant differences in uterine artery pulsatility ($p=0.083$), resistancy ($p=0.087$) indexes and umbilical artery pulsatility ($p=0.404$), resistency ($p=0.676$), systolic/diastolic ratio ($p=0.642$) indexes.

Conclusions: Risk factors of PE and antiangiogenic profile were more expressed in PE+FGR group compared to PE. There were no differences between two groups in uterine and umbilical arteries Doppler indices.

Fertility-Sparing Surgery of a Giant Uterine Fibroid

Authors: Gabriel Dichev, Melani Pirgova

Tutor: Stoyan Kostov MD, PhD

Affiliation: Medical University - Varna "Prof. Dr. Paraskev Stoyanov"

Introduction: Uterine fibroids are common in gynecologic practice. Large fibroids that weigh more than 11.4 kg are extremely rare and are referred to as "giant" fibroids. In such cases, a hysterectomy is typically the treatment of choice. However, women who are of reproductive age and have a desire to have children pose a challenge. It is important to consider the patient's age and desire for fertility when deciding on a surgical approach.

Case report: A 35-year-old nulligravida woman presents with pelvic pain and pressure, as well as a slowly increasing abdominal distension for the past 3 years. She was diagnosed with uterine fibroid. Due to the size of the fibroid, other hospitals offered her a hysterectomy as the only treatment option. However, she refused, stating that she desired to have childrens.

The patient was admitted to our gynaecology department for an elective myomectomy. Physical examination revealed a dense tumor formation occupying the entire abdomen. An ultrasound examination revealed a tumor with a diameter of approximately 35 cm. Genitourinary, cardiovascular, and respiratory complaints have not been reported. There were no deviations in laboratory tests (including LDH) or tumor markers (CA-125, HE-4).

An abdominal uterine myomectomy was performed. A midline longitudinal incision was made from the xiphoideus to the pubic symphysis. A single intraligamentary node involving the left uterine wall was visualized. The uterus was towed cranially and in dextroposition. No adhesions were observed. The nodule was enucleated, and a single continuous suture was used to reconstruct the uterine wall. The fibroid measured 25/30/30 cm and weighted around 12kg. Due to intractable bleeding, both hypogastric arteries were ligated. Intraoperative blood loss was 2 L. Following surgery, hemoglobin levels were 87 g/l, and a hemotransfusion was initiated. There were no postoperative complications, and the patient was discharged in good overall health 5 days after surgery.

Conclusions: Fertility-sparing surgery is not always possible and is associated with an increased risk of intraoperative hemorrhage and postoperative complications. A comprehensive preoperative assessment, optimal intraoperative management, and careful postoperative care are essential to a positive outcome.

Successful pregnancy in karyotype 46,XY patient (Swyer’s syndrome)

Authors: Augustė Žurauskaitė

Tutor: Vilda Baliulienė MD, PhD

Affiliation: Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania; Lithuanian University of Health Sciences, Department of Anaesthesiology, Kaunas, Lithuania

Introduction: Complete gonadal dysgenesis (Swyer syndrome) is a rare disorder of sexual differentiation characterized by normal or low development of the external genitalia, uterus and fallopian tubes, with non-functioning gonads. The incidence of this rare condition is estimated to be approximately 1 per 80,000 births. Treatment of this condition is based on hormone replacement therapy and bilateral gonadectomy to prevent the development of gonadal tumor. Even though infertility resulting from aplastic gonads is a common problem among individuals with Swyer syndrome, oocyte donation is an effective method of fertilization, which enables affected women to become pregnant.

Case report: There is a presentation of a woman diagnosed by XY gonadal dysgenesis at the age of 16 years. The patient underwent a physical examination because of primary amenorrhea. Chromosome analysis revealed a 46 XY karyotype. Regarding the high risk of tumors, prophylactic bilateral gonadectomy was performed after diagnosis, followed by treatment with hormone replacement therapy to ensure normal puberty and bone mineral density formation. In 2009 years, Th4-Th5 spine correction and fixation surgery was performed due to idiopathic scoliosis. At the age of 34 years she underwent oocyte donation and IVF (Intracytoplasmic sperm injection procedure with donated oocyte). Day-3 embryo was transferred into her uterus successfully. The course of the pregnancy was smooth. At the 39th week of gestation, the patient was presented to the hospital because of possible leakage of amniotic fluid with some blood. It was decided to perform a C-section due to an adverse medical history and spinal fixation surgery. Spinal anesthesia was unsuccessful because it was not possible to localize the intervertebral space therefore general endotracheal anesthesia was performed. A healthy baby with an Apgar score of 9 was delivered. Further treatment was without complications.

Conclusions: This case report aimed to show that patients with Swyer syndrome may become pregnant without any major problems through assisted reproduction. Due to certain abnormalities in organ development, such cases may be higher-risk pregnancies. After delivery, hormone replacement therapy should be used for the preservation of bone health in all such patients.

Bilateral fetal hydrothorax accompanying with absent umbilical arterial end-diastolic flow, trisomy 21 and polihydramnios

Authors: Jagoda Sarad, Justyna Kuciel

Tutor: Magdalena Kołak, MD, PhD; Andrzej Jaworowski, MD, PhD

Affiliation: Department of Obstetrics and Perinatology, Jagiellonian University Medical College in Cracow, Poland

Introduction: Fetal hydrothorax or fetal pleural effusion is a result of accumulation of fluid in the foetus's chest cavity. It is a rare condition that occurs with incidence ranging from 1/10,000 to 1/15,000. Generally, it could be classified as a primary or secondary hydrothorax. The first one, also called congenital chylothorax, results from abnormality of multiple lymphatic vessels or thoracic cavity defects. The secondary hydrothorax may be caused by the autoimmune conditions and non-immune factors. Among the reasons of autoimmune secondary hydrothorax, Rh or ABO blood type incompatibility can be mentioned, whereas in case of non-immune chromosomal abnormalities, genetic disorders or infections. The prognosis is hard to predict and ranges from spontaneous resolution to perinatal death.

Case report: 41-year-old woman at 31+3 weeks of gestation was admitted due to bilateral fetal pleural effusion and absent end-diastolic flow. The patient was previously diagnosed for congenital thrombophilia and hypothyroidism. Her current medications included enoxaparin, acetylsalicylic acid, levothyroxine. As a matter of the likelihood of pulmonary hypoplasia a decision to perform ultrasound-guided percutaneous placement of bilateral fetal thoraco-amniotic shunts was made. Simultaneously an aspiration of 30 ml of

amniotic fluid was performed for finding chromosomal abnormality. Cytogenetic analysis of the lymphocytes obtained from the pleural effusion fluid revealed a karyotype of 47, XY, +21. Amniocentesis was repeated due to increasing bilateral hydrothorax, ascites, polyhydramnios and patient's dyspnoea and 1410 ml of amniotic fluid was drained. Due to active-phase preterm labour, a cesarean section was performed on a gestational age of 35 weeks and 1 days. The post-cesarean course was uneventful, and the mother was discharged on the second postoperative day.

Conclusions: Fetal pleural effusion is a rare condition. One of the effective forms of diagnosis and treatment of hydrothorax is thoracocentesis or pleural shunt, which increases the chance of prolonging the pregnancy and reduces the risk of respiratory failure in the newborn. In the case of symptomatic polyhydramnios, the procedure can be extended to include amnioreduction. However, it is known in which conditions there is a higher probability of fetal pleural effusion, the causes remain unclear.

Internal Medicine

Oral Session

Scientific Committee

prof. Stanisława Bazan-Socha, MD, PhD

prof. Dorota Cibor, MD, PhD

prof. Jacek Czepiel, MD, PhD

prof. Małgorzata Zwolińska-Wcisło, MD, PhD

Karolina Piotrowicz, MD, PhD

Robert Kupis, MD

Coordinators

Karolina Jałowiecka

Michał Ziobro

IMSC

Selected respiratory and esophageal mechanisms in gastroesophageal reflux disease

Authors: Jana Vnučáková

Tutors: MUDr. Martin Ďuriček, PhD.

Affiliation: Clinic of Internal medicine – Gastroenterology

Introduction: Gastroesophageal reflux disease presents with a variety of esophageal and extraesophageal symptoms. Of the extraesophageal ones, cough, throat cleaning, globus are most prevalent. Pathogenesis of these symptoms is complex and incompletely understood, however, microaspirations of refluxate have their role establihed. As a substantial proportion of patients present with recurrent or persistent inflammation of the upper airways, one might assume that impairment of airway defense mechanisms might also be involved.

Aim of the study: We hypothesized that GERD patients have impaired mucocilliary clearance. We therefore determined ciliary beat frequency (CBF), one of the major quantifiable aspects of mucocilliary clearance in patients with extraesophageal GERD.

Materials and methods: Consecutive patients with extraesophageal GERD had a sample of the ciliated epithelium obtained from the nose using a cytology brush. Nasal CBF was analyzed using a digital high-speed video microscope and the software application Ciliary Analysis (NI LabVIEW), which is situated in Department of Pediatrics, University Hospital in Martin. Control group consisted of healthy volunteers without GERD symptoms and any airway inflammation at least 3 months prior to the evaluation. Maximal, minimal and average value of the CBF (Hz) was obtained.

Results: 11 patients with GERD (4F/7M) and 8 healthy controls (6F/2M) were analyzed. Mean CBF of GERD patients was significantly lower than in healthy volunteers (5.94±0.98 Hz vs. 11.14±1.53 Hz, resp., $p<0.00001$). Maximal CBF of GERD patients was also significantly lower than in healthy volunteers (8.72±1.2 Hz vs. 18.13±0.73 Hz, resp., $p<0.00001$). No significant difference was found in terms of the minimal CBF (4.23±0.89 Hz vs. 3.93±1.53, resp., $p=0.55$).

Conclusions: Patients with extraesophageal GERD had a significantly lower mean and maximal CBF than healthy volunteers. Mucocilliary clearance is most probably impaired in these patients which might contribute to their symptoms. Further research is needed to confirm the role of reflux in this impairment.

Factors increasing fall risk in hospitalized COVID-19 patients

Authors: Ivan Szergyuk, Maria Helena Santos de Oliveira, Giuseppe Lippi, Ahmed Al-Jabbary, Mohammed F Abosamak

Tutors: Dr. Brandon Michael Henry MD

Affiliation: Faculty of Medicine, Jagiellonian University Medical College, Krakow, Poland

Introduction: Falls are a significant public health issue, given the high rate of hospitalizations and fatalities, as well as the costs to the patient and the healthcare system incurred by the falls. During the current coronavirus disease 2019 (COVID-19) pandemic, falls have been identified as a potential presenting symptom in patients infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), however, data on factors increasing fall risk in this patient population is limited.

Aim of the study: This study aimed to examine the factors that may predispose hospitalized COVID-19 patients to falls.

Materials and methods: In this retrospective observational study, hospitalized COVID-19 patients were examined for fall incidence, as well as demographics, comorbidities, clinical and laboratory data. Patients were stratified according to their fall status and their characteristics were compared using Fisher's exact test or Mann-Whitney's U test.

Results: A total of 312 hospitalized COVID-19 patients were enrolled (median age, 75 years; males, 51.3%), of whom 11 (3.5%) fell. There was a greater prevalence of falls among patients that experienced arrhythmias than those that did not (28.6% vs 1.7%; p<0.001). Additionally, a significantly greater proportion of those that were discharged to the internal ward and to the intensive care unit fell (10.3% and 10.0%) compared to those that were discharged home (1.6%) [p=0.008]. Thyroid stimulating hormone (TSH) was significantly elevated in patients that fell (5.3 vs 0.97 µIU/mL, p=0.013), while alanine aminotransferase (ALT) was significantly lower in fallers (17.1 vs 33.5 IU/L, p=0.041).

Conclusions: In conclusion, COVID-19 patients that experience arrhythmias may be at increased risk for falls and fall prevention strategies should be aimed at this vulnerable patient population to reduce fall-related injuries and the associated costs. A holistic approach involving both hospital staff training and patient education, with a focus on screening for multiple potential risk factors should be effective in helping minimize fall risk. To the best of our knowledge, this study is one of the first to study falls in COVID-19 patients, and hence should be followed with studies with larger cohort size and analyzing for association to further validate our findings.

The association of Chest CT Severity Score (CT-SS) with Vaccination status among COVID-19 patients- A tertiary hospital based Cross-Sectional study

Authors: Rochelle Maria Justin, Dr Elizabeth Kurien

Tutors: Prof. Anne Varghese MBBS,MD,ACME Prof. Abraham Ittyachen M MBBS, MD,IDCCF,PGD-EPI

Affiliation: Kerala University of Health Sciences

Introduction: COVID-19 patients undergo a high resolution CT scan to determine the extent of lung involvement. The 25 point Chest CT Severity score serves as a numerical modulus to evaluate the severity of pulmonary involvement quickly and objectively.

Various vaccines are developed to protect people from transmission and adverse effects of the virus. But currently there is a concern that the newly developed strains cause breakthrough COVID-19 infections impacting the efficacy of already developed vaccines.In this background, this study aims at assessing the correlation of vaccination status and CT severity scores in COVID-19 patients and to understand the effects of vaccination on the body, primarily the lungs.

Aim of the study: To evaluate the effect of vaccination on Chest CT Severity Score in COVID-19 patients.

Materials and methods: Groups of 30 non, partially and fully vaccinated (who have taken COVISHEILD vaccine) COVID-19 patients (satisfying inclusion and exclusion criteria) were retrospectively analysed. The severity of lung involvement was scored using 25 point CT-SS. Data Analysis was done using Excel and SPSS .

Results: Out of the 90 confirmed cases of COVID-19, 31 (34.4%) were non vaccinated, 30 (33.3%)

were partially vaccinated and 29 (32.2%) were fully vaccinated.

COVID status was graded from mild to severe based on chest CT severity score and there were 40 (44.4%) mild, 25 (27.8) moderate and 25 (27.8%) severe cases.

Out of the 31 unvaccinated, 15 belonged to severe, 12 to moderate and 4 to mild categories. Out of the 30 partially vaccinated 11 each belonged to mild and moderate, 8 to severe. Out of the 29 fully vaccinated, 25 belonged to mild, 2 each to moderate and severe categories.

Kruskal Wallis test was performed and it was observed that there is a significant difference in the Chest CTSS between non vaccinated and fully vaccinated ($p<0.001$); partially vaccinated and fully vaccinated ($p=0.001$) but there was no significant difference observed in the average CT score between non vaccinated and partially vaccinated ($p=0.252$)

Conclusions: Vaccination resulted in a significant reduction in Chest CT-SS seen on HRCT chest scans and severity of pneumonia thereby reducing the indication for a CT scan in the post vaccination period. There is significant association between the chest CT-SS and the vaccination status in this study population. This study reiterates that full vaccination aids in reducing the severity of lung damage in COVID-19 infections.

New definition of pulmonary hypertension: clinical characteristics of patients with mean pulmonary arterial pressure of 21–24 mmHg

Authors: Michał Karnaś, Weronika Chaba

Tutors: prof. Grzegorz Kopeć MD, PhD; Jakub Stępniewski MD, PhD

Affiliation: Students' Scientific Group of Pulmonary Circulation and Thromboembolic Diseases, Faculty of Medicine, Jagiellonian University Medical College, Kraków, Poland

Introduction: In 2022 European Society of Cardiology guidelines the mean pulmonary artery pressure (mPAP) threshold, above which the diagnosis of pulmonary hypertension (PH) can be made, was decreased from ≥ 25 to > 20 mmHg. As this may result in an increase of PH diagnoses, it is of a great clinical importance to better understand this new PH population.

Aim of the study: We sought to determine the clinical classification of patients with mPAP of 21–24 mmHg.

Materials and methods: We reviewed medical records of patients who underwent right heart catheterization (RHC) in the Pulmonary Circulation Centre for the evaluation of pulmonary circulation haemodynamics. For further analysis we included patients with mPAP between 21 and 24 mmHg and investigated their pulmonary artery wedge pressure (PAWP) and pulmonary vascular resistance (PVR). Using the 2022 Guidelines haemodynamic and clinical classification of PH we classified patients as having left heart disease (LHD), chronic lung disease (CLD), congenital heart defect (CHD), chronic thromboembolic pulmonary disease (CTED), or connective tissue disease (CTD). Patients with PAWP ≤ 15 mmHg and PVR > 2 WU were identified as having pre-capillary PH and with PAWP > 15 mmHg as post-capillary.

Results: We analysed 1660 RHCs performed between January-2011 and December-2022 and identified 79 patients with mPAP 21 to 24 [63±13 years old; 29 (37%) male]. The mean mPAP was 22±1.2 mmHg, PAWP 10.8±4.7 mmHg and the PVR 2.2±1.3 Wood units (WU). There were 18 (23%) patients with LHD, 4 (5%) with CLD, 26 (33%) with CHD, 3 (4%) with CTED and 3 (4%) had severe tricuspid valve regurgitation without other abnormalities. Pre-capillary PH was found in 40 (51%) patients of whom 17 (42.5%) had either heart failure with reduced ejection fraction, CHD, CLD or CTED [8(20%), 4(10%),

3(7.5%), 2(5%), respectively], 7 (17.5%) had CTD, and the remaining 16 (40%; 20% of study group) could be classified as having idiopathic pulmonary arterial hypertension (iPAH).

Conclusions: Apart from LHD and CHD, a significant proportion of patients, who could be diagnosed with PH according to the new definition were patients with CTD and iPAH, which could influence their management strategi

Statin therapy in chronic kidney disease patients undergoing hemodialysis

Authors: Santa Strapcane

Tutors: Asoc. Prof. Andris Skride MD, PhD, Dr. Dana Kigitovica

Affiliation: Riga Stradiņš University, Pauls Stradiņš Clinical University Hospital

Introduction: Haemodialysis is accounted as the most common therapy, accounting for 69% of all renal replacement therapies and 89% of all dialysis. Patients receiving haemodialysis present significantly higher risk for cardiovascular events which affect more than two-thirds of patients (Bello et al., 2022). Statin therapy is used as primary prevention of cardiovascular risk amongst the general population; nonetheless, in patients with chronic kidney disease the benefits of statins are controversial (Fellström et al., 2009).

Aim of the study: The aim of this study is to analyze data of statins use in patients from different Latvian haemodialysis centers.

Materials and methods: A cross-sectional study included consecutive patients from four hemodialysis centers from June till October 2022. Data was analyzed with SPSS statistics.

Results: Among 113 included patients, 64.6% were man, mean age was 62.8±14.9 years. Current smokers were 14.2%. Most common primary cause for hemodialysis (47.2%) was glomerular diseases. Comorbidities as primary arterial hypertension and diabetes were diagnosed in 39.8% and 17.7% of patients, respectively. History of arterial vascular disease was present in 47 (41.6%) patients, 26 (23%) patients underwent revascularization. Anamnesis of kidney transplantation was present in 17.7%. Mean plasma concentration for total cholesterol, LDL cholesterol and triglycerides were 4.4±1.3 mmol/L, 2.5±1.1 mmol/L and 1.7±1.3 mmol/L, respectively. Statins were used in 60 (53.1%) patients, majority of them (68.3%) were using atorvastatin and 31.7% patients were using rosuvastatin. 19% of patients started statin therapy while undergoing haemodialysis. Patients who had transplantation were associated with 2.4 times increased usage of statins (p=0.09). No significant lipid concentration difference was observed between patients who underwent transplantation and those who did not (p>0.05). LDL concentration with and without statin use was 1.97 and 2.73 (p=0.03), respectively. Patients with history of cardiovascular events had 8.4 times higher probability of using statins than patients without cardiovascular events (p<0.001, CI 3.47-20.53) and 10.3 times higher probability of using statins after revascularization than patients without revascularization (p<0.001, CI 2.98-37.11).

Conclusions: Statin therapy was related to history of cardiovascular events and revascularization, as well expressing significantly lower LDL concentration, that might be beneficial in secondary prophylaxis. History of transplantation was associated with increased statin administration.

Is insulin resistance associated with acne vulgaris?

Authors: Weronika Szybiak1 Michalina Gruszczyńska1

Tutors: Prof. Katarzyna Łącka MD, PhD 2

Affiliation: 1 Students' Scientific Society at Poznan University of Medical Sciences, Student's Scientific Section of Endocrinology, Department of Endocrinology, Metabolism and Internal Medicine, Poznan University of Medical Sciences, Poznan, Poland 2Department of Endocrinology, Metabolism and Internal Medicine, Poznan University of Medical Science, Poznan, Poland

Introduction: Acne vulgaris is a growing problem in different age groups of patients. This skin disorder may be regarded as a civilization disease, likewise the insulin resistance, glucose intolerance or even diabetes mellitus. Skin often reflects the internal health condition, therefore acne formation may be associated with glucose disbalance. The recently growing interest concerning possible relationship between these diseases has been observed, however, up to now, with a few data available. Conducting more research is necessary in order to include assessment of insulin resistance in classical acne vulgaris diagnosis and treatment.

Aim of the study: The aim of our study was to evaluate insulin resistance conducted by obtaining: glucose and insulin fasting serum levels in patients with acne vulgaris compared to the control group.

Materials and methods: Group of patients consist of: 41 acne vulgaris patients and 47 healthy controls. Both groups involved in the study were matched in age. Glucose fasting serum level and insulin fasting serum level were obtained from each patient. Moreover, HOMA-IR and BMI were calculated.

Results: The mean±SD glucose fasting serum level was 94,88±7,731 [mg/dl] in study group and 79,51±7,175 [mg/dl] in control group (p<0,001). The mean insulin fasting serum level was 14,47±6,394 [µIU/mL] in study group and 11,83±4,309 [µIU/mL] in control group (p=0,059). The mean±SD BMI was 24,57±3,867 in study group and 22,9±2,53 in control group (p=0,051). The BMI range for acne patients was 18,939-36,678 and for controls 18,37-29,04. Calculated HOMA-IR mean value in study group was 3,4±1,49 and in control group 2,34±0,909 (p<0,001).

Conclusions: Statistical analysis revealed statistically significant differences between acne patients and control group in the mean±SD glucose fasting serum level values and calculated HOMA-IR mean values. The mean±SD glucose fasting serum level values were found to be statistically higher in patients with acne, similarly to HOMA-IR values. The results indicate that glucose disbalance and a lack of insulin sensitivity of tissue may be associated with acne vulgaris. Assessment of insulin resistance should be considered in the process of acne diagnosing and treatment.

The antibiotic consumption in the intensive care unit of the University Hospital in Cracow before and in the era of COVID-19

Authors: Urszula Durlak, Cezary Kapturkiewicz

Tutors: prof. Jadwiga Wójkowska-Mach, dr Paweł Krzyściak

Affiliation: SSG of Microbiology, Jagiellonian University Medical College, Krakow, Poland

Introduction: The period before and during the pandemic differed in the management of hospital treatment, including the use of antibiotics in patients of intensive care units.

Aim of the study: The aim of the study was to check whether the pandemic affected the

antibiotic consumption in total and profile of antibiotics used in intensive care patients.

Materials and methods: We collected data on the supply of antibiotics in patients hospitalised in 2019 and 2020 in the intensive care unit. In 2020, we took into account patients without the COVID-19. The results are reported in DOT per 100 pds (antibiotic Days of Therapy per 100 patient days), the total number of days a specific antibiotic was administered per number of patientdays (pds).

Results: The total DOT/100pds was 196,6 in 2019 and 248,7 in 2020. Penicillins with extended spectrum were used more frequently in 2019 than in 2020, respectively, 7,9 and 4,8 DOT/100 pds, $p<0,001$. Piperacillin and tazobactam consumption has tripled in 2020, respectively, 1.7 (2019) and 4.5 (2020) DOT/100 pds, $p<0,001$. Use of3rd and 4th generation of cephalosporins quadrupled in 2020, respectively, 12,8 (2019) and 44,8 (2020) DOT/100 pds. The consumption of Fluoroquinolones has increased approximately 1.5 times in 2020, respectively, 35.6 (2019) and 55,0 (2020) DOT/100 pds, $p<0,001$.

Conclusions: Changes in the profile of the antibiotic consumption and used in 2019-2020 were significant, which is particularly visible in the case of an increase in the consumption of the most important in modern medicine antibiotics, the 5th generation of penicillin and the 3rd and 4th generations of cephalosporins. The results of our study show not only the lack of clear, consistent guidelines for antibiotic therapy in the first year of the pandemic, but also a problem with the broader approach to antibiotic stewardship in Poland

Mental Health

Oral Session

Scientific Committee

prof. Marcin Siwek, MD, PhD

Joanna Mostowik, MD, PhD

Aleksandra Gorostowicz, MD

Coordinators

Patryk Sajkiewicz

Dominika Szumilas

IMSC

Evaluation of decision-making process changes in gambling and opioid-addicted individuals during the Iowa Gambling Task

Authors: Michał Piotrowski, Antoni Cierniak, Zofia Polak, Julianna Dąbrowa

Tutors: Piotr Walecki, MD, PhD; prof. Edward J. Gorzelańczyk, MD,PhD

Affiliation: SSC for Digital Medicine and Robotics

Introduction: The Iowa Gambling Task (IGT) is a psychological task thought to simulate real-life decision-making. Gambling addiction is correlated with the tendency to gamble despite logic. Evidence suggests that compared to healthy individuals, those who are addicted to opioids or gambling exhibit higher levels of risky behaviors. However, the number of studies research covering the learning curve in the IGT of such individuals is reduced.

Aim of the study: The aim of the study was to investigate whether gambling or opioid addiction impacts the ability to learn during the IGT.

Materials and methods: The participants were recruited and then diagnosed following the ICD-10 criteria. The participants were divided into four groups: healthy, controls(n=39), opioid-addicted (n=30), opioid addicted after methadone substitution therapy (n=27), and gambling-addicted (n=33), with all participants being male. The IGT was used to evaluate changes in the decision-making ability process. The process of learning during the task was measured using a net score (the number of advantageous decisions minus the number of disadvantageous decisions).

Results: It was found (Wilks lambda F = 7,804853, p = 0.000) that the starting net score was lowest among opioid-addicted (-0,87±6,88), but patients after methadone treatment had the net score (0,33±7,53), similar to the control group (0,46±7,32). Groups with opioid addicts presented a lower average increase in the net score (1,04±1.99) than the control group (2,04±2,57). Gambling-addicted had a higher starting net score (2,36±7,32) and a lower net score improvement (0,23±2,28). After three rounds of the IGT, a decrease in their net score was observed. A similar reduction in the net score was found among opioid addicts' who had not received methadone.

Conclusions: All groups presented lower learning potential than the control group. Despite better decision-making ability at the start, the gambling-addicted group stopped learning after 3 rounds, possibly because of the specific nature of gambling dependence. Perhaps a game is more important than winning for gamblers. A similar effect is present in opioid-addicted individuals, but it seems to be diminished by a methadone application. Methadone therapy also increases opioid addicts' ability to learn during the IGT

The influence of external and internal focus of attention (FOA) on learning motor skills in children with mild intellectual disabilities

Authors: Karolina Schmidt, Gabriela Kwoka, Karolina Bieda

Tutors: dr.n.med. Alicja Fąfara

Affiliation: Student Scientific Society UJ CM

Introduction: Focus of attention (FOA) refers to where the performer pays attention when performing a particular movement. Focusing on the inside of the body while performing the movement is called "Internal FOA", and focusing on the outside of the body is called "External FOA". When teaching new motor skills, we can evoke either internal FOA or external FOA in a

child with appropriately communicated instructions, which can affect the child's learning process.

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

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

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

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

The level of dispositional optimism in postpartum women after a Cesarean delivery

Authors: Katarzyna Błaszczak1, Tomasz Smól 2, Anna Jaśkiewicz1, Angelika Doroszewska1

Tutors: dr hab. Anna Pilewska-Kozak; Grażyna Stadnicka PhD, prof. UM

Affiliation: 1 Student Scientific Club of Midwifery Enthusiasts, Department of Obstetrics and Gynecology Nursing, Faculty of Health Sciences, Medical University of Lublin 2Student, Faculty of Medicine, Medical University of Lublin

Introduction: The level of optimism has the function of modifying the individual's actions and behaviour in various situations. Dispositional optimism describes a person's tendency to have a positive perception of the world and their own future. Postpartum women are in a completely new life situation. What is more, the Caesarean section itself is an operation that modifies their perception of reality.

Aim of the study: Examining what level of dispositional optimism characterizes postpartum women after Caesarean section.

Materials and methods: The study was conducted by a diagnostic survey method, using a questionnaire of our own design and the Life Orientation Test-Revised (LOT-R). The research was carried out among 171 post-caesarean section women in the maternity ward of the Independent Public Clinical Hospital No. 4 in Lublin.

Results: The respondents presented a moderate level of dispositional optimism (the mean was 15.18 points). Low scores (1-4 sten) were obtained by one in four (26.3%) women, 37.4% had average scores (5-6 sten), while high scores (7-10 sten) were obtained by 36.3% of the respondents.

Conclusions: Postpartum women after a Caesarean delivery have an average level of dispositional optimism. Married women present higher levels of optimism than single women. Age and education, however, were proved to remain without an impact. Women who declare to have knowledge about pregnancy and childbirth are characterised by a higher level of dispositional optimism than those with little education in that matter.

The health locus of control among prostate cancer patients and its impact on patients' treatment satisfaction levels

Authors: Julia Kowalska

Tutors: Joanna Biegańska-Banaś, MD PhD

Affiliation: Student Scientific Association at the Department of Health Psychology, Faculty of Health Sciences, Jagiellonian University Medical College; Department of Clinical Psychology, University Hospital in Cracow

Introduction: Patients with an external locus of control are more likely to limit the treatment process to only following the instructions of the medical staff. Such patients are characterized by low motivation to undertake other pro-health behaviors and a lower sense of satisfaction with life. This attitude is more often seen in men with prostate cancer, in whom this diagnosis strongly affects their mental well-being, but nevertheless, they are often reluctant to take self-motivated steps towards better health and satisfaction (including psycho-oncological support in a coordinated care model).

Aim of the study: The aim of the study is to verify whether the locus of health control can be related to the level of patients' treatment satisfaction. The additional aim is to identify if patients with internal locus more often decide to seek help from other specialists, including psycho-oncologists on their own (while provided with such a possibility).

Materials and methods: The research was carried out among 135 prostate cancer patients (aged 36-72) who were currently in treatment at hospital wards offering the possibility of additional psycho-oncological support. The research method was a diagnostic survey with the use of the Multidimensional Health Locus of Control Scale (MHLC), version B, and the author's questionnaire measuring satisfaction.

Results: Patients were divided into two groups based on test results: 83 of them were qualified as External-Locus group, and 52 as Internal-Locus group. People from group IL displayed a substantially higher level of treatment satisfaction ($p < 0.05$), whereas, for the group EL, no such effect was observed. In addition, group IL also displayed a much higher correlation with voluntary help-seeking at psycho-oncologists than group EL.

Conclusions: The health locus of control constitutes a crucial factor in the prediction of overall treatment satisfaction and his ability to voluntarily seek coordinated care options in order to improve treatment effects.

Proalgesic action of SSRIs – case series of two patients with type 2 diabetes mellitus

Authors: Wiktoria Wojturska, Zuzanna Kurylonek

Tutors: Jarosław Woroń MD, PhD

Affiliation: Students' Scientific Group of Clinical Pharmacology, Jagiellonian University Medical College in Cracow

Introduction: In patients presenting with chronic pain overlapping symptoms of pain, depression, anxiety and insomnia often occur. Hyperalgesia, which results from this specific group of symptoms, conduces to worsening pain control,

whereas inappropriate pharmacotherapy of several symptoms leads to deteriorating quality of life. The use of antidepressants, especially selective serotonin reuptake inhibitors (SSRIs), in patients with neuropathic pain may be connected with aggravation of pain or provoke occurring of pain as adverse events of pharmacotherapy. This phenomenon can be explained by the fact that serotonin in the peripheral nervous system has proalgesic action.

Case report: Here we present 2 cases in which the use of SSRIs resulted in exacerbation or occurrence of pain as side effects. The first patient is a 58 year old male who has been suffering from depression and anxiety. His comorbidities were type 2 diabetes mellitus as well as diabetic neuropathy. After he started taking paroxetine, 40 mg daily, the burning, stinging feeling in both feet intensified. The paroxetine was switched to milnacipran, as the patient had not tolerated well the combination of duloxetine and pregabalin earlier. The symptoms were mitigated by the change of treatment. The second case is about 71 year old woman complaining of depression. She also had history of type 2 diabetes mellitus and diabetic neuropathy. Fluoxetine, 20 mg daily, was changed to duloxetine with alpha-lipoic acid because of exacerbation of dysesthesia and burning of both feet. Alleviation of the symptoms of neuropathic pain was observed after.

Conclusions: Presented cases show that SSRIs may cause the increase the level of neuropathic pain. Therefore, in patients suffering from chronic pain, especially diabetic neuropathy, it is crucial to take this into account. When such adverse effects occur, it may be advisable to switch pharmacotherapy.

Psychodermatology of plaque psoriasis in a 69-year-old patient

Authors: Konrad Tomczyk

Tutors: Grażyna Puto, Doctor of Medical Sciences

Affiliation: Institute of Nursing and Midwifery, Faculty of Health Sciences, Jagiellonian University Medical College

Introduction: Psoriasis is a non-infectious, chronic, systemic inflammatory disease characterized by skin lesions resulting from hyperkeratosis of the epidermis. Plaque psoriasis is one of the most common psoriasis. Typical changes for this psoriasis are raised, round or oval, covered with scales, clearly separated from healthy skin, located on the legs, arms, knees and elbows, back, head, rarely on the face, hands, feet, or stomach.

Case report: A 69-year-old man with plaque psoriasis diagnosed at the age of 34. Previously treated with betamethasone ointment with salicylic acid and salicylic acid ointment with castor oil for lesions on the right calf. Tar shampoo and an ointment containing betamethasone and calcipotriol were used for skin lesions on the scalp. Currently, the patient's psoriasis is in remission. Currently treated with a prescription ointment containing: eucerin, salicylic acid, hydrocortisone, and precipitated sulfur. For skin changes within the scalp, the patient continues to use tar shampoo. The comorbidities include hypertension diagnosed at the age of 55 (treated with an angiotensin converting enzyme inhibitor) and gout diagnosed at the age of 69 (treated with a xanthine oxidase inhibitor). The patient has been complaining of joint pain for 3 months (so far untreated). The patient is under the constant care of a dermatologist and primary health care. The patient complains of severe itching of the sore lesions, which intensifies in the evening, making it difficult for him to fall asleep. Uncomfortable sleep causes a lot of stress, which the patient complains about. Despite

troublesome symptoms, the patient does not always comply with medical recommendations. Treatment at home is unsystematic.

Conclusions: 1. The care of a 69-year-old man with plaque psoriasis focuses on the care of skin lesions and skin.

2. The patient should be educated about comorbidities and side effects of the drugs used

3. Reducing the number of pharmacological agents in therapy has a positive effect on the ease and willingness to comply with treatment.

4. Psoriasis in terms of psychodermatology affects coping with stress and the quality of sleep.

Polypharmacy in a psychiatric patient - a case study

Authors: Michał Pałuchowski, Olga Jakubik

Tutors: Krzysztof Bogusz MD

Affiliation: Medical University of Warsaw / SKN Psychiatrii WUM

Introduction: Polypharmacy is a term used to describe a simultaneous use of 2 or more medications in the same patient, however the definitions have ranged from 2 to 7 or more drugs. It may suggest that the patient is being prescribed more medications than it is clinically indicated. In different studies the prevalence of polypharmacy is estimated up to 37%.

Case report: A 34-year-old woman was referred to private practice by her psychotherapist. In the course of the appointment the patient reported that she had recently been experiencing an exacerbation of depression, practically not leaving the house due to the fear of rejection and negative evaluation.

On Beck's Depression Inventory she initially scored 34 points (severe depression) and on GAD-7 scale 14 points (moderate severity).

The patient was previously diagnosed with social phobias (F40.1), recurrent depressive disorder, current episode severe without psychotic symptoms (F33.2) and overeating associated with other psychological disturbances (F50.4).

She started psychiatric treatment in high school, around the age of 16. She reported that the drugs were modified frequently, even in a span of one month. She was being prescribed olanzapine, fluoxetine, valproic acid, vortioxetine, moclobemide and ketamine. At the time of the visit she was taking venlafaxine (300 mg), aripiprazole (15 mg), bupropion (150 mg), quetiapine (200 mg) and pregabalin (300 mg) daily as needed. The patient expressed doubts concerning the effectiveness of the current treatment.

Within the next 2 visits bupropion, aripiprazole and quetiapine were gradually discontinued which resulted in the significant improvement on both BDI (5) and GAD-7 (9) scales without introduction of any new medication.

Conclusions: Although polypharmacy may be justified in certain medical cases, the practitioners should be aware of all the concerns associated with the phenomenon. The use of various medications, especially in psychiatric patients, may not necessarily result in a better therapy response, often leading to the exacerbation of the reported symptoms.

Therefore adequate caution should be exercised in the prescription of psychiatric drugs. Furthermore, the effectiveness of the administered medication ought to be regularly assessed and followed by appropriate changes in the treatment plan.

Young patient with severe mental and physical illness

Authors: Karīna Čerņika

Tutors: Assoc.Prof. Jeļena Vrubļevska

Affiliation: RSU

Introduction: Life expectancy for individuals with serious mental illness is shorter than the general population, and this excess mortality is also due to physical diseases. It is crucial that severe physical conditions can occur in young patients with mental illness, who often are not appropriately investigated due to their extrinsic age.

Case report: The patient is a 23-year-old woman whose primary complaints were frequent seizures of unclear ethiology that were characterized by loss of consciousness. Since 2018 she was taken to the somatic hospitals several times. The neurological investigation did not confirm epilepsy, and no other neurological disorders were detected. Noteworthy, seizures used to be provoked by stressful situations. Moreover, her mental state was represented by depression, derealization and depersonalization. Two years later, the patient started to have auditory pseudohallucinations and thought insertion. The diagnosis of Schizophrenia (F20; ICD-10) was detected In 2022 she was hospitalized due to shortness of breath and anxiety. A diagnosis of deep vein thrombosis of the lower extremities, bilateral pulmonary embolism with infarct pneumonia was established. Laboratory tests revealed an increase in Willebrand and other blood clotting factors. Although the patient's quality of life is reduced due to severe mental illness and poor physical condition, she is part-time employed and continues her education.

Conclusions: The primary purpose of this case is to show that very serious health conditions can occur in young patients, and emphasis should be placed on the treatment and monitoring of psychiatric patients to improve functioning in the main aspects of life.

Orthopedics & Physiotherapy

Oral Session

Scientific Committee

prof. Artur Gądek, MD, PhD

prof. Henryk Liszka, MD, PhD

Małgorzata Kulesa-Mrowiecka, PhD

Tomasz Potaczek, MD, PhD

Agnieszka Wnuk-Scardaccione, PhD

Coordinators

Magdalena Śladowska

Lizaveta Vashchelina

IMSC

Awareness, knowledge and needs of men related to physiotherapy in sexology. Frequency of sexual dysfunctions

Authors: Maria Krysik, Weronika Stochniałek

Tutors: Dr Andrzej Szczygieł

Affiliation: Students' Science Club Manual Activity Group, Rehabilitation Department, Academy of Physical Education them. Bronisław Czech in Cracow, Poland

Introduction: Sexuality is a very important topic that affects every human being. The lifestyle we lead has a negative impact on our health and well-being, and also contributes to the emergence of health problems, including more frequent occurrence of sexual dysfunctions. There are few scientific studies showing the magnitude of this problem, and the field of physiotherapy in sexology is a new and little-known field, sexuality itself is still a taboo for many people.

Aim of the study: The aim of the study is to draw attention to how much the topic of sexual dysfunctions is overlooked. It analyzes the knowledge and needs of men related to physiotherapy in sexology, as well as the frequency of sexual dysfunction among them.

Materials and methods: The research group included 76 men aged 18-39. The author's questionnaire, created for the purposes of research by its authors, was used as a tool. It consists of 30 questions. The data was collected electronically.

Results: 22 (28.95%) of the surveyed men know that there are physiotherapists dealing with sexual dysfunctions, and 11 (14.47%) know such a specialist. Only 2 (2.63%) men used the services of a urogynecological physiotherapist. 31 (40.79%) men report sexual dysfunctions, and 2 (6.45%) of them went to a specialist with their problem. In the event of sexual dysfunction 56 (73.68%) men declare that they would seek help, including 5 (6.58%) of all respondents would choose a physiotherapist.

Conclusions: There is little scientific research on the effectiveness of physiotherapy in combating male problems related to sexual dysfunction. Awareness of physiotherapy in sexology among men is at a low level - 28.95% of men know that such a field exists, but only 2.63% of men used the help, including none suffering from sexual dysfunction problems. The demand for physiotherapists dealing with sexual problems is very high, as 40.79% of men suffer from sexual dysfunction.

Correlation between results of passive knee extension test according to Kinetic Control concept and results of Functional Movement Screen test: active straight-leg raise test- initial report

Authors: Aleksandra Adamik

Tutors: dr hab. Edyta Mikołajczyk prof. AWF PhD, DSc

Affiliation: Institute of Applied Sciences, Department of Kinesiotherapy, University School of Physical Education in Krakow, Student Science Club of Motor Rehabilitation „SZANSA"

Introduction: Non-specific low back pain affects people of all ages. It is now one of the leading reasons for disability all over the world.

Aim of the study: The purpose of the work was to determine correlation between two tests which were used to examine young women with low back pain.

Materials and methods: 23 women in age 20-24 with reported low back pain who took part in

research do not practice any organized sports discipline. Every participant has been tested using selected Kinetic Control (KC) tests and the Functional Movement Screen (FMS). Than it will be planned individual rehabilitation

To check the relationship between the results of the passive knee extension test according to Kinetic Control and FMS active leg-raise test, the data were subjected to statistical analysis, the Shapiro Wilk and Spearman correlation tests. The statistical significance was set at $p<0.05$.

Results: The results show that there is no statistically significant correlation between the results of both tests. The passive knee extension test and the active straight-leg raise test have been widely used to assess hamstring flexibility. The results of both tests showed extremely different observations. The participants did not reach the full passive range of extension (KC test), while most of them reached the active range of flexion of the lower limb (FMS test). There were observed significant correlations ($p<0.05$) between stiffness of right and left leg (KC test).

Conclusions: The relationship between the KC test - passive knee extension and FMS – active straight-leg raise has not been observed. Although these are two independent tests, both were designed to assess the flexibility and stretching of the posterior thigh muscles. In case of active straight-leg raise subjects could uncontrollably compensate for the stiffness of the posterior tight muscles with possible excessive pelvic tilt and lumbar segmental instability (while the opposite lower limb were constantly keeping in contact with the base).

The presented work is a preliminary report and further observation and analysis of the test results are necessary. They will be carried out after a 3-month rehabilitation, aimed at restoring the appropriate muscle balance of the subjects.

De Quervain's tenosynovitis: incidence and demographic risk factors in Hospital of Lithuanian University of Health Sciences Kaunas Clinics.

Authors: Gintarė Lukoševičiūtė, Viljamas Sipavičius

Tutors: Dr. Ernest Zacharevskij, PhD

Affiliation: Faculty of medicine, Medical Academy, Lithuanian university of Health sciences, Kaunas, Lithuania

Introduction: De Quervain's tenosynovitis affects the abductor pollicis longus and the extensor pollicis brevis tendons at the styloid process of the radius. The etiology of the disease is associated with repetitive movements of the wrist and thumb, that involves a thickening of the extensor retinaculum.

Aim of the study: To assess the rate and change of cases, association of demographic risk factors such as age and gender with De Quervain's tenosynovitis adult patients, also to compare epidemiological statistics of Lithuanian University of Health Sciences Kaunas Clinics with global trends.

Materials and methods: Data of study was used from the Health Information Center of the Institute of Hygiene in Lithuania. Cases were collected from Kaunas Clinics Lithuania from 2014 to 2021. Statistical methods - using the Student t test, t-test for independent samples. Statistical significance - $p<0.05$.

Results: During 8 years period, 336 cases were identified: children accounted for 0.60% adults 99.40%. Among adults 83,93% (18-64 years), 282 cases were identified: they accounted for 20.92% men and 79.08% women ($p= 0.000$). Among the elderly 15,48% (65+), 52 cases were identified: men 19.23% and 80.77% women, ($p= 0.000$). Comparing in terms of age. 83.93% were

18-64 year old patients, 15.48% were 65+ year old patients (p= 0.000).

Conclusions: From 2014 to 2021, 336 cases of De Quervain's tenosynovitis were identified in Kaunas Clincs. Analysis showed that De Quervain's tenosynovitis is mostly detected in patients aged 18-64. Our study found out that gender is an important factor in the occurrence of De Quervain's tenosynovitis. Adult women in all age groups are affected more often than men. De Quervain's tenosynovitis was the most common in women aged 18-64 and this coincides with global trends worldwide, according to which risk factors for De Quervain's are female gender, and age above 40. During 8 years period, the number of cases has not significantly changed.

Detailed measurements of the synovial Plica of the elbow in asymptomatic patients with clinical implications.

Authors: Michał Bonczar1,2,3,4, Patryk Ostrowski1,2,3,4, Wojciech Bednarz4

Tutors: Mateusz Koziej MD PhD DSc 1,2,4

Affiliation: 1. Youthoria, Youth Research Organization, Kraków, Poland 2. Students' Scientific Group of Surgical Anatomy, Jagiellonian University Medical College, Kraków, Poland 3. Students' Scientific Group at the Chair of Radiology, Jagiellonian University Medical College, Kraków, Poland 4. Department of Anatomy, Jagiellonian University Medical College, Kraków, Poland

Introduction: Around the radiocapitellar joint is a fold of synovial tissue known as the synovial plica of the elbow, which is thought to be a remnant of the embryonic septa of normal articular development.

Aim of the study: The goal of the current study was to describe the morphometric characteristics of the elbow synovial plica and its relationship to surrounding structures in asymptomatic individuals.

Materials and methods: To determine the morphometric features of the elbow's synovial plica, a retrospective study was conducted. The outcomes of 216 consecutive patients who received magnetic resonance imaging (MRI) of the elbow during a five-year period were examined.

Results: A total of 161 out of 216 elbows (74.5%) had plica. The plica's average width was set at 3.00 mm (SD: 1.39). The plica's average length was determined to be 2.91 mm (SD: 1.13). An analysis of sexual dimorphism was also included. Potential correlations were analyzed for each of the categories and age.

Conclusions: The synovial plica of the elbow is a clinically relevant anatomical structure. Analyzing the morphometric parameters of the synovial plica is necessary to properly evaluate synovial plica syndrome, which can commonly be confused with other sources of lateral elbow pain such as tennis elbow, oppression of the radial and/or posterior interosseous nerve, or snapping of the triceps tendon. The authors suggest that the thickness of the plica may not be the golden diagnostic feature as there are no statistically significant differences in this parameter between symptomatic and asymptomatic patients. A precise and accurate diagnosis of synovial fold syndrome and/or differentiation from other sources of lateral elbow pain must be performed, as the surgical treatment, even if performed properly, will be unsuccessful because of a misdiagnosed source of pain.

Motor branches of the sciatic nerve - the anatomy and clinical aspects for orthopaedists

Authors: Tomasz Kozioł, Dawid Plutecki, Patryk Janda, Julianna Dąbrowa

Tutors: prof. Jerzy Walocha, MD, PhD

Affiliation: Students' Scientific Group of Clinical Anatomy, Chair of Anatomy, Jagiellonian University Medical College

Introduction: Sciatic nerve is the largest nerve in human body, originating from the lumbosacral plexus (L4-S3 nerve roots), leaves the pelvis through the greater sciatic foramen inferior to the piriformis muscle and traveling posteriorly through the lower limb. The sciatic nerve in the thigh provides motor innervation of the biceps femoris, semimembranosus, semitendinosus, and the ischial portion of the adductor magnus. The muscular branches of the sciatic nerve is not particularly highly discussed in the literature, however hamstring injuries are one of the most common problems in sports medicine. Moreover, the proximal motor branches of the sciatic nerve may be transferred as donor nerves to repair high femoral nerve injury. Detailed anatomical knowledge of the motor branches of the sciatic nerve can be useful in the sports-related muscle injuries.

Aim of the study: Aim of the study was to describe the innervation pattern of the posterior group of muscles of thigh and its variations to avoid complications during surgeries.

Materials and methods: Sciatic nerves from 12 formalin-fixed lower limbs were carefully dissected and described. In 10 of them were measured distances between lower edge of piriformis muscle and each branch from sciatic nerve coming to hamstring muscles. Every measurement was made three times using an electronic calliper.

Results: In the most of cases (8/12) was observed 2 branches from tibial nerve which innervated long head of biceps femoris, semitendinosus, semimembranosus, adductor magnus and common proximal hamstring tendon. In the rest of cases were observed 3 (3/12) and 1 branch (1/12). Usually, one branch from the common peroneal nerve innervated the short head of biceps femoris and in only two cases there were 2 branches. On average the first branch from the tibial nerve came 77 mm under piriformis muscle, the lowest 116 mm and branch from common peroneal nerve 189 mm.

Conclusions: Innervation pattern of the posterior group of thigh muscles is variable but this research shows that usually sciatic nerve gives 2 branches to the hamstring muscles and adductor magnus from tibial nerve and one to short head of biceps femoris. An important finding is also the accessory innervation of the proximal hamstring ten.

Relationship of physiologic variables among adult patients with ulnar and radial nerve mononeuropathies.

Introduction: Peripheral nerve injuries in the upper extremities is an important medical issue, causing significant morbidity. Nerve damage can occur due to various pathologies or traumatic conditions. In some cases, the ulnar nerve is more affected, and in others, the radial nerve.
Aim of the study: To evaluate the rate of cases and association between age and gender among ulnar and radial nerve injury patients patients from 2014 to 2021 in Lithuanian University of Health Sciences Kaunas Clinics.

Materials and methods: Data of study was used from the Health Information Center of the Institute of Hygiene in Lithuania. Cases were

collected from Kaunas Clinics Lithuania from 2014 to 2021. Statistical methods - using the Student t test, t-test for independent samples. Statistical significance - $p<0.05$.

Results: From 2014 to 2021, 3,225 cases of ulnar nerve damage were identified. 84.65% were adults aged 18-64: men accounted for 49.19% and women - 50.81% (between genders p= 0.252). 13.71% were elders aged 65+: 42.08% were male and 57.92% female (p= 0.003 between genders).

Furthermore, during 8 years period 382 cases of radial nerve injury were identified. 79.06% were adults aged 18-64: men accounted for 61.26% and women - 38.74% (between genders p= 0.000). 16.49% were elders aged 65+: men - 47.62% and women 52.38% (between genders p= 0.752).

Conclusions: From 2014 to 2021, 3,225 cases of ulnar and 382 cases of radial nerve injuries were identified. The study showed that patients aged 18-64 were most commonly affected by ulnar and radial nerve injuries. Among elders (65+) the percentage of injuries was higher in woman than in men. Incidence of ulnar nerve injuries was higher in woman than in men among 65+ patients. Hence, damage to the radial nerve among 18-64 year old group was more often found in men than in women.

The difference in the effects of vibrotherapy versus kinesiotaping on lumbar pain

Authors: Magdalena Łaś, Piotr Nenko, Oskar Pażucha

Tutors: Dr Andrzej Szczygieł

Affiliation: Academy of Physical Education in Krakow

Introduction: The research study involved comparison of the effects of two methods used to treat lumbar spine pain : vibrotherapy and kinesiotaping. Thirty-six people aged 18-25 with varying degrees of pain participated in the study which took into account: intensity, the nature of pain and the impact of complaints on the performance of daily activities. The study group was divided into 3 subgroups, two of which were treated with a physical factor (kinesiotaping or vibrotherapy). The third was a control group, whose task was to describe pain sensations before and after 2 weeks.

Aim of the study: Comparison of the effectiveness of vibrotherapy and kinesiotaping in the treatment of lumbar spine pain complaints

Materials and methods: A group of 36 people was divided into three subgroups of 12 people each, consisting of a control group, a study group received kinesiotape applications, and a group that received vibrotherapy using Vitberg vibration mattresses. Each of the 12 people in the vibrotherapy group was given a "neuro" module for pain relief and muscle strengthening. Sessions were held 3 times a week for 2 weeks, each time under the same conditions. In the kinesiotape group, "stars " pain relief applications were applied 2 times a week for 2 weeks. The control group also consisted of 12 people, in whom pain complaints were examined before and after 2 weeks (including pain intensity on the VAS scale). The study groups using kinesiotaping and vibrotherapy were examined for pain before and after a series of treatments.

Results: Kinesiotqaping: The kinesiotape group had a significant reduction in pain. 10 out of 12 subjects said they felt an overall improvement after applying the tapes. Moreover,10/12 subjects declared a reduction in pain relative to the intensity of their pre-test complaints.

Vibrotherapy: 8 out of 12 subjects reported a noticeable reduction in the intensity of lower back pain symptoms, with 9/12 subjects reporting overall improvement after vibrotherapy.

Control group: the level of pain complaints remained relatively constant.However, some experienced a decrease in pain, and some even experienced an increase in pain symptoms.

Conclusions: Both vibrotherapy and kinesiotaping reduce lumbar pain.

Results of surgical treatment of early onset scoliosis with MAGEC® system

Authors: Kacper Stolarz, Tomasz Kozioł, Aleksander Osiowski, Maksymilian Osiowski

Tutors: Dominik Taterra MD

Affiliation: 1.Ortho and Spine Research Group, Poland 2.Department of Orthopaedics, Orthopaedics-Rehabilitation University Hospital in Zakopane, Poland

Introduction: Early onset scoliosis (i.e., scoliosis which has been diagnosed before the age of 10 years) is a serious condition concerning patients suffering from neuro-muscular diseases. Moreover, still many of the cases are classified as idiopathic. Conservative treatment is frequently insufficient and therefore surgical intervention is necessary. However, traditionally used growing rods require repeated surgeries which may expose patients to higher risk of long-lasting complications. Magnetically controlled growing rods were introduced almost a decade ago as an alternative to traditional growing rods for management of early onset scoliosis. MAGEC rods can be lengthened non-invasively which reduces risks connected with numerous surgical interventions. However, there is still a lack of research on this system with long postoperative follow-up time.

Aim of the study: The purpose of this study was to evaluate clinical and surgical outcomes of early onset scoliosis treatment with MAGEC® system in patients with long follow-up time.

Materials and methods: Preoperative, postoperative and follow-up protocols of 48 paediatric patients from orthopaedic ward were reviewed. Cobb angles were measured on radiographs before and after the surgery, and after the latest follow-up visit. Moreover, distraction lengths as given by external remote controller and as measured on radiographs were noted on each visit. Paired student t-test or ANOVA was used when normality of the data was met. For nonparametric analyses Wilcoxon signed-rank test was utilized.

Results: The mean age of patient at the time of surgery was 8.2 years (SD = 1.96) and mean follow-up time was 24.96 months (SD = 15.77). Mean percentage of correction of scoliosis immediately after the surgery was 50.7% (SD = 14.2%) and 46.8% (SD = 18.4%) after the latest follow-up visit with differences being statistically significant (p=0.021). The distraction length shown by the external remote controller used for magnetic distraction was significantly larger than actual distraction measured on x-ray (p=0.014). Moreover, type of scoliosis influenced postoperative and follow-up correction values (p=0.011).

Conclusions: Our results show that the initial correction after the surgery was larger than at the last follow-up. Moreover, distraction length as given by manufacturer's device deviated significantly from real-life measurements. Nonetheless, MAGEC is a feasible system for treatment of early onset scoliosis.

Pediatrics Original Work

Oral Session

Scientific Committee

prof. Przemko Kwinta, MD, PhD

prof. Dorota Drożdż, MD, PhD

prof. Maciej Siedlar, MD, PhD

prof. Małgorzata Sładek, MD, PhD

Coordinators

Mateusz Kęska

Maria Kurek

IMSC

Accessibility and Immediate Outcomes of Congenital Heart Disease Treatment in Lithuania During COVID-19 Pandemic: a Retrospective Study of a National Center

Authors: Dominykas Budrys (1)

Tutors: Karolis Jonas MD, PhD (2); prof. Virgilijus Tarutis MD, PhD

Affiliation: (1) Vilnius University Faculty of Medicine (2) Vilnius University Faculty of Medicine, Institute of Clinical Medicine, Department of Cardiovascular Diseases, Cardiothoracic Surgery Center

Introduction: Congenital heart disease is a unique group of medical conditions. Patients, usually very young, require complex surgical treatment, various means of diagnostic tests, in- and outpatient care. Vilnius University Hospital Santaros Clinics (VUHSC) is the only center in Lithuania where such care is delivered for patients throughout their life. Recent Covid-19 pandemic posed multiple challenges in maintaining quality of healthcare services. It is especially relevant in the field of congenital heart disease where timely and sometimes even immediate care is essential.

Aim of the study: This study aims to investigate accessibility and immediate outcomes of congenital heart disease treatment in Lithuania during the period of pandemic restrictions.

Materials and methods: Health data of all patients with congenital heart disease who underwent surgery in VUHSC from 28th February 2020 (first confirmed Covid-19 case in Lithuania) to 20th April 2022 (end of the last quarantine) was analyzed retrospectively (n=288). Results were compared against a similar sized cohort treated during a pre-pandemic period from 1st April 2018 to 28th February 2020 with similar case volume (n=310).

Results: In the research period, 288 patients were admitted to the center of congenital heart disease in VUHSC. Male to female ratio was 1:1.28. Median patient age was 237.5 days (IQR 866,75–24), most of the patients (43.75%) were 1–18-year-old. 354 surgeries were made, including urgent (11.01%), recurrent (21.75%) procedures and revisions (15.25%). 4.5% of the patients died in the early postoperative period. Higher age was associated with longer time from the date of diagnosis to the date of surgery ($p<0.001$). Among neonates (age 0–28 days) and 1–18-year-old patients, hospitalizations were significantly longer than others ($p<0.001$). Compared to a pre-pandemic period, patients were younger ($p<0.001$), more newborns (0-28 days old) were treated ($p=0.009$), and more urgent surgeries were performed ($p=0.007$) during the research period.

Conclusions: Covid-19 pandemic did not cause any decrement in congenital heart disease patient count, and the imposed pandemic restrictions did not impair treatment availability. During the pandemic period, more patients underwent urgent surgical treatment and the number of neonate patients increased.

Bacterial colonization of blood in children's treated in the Department of Paediatric Oncology and Haematology UCH - statistical analysis

Authors: Kacper Żurek, Joanna Klepacka, Zuzanna Zakrzewska, Magdalena Wojtaszek-Główka

Tutors: Małgorzata Czogała MD, PhD

Affiliation: Student Scientific Association of Paediatric Oncology and Hematology

Introduction: Patients with neoplasms have a high predisposition to bacterial infections, due to the implemented treatment that impairs immunity and numerous risk factors. Numerous

research studies have been published on this problem but epidemiological studies are insufficient.

Aim of the study: The aim of the study is to analyze and draw conclusions based on the epidemiology of blood infections of paediatric hematooncology patients at the University Children's Hospital (USD) in the period 2011-2021.

Materials and methods: We collected data of bacterial and fungal blood contaminations as well as bacterial and fungal infections epidemiology with cooperation with the Department of Clinical Microbiology UCH. Between 2011 and 2021, 7,667 blood samples were collected and 32,610 tests were performed on 1,914 patients. The analysed cultures were divided into 3 groups depending on the substrate specific for a given group of microorganisms.

Results: The number positive test result was 5.5%. The highest detection was noticed in 2021. Differences in the distribution of patients with positive and negative results in individual years were not statistically significant. The most common pathogen detected was Staphylococcus epidermidis, which was also the leader among Gram-positive microorganisms. There were not dominant species among the isolated Gram-negative microorganisms. Detection of anaerobic organisms was rare (only 4 different anaerobic organisms were isolated in single patients). The same was among the fungal observed. Mechanisms of resistance were included in the analysis of all identified strains-the most common was methicillin-resistant Staphylococcus epidermidis (MRSE).

Conclusions: Our results confirmed that bacterial infections are still a problem and may indicate the effectiveness of prophylaxis. Most of our results are consistent with the current literature, however we were able to highlight data unique to our patient population. Our findings can be helpful for clinical practice and be base for further research

Is level of phospholipides in exhaled breath condensate predictive for pulmonary complications in children with acute leukemia?

Authors: Victoria Koval

Tutors: prof. Nataliia Makieieva, MD, DMedSc

Affiliation: Kharkiv National Medical University. Department of pediatrics №2

Introduction: Acute leukemia (AL) is the most common cancer in children. Due to the improvement of prognosis in recent years, more attention is concentrated on studying the complications of AL, including pulmonary ones. Phospholipids are the component of pulmonary surfactants and alveolocytes. Determination of phospholipids in exhaled breath condensate (EBC) can be predictive for pulmonary complications in children with acute leukemia.

Aim of the study: To assess the level of phospholipids in EBC in children with acute leukemia and its prognostic value.

Materials and methods: We examined 51 children aged 6-18 years with acute leukemia and 15 healthy children for the control group. Children with AL were divided into 2 groups: 1st group –during induction phase of chemotherapy (n = 24), 2nd group – in remission (n= 27). Levels of phospholipids in EBC were analyzed by spectrophotometric thin layer chromatography using an SPh 46 spectrophotometer. Data analysis was performed using Statistica 8 and the statistical program MedCalc version 17.2.

Results: Pulmonary complications were recorded in 86.27% % of children with acute leukemia: acute bronchitis (60.78%), pneumonia (49.01%), wheezing (21.57%), bronchial asthma (5.88%), interstitial pneumonia - in 1.96%, pleurisy (3.92%), pneumothorax (3.92%),

pulmonary fibrosis (1.96%), leukemic infiltration (1.96%). Acute pulmonary complications were presented in 87.50% of children (group 1). In 18.52% of children pulmonary complications persisted during the period of remission (group 2). The increased level of phospholipids in acute leukemia groups compared with control was found: p1-C=0.000000; p2-C=0.000000. Children with acute leukemia during chemotherapy (group 1) had higher levels of phospholipids in EBC than children in remission (group 2): p1A-2= 0,000007. Despite the decrease in phospholipids in children of the group 2, it is higher than one in healthy children of the control group. According to ROC analysis phospholipids level in EBC collected during the induction phase of chemotherapy >132.15 mmol/l can be predictive for acute pulmonary complications (AUC 0.968; sensitivity 90.48%; specificity 100.00%). PL level in EBC in remission >131.16 mmol/l can be predictive for persistent pulmonary complications (AUC 0.791; sensitivity 100.00%; specificity 77.27%).

Conclusions: The level of phospholipids in EBC can be considered a possible predictor of pulmonary complications in children with acute leukemia.

Maxillofacial Space Infections in Pediatric Patients: a Retrospective Cohort Study

Authors: Gabrielė Šimėnaitė (1)

Tutors: Rūta Rastenienė DDS, PhD (1,2)

Affiliation: (1) Institute of Dentistry, Faculty of Medicine, Vilnius University, Vilnius, Lithuania (2) Vilnius University Hospital Zalgiris Clinic, Vilnius, Lithuania

Introduction: Maxillofacial space infections (MSI) are dangerous conditions that may cause life-threatening complications. Advanced odontogenic, advanced lymph node infections and trauma are the main causes of MSI. Such diseases at a young age are related to the overall poor oral health status among pediatric patients in Lithuania.

Aim of the study: The study aims to analyze the epidemiology, treatment and microbiological aspects of the pediatric patients hospitalized at Vilnius University Hospital Zalgiris Clinic due to MSI during a 17-year period.

Materials and methods: The study was approved by Vilnius Regional Bioethics Committee. Medical records of the pediatric patients hospitalized during the period of 2003.01.01 to 2019.12.31 due to MSI (ICD-10 code K12.2) were reviewed. The following patient data was collected: sociodemographic characteristics, length of hospital stay, treatment specifics and microbiological findings. IBM SPSS software was used for statistical analysis. Descriptive statistics and independent samples t-test were used. The threshold for statistical significance was set at $p<0.05$.

Results: In total, 171 cases of MSI were included. 123 (71.9%) cases were of odontogenic and 48 (28.1%) were of non-odontogenic origin. The mean age of the patients was 10.8 ± 4.4 years. Male to female ratio was 1.5:1. A permanent lower molar was the most common cause of the infection in 88 (51.5%) cases. The submandibular space was the most commonly involved anatomical region in 73 (42.7%) cases. The mean length of hospital stay was 5.9 ± 3.7 days. The most frequently prescribed group of antibiotics were penicillins in 134 (78.4%) cases. Surgical treatment was performed in 169 (98.8%) cases. Streptococcus spp. were the dominant microorganisms in odontogenic MSI while Staphylococcus spp. were the most prevalent in non-odontogenic MSI. Of all isolated microorganisms, 52 (37.1%) were resistant to penicillin.

Conclusions: The most prevalent maxillofacial space infections among pediatric patients were of odontogenic origin. The most frequent

causative tooth was the permanent molar while the most commonly involved space was submandibular. Longer hospital stay was associated with the involvement of multiple maxillofacial spaces and a permanent causative tooth. The most commonly isolated microorganisms were Streptococcus spp. The overall high resistance to penicillin was identified.

Role of autoimmune factors in type 1 diabetes development after exposure to SARS-CoV-2 in pediatric patients

Authors: Liva Kuzmane 2

Tutors: Prof. J. Pavare 1,2, Asoc. Prof. I.Dzivite-Krisane 1,2

Affiliation: 1 - Children's Clinical University Hospital 2- Riga Stradins University

Introduction: After the start of COVID-19 pandemic there has been an increase in incidence of type 1 diabetes (T1D) cases that has been linked to SARS-CoV-2. It is theorized that an interaction happens when SARS-CoV-2 binds to angiotensin-converting enzyme (ACE) receptors on pancreatic beta cells that ultimately leads to their damage. It is proven that other autoimmune comorbidities and autoimmune diseases in family history can increase the risk of T1D incidence.

Aim of the study: To analyze the role of autoimmune factors in T1D development depending on previous exposure to SARS-CoV-2.

Materials and methods: In the retrospectives study patients were divided in two groups depending on whether they have been exposed to SARS-CoV-2 before T1D diagnosis or not. Most of the patients in the unexposed group were diagnosed with T1D prior to the COVID-19 pandemic. Data about patients' autoimmune comorbidities, family history with autoimmune diseases, islet cell antibodies (ICA) and antibodies to glutamic acid decarboxylase (GAD) were collected. Statistical significance was determined by Pearson's Chi-squared test and Fisher's Exact test. The level of statistical significance was considered $p<0.05$.

Results: In total 109 patients up to 18 years old with new-onset T1D were included in the study. 56 (51.4%) exposed patients (53.6% boys) and 53 (48.6%) in the unexposed group (54.7% boys). No evidence was found that exposure to SARS-CoV-2 leads to a significantly increased number of new cases with autoantibody-negative T1D. No difference was concluded in prevalence of autoimmune comorbidities in patients (exposed group 5.4%, unexposed 5.8%, p=1). No difference was found between prevalence of autoimmune comorbidities in patients family history (exposed group (19.6%), unexposed group (21.2%), (p=0.635). T1D in family history was more common in the group that was not exposed to SARS-CoV-2 (15.1%) compared with the exposed group (8.9%), even though these results were not statistically significant (p=0.384).

Conclusions: No statistically significant difference was discovered in autoimmune factors comparing exposed SARS-CoV-2 patient group to unexposed. Further research needs to be done in order to determine the role of autoimmunity in T1D development after exposure to COVID-19.

Surgical management of glaucoma associated with Sturge-Weber Syndrome

Authors: Monika Dziedzic, Adrian Dyląg

Tutors: lek. Agnieszka Tronina, dr hab. n. med. Erita Filipek

Affiliation: Department of Paediatric Ophthalmology, Faculty of Medical Sciences in Katowice, Medical University of Silesia, Katowice

Introduction: Sturge-Weber Syndrome is a rare type of phakomatosis and usually arises from sporadic mutations, rather than being inherited. Glaucoma is the most common ocular manifestation of this disease and it's management can be challenging.

Aim of the study: To report the efficiency of surgical procedures concerning the treatment of glaucoma in children with SWS.

Materials and methods: The study group included 52 eyes in 26 children with confirmed diagnosis of SWS and a mean diagnostic evaluation age of 26 months (±47) of which 14 were diagnosed with glaucoma (9 unilateral, 5 bilateral). Measurements in group of patients that underwent surgical procedure were taken before surgery, 6 (±3) days after surgery and 15(±9) weeks after surgery. The results were statistically analyzed at the assumed significance level α=0.05.

Results: The mean value of intraocular pressure at the time of the first examination was 13 mmHg (±9.5) in non affected eyes, and 28,7(±11) in eyes with glaucoma. Six patients with glaucoma were not qualified for the surgery and were treated only with anti-glaucoma drugs. In glaucomatous group six patients underwent trabeculectomy (3 with and 4 without mitomycin C), while 2 underwent cyclocryotherapy and transscleral cyclophotocoagulation (TSCPC). During the first control after trabeculectomy mean intraocular pressure was 16.28mmHg (±4.8), and 15(±9) weeks after was 18mmHg (±2.8). All patients treated with trabeculectomy without mitomycin C in a period of not more than 6 months required subsequent additional treatment either cyclocryotherapy, TSCPC or local anti-glaucoma drugs administration. In patients who underwent TSCPC or cyclocryotherapy the mean intraocular pressure was 23mmHg (±3.5) and at the period of second control 24mmHg (±2.6). In this group the procedure had to be repeated several times and in all of patients after the procedure, it was not possible to discontinue anti-glaucoma medicine. Eyes with glaucoma in 93% had associated eyelid hemangioma.

Conclusions: The best results were observed in patients who underwent trabeculectomy with mitomycin C both in terms of lowering intraocular pressure and reducing the use of anti-glaucoma drugs. Procedures such as TSCPC or cyclophotocoagulation were less successful and required several repetitions, however, these procedures are less invasive than trabeculectomy.

Treatment of Congenital Heart Disease in Lithuania: a 4-Year Analysis

Authors: Dominykas Budrys (1)

Tutors: Karolis Jonas, MD, PhD (2); prof. Virgilijus Tarutis MD, PhD (2)

Affiliation: (1) Vilnius University Faculty of Medicine (2) Vilnius University Faculty of Medicine, Institute of Clinical Medicine, Department of Cardiovascular Diseases, Cardiothoracic Surgery Center

Introduction: Treatment of congenital heart disease is complex. Variety of pathologies that are present in this field require coordinated actions from a team of experienced specialists. Vilnius University Hospital Santaros Clinics (VUHSC) is the only center in Lithuania which provides specialized care to patients with congenital heart disease.

Aim of the study: This study aims to analyze various aspects of congenital heart disease treatment in Lithuania in the last 4 years.

Materials and methods: Health data of all patients with congenital heart disease who underwent surgery in VUHSC from April 2018 to April 2022 was analyzed retrospectively.

Results: 598 patients with congenital heart disease were admitted to VUHSC during the research period. Male to female ratio was 1:1.21. Median patient age was 282,5 days (IQR 1346 – 48,25). The most prominent diagnostic groups were atrial septal defects (n=108; 18.06%) and ventricular septal defects (n=52; 8.7%). 724 surgeries were performed (urgent – 8.4%, recurrent – 19.27%, revisions – 16.71%). The fraction of urgent surgeries was highest among neonates (24.8%) and the smallest among 1–18-year-old patients (2.9 %) ($p<0.001$). Urgent surgeries were associated with significantly longer hospital stay ($p<0.001$). Median time from the date of diagnosis to the date of surgery was shortest among neonates (5; IQR 2-10) and longest among 1–18-year-old patients (531.5; IQR 1053.25 – 102.5) ($p<0.001$). Median length of hospital stay was longest among neonates (26; IQR 35 – 18) and shortest in the group of 1–18-year-olds (10; IQR 15 – 8) ($p<0.001$). Overall early postoperative mortality was 4.5% (n=27) during the research period, only one patient older than one year died. Mortality among patients younger than one year was 7.95%.

Conclusions: This single-center 4-year analysis of congenital heart disease treatment demonstrated significant differences among different patient age groups. Compared to other age groups, neonates required urgent surgical treatment more often and had the longest median length of stay; 1–18-year-old patients had the shortest median length of stay and longest median time from the date of diagnosis to the date of surgery.

Comparison of surgical scoliosis treatment outcomes in patients with Duchenne muscular dystrophy and spinal muscular atrophy

Authors: Maksymilian Osiowski, Aleksander Osiowski, Kacper Stolarz, Tomasz Kozioł

Tutor: Dominik Taterra MD; Tomasz Potaczek MD, PhD

Affiliation: (1) Ortho and Spine Research Group, Poland; (2) Department of Orthopaedics, Orthopaedics-Rehabilitation University Hospital in Zakopane, Poland

Introduction: One of the most common deformity in neuromuscular diseases is scoliosis. The scoliosis may vary from mild to severe in different cases and often a corrective surgery that can significantly improve quality of life is needed. Spinal muscular atrophy (SMA) and Duchenne muscular dystrophy (DMD) are two neuromuscular disorders which often lead to serious spinal deformities. Unfortunately, previous research often included them together in one neuromuscular type of scoliosis despite being separate medical conditions with specific pathogenesis, symptoms and also differing spinal deformities. Therefore, there was a need for a study that would systematically compare surgical treatment outcomes between patients with SMA and DMD.

Aim of the study: The purpose of this study was to evaluate and compare clinical and radiological outcomes of the scoliosis surgery treatment in SMA and DMD patients.

Materials and methods: Preoperative and postoperative protocols of 70 pediatric patients with SMA or DMD were reviewed. Measurements of Cobb angle, range of the curvature, pelvic and shoulder tilt, length from central sacral vertical line to apical vertebrae of

scoliosis were taken on every radiograph in sitting and elongated positions to determine improvement after the surgery. Student t-test and Welch's t-test were utilized to compare means. For nonparametric analyses Mann-Whitney U was employed. Multiple regression was used when adjusting for confounders.

Results: The mean weight was 52.21kg (SD=14.59) in DMD patients and 39.86kg (SD=11.05) in SMA patients. The mean percentage of Cobb angle correction was 47.49% (SD=17.06) in DMD patients and 57.53% (SD=14.83) in SMA patients with differences being statistically significant ($p<0.04$). There was no significant difference in mean Cobb angle before surgery ($p=0.32$), pelvic obliquity change ($p=0.89$), post-op hospital stay time ($p=0.77$), time spent in ICU ($p=0.61$), post-op blood units transfusions ($p=0.31$) and BMI ($p=0.39$) between these two groups of patients.

Conclusions: When adjusted for weight and initial Cobb angle, the type of disease (DMD vs. SMA) remained the only predictor of higher Cobb angle change after surgery. No other analyzed factors played a significant role in surgical outcomes.

Pediatrics Case Report

Oral Session

Scientific Committee

prof. Kinga Kowalska-Duplaga, MD, PhD

prof. Ewa Cichocka-Jarosz, MD, PhD

Aleksandra Furtak, MD, PhD

Agnieszka Kruszecka-Krówka, PhD

Coordinators

Kamila Siuda

Konrad Tomczyk

IMSC

Challenges in the management of clinical and biochemical manifestation of thyroid hormone resistance - a case report.

Authors: Jagoda Sarad

Tutor: Małgorzata Wójcik MD, PhD

Affiliation: Department of Pediatric and Adolescent Endocrinology, Jagiellonian University Medical College, Cracow, Poland

Introduction: Thyroid hormone resistance syndrome, also known as Refetoff syndrome, is a rare autosomal dominant or recessive disorder associated with decreased reaction of body tissues to thyroid hormones (TH). In the vast majority of cases it is caused by genetic mutations in the thyroid hormone receptor β (THRβ) gene (THRB). Patients with RTH-beta may have some symptoms or signs of hypothyroidism and hyperthyroidism, but these are variable and, when present, often reflect the relative significance of the THRB in the action of thyroid hormone in a particular tissue.

Case report: In a ten-year-old boy with tall stature, macrocephaly, mild mental retardation, tachycardia, mild left ventricular hypertrophy thyroid function tests show constantly increased levels of both free T3 (8,18 pg/ml) and free T4 (2,18 ng/ml) in the presence of unsuppressed TSH (2,5574 µIU/ml). Thyroid antibodies were within normal range, and thyroid ultrasonography revealed a normal thyroid gland volume with a slightly hypoechoic pattern. A magnetic resonance imaging scan of pituitary gland was normal. Echocardiogram showed left ventricular hypertrophy. There was no family history of thyroid disorders. Despite typical clinical presentation, the analysis of thyroid hormone receptor gene THRB mutation was not confirmed. The patient was treated with metoprolol with good heart rate-lowering effect.

Conclusions: In 15 percent of patients with typical clinical presentation of RTH-beta, THRB gene mutations are not detected; this is known as "nonTR-RTH". Treatment is not required in most patients, because the elevated thyroid hormones levels compensate for the partial tissue resistance except if beta-adrenergic blockers relieve sinus tachycardia.

Immune dysregulation-poliendocrynopathy-enteropathy-X-linked syndrome – case report

Authors: Adrianna Muciek, Martyna Mocarska

Tutor: Anna Szaflarska, MD, PhD

Affiliation: SKN Immunologii Klinicznej UJCM

Introduction: Immune dysregulation-poliendocrynopathy-enteropathy-X-linked (IPEX) syndrome is the only one known disease characterised by complete absence of regulatory T cells, a major lymphocytes population involved in self-tolerance. Classic clinical manifestation is the triad of symptoms:enteropathy, autoimmune disease (especially type I Diabetes Mellitus) and cutaneous involvement.

Case report: J. was a boy born in 28 Hbd with birthweight 1060g. He gained 4, 5, 5, 5 in Apgar scale and faced severe complications

of prematurity such as bronchopulmonary dysplasia, respiratory failure, anaemia, transient intestinal obstruction. From birth he had massive skin lesions resembling a collodion baby, followed by peeling on erythematous base and dystrophic nails. In 51st day of his life he had incarcerated right inguinal hernia operated. After the surgery total parenteral nutrition was started but he developed diarrhoea, hepatosplenomegaly, jaundice with hepatic failure, ascites and multilevel intestinal obstruction. He also suffered from unspecified neonatal sepsis, Clostridium difficile infection, prolonged fever and chronically elevated inflammatory parameters. The diagnosis came with genetic testing (Next Generation Sequencing-NGS) which revealed FOXP3 gene mutation responsible for causing IPEX syndrome. After his death, the autopsy showed mixed-cell inflammatory infiltration in the wall of the left ventricle, lungs with oedema and clusters of hemosiderin-laden macrophages, calcifications and non-specific granulomas, cholestasis and proliferation of small bile ducts and focal fibrosis in the liver. In the stomach, small and large intestine fibrosis, granulomas and mixed-cell inflammatory infiltration were found. Thymus had features of hypoplasia.

Conclusions: IPEX syndrome prevalence is unknown. The diagnosis is based on clinical examination, family history, laboratory results and finally genetic testing which is the test of confirmation. Differential diagnosis should include Omenn and Omenn-like syndromes, Gaucher disease type II, Netherton syndrome. Without early diagnosis and treatment the disease is usually fatal within the first two years of life.

Bilateral submandibular sialadenitis in a pediatric patient with influenza A infection

Authors: Katarzyna Klimaszewska

Tutor: Marta Olszewska MD

Affiliation: Jagiellonian University Medical College, Students' Scientific Group at Department of Pediatrics

Introduction: Submandibular sialadenitis constitutes about 10% of all cases of sialadenitis. Major causes of this condition include viral or bacterial infections. Although influenza A H3N2 has been linked to acute parotitis in children, there are only individual reports of influenza-associated submandibular sialadenitis.

Case report: A 10-year-old boy was admitted to the pediatric department with severe facial and neck swelling. 4 days prior to admission respiratory infection had occurred. The day before the patient had woken up with swollen eyelids. There was no new environmental exposure. Because of a recent history of IgA vasculitis with abdominal presentation, the patient was in a process of methylprednisolone dose reduction (12 mg/day). He was fully vaccinated against mumps. On physical examination the patient presented with severe facial and neck swelling, mostly including eyelids and submandibular area, conjunctivitis and signs of nasopharyngeal infection. Complete blood count showed increased total leukocyte count of 12.6 x 10^9/L with neutrophil predominance (59.7%). Other biochemical tests, including C-reactive protein, serum and urine amylase levels, were normal. The neck ultrasound showed generalized edema of the subcutaneous tissue with bilateral submandibular sialadenitis and lymphadenopathy. The nasopharyngeal swab was positive for influenza A H1N1. Other viral coinfections (mumps, cytomegalovirus, HIV,

Ebstein-Barr virus, Coxsackie) were excluded. The diagnosis of bilateral submandibular sialadenitis following influenza A H1N1 was set. The treatment included oseltamivir and methylprednisolone.

Conclusions: Influenza A should be included in differential diagnostics of submandibular sialadenitis during influenza season. Although subtype H3N2 was most frequently reported in salivary gland inflammation, other subtypes such as H1N1 can be also pathogenic.

Challenges in the management of a 31/32-weeks-old premature infant with gastroschisis

Authors: Cristina-Ana-Maria Nițu

Tutor: prof. Manuela Cucerea MD, PhD

Affiliation: Neonatology

Introduction: Gastroschisis represents a rare congenital defect, which consists of the outside protrusion of the abdominal organs into the amniotic fluid during the pregnancy and being exposed to the air following the delivery. In gastroschisis, the herniated bowels tend to be on the right side of the umbilical insertion and are not covered by the peritoneal layer. The prognosis of survival reaches 90% with a proper medical management of the gastroschisis cases.

Case report: We present the case of a preterm newborn, at 31/32 weeks of gestational age, by vaginal delivery and cephalic presentation, with polyhydramnios, and a 1520g weight at birth. Having an APGAR score of 6 at 1 minute, the reanimation was necessary, with visible improvement. The male infant presented gastroschisis, prenatally undiagnosed as the pregnancy was not under medical supervision. The patient was on our evidence since he was 2 days old, after the gastroschisis surgical intervention, which involved the refund of the bowels into the abdominal cavity, alongside the complete fascial and skin closure. Echocardiographic evaluation revealed medium to severe pulmonary hypertension, secondary systolic disfunction of the right ventricle and ostium secundum atrial septal defect, with left to right shunt. Other postoperative complications were the respiratory distress syndrome and the edema, localized especially at the inguino-scrotal and inferior limb regions. The treatment with Milrinone was initiated, as well as the use of Furosemide, oxigenotherapy with orotracheal intubation until spontaneous and efficient breathing, hydroelectrolytic and acid-base balancing. With a gradual improvement, the neonate was discharged after 18 days.

Conclusions: Early diagnosis of gastroschisis during pregnancy is recommended in order to institute the appropriate, supportive medical treatment after birth and to perform the mandatory surgical correction of the defect. The particularity of this case is emphasized by the late diagnosis of the pathology, the prematurity and the challenges in the postoperative management of gastroschisis.

Clinical case of poliomyelitis-like disease progressing with flaccid paralysis in a child associated with enterovirus infection

Authors: Petar Terziyski , Melani Pirgova

Tutor: Mergyul Halilova MD

Affiliation: UMHAT "St. Marina" Varna

Introduction: In recent years, enteroviruses have emerged as one of the important causative agents of encephalitis. The purpose of this report is to describe a case of poliomyelitis-like disease progressing with flaccid paralysis that was successfully treated, resulting in recovery for the patient.

Case report: We present a clinical case of a child aged 2 years and 5 months with an uncomplicated premorbid history. One week prior to hospitalization, he had febrility to 39.0 °C. The patient did not respond to assigned therapy with Amoxiclav, therefore hospitalization was required. During the hospitalization, a deviation of the head to the left, a more rapid relaxation of the right limbs and a positive Babinski on the right made an impression. MRI showed no specific features. Cerebrospinal fluid was xanthochromic turbid color. Pleocytosis was also found. During the stay in the clinic, the child increased the symptoms of meningismus, the neck rigidity turned into cervical and axial hypotonia, and paresis of the peripheral type progressively formed for all four limbs. The condition was complicated by hypotonic quadriplegia of the extremities with positive Babinski bilaterally and Brudzinski (lower). RT PCR testing of nasopharyngeal swabs demonstrated the presence of Enterovirus RNA. A combination of antibiotics, antiedema and symptomatic treatments, as well as rehabilitation, were administered to him. After spending 14 days in intensive care, the child's condition gradually improved and he started to actively move his lower limbs and left arm. Flaccid paresis of the right arm is persisting.

Conclusions: Enteroviruses cause a wide variety of clinical manifestations. The symptoms may range from a nonspecific febrile illness up to severe meningitis. Long-term neurological sequelae are rare. The majority of cases make a full recovery. It is imperative to diagnose the disease as early as possible in order to improve the outcome.

Enlargement of a thyroid gland as the first clinical manifestation in multiple endocrine neoplasia 2B (MEN 2B)

Authors: Agnieszka Czapska

Tutor: prof. Małgorzata Wójcik MD PhD

Affiliation: Jagiellonian University Medical College

Introduction: The multiple endocrine neoplasia 2B (MEN2B) is an inherited autosomal dominantly syndrome involving aggressive medullary thyroid carcinoma of early onset, phaeochromocytoma, ganglioneuromatosis and typical phenotypical, marfanoid-like presentation arising from skeletal and connective tissue abnormalities. Other clinical features include opthalmologic findings, neuropathic and

myopathic manifestations. MEN 2B is caused by germline mutations in RET proto-oncogene, with most of them being a result of a de novo mutation, which delays the diagnosis, especially as individual presentations are variable and age dependent.

Case report: A 14-year-old girl presented with enlargement of a thyroid gland. Results of the first USG with family history findings of thyroid dysfunction (grandmother) were suggestive of non-toxic multinodular goiter. Subsequent imaging (heterogenous nodules with increased vascularity and calcification), fine needle aspiration biopsy (Bethesda VI) and biochemical testing (euthyreosis,thyroid antibodies and calcium within normal range, calcitonin 1823 pg/mL (N<5)) however, revealed high risk of medullary thyroid carcinoma. The patient was therefore consulted and diagnosed in Maria Sklodowska-Curie Institute – Oncology Centre in Gliwice. Total thyroidectomy was performed in University Children's Hospital of Cracow and pathology report confirmed multifocal neoplasm of intermediate grade, without angio or neuroinvasion, which was staged pT2(m)N0. Considering phenotypical features (marfanoid-like presentation, enlargement of lips, mucosal ganglioneuromatosis) MEN 2B was suspected. The diagnosis was verified by Next-Generation Sequencing, which indicated a c. 2753T>C mutation of RET gene. Further investigations for phaeochromocytoma were initially disturbed by patient's pharmacotherapy (antidepressant, selective serotonin reuptake inhibitor, interfered with urine test for catecholamine, serotonin and its metabolites), but computed tomography and 123I-MIBG scintigraphy eventually excluded the presence of the tumor at the time of assessment. With high risk of developing phaeochromocytoma or other MEN 2B-determined health problems in future, follow-ups were needed.

Conclusions: This case underlines the importance of suspicion of inherited syndromes when carcinomas of generally late onset are diagnosed in childhood or early adulthood. Moreover, it highlights the paramount role of thorough and cautious physical examination of a patient, which allows to notice typical for certain diseases phenotypical features.

Ethmoid Mucocele with Atypical Symptoms

Authors: Jan Ramian, Emilia Rachwalik

Tutor: Ireneusz Bielecki MD PhD Asst. Prof.

Affiliation: Student Scientific Association at the Department of Paediatric Otolaryngology, Head and Neck Surgery in Katowice

Introduction: An ethmoid mucocele is a benign lesion in the paranasal sinuses, filled with mucus. They arise as a result of a narrowing of the outflow pathway in the sinus system and surrounding structures, which can occur naturally or arise as a result of a number of factors such as inflammation, allergies, trauma or sinus congestion. Paranasal sinus mucoceles most commonly manifest through occipital headache, nasal blockade and periorbital pain. Ethmoid sinus mucoceles may present with ophthalmic symptoms such as proptosis and diplopia, as a result of their mass effect where they push the eyeball to the side. Treatment of choice in this disease entity is a functional endoscopic sinus surgery (FESS). The focal point of surgery is the effective removal of

the lesion without unnecessary risks, since it is a benign lesion, complete removal is not essential.

Case report: Nonetheless, patients may be admitted with atypical symptoms of an ethmoid mucocele, especially if the lesion is situated in an unorthodox place. A 17-year-old male patient was admitted to the Department of Otolaryngology with Short-Term Treatment of Subdivision with a history of lacrimation in his left eye since birth and long-term headaches. Physical examination revealed congestion of the nasal cavity and impaired hearing in the left ear. Imaging revealed ethmoid mucoceles in both ethmoid sinuses- in the right a cyst with fungal infection and in the left, a cyst causing destruction of the orbital lamina of the ethmoid bone. Left cyst was formed in the lacrimal duct causing its obstruction leading to lacrimation. The patient was qualified for FESS in which mucoceles were drained and lacrimal canaliculi were catheterized and their connection to the nasal cavity was established. The course of the procedure was uncomplicated, the patient reported the following month for catheter removal.

Conclusions: It is crucial to bear in mind that known diseases may manifest atypical symptoms due to their unusual location or rarer causative cause, leading to delayed diagnoses and unnecessary discomfort for patients

Multidisciplinary care of an infant with several birth anomalies eventually diagnosed with VATER association.

Authors: Katarzyna Górny, Hanna Kubik

Tutor: Andrzej Grabowski MD PhD

Affiliation: Student Scientific Society at the Department of Children Developmental Defects Surgery and Traumatology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia in Katowice

Introduction: Although there are several diagnostic standards for VATER association, its incidence is thought to range only from 1 in 10,000 to 1 in 40,000 live births. The occurrence of at least three of the congenital deformities: anal atresia, tracheo-esophageal fistula, renal anomalies, vertebral defects, limb abnormalities and cardiac defects, is what characterizes that syndrome. We present the case of a boy who was born with multiple congenital anomalies, the coexistence of which led to the diagnosis of VATER association.

Case report: An infant from pregnancy V, delivery III, complicated by anemia and gestational diabetes, weighing 3340 g and scoring a 9/9 on the APGAR scale was born spontaneously in a 40 Hbd. He was burdened with many congenital anomalies, including congenital anorectal atresia, esophagus atresia with a tracheoesophageal fistula, agenesis of the right kidney, dilatation of the left kidney's pelvicalyceal system, right-sided cryptorchidism, flattening of the pelvis and shortening of the sacrum.

Due to respiratory failure and the need for surgery, the boy spent his first 39 days of life in the hospital's Intensive Care Unit. A temporary double-barrel colonostomy was created on the second day, and an esophageal anastomosis with closure of the fistula was performed on the fourth day of life.

In the second month of life urosepsis caused by Klebsiella pneumoniae ESBL+ appeared. Following that, the patient had to struggle with acute tubulointerstitial nephritis. He was hospitalized again in our hospital's nephrology unit a month later with a urinary tract infection that Meronem had successfully treated. The results of micturition cystography and dynamic scintigraphy of the kidneys revealed that there was left-sided vesicoureteral reflux.

At the age of 5 months, the patient underwent posterior anorectoplasty, after which a neurogenic bladder was suspected. Later the patient was discharged home in good general condition, with a maintained urinary catheter. The boy remains under the supervision of the many specialist clinics.

Conclusions: VATER association is an uncommon condition of abnormalities that requires multidisciplinary care. The clinical instance discussed above is a perfect illustration of how crucial it is for the therapeutic process for skilled specialists to collaborate.

Nasal Glial Heterotopia in a 5-month-old girl: A Case Report and A Review of Literature

Authors: Jia Jia Teo, Barbara Buchalska, Paweł Poppe

Tutor: Jacek Kunicki

Affiliation: Pediatric Otolaryngology Department of the Medical University of Warsaw

Introduction: Nasal Glial Heterotopia (NGH) is a rare congenital mass commonly mistaken for a nasal polyp. In this case report we focus on the challenges of appropriate imaging techniques as well as the appropriate treatment method.

Case report: A 5-month-old girl presented with a mass in the left nasal cavity originating most likely from the roof of the nose. The mass was noted by the patient's guardian in the first 2 weeks of life. A CT scan with contrast and an MRI were performed in another facility showing, in addition, a possible defect of the floor of the anterior cranial fossa. We performed an endoscopy upon admission to confirm the location, size and possible origin of the mass, followed by a total transnasal endoscopic resection under general anaesthesia. The post-operative site revealed two possible skull base defects which were not able to be confirmed in the imaging studies. The excised mass was sent for histopathological examination which confirmed the diagnosis. There were no complications on the follow-up visits and no CSF leak was noted, the nasal patency was good and a completely healed surgical site was observed in endoscopy.

Conclusions: Differential diagnosis including mainly other congenital lesions of the nose relies strongly on radiological investigation. An appropriate choice of imaging studies is crucial for preparation for surgery, which is the only treatment. Children with NGH will usually be examined initially by paediatricians before being referred to otolaryngologists, therefore awareness about NGH in both specialties is beneficial. Additionally, challenges in radiological imaging in infants should be taken into account so that radiologists, paediatricians and otolaryngologists may work together to establish a proper diagnosis and treatment.

PALB2 gene mutation as a predisposition to tumorigenesis in childhood- case report

Authors: Dominika Galli1, Jakub Czarny1

Tutor: Prof. Katarzyna Derwich, MD, PhD 2

Affiliation: 1Faculty of Medicine, Poznan University of Medical Sciences, Poznan, Poland 2Department of Pediatric Oncology, Hematology and Transplantology, Institute of Pediatrics, Poznan University of Medical Sciences, Poznan, Poland

Introduction: Positive oncological family history, as well as the second malignancy in childhood, require profound genetic testing using adequate next-generation sequencing (NGS) panel to provide the complex screening to certain patients. We present the case of a patient with a genetic malignancy predisposition, positive oncological family history and the second malignancy in childhood.

Case report: The patient was diagnosed with nodular sclerosis classical Hodgkin lymphoma (cHL), IIIB grade at the age of 8. Her father suffered from cHL at the age of 27. NGS panel detecting germinal lymphoma predispositions detected no aberrations in the patient. The patient was treated successfully according to the TL-3 group EuroNET-PHL-C1 protocol without radiotherapy, with an adequate response for induction chemotherapy. She completed the successful treatment and remained under the care of the outpatient children's oncology clinic.

At the age of 16, she complained of leg and low back pain. She was diagnosed with Ewing sarcoma of the 6th left rib with metastases in vertebrae and the head of the left femur, without bone marrow involvement. According to Euro Ewing 2012 protocol Arm B, she underwent preoperative radiochemotherapy and surgical management. She continues postoperative chemotherapy. The mobilization of hematopoietic stem cells was successful only in the second trial after a double dose of filgrastim.

Germinal tumorigenesis predispositions NGS panel detected a heterozygous mutation of unknown significance in the PALB2 gene (NM_024675.4:c.110G>A;p.Arg37His) in the patient and her father. The detected mutation impairs the homologous recombination activity of PALB2. It was previously seen in families with early breast and ovarian cancer history. In the family with a similar PALB2 mutation, the child of the mother suffering from renal cell cancer presented acute lymphoblastic leukemia and Ewing sarcoma. It confirms the pathogenicity of this mutation inherited via an autosomal dominant manner.

Conclusions: The oncogenetic testing should involve a maximal number of genes responsible for oncogenesis using NGS, not only of the certain histological type, to improve oncological screening. The detection of pathogenic mutation predisposing to tumorigenesis could change the differential diagnostic process in the direction of a neoplasm. This case depicts a new manifestation of a previously described PALB2 gene mutation.

Prenatally diagnosed large abdominal mass - a challenge for perinatologists and neonatologists

Authors: Maja Kłopecka

Tutor: dr hab. Przemysław Kosiński MD, PhD

Affiliation: Students' Scientific Group of Fetal Therapy and Perinatology, Department of Obstetrics, Perinatology, and Gynecology, Medical University of Warsaw

Introduction: Ovarian cysts are the most encountered abdominal lesions in fetus, but complications associated with this condition are rare. Bleeding into the cyst or torsion of the adnexa increases the risk of fetal complications and the need for emergency surgical intervention after delivery.

Case report: A 26-year-old woman at 34 weeks' gestation presented to the OB/GYN Outpatient Clinic due to an abdominal mass diagnosed on a routine ultrasound scan. The ultrasound revealed a large abdominal cyst of approximately 8 cm in size of unknown origin with features of bleeding and mixed solid and fluid composition. In addition, polyhydramnios was noted. Fetal and maternal well-being were monitored. An emergency caesarean section was performed at 35 weeks due to the risk of fetal asphyxia (abnormal Doppler flow and reduced fetal movements). Following delivery, an abdominal ultrasound was conducted on the baby girl, which confirmed a likely diagnosis of ovarian tumour bleeding. After multidisciplinary case discussion (neonatal, surgical, radiological and oncological teams) and based on previous tests results the surgery was scheduled within next few days. Prior to the procedure, a thoracic-abdominal MRI and a chest X-ray were performed to exclude other pathologies. These examinations did not reveal any abnormalities apart from the fetal abdominal cyst. A panel of tumour markers (beta-HCG, L-fetoprotein, LDH, enolase) and measurement of catecholamines and their metabolites were planned. These investigations also showed no abnormalities. Tumour resolution was noted during repeat ultrasound. Following the radiological-surgical-oncological consultation, specialists decided to withhold the surgery. After 14 days of life, the girl's abdomen was soft, and the tumour was not palpable. On the 15th day of life, the infant was discharged home.

Conclusions: Due to the development of imaging methods, fetal abdominal tumours are increasingly being detected prenatally. While these lesions are typically associated with a good prognosis, it is important to seek a multidisciplinary consultation to conduct a differential diagnosis and develop a management plan. Pathologies such as choledochal cysts, mesenteric or omental cysts, hepatic cysts, intestinal duplication cysts, but also neuroblastoma must be considered.

Sepsis-like HPeV encephalitis in neonates - case series

Authors: Julia Śladowska

Tutor: Anna Piwowarczyk MD; Ernest Kuchar MD, PhD

Affiliation: Department of Pediatrics with Clinical Assessment Unit, Pediatric Teaching Clinical Hospital of Medical University of Warsaw

Introduction: Infections caused by Human Parechoviruses (HPeVs) primarily occur in children under 5 years and lead to a spectrum of diseases ranging from self-limiting febrile illness to sepsis-like illness, myocarditis, encephalitis, and sometimes, death. A severe course of HPeV infection is mostly observed in newborns and infants. HPeVs infections peak in summer months. Data suggest that the major risk factors for HPeV infection include: the presence of older siblings, symptomatic household contact, and age below 90 days.

Case report: In the case series, we included infants aged below three months diagnosed with a sepsis-like HPeV encephalitis hospitalized in Warsaw pediatric hospitals between May and August 2022. The diagnosis was based on neurological symptoms, HPeV-positive cerebrospinal fluid (CSF) polymerase chain reaction (PCR), and the criteria of sepsis defined by the National Institute for Health and Care Excellence. Finally, we identified 5 infants with the sepsis-like course of HPeV encephalitis. The average age of patients was 25.6±18.29 days (range 8-58 days), with a median of 27 days. The mean length of stay was 6.6±0.8 days (range 6-8 days). There was a significant disproportion between boys and girls (M=5; F=0). All patients were secondborns, and the median age gap to the sibling was 2.6±0.49 years (range 2-3.5 years). Patients mostly presented with tachycardia (n=5), abdominal distension (n=5), irritability (n=5), fever (n=4), abnormal muscle tone (n=4), mottling (n=3), decreased activity (n=3), and absence of neonatal developmental reflexes (n=3). No abnormalities in CSF were identified. We reported mild elevation of proinflammatory markers and lymphopenia in four patients, leukopenia in three and anemia in two. MRI was performed in all infants and it revealed abnormalities in two patients. Based on clinical presentation mimicking sepsis, infants received intravenous fluids (n=5), antibiotics (n=4) and acyclovir (n=2) at admission. In ¾ cases antibiotic therapy was discontinued on day 2 hospitalization.

Conclusions: As the prevalence of HPeV encephalitis grows, the necessity of performing CSF PCR despite the lack of signs of inflammation in the CSF in patients presenting with sepsis-like illness is gaining importance. Such a diagnostic process is crucial to minimize antibiotic overuse in perinatal medicine.

Stroke - affects only adults?

Authors: Agnieszka Mariowska

Tutor: Paweł Kemnitz, MD

Affiliation: Department of Infectious Diseases and Child Neurology, Poznan University of Medical Sciences, Poland

Introduction: Stroke is a rare disease that occurs among children with an incidence of about 3 cases per 100,000 children per year. Predisposing factors are different from those in the adult patient population. These include cerebral vascular arteriopathies,

heart defects, conditions that favor thrombosis, and the rare Melas Syndrome. The clinical picture depends on the location of the stroke focus and the age of the patient. Most children present permanent neurological sequelae especially paresis, speech disorders and post-traumatic epilepsy.

Case report: A 16-year-old patient presented to the hospital with a severe headache localized in the left temporal region and persisting for 4 days. In addition, he reported left eye pain along with visual disturbances and vomiting. An MR scan of the head was ordered, which showed fresh ischemic changes in the cortical layer of the left occipital lobe. With a diagnosis of ischemic stroke, the patient was transferred to the infectious diseases and pediatric neurology clinic for further diagnosis and treatment. On admission, the patient's complaints continued. The follow-up MR examination of the head showed progression of CNS lesions, with lesions covering a larger area of the brain and increased edema. From the beginning of hospitalization, an extensive differential diagnosis of CNS ischemic lesions was carried out, which included metabolic factors including MELAS syndrome. Studies showed elevated blood lactic acid levels. Then a genetic consultation was ordered, after which blood was drawn for molecular testing for MELAS. The results eventually confirmed this diagnosis.

Conclusions: The relatively rare occurrence of stroke in the pediatric population and the non-specific symptoms present pose a challenge to the clinician and can hinder a quick and correct diagnosis. It is crucial to conduct a broad differential diagnosis, incorporate treatment, and include the patient in multispecialty rehabilitation to mitigate the sequelae of the disease and enable the patient to function as well as possible in a group of healthy peers. The occurrence of stroke in the course of a genetic condition further increases the risk of misdiagnosis and delays in proper diagnosis, which is often the result of poor awareness among doctors.

The case of a newborn with Transient Abnormal Myelopoiesis and no signs of Down Syndrome

Authors: Natalia Zamorska

Tutor: Małgorzata Czogała MD

Affiliation: Students Scientific Association Pediatric Oncology and Hematology

Introduction: Transient abnormal myelopoiesis (TAM) is a remarkable hematologic abnormality that usually co-occurs with Down syndrome (DS) or mosaic trisomy 21 in children. Furthermore the GATA1 mutation is representative and correlated with this disorder. In the clinical picture it can manifest as many different phenotypes - it may be detected incidentally or during a rapid course with a fatal result. Importantly TAM should always be differentiated with congenital leukemia (CL), which contrary to TAM can reveal as an extremely critical prognosis.

Case report: We would like to present the case of a newborn girl with anemia, leukocytosis, thrombocytosis and presence of blasts in peripheral blood smear whose

condition and test results could have given a suspicion of AML M7. Nevertheless, examination findings – appearance of non-typical anomalies at that age in morphological and blood smear tests - got specialist's attention and could have suggested TAM. Interestingly enough, 21 trisomy and GATA 1 mutation were detected in genetic testing but only in the blast cells, moreover there were no phenotypic signs of DS. Because of increasing hepatomegaly and dyspnea four-day cytoreductive therapy was used. Afterwards gradual normalization of complete blood count was observed.

Conclusions: In diagnostics, it is incredibly important to identify which entity we deal with in the particular case. Moreover, for this reason, making an early diagnosis is rather difficult and challenging so far. Lastly, prompt GATA1 testing of blasts before self-resolution can establish a definitive diagnosis, allowing for the effective counseling of families on both immediate and long-term management and screening.

Trichobezoar – a rare, chronic and persistent disease with ineffective casual treatment

Authors: Weronika Michalik

Tutor: prof. Wojciech Górecki MD

Affiliation: Jagiellonian University Medical College, Kraków, Poland

Introduction: Bezoars are swallowed, impacted concretions of indigestible foreign bodies in the digestive tract. In children and adolescents the most common type is trichobezoar, which is usually seen in young females irrespective of possible psychiatric disorders. A trichobezoar may spread into the small intestines to acquire a long tail, the Rapunzel syndrome, named after the tale character - a long-haired ‚Rapunzel'. The disorder may remain undiagnosed for years which can cause severe complications such as malnutrition or mechanical perforation. It have been reported in that the disease may present recurrency. We are presenting two pediatric patients with similar symptoms, one of which diagnosed with a recurrent trichobezoar to emphasize the importance of early diagnosis and finding an effective follow-up treatment.

Case report: A 6-year-old and 15-year-old girls presented to emergency department with abdominal pain, emesis and a palpable epigastric mass. Exploratory laparotomy and gastronomy were performed; gastric trichobezoars, which in one case elongated into small intestine, were extracted. Postoperative courses were uneventful; the patients were discharged for psychological follow-up and periodical clinical care. After 7 months, one girl presented with a recurrent trichobezoar that was removed via laparotomy. Psychiatric pharmacological treatment and anti-anemia medication were introduced. Following control gastroscopies were negative for foreign body in the stomach cavity. After another few years the girl presented the second relapse which resulted in endoscopic removal of the recurrent trichobezoar through the esophagus.

Conclusions: Due to common connection of psychiatric disorders to trichobezoar, regular follow-up among the patients should be inevitable in order to avoid replacement of trichotillomania by other compulsive

disorders. Postoperative care should be extended to close family members, who keep the patients under surveillance since relapse have been possible. There are still no universal clinical guidelines for monitoring and treating such patients. Increased awareness at a primary health care level should be spread to help fight the cause, not the outcome. Described cases show a non-predictable course of the disorder, which indicates that possible complications of trichotillomania and trichophagia should not be underestimated.

Tuberculous meningoencephalitis - diagnostic and therapeutic challenge, case report

Authors: Annija Holstroma

Tutor: Dr. Anda Viksna

Affiliation: Riga Stradins University, Faculty of Medicine, Department of Infectology

Introduction: Tuberculosis (TB) is still a global health problem. The TB incidence rate were 10.6 cases in 2021. Miliary TB with Central nervous system (CNS) involvement is the most severe forms of TB and with highest mortality.

Case report: A 17-years-old female was losing weight for last 2 months, when she started feeling sick and dizzy. Laboratory tests did not show any abnormalities. Head CT scan showed vague hypodense changes. In the MRI scan was visible oedematous changes with hemosiderin infiltration in the affected areas of brain. In cerebrospinal fluid obtained low glucose levels (1.11 mmol/l). Lung CT scan showed miliary changes in lungs (manifestations of pulmonary miliary tuberculosis). Tuberculosis was confirmed with Xpert/Rif Ultra test in bronchial wash. Treatment was started with isoniazid, rifampicin, ethambutol, and pyrazinamide, combining it with dexomethasone after World health organisation (WHO) guidelines. Over the span of 2.5-month therapy, there were no more visible signs of pulmonary miliary tuberculosis, but in this time, neurological symptoms of CNS tuberculosis became more severe with associated complications – hydrocephalus, coma, seizures, multiple strokes. Four months after starting therapy, MRI scan was done - edema in the brain progressed. Condition improved after 5 months, patient was starting to communicate and be more independent (eating, doing physical therapy). Control MRI scan after 9 months of therapy showed positive signs in dynamic, swelling in the brain had decreased and had no additional structural changes.

Conclusions: Therapy after WHO guidelines worked well for pulmonary miliary tuberculosis and no signs of infiltration were present after 2.5 months. Challenges were with CNS manifestations - during the first period of treatments, symptoms got more severe, and multiple complications developed, but continuing therapy showed promising results after five months and no additional changes were detected in MRI scan.

Atypical presentation of Loeys-Dietz Syndrome in a 13-year-old boy

Authors: Hosu-Durnea Diana-Elena

Tutor: Lazea Cecilia MD, PhD

Affiliation: "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania; Pediatrics I Clinic, Emergency Children Hospital, Cluj-Napoca, Romania

Introduction: Loeys-Dietz Syndrome (LDS) is a rare autosomal dominant multisystemic connective tissue disease (CTD) that was described in 2005. It arises from mutations altering the transforming growth factor-beta (TGF-B) pathway. Phenotypically LDS overlaps considerably with other CTDs like Marfan Syndrome (MFS), yet salient distinguishing features include arterial aneurysms/tortuosity, hypertelorism, and bifid uvula. LDS is associated with an aggressive nature of the aortic aneurysms and an increased risk for dissections that occur at a younger age and a smaller aortic diameter.

Case report: A 13-year-old boy without significant past medical history presented to the Pediatrics hospital after an episode of syncope. In the last two years before presentation, he accused two episodes of pre-syncopal symptoms including muscle weakness, vertigo, and scotomas.On admission, he was hemodynamically stable, the cardiac auscultation revealed a low-grade systolic murmur, and the electrocardiogram (ECG) found the presence of monomorphic ventricular premature contractions (PVCs). The transthoracic echocardiogram showed an aortic root aneurysm of 31.5mm, a dilated aortic arch of 23mm, and a grade 1 mitral regurgitation. Further investigation of the aneurysms was followed by a Computed Tomography angiography.Physical examination revealed a marfanoid habitus with craniofacial dysmorphic features (dolichocephaly, hypertelorism), thoracolumbar scoliosis, arachnodactyly, increased joint laxity, and a bifid uvula. The blood exams were within normal limits except for a mild vitamin D deficiency.On Holter monitoring, there were 2588 PVCs (couplets, bigeminy, trigeminy) per 24hours for which a B-Blocker was prescribed. The association between the aortic aneurysms and the patient's phenotype raised suspicion of MFS, however, the genetic studies revealed a heterozygous mutation of the TGF-B2 gene, associated with LDS type 4.

Conclusions: While the clinical presentation of this patient is unusual for LDS, some studies have suggested a potential link between TGF-B2 mutations and myocardial dysfunction which could increase the risk of arrhythmias and sudden cardiac death. Larger prospective cohort studies are required to explore this association. This case highlights the importance of an early diagnosis in LDS patients in order to provide them with the required close surveillance and life-prolonging treatment.

Keywords: Loeys-Dietz Syndrome; Connective tissue disorder; TGF-β pathway; aortic aneurysm; arrhythmia.

Cerebral venous sinus thrombosis in a pediatric patient with tuberous sclerosis

Authors: Maria Grămadă

Tutor: Teaching Assistant Dr. Cătălina Elena Mărgineanu

Affiliation: Pediatrics Hospital 1 Cluj Napoca

Introduction: Cerebral venous sinus thrombosis (CVST) is a rare condition occurring in childhood with potentially life-threatening complications. CVST represents a diagnostic challenge due to its nonspecific clinical manifestations. Tuberous sclerosis is a rare disorder involving the development of benign tumors in different parts of the body. Infection with β-hemolytic group A Streptococcus rarely leads to lower tract infections, even less septicemia.

Case report: A 3-year-old boy is admitted for drowsiness, productive cough, and fever, persistent to symptomatic treatment. He is diagnosed with genetically confirmed tuberous sclerosis, SEGA (Subependymal Giant Cell Astrocytoma), multiple cardiac rhabdomyoma, and epilepsy. He takes multiple antiepileptic drugs, specifically Everolimus (started 3 months ago). He was diagnosed with Sepsis due to β-hemolytic group A Streptococcus secondary to acute right pneumonia. Treatment with Everolimus was temporarily stopped and intravenous penicillin was administered. In evolution, drowsiness persisted, without critical cerebral manifestations. Magnetic Resonance Imaging (MRI) of the brain showed a partial thrombosis of the transverse venous sinus, respectively sigmoid on the right, as well as the proximal segment of the right internal jugular vein. Considering these findings, he followed treatment with Clexane for a month. The MRI performed a month later revealed the quasi-complete recanalization of the transverse and sigmoid sinus, respectively the proximal segment of the right internal jugular vein.

Because CVST is a multifactorial condition, a recent infection with SARS-CoV-2 was excluded. Also, as he followed treatment with Everolimus 3 months prior to presentation, it was raised the suspicion of this drug being responsible for the thrombosis.

Conclusions: Due to the highly variable clinical presentation, the diagnosis of CVST is difficult and it is usually delayed or missed in some cases. From the literature, no mechanism linking tuberous sclerosis and cerebral venous thrombosis was discovered. Having taken Everolimus for 3 months, thrombosis is not reported as a side effect. Despite our investigation, no discernible underlying cause of thrombosis could have been identified. However, once the diagnosis of cerebral venous thrombosis is established, anticoagulation therapy should be started immediately to prevent the deadly outcomes of this pathology.

Keywords: Venous sinus thrombosis, Tuberous sclerosis, Everolimus, Group A Streptococcal Septicemia

Pharmacy & Molecular Biology

Oral Session

Scientific Committee

prof. Marcin Kołaczkowski, PhD
prof. Tadeusz Librowski, PhD
prof. Aleksander Mendyk, PhD
prof. Rafał Olszanecki, MD, PhD
prof. Anna Patryka, PhD
prof. Anna Więckowska, PhD

Coordinators

Agnieszka Czapska
Magdalena Gomułka

IMSC

Cytotoxic Activity of Chromanone Derivatives

Authors: Nadia Fatyga, Aleksander Brzozowski, Marta Sobiesiak

Tutors: Małgorzata Maj, Associate Professor, MD, PhD

Affiliation: Tissue Engineering Department, Nicolaus Copernicus University in Toruń Ludwik Rydygier Collegium Medicum in Bydgoszcz

Introduction: Cancer is one of the leading causes of death worldwide reaching up to 10 million deaths per year. The discovery and development of new anticancer substances remains one of the main priorities in pharmaceutical research. Recently, many promising results have been obtained on chromanone and its derivatives, as they manifest good anticancer potential.

Aim of the study: In this study, we examined the cytotoxic activity of chromanone and its derivatives using two cancer cell lines: MCF-7 (breast cancer) and DU-145 (prostate) and standard MTT assay. The efficacy of tested compounds was compared to cisplatin on the basis of IC50 value. IC50 value signifies the concentration at which a substance displays half of its maximum inhibitory effect.

Materials and methods: Stock solutions (10 mM) of chromanone and its derivatives were prepared in DMSO. MCF-7 and DU-145 cells were seeded onto a 96-well plate at a mean number of 5x103 cells per well. After 24h preincubation standard growth medium was changed to a medium containing tested compounds in a range of 10-250uM. Cisplatin was added in a concentration range of 0.1-100uM. Cells cultured in a medium only served as control. After subsequent 24 incubation cells were incubated with MTT solution (1mg/ml). Formazan crystals were dissolved in DMSO and the absorbance of the resulting solution read at 570 OD using a plate reader.

Results: Chromanone and its derivatives induced changes in the metabolic activity of breast and cancer cell lines. The observed activity was lower than cisplatin. IC50 values for MCF-7 and DU-145 were 32.8 uM and 56.8 uM respectively. In case of chromanone derivatives IC50 value started at 137.9 uM reaching to 245.7 uM for MCF-7. As for DU-145 (concentrations narrowed down to 100 uM) it was found that the minimal IC50 value was 147.8 uM reaching 186.1 uM.

Conclusions: The study of the relationship between different concentrations and cytotoxic activity against cancer cell lines of chromanone derivatives, revealed that they do not exhibit such significant anticancer activity as other commercially available substances. However, further experiments are going to be conducted to see if other substituents can bring more promising results.

Degradation of diclofenac by Cunninghamella species, in vitro toxicity evaluation of fungal transformation products

Authors: Aleksandra Murzyn, Justyna Orzeł, Barbara Dąbrówka, Angelika Śmiertka, Anna Sarka, Adam Mazur

Tutors: Paulina Koczurkiewicz-Adamczyk PhD, Karolina Słoczyńska PhD

Affiliation: Department of Pharmaceutical Biochemistry, Faculty of Pharmacy, Jagiellonian University Medical College, Kraków

Introduction: Due to the growing consumption of non-steroidal anti-inflammatory drugs (NSAIDs) such as diclofenac, the pollution of the aquatic environment with these substances is increasing. Thus, new methods of biodegradation of pharmaceuticals into less harmful substances using microorganisms are sought. Cunninghamella species are filamentous

fungi that are widely studied for their ability to detoxify various xenobiotics and as a microbial model of drugs metabolism.

Aim of the study: The main purpose of the study was to evaluate the ability of Cunninghamella species to biodegrade diclofenac. Next, in vitro ecotoxicity and mutagenicity, as well as in silico toxicity of fungal transformation products were carried out.

Materials and methods: Biotransformation using three Cunninghamella strains (C. echinulata, C. blakesleeana and C. elegans) was carried out for 7 days, and its progress was monitored with liquid chromatography coupled with tandem mass spectrometry (LC-MS/MS). The obtained fungal transformation products ecotoxicity was assessed with the use of Aliivibrio fischeri bacteria employing Microtox® assay, whereas their mutagenicity was evaluated with the Ames (Salmonella) test. In silico toxicity was carried out using Derek Nexus system.

Results: Different loss of diclofenac was observed after 7 days incubation of Cunninghamella strains with the compound, 85% for C. echinulata, 75% for C. blakesleeana and 91% for C. elegans. Hydroxylated diclofenac metabolite was identified as the major biotransformation product, which is also the major metabolite in mammals. There was a decrease in the ecotoxicity of the postculture extracts toward Aliivibrio fischeri in relation to the parent drug. Moreover, no mutagenicity of the postculture extracts in the Ames test was observed. In silico toxicity tool indicated that the obtained transformation product does not exhibit any structural alerts for endpoints such as carcinogenicity, teratogenicity, neurotoxicity and cardiotoxicity.

Conclusions: To sum up, the study indicated that Cunninghamella strains efficiently carry out the biotransformation of diclofenac into non-toxic compounds. Thus, diclofenac could be metabolized in the natural environment. Moreover, the study demonstrated the possibility of using Cunninghamella strains as potential tools for environmental bioremediation. The project was supported by the National Science Center Grant No 2020/37/B/NZ7/02546.

Hericium species as a source of biologically active compounds.

Authors: Joanna Karnafał, Katarzyna Kała, Jan Lazur, Katarzyna Sułkowska-Ziaja, Bożena Muszyńska

Tutors: Katarzyna Kała, Bożena Muszyńska

Affiliation: Jagiellonian University Medical College, Faculty of Pharmacy, Department of Pharmaceutical Botany, 9 Medyczna Street, 30-688 Kraków, Poland

Introduction: The genus Hericium is currently attracting growing scientific attention. Hericium erinaceus is mainly known from containing diterpenoinds, for example, erinacines. These substances may exhibit antidepressant activity by stimulating nerve growth factor (NGF) synthesis. Today, many researchers use Hericium erinaceus to conduct in vitro and in vivo experiments, and clinical trials, as well. Less studied species,such as Hercium americanum and Hericium coralloides, may also be a source of substances with antidepressant activity.

Aim of the study: The aim of the study was to compare the content of active compounds in the mycelium of Hericium spp. (H. erinaceus, H. americanum, H. coralloides) and fruiting bodies obtained from two flushes. Additionally, the next aim of the research was to choose the most suitable mushroom material that could be used as a potential dietary supplement or even a medicine.

Materials and methods: The research materials of Hericium spp. were obtained from in vitro cultures and also these mycelia were used to

received fruiting bodies under controlled laboratory cultivation. The analysis of lovastatin, ergothioneine, 5-hydroxy-L-tryptophan, L-tryptophan, tryptamine, and 5-methyltryptamine was performed using a high-performance liquid chromatography (HPLC) method. The content of glucans and antioxidant activity was determined by spectrophotometric methods.

Results: The best source of lovastatin is H. coralloides mycelium (21.6 mg/100 g d.w.). This material also contains the largest amount of 5-methyltryptamine (14.0 mg/100 g d.w.). H. americanum fruiting bodies from the first flush contain a higher quantity of lovastatin, ergothioneine, 5-hydroxy-L-tryptophan, and L-tryptophan than mycelia and fruiting bodies from the second flush, obtain from the same species. Additionally mycelial cultures contain more glucans and show higher antioxidant activity than fruiting bodies. The most popular H. erinaceus mycelium has high antioxidant activity (1132 mg Trolox equivalent/g d.w.) and contains high amounts of biologically active substances.

Conclusions: H. erinaceus mycelium can be proposed as species with high antioxidant activity and a source of significant amount of compounds with biological activity. Despite lower antioxidant potential H. americanum fruiting bodies from the first flush seems to be a better source of biologically active compounds than another species investigated.

Hydantoin-derived ligands of dopamine receptors as a great tool in search for innovative treatment for glioblastoma multiforme.

Authors: Katarzyna Pawłowska, Katarzyna Kucwaj-Brysz, Kinga Czarnota-Łydka, Jadwiga Handzlik

Tutors: prof. Jadwiga Handzlik, PhD and Katarzyna Kucwaj-Brysz, PhD

Affiliation: Department of Technology and Biotechnology of Drugs, Jagiellonian University Medical College, Medyczna 9, 30-688 Kraków, Poland

Introduction: Glioblastoma multiforme (GBM) is one of the most aggressive, lethal cancer of central nervous system (CNS). The median patient survival is approximately 15 months. Despite decades of deep research and clinical trials, combination of current surgical options, chemotherapy and radiotherapy provides marginal improvement of patient survival. Obviously, searching for novel GBM therapies is extremely urgent to efficiently deal with this unmet clinical need.

Dopamine receptors (DRs) are G protein-coupled receptors. Studies have shown correlation between expression of the DRs and GBM progression. Blockage of DRD2 and DRD4 is linked to decreased GBM cell viability. Very recent clinical trials using ONC201, an antagonist of DRD2 and DRD3, shown positive effect on recurrent GBM patients. This leads to the conclusion that DR ligands might be an innovative and promising treatment for GBM.

Given these facts, we performed preliminary studies among our small in-house library of hydantoin-derived DRs ligands. The results for some of derivatives showed the significant anticancer activity on GBM cell line (U87-MG) and no non-specific cytotoxicity confirmed in MTT using fibroblasts as non-tumour control. The two compounds with the most promising properties was selected as the lead structure for herein presented studies.

Aim of the study: The aim of this work was to design and synthesize DRs hydantoin-derived ligands based on structure-activity relationship (SAR) analysis performed in preliminary studies and the above-mentioned selected lead structures.

Materials and methods: Each synthesis consisted of three steps: Spiro[fluorene-9,4'-imidazolidine]-2',5'-dione was obtained from the corresponding ketone using the Bucherer–Bergs reaction. This was followed by N-alkylation and condensation with substituted phenylpiperazines or 1-benzhydrylpiperazine.

Results: Four newly designed derivatives were synthesized with moderate to good yields for particular reactions (32%-65%), total yields (7%-16%) and high purity >95%.

Conclusions: The resulted compounds were obtained in enough amount and purity, thus they are suitable for biological studies which will include MTT cytotoxicity tests in three types of GBM cell lines (U87-MG, A-172 and U251) and in fibroblasts as non-tumour control.

Impact of the formulation factors on the critical quality attributes of itraconazole-loaded filaments prepared by hot-melt extrusion

Authors: Jakub Sikora, Agnieszka Dużyk, Magdalena Kurpiel, Zuzanna Moczarska, Magdalena Nachman, Katarzyna Sikora

Tutors: Mateusz Kurek, PhD

Affiliation: SSG of Pharmaceutical Technology

Introduction: Hot melt extrusion (HME) has been utilized in pharmaceutical technology for over 50 years. It is commonly used in the formulation of poorly water soluble drugs in the amorphous solid dispersion forms. With the intensive development of the fused deposition modeling 3D printing method, HME has gained a new application, namely drug-loaded filament production. Preparation of the amorphous solid dispersion with this method is challenging, and, moreover, filaments have to fulfill more quality requirements i.e. good mechanical properties, diameter uniformity and shape stability.

Aim of the study: Our goal is to determine the influence of filament compositions and process modifications on the quality attributes of itraconazole-loaded filaments.

Materials and methods: Itraconazole is used as a model water-insoluble drug substance. We have conducted a series of preformulation analyses such as particle size distribution, moisture content, wettability, flowability, and thermal properties of active substance and excipients. A series of hot melt extrusion processes with various polymers: poly(vinyl alcohol) (PVA), hypromellose (HPMC), and three grades of hypromellose acetate succinate (HPMC-AS). The effect of additives such as lubricant e.g. colloidal silica, on the filaments properties will be evaluated as well. The filaments are tested in terms of their shape and diameter uniformity using two-dimensional laser gauge and mechanical resilience using texture analyzer. The solubility and dissolution rate improvement of itraconazole will be evaluated using the shake-flask method, and the dissolution tests respectively.

Results: The results of preformulation studies showed the potential for the preparation of filaments as the unfavorable properties of itraconazole, such as poor wettability and flowability, can be improved by mixing it with selected polymers and the formulation of amorphous solid dispersions in the form of filaments. So far, we have obtained one placebo PVA filament and two drug-loaded filaments, one based on PVA and the other based on HPMC-AS with 25% drug loading. The prepared filaments are of good quality and their properties will be evaluated during further analyses.

Conclusions: We can conclude that it is possible to prepare itraconazole-loaded filaments of good quality, and their properties are affected by the type of the polymer.

Medicinal Mechanochemistry, an efficient and environmentally-friend approach for the synthesis of compound PZ-1190 with potential antipsychotic properties

Authors: Michał Kamiński

Tutors: Wojciech Trybała MSc, Vittorio Canale PhD, prof. dr hab. Paweł Zajdel

Affiliation: SSG of Organic Synthesis, Jagiellonian University Medical College, Faculty of Pharmacy, Department of Organic Chemistry

Introduction: Mechanochemistry has been recently recognized as an efficient and green method for organic synthesis, providing an alternative to classical in-solution processes. Indeed, growing efforts from pharmaceutical industry and academia are focused on the development of sustainable procedures for the synthesis of pharmaceutically active ingredients (APIs) leading to coin the term medicinal mechanochemistry.

Aim of the study: Extending the concept of medicinal mechanochemistry, we applied a solid-state approach for the synthesis of compound PZ-1190, a multi-target ligand for serotonin and dopamine receptors from a group of azinosulfonamide derivatives of arylpiperazines, with potential antipsychotic properties in rodents.

Materials and methods: All mechanochemical reactions were performed using a vibratory ball-mill – Retsch Mixer Mill MM 400, operated at 30 Hz and 35 mL stainless steel jars equipped with one stainless steel ball. All of the reactions were carried out under air and ambient temperature.

Results: The developed mechanochemical protocol offered several advantages over classical batch synthesis, including improvement of the overall yield (from 35% to 45%), reduction of reaction time (from 42 to 5.5 h), limitation of the use of toxic reagents and solvents, and the formation of byproducts. Moreover, all synthesized intermediates and final compound PZ-1190 were isolated with high purities by simple extraction, without the need for column chromatography purification. To the best of our knowledge, performed reactions represent a rare example of mechanochemical reduction of a carboxylic function as well as oxidation of an aliphatic hydroxylic group into aldehyde.

Conclusions: The obtained results prove the suitability of mechanochemistry as a sustainable and efficient method for the synthesis of biologically active compounds.

Prolonged release bromhexine hydrochloride minitablets as a convenient pediatric formulation for once-a-day administration

Authors: Agata Grzejdziak, Olaf Lengier, Justyna Żarek, Dziyana Hliabovich

Tutors: Witold Brniak PhD

Affiliation: Students' Scientific Group of Pharmaceutical Technology, Department of Pharmaceutical Technology and Biopharmaceutics, Faculty of Pharmacy, Jagiellonian University Medical College

Introduction: Due to the problem of drug administration to pediatric patients, the development of an appropriate dosage form for these patients remains one of the main challenges of pharmaceutical technology. Minitablets may be a promising solution, because of their small size (1-3 mm), facilitating their swallowing, even by 2- and 3-year-old

children. Bromhexine hydrochloride (BHX), a well-known mucolytic drug, is available in the form of solutions, drops, syrups or tablets that must be applied 2-3 times a day. Therefore, these forms may not be suitable for all children, especially the youngest ones. The availability of BHX formulation with sustained release could significantly increase compliance in pediatric patients.

Aim of the study: The aim of this study was to develop prolonged release minitablets containing bromhexine hydrochloride that can be administered once a day.

Materials and methods: Eight series of BHX minitablets of 3 mm diameter were prepared using a single-punch tablet press Korsch EK0. They contained 1 mg of BHX, microcrystalline cellulose, lactose, sodium stearyl fumarate and one of the sustained release polymers: sodium alginate, polyvinyl alcohol, or hydroxypropylmethylcellulose (different grades and amount). The hardness of the minitablets was evaluated using the texture analyzer Shimadzu EZ-SX equipped with a 10 mm flat cylindrical probe. Dissolution studies were carried out with a type II apparatus in 500 mL of hydrochloric acid pH = 1,2 for 16 h.

Results: All minitablets had excellent mechanical properties. Their hardness was in the range 12 – 39 N. The complete dissolution of BHX was maintained from 1 to 8 h, depending on the composition of the tablets, particularly the amount and grade of the matrix-forming polymer.

Conclusions: The formulation of the prolonged release dosage form intended for once-a-day use was successfully achieved. The form of minitablets allows easy and precise dose adjustment for pediatric patients.

Public Health

Oral Session

Scientific Committee

prof. Mariusz Duplaga, MD, PhD
prof. Andrzej Galbarczyk, PhD
prof. Aleksander Gałaś, MD, PhD
prof. Agnieszka Gniadek, PhD
prof. Iwona Malinowska-Lipień, PhD
prof. Ilona Nenko, PhD
Marzena Ksel-Teleśnicka, MD

Coordinators

Julia Pałka
Julia Pieczykolan

IMSC

Conspiracy beliefs and intensity of Internet use but not game addiction are predictors of adherence to preventive measures during the pandemic in online gamers.

Authors: Paulina Smoła

Tutors: Mariusz Duplaga, MD, PhD

Affiliation: Students' Scientific Circle of Health Promotion, Department of Health Promotion and e-Health, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow

Introduction: Unfavorable social and health outcomes are indicated as a consequence of excessive computer gaming. However, it is not clear what is the role of gaming addition (GA) in adherence to preventive measures (PM) recommended during the epidemic threats.

Aim of the study: The study's main aim was to assess the effect of GA and other factors on compliance with PM recommended during the COVID-19 pandemic.

Materials and methods: An online survey was carried out among adult participants of the Facebook group "Gracze to my!". The uni- (ULR) and multivariate linear regression (MLR) models for PM score as a dependent variable were developed. GA was measured with a 7-item Gaming Addiction Scale (GAS-Brief).

Results: In the sample of 257 gamers, men were 77.0% (n=198). The mean age (standard deviation, SD) of the respondent was 22.1 (4.9) years, PM score – 20.4 (7.1), GA score - 17.6 (5.3), HL score - 12.4 (3.3), eHL score – 29.7 (5.9), conspiracy beliefs (CB) score – 17.9 (8.0).ULR mode revealed that higher GA was associated with lower adherence to PM (B coefficient (B)=-0,19, 95% confidence interval (95%CI)=-0.36 - -0.03, p=0.021). Persons with higher CB scores (B=-0.39, 95%CI=-0.48 - -0.29, p<0.001) and those using the Internet >8 hours daily (B=-2.97, 95%CI=-5,26 - -0.68), p=0.011) were also less likely to apply PM. Higher adherence to PM was also seen in women than in men, in respondents with higher than a lower level of education, in students than in employees, and in those living in the largest cities than in rural areas.

MLR model showed that GA was no longer significantly associated with adherence to PM. Significant predictors of adherence to PM included CB score and HL score, gender, education, vocational status, and Internet use (IU).

Conclusions: The effect of the GA score on adherence to COVID-19-related PM is not maintained in the multivariate model after adjusting for sociodemographic factors, IU, CB, and HL. Contradictory to expectations, eHL was not a predictor of PM either in the ULR or MLR model. MLR also showed that respondents with sufficient HL were more likely to comply with PM than those with problematic or undermined HL.

Prevalence and factors associated with chronic fatigue syndrome among health care workers during the COVID-19 pandemic

Authors: Katarzyna Sekulak

Tutors: Ilona Barańska, MPH, MSc, PhD, Assistant professor

Affiliation: Laboratory for Research on Aging Society, Department of Sociology of Medicine, The Chair of Epidemiology and Preventive Medicine, Medical Faculty, Jagiellonian University Medical College

Introduction: During Covid-19 pandemic, health care workers (HCWs) must have faced many challenges. Higher levels of stress at work, sleep

deprivation and work overtime contributed to chronic levels of occupational fatigue which is described as resulting from longer term workplace stress that is not successfully managed, resulting in emotional exhaustion, anhedonia, depression, mental distance from one's job and reduced professional efficacy.

Aim of the study: The aim of the study was to determine the prevalence and factors associated with chronic fatigue syndrome among HCWs employed at a designated hospital during the COVID-19 pandemic.

Materials and methods: This cross-sectional survey was conducted in 2021 among employees in the large hospital in Poland. To assess the intensity of chronic fatigue syndrome, we used the Checklist Individual Strength questionnaire. This tool contains 20 statements that are scored on a 7-point scale. The outcome is the sum of all points scored on the scale (higher score indicates higher fatigue). The prevalence of fatigue among HCWs was estimated based on a sten distribution (low, moderate and high level of fatigue). To analyze factors related to the prevalence of fatigue, we used multivariable linear regression.

Results: The study sample included 1412 HCWs of whom 53% were nurses, 9% physicians, 9% medical students, 16% other HCWs and 13% administrative staff. In our sample, 49% respondents reported medium level of fatigue and 32% high. Gender, age, workplace, occupation and providing care for COVID-19 patients were not related to the level of fatigue. In multivariable linear regression analysis (R2=56%), we found that higher emotional exhaustion (b=0.73, 95%CI 0.62-0.84), sleep problems (b=11.54, 95%CI 9.60-13.48), lowered mood (b=3.83, 95%CI 1.49-6.17), anxiety (b=4.84, 95%CI 2.27-7.41), feeling sad or depressed (b=4.44, 95%CI 1.56-7.33) and anhedonia (b=8.31, 95%CI 5.68-10.93) were associated with a higher intensity of fatigue among HCWs. On the other hand, the higher personal accomplishment and good or very good self-reported health were correlated with reduced fatigue.

Conclusions: Hospitals and local health authorities can use these results to prepare interventions that aim to reduce work fatigue and ensure the wellbeing of HCWs (e.g. psychological support, debriefing meetings).

Stethoscopes as potential bacterial infection transmission tools in six different Latvian hospitals

Authors: Sabīne Lūkina, Anna Paula Laizāne, Katrīna Elīna Bērziņa

Tutors: Asoc. Prof. Ingus Skadiņš MD, PhD, Prof. Ilze Grope MD, PhD

Affiliation: Riga Stradiņš University

Introduction: Nosocomial infections are a great concern in hospital settings. It is well-known that medical staff members and their equipment can transmit infectious agents.

Aim of the study: This study aimed at evaluating the presence of bacterial contamination on the stethoscopes of medical personnel in six different hospitals located in Latvia.

Materials and methods: 64 stethoscopes from 13 different units, belonging to physicians and residents, were sampled for bacterial cultures by swabbing the entire surface of the diaphragm of the stethoscope with a sterile cotton-tipped applicator, placed in Amies transport medium. Next cultures were transferred to blood agar, mannitol-salt-agar and Levine EMB agar plates. The plates were incubated at 37oC for 24 hours and examined for colony growth, then Gram stained and microscoped. Next using streak plate method transferred to Trypticase Soy Agar to obtain a pure culture that could be used in VITEK-2 for accurate microbial identification.

Results: Bacteria were found on 95%(106) of the sampled stethoscopes: hospital A 97%(33), B 90%(27), C 100%(18), D 85%(11), E 100%(17). In comparison between A, B, C, D and E: Gram-negative cultures (15%(5); 19%(5); 94%(17); 0%(0), 0%(0)), Gram-positive (76%(25); 11%(3); 0%(0); 100%(13); 76%(13)), combination of Gram-positive and Gram-negative (6%(2); 63%(17); 0%(0); 0%(0); 6%(1)), unidentified (9%(3); 7%(2); 0%(0); 0%(0); 18%(3)). The most prevalent species in hospital A were Staphylococcus 48%(16) with one case of coagulase-positive Staphylococcus aureus and Enterococcus 15%(5), in hospital B Enterobacteriacea (E.coli) 70%(19) and Staphylococcus 63%(17) with one case of coagulase-positive Staphylococcus aureus, in hospital C Enterobacteriacea (E.coli) 100%(18) and in hospital D and E - Staphylococcus 61%(8) and 53%(9). Most bacteria were non-pathogenic, with a few exceptions such as Acinetobacter baumanii in hospital A, Staphylococcus haemolyticus in A and D, Enterococcus faecalis in A and E.

Conclusions: 95%(106) of sampled stethoscopes were colonized by various groups of bacteria, which shows that stethoscopes are potential vectors for transmission of bacterial infections. These results raise awareness of the importance of regular medical device disinfection. Future research about resistance patterns of isolated cultures needs to be considered.

Determinants of preventive measures in the early phase of the COVID-19 pandemic in young adult Internet users

Authors: Katarzyna Jankowska, Paulina Smoła, Katarzyna Kuciel, Julia Jędrasik, Justyna Wcisło

Tutors: Mariusz Duplaga, MD, PhD

Affiliation: Students' Scientific Circle of Health Promotion, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow, Poland

Introduction: The adherence to preventive measures (PM) recommended during the pandemic depended on many variables. It was also expected that higher health literacy (HL) and e-health literacy (eHL) would positively impact undertaking such behaviors.

Aim of the study: The study's main aim was to assess the association between sociodemographic variables, HL, eHL, and adherence to PM.

Materials and methods: The analysis was performed on the data of 881 respondents aged 18-34 who took part in the computer-assisted web-based interviewing (CAWI) survey conducted in October 2020. The questionnaire applied in the study consisted of 66 items and included validated tools enabling the assessment of HL, eHL, six items asking about PM, and a set of sociodemographic items. The relationships between PM and potential determinants variables were analyzed with non-parametric Mann-Whitney and Kruskal-Wallis tests and Spearman correlation.

Results: The mean (standard deviation, SD) age in the study group was 26.11 (4.96), the mean HL was 12.05 (3.66), the mean eHL was 25.00 (4.60), and the mean PM score was 32.30 (7.44). The combined PB score was calculated based on the adherence to 6 individual measures, including keeping a social distance (mean, SD: 5.07, 1.60), not touching the face (4.76, 1.76), covering

mouth and nose when coughing (5.82, 1.55), wearing the mask (5.99, 1.56), washing hands (5.66, 1.48) and avoiding crowded places (5.00, 1.78). The PM score was significantly associated with gender and political sympathies but not with marital status, vocational status, education, place of residence, and income. Women showed significantly higher PM score than men (33.28 (6.97) vs. 30.86 (7.85), p<0.001). Voters supporting governing party received a significantly higher PM score than supporters of Confederation (33.58 (7.22) vs. 31.28 (7.97), p=0.036) and non-voters (31.47 (8.07), p=0.045). PM score was significantly positively but very weakly correlated with age (rho Spearman=0.09, p=0.006), and weakly with HL (rho=0.24, p<0.001), and eHL (rho=0.25, p<0.001).

Conclusions: Persons with higher HL and eHL, older than younger respondents, women more than men, and supporters of the governing party more than supporters of extreme right party or non-voters adhere to the PM recommended during the pandemic.

Antibiotics in COVID-19 patients in 2020 – cohort study

Authors: Cezary Kapturkiewicz, Urszula Durlak

Tutors: prof. dr hab. Jadwiga Wójkowska-Mach, dr Paweł Krzyściak

Affiliation: SSG of Microbiology, Jagiellonian University Medical College

Introduction: In 2020, a pandemic of viral disease, COVID-19, has caused massive problems to public healthcare. One of the dangers in COVID-19 patients in the early stages of the pandemic was secondary bacterial infections. This lead to wide usage of antibiotics, also as prophylactic measures, that could impact effectiveness of those substances long term as well as cause side effects.

Aim of the study: To assess the antibiotic consumption in COVID-19 patients according to group of antibiotics in non-ICU settings.

Materials and methods: Data on antibiotic usage in COVID-19 non-ICU patients in 2020 was gathered from University Hospital in Cracow, including class of the antibiotic, length of antibiotic therapy, as well as demographic data and length of hospital stay. Data was then compiled into DOT [Days of Therapy, the total number of days a specific antibiotic was administered] of each antibiotic class] per 100 patient days [pds], excluding cefazolin as the most common used in perioperative prophylaxis. The data from 2019 was used as control group.

Results: In 2020 the hospital treated 2 943 patients with PCR-confirmed COVID-19 , for 69 042 pds. Total antibiotic consumption in these patients was 50.9 DOT/100pds, compared to 28.26 in control group. Most used antibiotics were: 3rd and 4th generation of cephalosporins (24.1 DOT/100pds vs 2.9 DOT/100pds in 2019; p<0.001), carbapenems (9.14 DOT/100pds vs 5.06 DOT/100pds; p<0.001) and fluoroquinolones (9.0 DOT/100pds vs 8.2 DOT/100pds; p<0.001). Additionally, increased usage of polymyxins (colistin), was observed, although statistically insignificant (0.7 DOT/100pds vs 0.3 DOT/100pds; p>0.5).

Conclusions: Data suggest a significant increase in the consumption of antibiotics in non-critical COVID-19 patients in the beginning of COVID-19 pandemic. This should increase awareness of physicians treating similar diseases, especially in case a new viral pandemic occurs, in order to preserve the effectiveness of antibiotic agents. The effective antibiotic usage and the antibiotic stewardship should be considered in such of the secondary bacterial infections, especially to prevent multidrug resistant microorganisms.

Assessment of selected socio-demographic factors on the consumption of dietary supplements among children

Authors: Katarzyna Sekulak, Maria Pavlovska, Joanna Stolarska

Tutors:Beata Piórecka PhD, Ewa Błaszczyk-Bębenek PhD

Affiliation: 1. Students`Scientific Group of Human Nutrition, Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College 2. Department of Nutrition and Drug Research, Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College

Introduction: Supplementation is used to prevent deficiencies, but should not be used instead of a well balanced diet. Recently, it has been observed an overuse of dietary supplements. Since the majority of Polish people suffer from vitamin D deficiency, a vitamin D supplement should be administered at 600-1000 IU/day for children under 10 years of age and 800-2000 IU/day for adolescents and adults throughout the year. In the case of low fish consumption, it is recommended to implement DHA supplementation.

Aim of the study: Our study aimed to assess what socio-demographic factors influence the use of dietary supplements by children attending public educational institutions in Krakow.

Materials and methods: The study was carried out in November 2022 year and involved data about 2789 children, including 488 (17.5%) children attending nurseries, 594 (21.3%) preschoolers, 1575 (56.5%) primary school students and 132 (4.7%) high school students. 148 children out of the total study group have a certificate of disability. For those participating in the study, 80% of mothers and 60% of fathers declared a higher education. The study was based on a diagnostic survey using the Computer-Assisted Web Interview (CAWI) method addressed to the parents of children attending public educational institutions subordinated to the City of Krakow.

Results: The intake of diet supplements is related to the age of the child, 82.2% of children attending nurseries used dietary supplements, 73.1% of schoolers, 61.8% of students in primary schools and 46.2% among high school students took dietary supplements. The most used supplements among children in nurseries, preschoolers and primary schools were vitamin D (81.4%, 69.4% and 56.6% respectively), vitamin C (28.1%, 27.1% and 22.7% respectively) and cod liver oil or polyunsaturated fatty acids from the Omega-3 family (20.9%, 24.7% and 16.8% respectively). The students of high schools received most often vitamin D (41.7%), vitamin C (25.8%) and magnesium (15.2%). The limitation in the interpretation of the results is that most of the parents participating in the study declared higher education.

Conclusions: The administration of dietary supplements decreases with the age of the child. It is necessary to educate parents and raise awareness of a well-balanced diet and the use of supplements.

Access to health insurance, primary healthcare and pharmacotherapy among homeless people in Krakow

Authors: Marcin Wojnarski

Tutors: Jacek Klich, associate professor at Cracow University of Economics

Affiliation: Jagiellonian University Medical Collage, Medicne; Cracow University of Economics, Economy and Public Administration

Introduction: Homelessness is a vital social problem affecting about 2,000 city inhabitants. People experiencing homelessness (PEH) are

particularly prone to health issues, due to the lifestyle, addictions and living conditions. Because of their unregulated social status, they do not always qualify for publicly funded healthcare and have difficulty taking medications regularly.

Aim of the study: The aim of the study was to assess the access of PEH in Krakow to health insurance and primary healthcare, as well as the frequency of primary health care usage. Moreover, the regularity of medication usage and the reasons for not taking the drugs were examined.

Materials and methods: Author's own survey questionnaire was used as a research tool. PEH residing in Krakow were included in the study. From 175 responses 75 were obtained by a direct interview with the author of the study and the remaining 100 by filling out the survey questionnaire by respondents on their own. The survey period ran from December 2021 to May 2022.

Results: The study shows that 42 (24,0%) of the respondents does not have a health insurance. Only 26 (61.9%) of them knew how to receive insurance. Of the remaining 133 people, 113 (85,0%) say they are under the care of a general practitioner. Among those 113 participants, 47 (41,6%) visit the primary healthcare at least once a month, 37 (32,7%) several times a year, 14 (12,4%) less often and 15 (13,3%) not at all. The irregular taking of medications by the respondents occurs in 90 (51.4%) cases. The reasons for this are most often: lack of financial resources (67,8%), not attending the doctor (32,2%), and disbelief in the sense of treatment (20,0%).

Conclusions: Nearly one in four respondents did not have health insurance, which makes it impossible to access most publicly funded services. Even if they are enrolled with a PHC, many of them do not receive help regularly. Alongside this, PEH have a serious problem with the regularity of drug treatment. The situation requires the involvement of public authorities, social workers and NGOs.

Surgery

Oral Session

Scientific Committee

prof. Marcin Barczyński, MD, PhD

prof. Mateusz Koziej, MD, PhD

prof. Piotr Major, MD, PhD

Mirosław Dolecki, MD, PhD

Radosław Pach, MD, PhD

Justyna Rymarowicz, MD, PhD

Coordinators

Viktoriia Popadynets

Olga Wilk

IMSC

Assessment of the suitability of high-voltage stimulation in the treatment of Diabetic Foot Ulcers

Authors: Tomasz Rabiega

Tutors: mgr Dorota Staniak, dr n.med. Krzysztof Sokołowski, dr hab. n. med. Alicja Wójcik-Załuska

Affiliation: Department of Clinical Physiotherapy, Medical University in Lublin

Introduction: Diabetes is considered as a global epidemic of the 21st century. Poorly controlled diabetes leads to the development of complications such as diabetic foot ulcer which usually leads to severe disability and even death. The treatment of diabetic foot ulcer includes surgical debridement of the wound, relieving the limb and patient education. Supporting treatment methods include: oxygen therapy in a hyperbaric chamber, the use of maggots, negative pressure therapy and physiotherapeutic treatments. One of the methods of physical treatment is high-voltage stimulation (HV current).

Aim of the study: The aim of the study was to evaluate the usefulness of high-voltage stimulation in the treatment of wounds in patients with diabetic foot syndrome.

Materials and methods: The study involved 40 people with diabetic foot ulcers. The control group included 20 people using only traditional treatment. The study group of 20 people using traditional treatment extended by high-voltage stimulation. The following were used in the study: author's questionnaire, wound size measurements before and after 30 days after therapy, VAS scale, WOMAC questionnaire and SF-36 questionnaire.

Results: Statistical analysis in the control group showed statistically significant changes in pain (p = 0.008) and vertical wound dimensions (p = 0.049) before and after therapy. There were no statistically significant changes in stiffness (p = 0.102), physical activity (p = 0.735), horizontal dimension of the wound before and after therapy.

The statistical analysis in the study group showed statistically significant changes in pain (p = 0.000), stiffness (p = 0.015), physical activity (p = 0.001), horizontal and vertical wound dimensions (p = 0.000) before and after therapy.

Statistical analysis in the study and control groups showed statistically significant changes in physical health (p = 0.014) and mental health (p = 0.001) after the therapy.

Conclusions: 1. High-voltage stimulation is effective in the treatment of diabetic foot ulcers.

2. The use of HV currents reduces the perception of pain among the respondents.

3. The use of high-voltage current improves the quality of life among patients.

4. The use of high-voltage current does not improve the functioning of the patients in everyday life.

Determining predisposing factors of hypoglycaemia after gastric bypass surgery

Authors: Gabija Germanaitė 1, Viltė Veličkaitė 1

Tutors: prof. Almantas Maleckas MD, PhD 2,3, prof. Džilda Veličkienė MD, PhD 4

Affiliation: 1 Lithuanian University of Health Sciences, Academy of Medicine, Kaunas, Lithuania; 2 Department of Surgery, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania; 3 Department of Gastrosurgical Research and Education, Institute of Clinical Sciences, The Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden; 4 Institute of Endocrinology, Lithuanian University of Health Sciences, Academy of Medicine, Kaunas, Lithuania;

Introduction: Gastric bypass (GB) surgery is used to accomplish long term weight loss in obese patients. Post-bariatric hypoglycemia is increasingly recognized as a complication of GB and occurs several months or years after the operation. The mechanism of postprandial hypoglycemia is related to insulin dependent and independent mechanisms. There is data that following a GB intestinal incretin hormone such as glucagon-like peptide-1 secretion is exaggerated and can cause not only weight loss but also hyperinsulinemia and hypoglycemia. The fear of hypoglycemia forces the patient to take additional meals and can be one of the causes of weight regain.

Aim of the study: was to assess predisposing factors for hypoglycaemia after GB.

Materials and methods: 8 patients (1 man and 7 women, age 39.8 ± 11.3) with hypoglycaemic symptoms after a GB were enrolled. Participants recorded food and hypoglycaemic symptoms diary and their blood glucose was monitored with a continuous glucose monitor for 7 days. Glycaemic load (GL) and grams of nutrients of every meal were calculated. Parametric data presented as average ± SD, non-parametric - median (min-max).

Results: Hypoglycemia manifested 3.9±1.6 years after GB. During 7 days hypoglycaemic events occurred 5 times (2.0-8.0), of which 33.0 % (25.0-100.0) was at night-time. Hypoglycaemia occurred 1.5 (0.2-12.0) hours after the last meal and lasted for 2 (0.2-12.0) hours. The average of greatest weight loss was 37.5±13.5 % before hypoglycaemia episodes onset. All patients who experienced hypoglycaemia observed 31.5±16.5 % weight regain of the previously lost weight.

Multiple linear regression was run to determine if hypoglycaemia onset could be predicted by last meal nutrients or GL, however it was statistically insignificant. Significant positive correlations were found between the number of hypoglycaemic episodes and time after GB ($r = 0.720$, $p = 0.044$), the percentage of maximum lost body weight after GB and night-time hypoglycaemia (NTH) ($r = 0.763$, $p = 0.046$). No correlation was observed between NTH and regained weight.

Conclusions: Patients that had GB a longer time ago, experienced more hypoglycaemic episodes and the patients that lost more weight after GB had increased number of NTH, regardless of regained weight. None of the nutrients or GL predicted the time of hypoglycaemia onset.

Number of falls within six months preceding oncologic surgery as a predictive parameter correlating with postoperative complications among geriatric patients

Authors: Apolonia Miążek; Wiktoria Szynkiewicz

Tutors: Jakub Kenig M.D. Ph.D. Prof. of Jagiellonian University

Affiliation: Department of General, Oncologic, Gastrointestinal Surgery and Transplantology

Introduction: More than 50 percent of new cancer cases occur in patients ≥65 years of age. As a result, oncologists and surgeons face the challenge of providing appropriate care to older patients. Comprehensive geriatric assessment (CGA) is a multidisciplinary diagnostic tool used to identify medical, psychosocial, and functional limitations of the elderly. Its implementation in the context of geriatric oncological patients has not been sufficiently assessed but could help to develop an optimal treatment plan.

Aim of the study: This study aimed at establishing if any CGA parameters are associated with postoperative complications.

Materials and methods: The studied group included patients aged 65 years or more hospitalized in the Department of General Surgery between January and December 2022.

Evaluated CGA parameters included: nutritional status, physical fitness, number of falls in the last six month, and psychological state. Disability was assessed using the Activities of Daily Living (ADL) and Instrumental ADL (I-ADL) questionnaires. The Blessed Orientation-Memory-Concentration (BOMC) Test and Clock Drawing measured cognitive functions. Additionally, data regarding the primary diagnosis, type of procedure, occurrence of medical and surgical complications were obtained from patients' records. The statistical analysis was performed using IBM SPSS Statistics 28.0.

Results: 63 out of 115 examined geriatric patients had complete medical data, were diagnosed with malignant neoplasm, and qualified for surgery. The mean age was 72 years, and gender distribution was equal. CGA elements that correlated with the Comprehensive Complication Index (CCI) were I-ADL, Nutritional Risk Screening (NRS), and Brief Frailty Index (BFI). The number of falls experienced in the previous six months best correlated with the presence and number of postoperative complications. Medical complications occurred more frequently in patients with higher BFI and lower I-ADL scores. The number of falls proved to be the only significant variable in created logistic regression model for predicting complications.

Conclusions: In our population, CGA elements most significantly associated with postoperative complications were the count of falls in the six months preceding surgery, BFI, and I-ADL scores. Studies showed the validity of the CGA for predicting complications from oncological treatment. We plan to continue our investigations on bigger groups to establish the relevance of other CGA parameters.

Unruptured cerebral microaneurysms treatment in the light of scoring systems

Authors: Jakub Nowicki, Wojciech Siłka

Tutors: Maciej Frączek MD, Roger Krzyżewski MD, PhD

Affiliation: Students' Scientific Group at Department of Neurosurgery and Neurotraumatology

Introduction: Aneurysmal subarachnoid hemorrhage (aSAH) as an acute neurosurgical disorder produces unfavorable outcomes. Indications for surgical or endovascular treatment of unruptured intracranial aneurysms are still a matter of discussion. There are even more questions regarding small intracranial aneurysms (SIAs) as more and more studies show that they carry a rupture risk that cannot be neglected.

Aim of the study: Study aim was to examine factors that are associated with interventional treatment of SIAs with special attention to aneurysm scoring systems.

Materials and methods: We retrospectively examined all patients with unruptured SIAs (of largest dome size ≤ 7mm) that were hospitalized at University Hospital of Cracow from 2021 to 2022. Study group consisted of 89 patients. SIAs rupture risk was estimated by 4 different scoring systems: PHASES, Small intracranial aneurysms of the anterior circulation (SIAAC), Unruptured Cerebral Aneurysm Study (UCAS) and simplified version of Unruptured Intracranial Aneurysm Treatment Score (UIATS) by Juvela.

Results: In our study 76,4% patients were female and average age equaled 57,4 years old. During 75 procedures 91 aneurysms were secured. Eleven patients with SIAs had also at least 1 other large aneurysm, 9 of which were treated in the study period. The most common site for treated SIAs was internal carotid artery (47,3%)

and the most common approach was endovascular (72,9%). Moreover, 20% of SIAs treatment procedures included more than 1 aneurysm. SIAAC scores were significantly higher for operated SIAs (4,88±2,07 vs. 3,56±1,89; p=0,019). SIAs dome size was also significantly higher in operated ones (4,63±1,52 vs. 3,67±2,24; p=0,033). Patients with SIAs who were smoking had an intervention on large aneurysm more often than others (55,6% vs. 21,3%; p=0,038). Patients with SIAs and another large aneurysm had an intervention on SIAs rarer than others (5,7% vs. 36,8%; p=0,001). Chronic heart failure (CHF) and respiratory diseases (RD) were factors associated with no intervention on SIAs (CHF: 4,3% vs. 26,3%; p=0,01) (RD: 5,7% vs. 21,1%; p=0,06).

Conclusions: Patients who underwent SIAs surgical treatment had greater SIAAC score and SIAs dome size. In contrary, coexistence of larger aneurysms and patients' comorbidities presence might be linked with less frequent SIAs intervention.

WHO Surgical Safety checklist completion at Gauhati Medical College and Hospital: A closed loop clinical audit tertiary care institute with a big case load

Authors: Mr. Krititta Kalita, Dr. Kevin Sunny

Tutors: Assistant Prof. Dr. Nae won Hailowng MS, MBBS, Prof and HOD Dr.Purujit Choudhury MS, MBBS,PhD

Affiliation: Gauhati Medical College and Hospital

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

Aim of the study: The aim of this audit was to assess the proper adherence to the WHO SSC during all surgeries in Surgical Unit 1 of General Surgery Department of a tertiary care institute in India from (add time period)

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

Results: During the period of 4 months (Oct-Jan) data was collected for the implementation of the checklist among 100 patients and noted that confirming patients' identity, procedure and consent was completed in all patients (100%). Before the intervention was taken the question to the surgeon on how long case will take and to nurses on count of instrument, sponges and needles had least compliance at 14.3% and 17.6%. After an interdepartmental educational intervention the rates of completion of the SSC was seen to increase in the above mentioned questions to 78.3% and 85% respectively. Compliance increased from 28.6% to 77.6% for the question "to the nursing team if there are equipment issues or any concern?"

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

Comparison of mortality in patients with acute abdomen with successful empiric antimicrobial therapy and patients with unsuccessful empiric antimicrobial therapy

Authors: Nastassia Chakhovich, Bartosz Roś, Anna Dąbrowska, Illia Lastovetskyi, Mateusz Kęska

Tutors: MD, PhD Mirosław Dolecki

Affiliation: 2nd Department of General Surgery, Jagiellonian University

Introduction: Targeted antibiotic therapy in the acute abdomen like a surgical treatment is one of the most important actions which leads to recovery. According to generally accepted guidelines, the antibiotic must be given to the patient at the time of admission to the department, when the pathogen is unknown. This type of using antibiotic defined as empiric antibiotic therapy.

Aim of the study: The aim of the study was to assess whether the empirical administration of an antibiotic, incompatible with the antibiogram obtained later, impacts the course of the disease and mortality in patients with acute abdomen.

Materials and methods: 205 patients, hospitalized in the years 2013 - 2022 at the Department of General Surgery of the University Hospital in Krakow because of acute abdomen, were examined. All patients, by the guidelines of empiric therapy, received before the operation third-generation cephalosporins and metronidazole intravenously. Bacterial cultures were sampled intraoperatively from the abdominal cavity of all patients. Patients with successful antibiotics therapy or with sterile culture were qualified to group A. Patients who were cultured resistant strains on the applied empiric therapy were qualified to group B. Demographic data, physiological parameters, laboratory test results, ASA (American Society of Anesthesiologists Classification), MPI (Mannheim Peritonitis Index), starting point of acute abdomen, the spectrum of cultured microorganisms, hospitalization in the ICU (Intensive Care Unit), presence of complications, and mortality rate were assessed respectively. The database was created with Excel spreadsheets.

Results: Group A comprised 85 patients, and group B - 120 patients. There was no difference in demographic data, physiological parameters, laboratory test results, ASA, or MPI. The difference was noticed in starting point of the acute abdomen and the spectrum of cultured microorganisms. There was a higher percentage of complications, a number of patients who were hospitalized in the ICU, and deaths in group B.

Conclusions: Empiric antimicrobial therapy inconsistent with the result of the antibiogram obtained later has a negative impact on prognosis in the course of acute abdomen. This is a very serious therapeutic problem because in our material 58,5% of patients received antibiotics incompatible with the antibiogram obtained later.

Endoscopic Endonasal Repair of Transsphenoidal/ Transethmoidal Meningoencephalocele and Meningocele - Surgical Outcomes and Complications Analysis

Authors: Jia Jia Teo, Barbara Buchalska, Paweł Poppe

Tutors: Dr n. med. Jacek Kunicki, MD PhD

Affiliation: Department of Neurosurgery, Marie Curie National Research Institute of Oncology, Warsaw, Poland

Introduction: Transsphenoidal/transethmoidal meningoencephalocele (or meningocele) are rare entities most commonly presenting as spontaneous CSF leaks. The defects of the lateral wall of the sphenoidal sinus for meningocencephalocele are considered congenital lesions, but some factors (increased ICP) may lead to acquired secondary skull base defects.

Aim of the study: The purpose of the study was to analyse the surgical outcomes, incidence and evolution of complications in cases of endoscopic endonasal repair (EEN) of Meningoencephalocele/ meningocele of the sphenoid sinus.

Materials and methods: The study is a retrospective clinical case series analysis. Eleven consecutive cases of meningoencephalocele and meningocele of the sphenoid sinus operated on using an endoscopic endonasal approach from 2011 to 2022 at the National Research Institute of Oncology in Warsaw, Poland, were reviewed. All patients have undergone reconstructions of skull base defects through extended transnasal transsphenoidal/transpterygoid endoscopic approaches.

Results: The series includes 11 patients (3 men, 8 women). All patients in this series presented with CSF rhinorrhea and it was associated with meningitis in 3 cases. There were no severe complications associated with surgery. There was no CSF leak postoperatively. Two patients complained of transitional hypoaesthesia of the V2 dermatome of the face, and there were three cases with sinusitis and one case of prolonged intranasal crusting.

Conclusions: Endoscopic endonasal surgery is a safe and effective approach for meningocele and meningoencephalocele of the sphenoid sinus. This minimally invasive method allows the resection of the meningeal hernia and repair of the skull base defect with favourable clinical outcomes and a low number of complications.

Pressurized intraperitoneal aerosol chemotherapy (PIPAC) for gastric cancer peritoneal malignancy: experience of the first program in the Baltic countries

Authors: Neda Gendvilaitė

Tutors: Martynas Lukšta, MD; Rokas Račkauskas, MD, PhD.

Affiliation: Faculty of Medicine, Vilnius University, Lithuania

Background: Peritoneal carcinomatosis (PC) appears in more than half of patients with gastric cancer and is associated with poor long-term outcomes. Despite improvements in systematic chemotherapy using multidrug combinations, the median survival time is 6 months. Minimally invasive pressurized intraperitoneal aerosol chemotherapy (PIPAC) was shown to be able to enhance drug distribution and uptake and is a novel palliative approach to treating PC. The aim of this study is to evaluate the experience with

PIPAC in the Baltic region during the last two years.

Methodology: All patients who underwent PIPAC for unresectable peritoneal metastases originating from gastric cancer at Vilnius University Hospital Santaros Klinikos between 2021 and 2022 were included in this retrospective study. The overall survival (OS) in patients with peritoneal carcinomatosis treated by PIPAC was the primary outcome of this study. The secondary outcomes were peritoneal carcinomatosis index (PCI) and ascites reduction after PIPAC treatment.

Main results: In total, 23 patients underwent 54 PIPAC procedures. The median overall survival after carcinomatosis diagnosis was 14 (95% Cl 11-28) months. Following PIPAC, the median PCI decreased from 10 (3; 13) to 8 (2.25; 12.75), although the difference failed for significance, p = 1. Among 18 patients who received at least 2 PIPACs, 9 had ascites at baseline with a median volume of 2000 ml (1000; 5000). After PIPAC, the median volume of ascites in these patients decreased to 1000 ml (400; 6000).

Conclusions: PIPAC may be used for peritoneal carcinomatosis treatment and likely prolong surviv

Self-inflicted neck injuries in patients of Otolaryngology Clinical Department

Authors: Maria Nowak

Tutors: Joanna Szaleniec MD, PhD

Affiliation: Student's Scientific Society at Otolaryngology Clinical Department, Jagiellonian University Medical College, University Hospital, Cracow

Introduction: Self-inflicted injuries may result from self-mutilation defined as an act of purposely harming oneself without deliberate suicidal intent, or from suicidal attempt. They also vary widely in type, means, severity or association with other medical conditions. The area of neck is not uncommon region of the body affected by self-inflicted injuries. Due to critical state of patients or frequently accompanying psychiatric background some difficulties in providing care may occur. Cases are usually complex, so multidisciplinary approach is suggested. Careful description of the injury is important since the self-inflicted injuries often present features that distinguish them from other forms of injuries.

Aim of the study: Aim of this study is to describe a series of 5 patients emphasising etiology, clinical findings, management and relevant characteristics of self-inflicted wounds.

Materials and methods: Patients hospitalized in the Otolaryngology Clinical Department over the years 2018-2022 were reviewed and a total of 5 patients with self-inflicted neck injuries were found. Their medical records were scrutinized, special attention was paid to the characterization of the wounds. Findings were compared with literature data.

Results: All patients presented with neck wounds of different etiology and morphology with traits typical for self-harm. Majority additionally suffered from psychiatric disorders. Four of them required surgical dressing in the operating room, two with additional tracheotomy. One, after self-removal of a foreign object, underwent observation only. Diverse care problems occurred during hospitalization. In most of the patients the use of direct coercion was requisite. One patient died, two were subsequently admitted to the psychiatric ward, one to cardiology department and one was discharged after refusal of further treatment.

Conclusions: Self-imposed wounds are not very rare and have a distinct pattern. Various subsidiary problems may present hence this type of trauma should be treated in a multidisciplinary fashion. Understanding its distinctiveness and complexion promotes better patient care.

Systematic Review

Oral Session

Scientific Committee

prof. Agnieszka Pac, PhD

prof. Grzegorz Kopeć, MD, PhD

prof. Anetta Undas, MD, PhD

prof. Małgorzata Bała, PhD

Magdalena Koperny, PhD

Coordinators

Mateusz Kęska

Maria Kurek

IMSC

A Systematic Review and Meta-analysis of Antibody Therapies for Diffuse Large B-cell Lymphoma

Authors: Elizaveta Bayramova

Tutors: Dr Andrejs Braun

Affiliation: Barts Cancer Institute

Background: Diffuse large b-cell lymphoma (DLBCL) is a subtype of non-Hodgkin lymphoma, which can be stratified based on the cell of origin classification, with the activated B-cell (ABC) subtype having worse prognosis than the germinal centre B-cell (GCB) subtype. This systematic review and meta-analysis aimed to determine the efficacy of antibody therapies in previously-untreated DLBCL patients, and what effect they have on DLBCL subtypes.

Methodology: Databases were searched for trials investigating antibody therapies in previously-untreated DLBCL patients. Where possible, 2-year progression-free (PFS) and overall survival (OS) data were analysed using the random-effects model as part of the meta-analysis.

Main results: Meta-analysis of three trials showed no significant PFS benefit of rituximab addition to conventional chemotherapy (RR 1.288; 95% CI 0.971-1.605). A significant OS improvement was seen in a meta-analysis of six trials (RR 1.276; 1.058-1.494). This review also showed that non-GCB subtypes benefited more from the addition of antibody therapies, bringing their survival up to that of the less aggressive subtype (GCB).

Conclusions: This review showed that the addition of rituximab to conventional chemotherapy improves both PFS and OS of previously-untreated DLBCL patients. Non-GCB subtype patients benefited more from immunochemotherapy than the GCB cohort.

Electroconvulsive therapy in treatment-resistant depression: systematic literature review

Authors: Paulina Tursaitė, Vainius Zajankauskas

Tutors: Dr. Algirdas Musneckis MD

Affiliation: Department of Psychiatry, Lithuanian University of Health Sciences, Kaunas, Lithuania

Background: Treatment resistant depression (TRD) refers to patients who do not respond to two trials of antidepressant medication. Electroconvulsive therapy (ECT) is considered the gold-standard treatment for TRD [1]; [2].

Methodology: This review aims to present recent findings regarding ECT as a potential treatment option for depression.

Literature review and analysis was performed. Articles from the past 10 years were searched via PubMed and other data bases with the following keywords: electroconvulsive therapy, depression. Of the 2310 results, only those which specifically identified findings regarding electroconvulsive therapy (ECT) as a potential treatment option for patients with depression.

Main results: ECT has shown high effectiveness in treating TRD, with remission rates of 50-70% compared to standard antidepressants at only 13% [2]. ECT is considered a first-line treatment for patients with acute suicidality, catatonia, and severe psychosis [1]. It has also been associated with reduced risk of suicide and lower rates of readmission to the hospital [3]. ECT is considered a safe treatment, with an extremely low mortality rate of approximately 2.1 deaths per 100,000 treatments [3]; [4]. While memory loss remains a common concern, electrode placement and parameters can be adjusted to minimize this side effect. [4]. Approximately one-third of individuals with depression do not respond to ECT [5], and 80% experience relapse without additional ongoing treatment [1].

Several studies have shown that combining pharmacotherapy with modified ECT decreases relapse rates [4]. During the acute course of ECT, it's important for the clinician to explore switching the patient's ineffective antidepressant medications to a different category that hasn't been attempted before [4]. While ECT remains a highly effective therapy the underlying mechanisms remain uncertain [6].

Conclusions: In conclusion, electroconvulsive therapy (ECT) is a highly effective treatment for severe psychiatric illnesses, especially in cases where a rapid response is critical and other treatments have failed. Despite the historical stigma surrounding ECT, patients and practitioners continue to hail it as potentially life-saving, and it remains one of the most rapid and effective treatments in psychiatry.

Clinical characteristics of lower respiratory tract infections induced by respiratory syncytial virus and rhinovirus in young children: a systematic review and meta-analysis

Authors: Izabela Orzołek, Aleks Adamiec, Wojciech Feleszko

Tutors: Dominika Ambrożej

Affiliation: SKN przy Klinice Pneumonologii i Alergologii Wieku Dziecięcego i Pediatrii

Background: Bronchiolitis is the leading cause of infant hospitalization and the most common lower respiratory tract infection at an early age. Two main viral agents causing bronchiolitis include respiratory syncytial virus (RSV) and rhinovirus (RV). RSV and RV elicit distinct cytopathic and immune responses and have different long-term outcomes. RV infection in infants has been associated with a higher risk for recurrent wheezing and childhood asthma. RSV has been reported to cause more severe course of the disease with oxygen demand. Although guidelines do not recommend testing for respiratory viruses in bronchiolitis, the viral agent may guide endotyping and personalized treatment and asthma preventive measures.

Methodology: A search of electronic databases PubMed, Cochrane, Embase was performed from inception to March 2022. Studies involving data on clinical presentation of children with RV and RSV-induced bronchiolitis younger than three years old were included. The Newcastle-Ottawa Scale was used to assess the risk of bias of the included studies. Our primary outcomes included wheeze at enrolment, personal history of eczema, parental atopy; severity of bronchiolitis such as: intensive care unit (ICU) admission, fever, and ventilation support.

Main results: 1441 records were found, with 38 studies included in qualitative analysis and 30 in quantitative syntheses. The meta-analysis of 7 studies revealed that patients with RV-bronchiolitis more frequently have the previous history of eczema (RR 0.70, 95% CI 0.55-0.91, p<.05). Based on 10 studies, RSV-positive patients required oxygen supplementation during hospitalization more often than RV-positive ones (RR 1.31, 95% CI 1.05-1.64, p<.05). No significant differences were found in the remaining primary outcomes.

Conclusions: Although the personal history of eczema and oxygen supplementation were found to be significantly associated with either RSV or RV, the clinical picture and atopic history are not satisfactory evidence to objectively determine viral etiology of bronchiolitis. Thus, the more accessible respiratory viral panels testing for RSV and RV, are eagerly anticipated to identify the group at risk of a more severe course of the disease and those at increased risk of developing subsequent asthma.

The anatomy of the bronchial arteries in relation to embolization procedures: a meta-analysis

Authors: Kinga Glądys, Patryk Ostrowski, Michał Bonczar, Maria Klimeczek-Chrapusta

Tutors: prof. Mateusz Koziej MD, PhD

Affiliation: Jagiellonian University Medical College, Krakow, Poland

Background: Massive hemoptysis is a life-threatening but relatively common clinical event. Its main etiology is secondary to the rupture of the bronchial arteries (BA). It is crucial to be aware that the origins, numbers, courses, and diameters of BAs can vary substantially among individuals, which is important while considering the location of a bleeding BA before, and during the embolization procedure. In this study, we aimed to provide the most accurate description of the normal anatomy and variations of the BAs according to data available in the literature. Adequate knowledge of the normal anatomical features and variations of the BAs can decrease the number of potential risks while undertaking BA embolization procedures and, ultimately, lead to better patient outcomes.

Methodology: Major online medical databases such as PubMed, Scopus, Embase, and Web Of Science were searched to find all studies providing data about the most common variations of arrangement, the number, and the origin of BA, involving both orthopic and ectopic ones. Articles that included exact data were qualified for a more precise evaluation. Therefore, out of 4867 studies initially evaluated, 36 were eventually included in the meta-analysis. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed.

Main results: The number of BAs varied from 1 to 6, divided into 16 arrangements. According to our study, the most prevalent distribution pattern happened to be two BAs: one right BA and one left BA with the pooled prevalence of 19.54% (95% CI: 6.69% - 36.44%). In terms of origin, BAs were found to originate most frequently from the descending aorta, the pooled prevalence was set to be 92.71% (95% CI: 80.91% - 100.00%). Furthermore, the prevalence of at least one ectopic BA in an individual is relatively high and was established at 37.80% (95% CI: 25.51% - 50.91%).

Conclusions: It is hoped that the results of the present meta-analysis will provide helpful knowledge for physicians performing endovascular procedures, especially the bronchial artery embolization as a treatment for life-threatening hemoptysis.

Aplastic anemia induced by immune checkpoint inhibitors- systematic review of case reports and EudraVigilance database

Authors: Aleksandra Czernicka, Dariusz Łaszczych

Tutors: Jakub Husejko MD

Affiliation: Department of Geriatrics, Faculty of Health Sciences, Nicolaus Copernicus University in Toruń Ludwik Rydygier Collegium Medicum in Bydgoszcz

Background: The introduction of immune checkpoint inhibitors (ICI) therapy was the breakthrough in oncology and became a pillar of present targeted therapy. ICIs are widely used as the first-line treatment of many advanced malignancies. From the other side, ICI may cause life-threatening immune-related adverse events (irAEs) such as aplastic anemia (AA). So far, AA associated with ICI remains poorly described. The aim of this work is to conduct comprehensive review of ICI-related aplastic

anemia occurrence based on published literature and pharmacovigilance databases.

Methodology: We searched Medline, Web of Science and Google Scholar for papers published before 10th February 2023. Publications reporting AA developing during ICI therapy were included in our work. In the next step, we searched the European database of adverse drug reactions (EudraVigilance). For each ICI available in the database we collected data from individual case safety reports (ICSRs) up to 10 of February 2023. In our further analysis we involved only reports of aplastic anemia.

Main results: In our work we included thirteen case reports of patients developing AA during ICI therapy. The most frequent malignancies were non-small cell lung cancer (NSCLC) (n=5) and malignant melanoma (n=4). The median time to AA onset was 4 ICI treatment cycles. Eight patients (61,5%) have not responded to immunosuppressive treatment and died due to bone marrow failure. In the EudraVigilance database we identified 57 ICSRs reporting AA induced by ICI therapy. The majority of reports were attached to nivolumab (n=18), nivolumab/ipilimumab combination therapy (n=15) and pembrolizumab (n=14). Most common malignancies reported in ISCRs were NSCLC (35%) and malignant melanoma (17,5%). Fatal outcomes were reported in 12/57 (21%) ISCRs. Fatal outcome risk in ICI-induced aplastic anemia among patients treated with combined nivolumab+ipilimumab regimen was comparable to nivolumab monotherapy (OR=0,95, 95% C.I 0,2- 4,4, P=0,47).

Conclusions: Aplastic anemia is a rare but potentially life-threatening adverse event of ICI therapy. Due to limited evidence, management of ICI-induced aplastic anemia is still challenging and frequently unsuccessful. To improve patient outcomes, more research is needed.

Influence of bariatric surgery on erectile dysfunction – systematic review and meta-analysis

Authors: Hanna Rodak, Ilie Lastovetskyi, Jakub Strojek

Tutors: Piotr Małczak MD, PhD

Affiliation: Student's Scientific Association of Second Department of General Surgery

Background: Obesity is a worldwide health issue which is a risk factor of erectile dysfunction that negatively affects patients' well-being due to psychological and social implications. Bariatric surgery has been proven to be a successful management strategy for morbid obesity, but limited studies exist on its effect on erectile dysfunction. This study aims to evaluate the efficacy of bariatric surgery in increasing male's erectile function.

Methodology: We searched the Medline, Embase, Cinahl and Scopus databases with the language restricted to English. We subsequently asessed bibliographies from other systematic reviews and meta-analyses regarding the subject. The study was included if the following criteria were met: 1) the study concerned adult patient who underwent bariatric surgery; 2) the study assessed erectile dysfunction by validated scale (most frequently IIEF-5); 3) the study compared pre- and post-operative outcomes in longitudinal design. All criteria were required to enroll a study for further analysis. Quality of included studies was assessed using New-Castle Ottawa Scale. The statistical analysis was performed by RevMan 5.4, as well as statistical heterogeneity and inconsistency were measured by Cochran`s Q tests and I2, respectively. Our study follows the PRISMA guidelines and MOOSE consensus statement.

Main results: From 596 records, only 14 met the inclusion criteria, which involved 508 patients and 6 different surgeries, such as Roux en-Y

gastric bypass, sleeve gastrectomy, gastric banding, banded gastric bypass etc. The analysis unveiled significant differences between findings at periods before and after a surgery (SMD=1.19; 95% CI=0.72-1.66; p<0.0001). Whereas heterogeneity was meaningful (I2=91%), sensitivity analysis showed that 6 studies were the cause of all heterogeneity. A subgroup analysis of studies with follow-up of 12 monthes was performed, including 5 studies involving 229 patients. The outcomes were statistically significant, and the mean difference was 12.13 in favour of post-surgery period (MD=12.13; 95%CI=7.88-16.38; p<0.0001; I2=89

Conclusions: Our study showed that bariatric surgery improves the erectile function, which is compatible with previous meta-analysis performed by other authors.

Future of retinitis pigmentosa

Authors: Martyna Żurek, Marcin Rojek

Tutors: dr hab. n. med. Zbigniew Nawrat

Affiliation: Studenckie Koło Naukowe im. Zbigniewa Religi, Katedra i Zakład Biofizyki, Wydział Nauk Medycznych w Zabrzu, Śląski Uniwersytet Medyczny w Katowicach

Background: Retinitis pigmentosa (RP) is a broad, heterogeneous group of genetically determined diseases that are characterized by progressive degeneration of rods and cones. It is the most common genetic cause of loss of vision in the world (estimated incidence of 1 per 4,000 births). Due to the severity and the possibility of blindness, there are several therapeutic strategies that can be divided into prevention of degeneration, restoration of vision or treatment of concomitant diseases.

Methodology: A thorough review of studies related to treatments for retinitis pigmentosa was performed on Google Scholar, PubMed and Scopus. We used keywords such as retinitis pigmentosa, retinal dystrophy and treatment. For pre-screening we got 1500 papers.

Main results: After strict selection, 71 texts were selected for further analysis. Chosen approaches were divided into three groups, depending on the stage of the disease they affect. In this work, we discuss glasses with shaded lenses, hyperbaric oxygen therapy (HBO), pharmacological drugs (e.g. valproic acid, nilvadipine), ciliary neurotrophic factor (CNTF), gene therapy, stem cell and tissue transplantation, retinal prostheses as well as management of concomitant eye diseases or disorders. Those nine different therapeutic strategies were analyzed, taking into account their fundamentals, their strengths and weaknesses.

Conclusions: So far, we do not have any fully effective treatment which could be introduced on a large scale into clinical practice. More likely to be used in the nearer future are methods that prevent degeneration rather than those that restore vision. Treatment of concomitant diseases is already possible and should be considered by ophthalmologists.

Technologies in Medicine

Oral Session

Scientific Committee

prof. Jacek Tarasiuk, PhD, Eng
prof. Grzegorz Tatoń, PhD
Justyna Hajto-Bryk, DMD, PhD
Kornelia Kliś, MD, PhD, Eng
Piotr Walecki, PhD

Coordinators

Kinga Glądys
Julianna Dąbrowa

IMSC

Aging simulators in the education of medical students

Authors: Jakub Jucha

Tutors: Piotr Walecki, Klaudia Proniewska

Affiliation: SSG of Digital Medicine and Robotics (SKN Medycyny Cyfrowej i Robotyki)

Introduction: Senescence is a complex biological process leading to decline in physiological function. Age simulation suits are used to investigate the effects of ageing on human performance and function. These suits replicate physical and physiological changes associated with ageing within a controlled environment, thus facilitating a better comprehension of the impact of ageing. Furthermore, we can enable the development of measures to understand and possibly mitigate the effects of senility.

Aim of the study: The primary objective of this study was to evaluate possible alterations in participants' knowledge and attitude towards ageing. This was done through experiencing simulations facilitated by wearing the suit. Secondary objective was to promote awareness towards age-related limitations.

Materials and methods: In this study, we employed the GERonTologic simulator suit (GERT) and a questionnaire to evaluate the pre- and post-effects associated with senescence. The questionnaire comprised 20 items that measured various aspects of aging and senility on a 10-point Likert scale and 28 standardized questions that assessed empathy based on the Interpersonal Reactivity Index (IRI). The study was conducted among a sample of medical students. A total of 60 participants completed the pre-test questionnaire, while 55 participants completed both the pre-and post-test questionnaires.

Results: The GERT suit was found to be effective in increasing participants' perceptiveness about age-related limitations. Specifically, participants' perspectives on the difficulty of simple motoric activities increased significantly by 31.99% (n=46, p=0.001), and concerns about old age increased by 27.99% (n=42, p=0.002). Furthermore, the participant's overall score in perspective-taking, as measured by the IRI, increased by 11.90% (n=44, p=0.003). The participants' score on the empathic concern scale also increased by 8.36% (n=44, p=0.001).

Conclusions: In conclusion, our study highlights the potential of the GERT suit as a valuable tool for increasing awareness of aging and improving understanding of age-related limitations. By using this method, along with other age simulation suits, we can identify gaps in knowledge and promote understanding of the issues faced by elderly individuals.

The use of artificial intelligence in bone detection on MRI scans depending on the correctness of the procedure.

Authors: Szymon Matejuk, Joanna Ożga, Michał Wyka, Agata Raczko, Zuzanna Oleniacz, Michał Korman

Tutors: Prof. Dr. Hab. Wadim Wojciechowski, MD

Affiliation: Jagiellonian University Medical College

Introduction: Magnetic resonance imaging (MRI) of sacroiliac joints is considered a first line method of axSpA diagnosis. Currently, only two algorithms for semi-automated detection of bones and axSpA-related sacroiliitis have been developed - the first by Zarco et al. and in 2019 our research team at Jagiellonian University created the second semi-automated algorithm. In the following year it was enhanced to become fully automated.

Aim of the study: The aim of this study was to further evaluate the performance of this automated algorithm, specifically to see how it performs on inaccurate MRI examination slides with incorrect deviation angles.

Materials and methods: 173 patients were included in the study; 47% (n=82) of the patients were male, while 53% (n=91) were female and the median age of patients was 31, IQR 23 years (range 10-86 years). To verify MRI imaging precision, a deviation angle was measured in T2-weighted sagittal planes. This angle was located between an imaginary line drawn between the posterior edges of S1 and S2 vertebrae and another line that marks the plane in which the slices were acquired in T1 and STIR sequences. All examinations were divided into quartiles according to measured deviation angle degrees: 1st group [0;2.2], 2nd group (2.2; 5.7], 3rd group (5.7; 10] and 4th group (10; 29.2]. Reference bone segmentation fields of the sacral and iliac bones were colored in manually as well as automatically with the use of this automated algorithm on a T1 sequence and then compared.

Results: The Dice similarity coefficient (DC) for comparison between manual and automatic segmentations, averaged over 173 examinations, was in the range from 0.9277 to the maximum of 0.9968. Analysis in terms of group differences of DC with Kruskal-Wallis H test yielded a statistically significant difference between groups, $H(3) = 8.362$, $p = 0.0391$. Post-hoc comparison with the use of Dunn's test with Bonferroni adjustment revealed a difference between group one and group three, which was considered statistically significant ($p = 0.0166$).

Conclusions: This algorithm seems to prove no difference in detecting the sacrum and iliac bones regardless of deviation angle differences although further testing is required.

The use of augmented and virtual reality-based teaching among medical students

Authors: Paulina Więcławek

Tutors: Piotr Walecki MSc, PhD, Klaudia Proniewska PhD, ENG

Affiliation: Students Scientific Circle for Digital Medicine and Robotics

Introduction: Augmented Reality (AR) and Virtual Reality (VR) are technologies aimed to either enhance or replace a real-life experience with tridimensional visuals. There has been an increased interest in using simulation models in medical education in recent years. The COVID-19 pandemic shifted the educational system towards online learning, leading to an urgent need for alternative methods to achieve a stimulating learning environment. AR and VR-based teaching programs were then introduced to medical students to help them understand complex concepts and procedures through hands-on immersive experiences.

Aim of the study: The study aimed to acknowledge students' opinions on whether AR/VR-based learning and imaging would be profitable in medical skillset development and whether it should be introduced as a way to upgrade current medical education.

Materials and methods: An AR session was conducted, with 3D segmented anatomy models presented to 35 students. All participants were recruited among medical students and were asked to complete a pre- and post-session questionnaire consisting of 14 questions: 6 questions addressing their attitudes toward AR/VR simulation, 2 questions on the usefulness of AR/VR-based teaching (in anatomy and 3D imaging), and 6 questions on whether 3D imaging should be a healthcare teaching and work standard in the future. The scoring was adopted according to a scale: 1-strongly

disagree, 2-disagree, 4-agree, and 5-strongly agree.

Results: Results showed that students were more convinced that enhanced lessons using AR/VR technology would improve the education process after AR/VR simulation (3.68±1.09 points in scale) than initially (4.56±0.50; p=0.0002). Also, the use of AR/VR technology in education was considered to contribute to better knowledge acquisition by students after AR/VR session (4.31±0.64) than before the session (3.91±1.00; p=0.036).

Conclusions: Students were shown to be more convinced of AR/VR learning methods after experiencing a hands-on immersive lesson. Perhaps AR and VR-based teaching programs should be taken under consideration in the medical field, along with traditional teaching methods. These simulation models could bring better medical understanding, better training possibilities, trial-and-error methods, and the possibility of 3D visualisation along with the development of students' 3D memory.

Ultrasonic Action on Human Blood Circulatory System

Authors: Rokas Janavicius, Augustas Skaudickas

Tutors: prof. Vincentas Veikutis

Affiliation: Cardiology institute of LSMU

Introduction: Ultrasound-based (Usb) therapy can activate both central and peripheral blood flow improving tissue micro/macro perfusion. Piezoelectric transducers can be used for that purpose when particularly high-frequency oscillations stimulate blood flow in tissues, microcirculation in the skin and subcutaneous tissues, and increase activation and proliferation of leukocytes and other immunocompetent cells. It is also known that neurosensory pathways are also sensitive to ultrasound action as a structural element of blood vessels integrated into their wall, through which both contraction and relaxation of the blood vessel can be successfully regulated and modulated.

Aim of the study: Our study aimed to evaluate acoustic ultrasound action on the main structural components of the human blood circulatory system, especially coagulation.

Materials and methods: We used a specially developed ultrasonic blood flow stimulation device based on a resonant vibration generation system combined with a piezoelectric buzzer transducer, an ultrasonic generator, and a controller. Anonymous blood samples were evaluated for general blood tests and coagulation representing thromboelastometry tests using standard 30W, 60W, and buzzer-type Usb action. Computer modeling was performed using the COMSOL Multiphysics software package, and data analysis were by IBM SPSS 28 version.

Results: No statistically significant structural changes on general blood tests were founded by using 30W and the buzzer Usb application. Using 60W Usb we found a decrease in RBC, HGB, HCT and an increase in MCHC, RDW, PLT expression. No significant changes were founded on EXTEM, INTEM, but increased CT and CT(A5) on FIBTEM by using both 30 and 60W Usb. Also, we observed a gradually increasing CFT and ML expression with no changes in EST, which could be clinically important. Looking at specific platelet functional status, we found increased APTT, FbC, SPA/INR, and D-dimer expression.

Conclusions: Disorders of hemostasis mainly manifest as bleeding or thrombosis. Using extracorporeal Usb in therapeutic parameters can successfully adjust disorders of the blood plasma coagulation system that occur due to insufficient activity of coagulation factors or their deficiency, identify other hemostasis disorders and evaluate the success of treatment.

Post-mortem celiac trunk three dimensional visualization - new approach and new possibilities.

Authors: Radosław Chmiel, Jakub Batko

Tutors: prof. Artur Pasternak MD, PhD, DSc, Krzysztof Woźniak, MD, PhD, DSc

Affiliation: Students Scientific Group of Anatomy

Introduction: Post-mortem anatomical research analysis is a time consuming process, associated with expression to the formaldehyde fumes. In this study, we propose different approach to classic procedure, based on post-mortem computed tomography angiography, to evaluate the celiac trunk – important anatomical structure.

Aim of the study: The aim of this study was to evaluate morphometry and type of celiac trunk based on post-mortem contrast-enhanced computed tomography angiography 3D reconstruction.

Materials and methods: The post-mortem contrast-enhanced computed tomography angiography of 105 patients without abdominal trauma or tumor were analyzed. The abdominal part of aorta and celiac trunk with its branches were reconstructed based on the arterial phase of computed tomography scan. Each arterial branch morphometrical measurements were assessed: diameter, distance between branches and branches angles. Celiac trunk type was evaluated.

Results: The most common celiac trunk type was 1 (88.6%). Types 2, 3, 6 were present in only one case. Type 5 was present in 5 cases (4.8%). 4 cases (3.8%) did not fit classification criteria. The celiac trunk diameter was 7.2±1.7 mm. The distance between celiac trunk and abdominal aorta origin was 7.4± 2.9 cm and between celiac trunk and aortic bifurcation was 13.2±1.5 cm. The highest branch diameter was observed in splenic artery: 6.1±1.3 mm and the lowest diameter was observed in left gastric artery: 3.8±1.1 mm. The length from celiac trunk to left gastric artery origin was 14.7mm±5.4 mm, origin angle was 126.4±31.2 º. The length from celiac trunk origin to common hepatic artery was 12.4±9.2 mm, origin angle was 121.2±30.1 º. The length from celiac trunk origin to splenic artery was 20.0±6.6 mm, origin angle was 106.5±28.1º.

Conclusions: The study showed that post-mortem contrast-enhanced computed tomography angiography three dimensional reconstruction is a great tool to perform precise morphometrical analysis for anatomical research purposes.

Characteristics of saccadic eye movements in patients with schizophrenia in the anti-saccade task

Authors: Kamila Undas

Tutors: Piotr Walecki, MSc, PhD

Affiliation: Scientific Circle for Digital Medicine and Robotics, Jagiellonian University Medical College

Introduction: Saccadometry is a non-invasive method for the assessment of saccadic eye movements and quantification of their parameters such as latency, velocity, and amplitude, which can be used to evaluate the function of involved brain regions. This technique has received attention as a potential diagnostic test in many neurological conditions such as Huntington's and Parkinson's diseases.

Aim of the study: The purpose of the study was to determine the differences in characteristics of saccadic eye movements between patients with schizophrenia and healthy controls in the anti-saccade task.

Materials and methods: 44 patients (27 women and 17 men, mean age 41±11 years; range 20-64

years) treated for paranoid schizophrenia, and 38 healthy volunteers were included. Participants were tested using Saccadometer Advanced (Ober Consulting, Poland) in the anti-saccade task, which consists of performing movements on the horizontal axis in the opposite direction to the visual stimulus. Incorrect saccades were defined as a movement toward the stimulus.

Results: Patients with schizophrenia performed significantly more incorrect saccades 49.41±26.54% (mean±std.dev.) than healthy controls 2.46±0.88%, and fewer correct saccades 92.05±8.5% compared to healthy volunteers 39.59±28.31% (Mann-Whitney U Test; $p<0.001$). In the control group, the average latency of correct saccades was 202.34±52.53 ms, compared to 407.35±208.93 ms in patients with schizophrenia ($p<0.001$). In the third quartile, the average latency was 215.37±53.99 ms, compared to 584.65±405.5 ms. In the control group, the average amplitude of correct saccades was 9,8±0.52 deg, and incorrect saccades were 6.25±2.03 deg, compared to 9.79±3.1 deg and 9.47±1.86 deg. In the third quartile, the average amplitude of correct saccades was 10.62 ±0.74 deg, compared to 13.49±5.65 deg in patients with schizophrenia ($p<0.001$).

Conclusions: Significantly worse performance of the anti-saccade task and higher latency were found in people with schizophrenia, as well as lower accuracy of correct saccades (as shown by the increased standard deviation of amplitude). These abnormalities suggest that saccadometry has the potential of becoming a useful diagnostic tool for schizophrenia.

Perspective of Polish physicians on the influence of non-ionizing electromagnetic fields on health and electrosensitivity

Authors: Kamila Undas, Gabriela Kanclerz, Jakub Popielak

Tutors: Grzegorz Tatoń MD, PhD

Affiliation: Jagiellonian University Medical College, Department of Physiology, Chair of Biophysics

Introduction: Non-ionizing electromagnetic field (EF) is generated by the vast majority of electronics used every day and is mostly considered to be harmless. On the other hand, literature provides several examples of individuals who claim to suffer negative effects caused by non-ionizing EF.

Aim of the study: To investigate doctors' opinions about the influence of non-ionizing EF on health as well as the number of patients who claim that devices emitting electromagnetic radiation negatively affect their health and well-being.

Materials and methods: In this study, an 18-question survey consisting of questions about demographic data, clinical specialty and internship, as well as experience with patients complaining of negative symptoms associated with non-ionizing EF, was distributed among physicians in two manners: online and in paper form.

Results: We reached 110 responders practicing 23 clinical specializations. The majority of our surveyed physicians (69, 63%) were practicing mostly in cities with a population exceeding 500 thousand. Out of our responders, 48 (44%) claim to have sufficient knowledge about the influence of electromagnetic fields on health, 53 (48%) believe that EF have no negative effects on health and 56 (51%) claim that the symptoms

have psychosomatic background. 67 (61%) of asked physicians do not encounter such patients, while the rest do (43, 39%) at rates of: 0-1% (33), 1-5% (8) and 5-15% (2). Among those physicians, the most prevalent symptoms being reported by patients are: headache (31, 72%), fatigue (17, 40%) anxiety (14, 33%) and insomnia (14, 33%). The most commonly reported devices allegedly causing the symptoms were: mobile phones (21, 49%), WiFi routers (12, 28%), mobile phone base stations (10, 23%). 75 (68%) of surveyed physicians believe that nationwide awareness-raising programs about non-ionizing electromagnetic fields should be implemented. 59 (54%) doctors would be interested in attending training on this topic themselves.

Conclusions: The presence of non-ionizing electromagnetic radiation is considered to be a cause of many undesirable symptoms, therefore seminars for physicians about the influence of EF on health may improve the quality of care for a significant number of patients in Poland.

Pressure equalization characteristics of vented chest seals

Authors: Norbert Kapczyński, Kamila Undas, Gabriela Kanclerz, Jonasz Stępień

Tutors: Tomasz Rok MD, PhD, Grzegorz Tatoń MD, PhD

Affiliation: Jagiellonian University Medical College, Department of Physiology, Chair of Biophysics, Students' Scientific Group of Medical Biophysics

Introduction: Penetrating chest trauma accounts for a significant number of life-threatening injuries among both civilians and military personnel. According to current Tactical Combat Casualty Care guidelines, application of a vented chest seal is a recommended element of prehospital treatment pending surgical intervention. There are several types of chest seals available on the market, yet little is known about their specific physical characteristics.

Aim of the study: The purpose of this study was to determine physical parameters of various chest seals through analysis of pressure curves registered using a synthetic pleural cavity model.

Materials and methods: The model used in the experiment consisted of an airtight chamber (with a circular opening, where each chest seal was adhered) connected to a vacuum pump and a compressor. In order to simulate a breathing cycle, a 2-second decrease and a 4-second rise in pressure was created, while the changes were monitored using 2 sensors (inside and outside the chamber for comparison with atmospheric pressure). 7 different types of chest seals were tested: 3 with flutter valves (Asherman, Bolin, SAM) and 4 with laminar vents (BlackFront, FoxSeal, HyFin, Russell).

Results: 3 different patterns of pressure change were registered. For SAM and Russel chest seals, quick linear growth was observed at the beginning of exhalation and then plateau at atmospheric pressure level was established. Logarithmic decrease can be seen afterwards. For HyFin and Bolin chest seals, a rapid rise and fall of pressure was first observed, which corresponds to a spire-shaped graph. Then, it remained at a level above atmospheric pressure transitioning to a slow, two-stage decrease in pressure during inspiration with a brief slowdown in the rate of decline around atmospheric pressure. In Foxseal, Asherman and Blackfront chest seals pressure in the chamber also reached plateau during exhalation, but at a level higher than atmospheric pressure, and the decrease during inhalation was also two-staged.

Conclusions: Despite different pressure release mechanisms some chest seals of the same number of outlets (3: Bolin, HyFin; 1: Russell, SAM) have similar pressure curves. The significant differences in physical characteristics of pressure equalization found between different chest seals suggest that further research is required as they may differ in efficacy.

Basic Sciences & Pharmacy

Poster Session

Scientific Committee

prof. Krzysztof Gil, MD, PhD

prof. Rafał Olszanecki, MD, PhD

Ewa Jasek-Gajda, MD, PhD

Coordinators

Natalia Mroczek

Marianna Zygmunt

IMSC

Comparison of first-generation and second-generation rat offspring's pancreas histomorphological variations interfaced with maternal undernutrition

Authors: Justina Semenkovaitė, Rosita Reivytytė

Tutors: prof. Renata Šimkūnaitė - Rizgelienė, prof. Janina Tutkuvienė

Affiliation: 1 - Faculty of Medicine, Vilnius University, Lithuania 2 - Department of Anatomy, Histology and Anthropology, Institute of Biomedical Sciences, Faculty of Medicine, Vilnius University, Lithuania

Introduction: Malnutrition is a major problem in third world countries, as is the cult of the thin body in economically advanced countries. However, a relationship between the health status of the offspring and maternal malnutrition before and during pregnancy is not fully understood.

Aim of the study: This study was performed to determine the histopathological changes in the pancreas of first- and second-generation rats fed a restricted diet.

Materials and methods: Rats were divided into three groups: control (normal diet), the first experimental group (1EG) – 50 % restricted diet before the pregnancy; and the second experimental group (2EG) – 50% restricted diet before and throughout the pregnancy. Sections of pancreas from first- and second-generation rat offspring were stained with H&E and examined microscopically. The percentage of vacuolization and the surface area of the islets of Langerhans were measured using CellSens software and R statistical software package program for statistical data analysis.

Results: In first-generation rat offspring, the increase of exocrine pancreas vacuolization was detected in the male 2EG compared with the control ($p<0.05$), whereas in the second-generation such increase was observed in the male 1EG compared with the control ($p<0.05$). Comparing generations, a significant decrease in vacuolization was observed in second-generation male 2EG ($p<0.05$). Additionally, both female EGs showed an increase in vacuolization in second-generation compared to first-generation ($p<0.05$). However, there was no significant surface area change of Langerhans islets in EGs, except for a size increase in the first-generation male 1EG compared with the control ($p<0.05$) and the male 2EG compared with the male 1EG ($p<0.05$). In the first-generation, the tendency of fibrosis and scattering of Langerhans islets in male offspring pancreas was observed visually, whereas in females only scattering of islets was identified. Second-generation rat offspring of both genders showed previously mentioned features. Examination revealed an accumulation of adipocytes in the pancreatic stroma in both sex and generation EG.

Conclusions: Maternal undernutrition caused significant changes in the pancreas of first- and second-generation rat offspring. Histomorphological changes were observed only in females of the second generation, and in males of both generations.

Confirmation of presence exosome-specific markers

Authors: Paula Kodan, Karolina Kowalska

Tutors: dr hab. Małgorzata Maj, prof UMK

Affiliation: Department of Urology and Andrology UMK

Introduction: Exosomes are lipid membrane bilayer vesicles that are secreted by almost all cell types. They can transfer their contents and communicate between cells. Local delivery of cells that produce large amounts of paracrine

factors can alter interactions in the tissue microenvironment. Therefore, exosomes have great potential and advantages as biomarkers in cancer diagnostics, and as drug delivery vehicles or targets in cancer therapy.

Aim of the study: Semi-quantitative evaluation of the levels of markers specific to exosomes isolated from in vitro cultured cells.

Materials and methods: In the study, a panel of bladder cancer cell lines was used (5637, HT-1376, HB-CLS-1, and T24). A conditioned medium (CM) containing metabolites, growth factors and extracellular matrix proteins secreted by the tumour cells was collected. The CM was then mixed in a 1:1 ratio with the medium for adipose-derived stem cells and used for further ASCs culture. The medium was then collected and mixed with Total Exosome Isolation Reagent (Thermo Fisher Scientific). Pelleted exosomes were resuspended in PBS and protein concentration was assessed. The next step was to evaluate the presence of specific markers. Lysed exosomes were applied to the membranę Exo-Check (SBI). After incubation with an HRP-conjugated antibody, TMB substrate was used to visualise exosomal markers.

Results: Expression of exosome-specific markers such as CD81, CD63, ALIX, EpCam, TSG101 and Annexin 5 have been demonstrated. Many of these proteins are involved in physiological processes, but also in tumour progression. For example, elevated levels of CD81 are associated with inflammation, and ALIX may be useful for pancreatic detection. For this reason, they are used as biomarkers of extracellular vesicles.

Conclusions: Confirmation of marker expression allows assessment of the quality of exosomes isolated from cell cultures. At the same time, it indicates that incubation with soluble mediators synthesized by cancer cells does not inhibit the expression of the proteins studied. Further experimental studies and prospective clinical trials are needed to support the use of exosomes in clinical cancer diagnosis and treatment practice.

Evaluation of a neuroprotective role of N-methyl-(R)-salsolinol using an in-vitro assay

Authors: Jahnobi Konwar, Mgr. Nadia Khan

Tutors: Dr. hab. Gniewomir Latacz, Dr. Magdalena Kurnik-Łucka

Affiliation: Jagiellonian University Medical College, Department of Technology and Biotechnology of Drugs, Department of Pathophysiology, SGG of Medical Biotechnology

Introduction: Neurodegenerative diseases, such as Parkinson disease (PD), have been an issue of great concern in the field of medicine. A dopamine derivative salsolinol (SAL) has been detected in the urine of PD patients treated with levodopa, and thus was considered as a possible neurotoxic contributor to this disease. However, the neuroprotective activity of low doses of SAL was recently proved. Therefore, within this study we examined the toxicity and potential neuroprotective role of its derivative: N-methyl-(R)-salsolinol (NMSAL), which levels were found to be increased in the cerebrospinal and intraventricular fluid of PD patients.

Aim of the study: The aim of our work was to revisit the neurotoxic and/or neuroprotective role of NMSAL through a series of in vitro experiments.

Materials and methods: MTS assay: At first, SH-SY5Y cells were preincubated for 1 h with NMSAL (50 µM). Then the following neurotoxins were added to the cells: MPP+ (1000 µM) or H202 (200 µM). After 24 hrs of incubation with H202 or 48hh with MPP+, MTS mixture of 100 µl was added to each well and further incubated for 2 hrs to determine the cells viability. Then, the

absorbance was measured using a microplate reader at 490 nm. The previously estimated neuroprotective concentration of SAL (50 µM) was used as the control.

Fluorescence Microscopy Assay: The plates were prepared and incubated as described above. Then a mixture of rhodamine (10 µM) and hoechst (10 µM) dyes were added and incubated for 40 min. Pictures were taken next under the fluorescence microscope Leica DMi8.

Results: SAL (50 µM) and NMSAL (50 µM) rescued neuroblastoma SH-SY5Y cells from death induced by H202 (200 µM) and MPP+ (1000 µM), showing increase in cell viability in comparison with the cells treated with H202 and MPP+ alone.

Conclusions: SAL and NMSAL has been proposed as neurotoxins but we found that at lower doses both SAL and NMSAL were non-toxic and exhibited neuroprotective properties. Their neuroprotective properties may indeed be explained by the presence of the catechol moiety, yet underlying molecular mechanisms still remain unknown.

The content of muscimol and other bioactive compounds in mycelium and fruiting bodies of Amanita spp.

Authors: Wojciech Polak, Katarzyna Kała PhD

Tutors: Katarzyna Sułkowska-Ziaja PhD, prof. Bożena Muszyńska

Affiliation: Jagiellonian University Medical College, Faculty of Pharmacy, Department of Pharmaceutical Botany, 9 Medyczna Street, 30-688 Kraków, Poland

Introduction: Mushrooms from the genus Amanita spp. are considered poisonous, but only few species contain the most toxic amanitotoxins. However, inedible and toxic Amanita muscaria and also A. pantherina, which belongs to this genus and has been known for centuries, possesses substances with psychoactive properties (muscimol) and health-promoting properties that have the potential in the treatment of depression.

Aim of the study: The aim of the study was to obtained A. muscaria and A. pantherina fruting bodies from natural state and from theirs pieces mycelium in bioreactors with air lift. The next goal of our research was to determined muscimol and other bioactive substances in them with antioxidant and antidepressant activity.

Materials and methods: The obtained mushroom materials were lyophilised, homogenised and then extracted by methanol, using an ultrasonic bath. Organic compounds were determined using reversed phase high-performance liquid chromatography (RP-HPLC), β-glucans were assayed using Megazyme's β-Glucan Assay Kit. To assay the bioelements, the samples under study were subjected to wet mineralisation. The bioelements were determined using flame atomic absorption spectroscopy (FAAS).

Results: A. muscaria fruiting bodies contained the highest amount of muscimol, but due to the variability in content, mycelia would be a better source despite their low content (0.06% d.w.), In addition, A. muscaria mycelium is a rich source of indole compounds, in mycelia, e.g. it contain: 5-hydroxy-L-tryptophan (167mg/100 g d.w.), while ibotenic acid was at the limit of quantification. Also, in materials under research were determined the content of: melatonin, L-tryptophan, 5-methyltryptamine, lowastatin, ergosterol, β-glucans and bioelements: Fe, Cu, Zn, Mn, K, Mg, Ca, Na.

Conclusions: The mycelia of selected for study Amanita spp. are a potential source of muscimol and 5-hydroxy-L-tryptophan, L-tryptophan, 5-methyltryptamine with antidepressant activity, and lowastatin, ergosterol, β-glucans and bioelements with antioxidant activity.

The influence of exogenous phenylalanine on the accumulation of phenolic acids in mycelial cultures of Inonotus obliquus

Authors: Mateusz Korczyński, Tomasz Rejman, Katarzyna Kała, Agnieszka Szewczyk

Tutors: dr hab. Katarzyna Sułkowska-Ziaja , prof. dr hab. Bożena Muszyńska

Affiliation: Jagiellonian University Medical College, Faculty of Pharmacy, Department of Pharmaceutical Botany, SSG of Medicinal Plant and Mushroom Biotechnology, Medyczna 9, 30–688 Kraków, Poland

Introduction: Inonotus obliquus, a commonly wood-decaying mushroom, has been used as a health-promoting supplement and nutraceutical for centuries. It is a rich source of bioactive secondary metabolites including phenolic acids accumulated in both fruiting bodies and the biomass obtained in vitro.

Aim of the study: This study aimed to examine the influence of the addition of precursor phenylalanine on the accumulation of phenolic acids in submerged mycelial cultures of Inonotus obliquus obtained from different host species. The mycochemical potential of mycelial cultures isolated from pseudosclerotia grown in deciduous trees: Betula pendula, Alnus glutinosa, and Carpinus betulus was compared.

Materials and methods: In vitro cultures were grown in Oddoux medium (with own modification). Phenylalanine was added to the cultures at a concentration of 1.25 g/L. The biomass was collected after 10 days of the addition of the precursor. The estimation of phenolic acids was determined by the RP-HPLC-DAD method.

Results: Both control and mycelia from experimental cultures accumulated the same secondary metabolites accumulated. Phenolic acids, such as protocatechuic acid, p-hydroxybenzoic acid, syringic acid, p-coumaric acid, and caffeic acid, were detected in the study methanolic extracts.

Conclusions: The production of phenolic acids was significantly increased by the addition of a precursor. For the first time, this study documented the effect of feeding the culture medium with phenylalanine on the accumulation of phenolic acids in the mycelial cultures of Inonotus obliquus. Mycelial cultures can be proposed as a potential source of bioactive compounds.

Evaluation of biofilm formation by strains of Proteus mirabilis and Pseudomonas aeruginosa isolated from patients with decubitus urinary tract infection

Authors: Dagmara Fydrych

Tutors: Prof. Dr Hab. Eugenia Gospodarek-Komkowska

Affiliation: Department of Microbiology

Introduction: Urinary tract infections account for up to 50% of hospital-acquired infections, almost 80% of which are associated with catheter-associated urinary tract infections.CAUTI represent serious consequences for both the health and life of patients and a large burden in terms of healthcare costs.The presence of microorganisms in the urinary tract can lead to the development of a generalised infection, i.e. urosepsis. The aetiological agents causing CAUTI are mainly Gram-negative Enterobacterales (Klebsiella spp,Proteus spp. or Pseudomonas spp.).

Aim of the study: The aim of the present study was to evaluate biofilm formation by 10 clinical strains of Proteus mirabilis and 10 strains of Pseudomonas aeruginosa, which are important etiological agents of CAUTI. Biofilm was formed by the test strains in the wells of polystyrene 96-well plates. After 24 hours, the absorbance value of formazan, a metabolic product of 2,3,5-triphenyltetrazolium chloride (TTC) used to stain the biofilm, was read. In order to include only reproducible results in the analysis, the test was performed in triplicate, with three determinations in each repetition.

Materials and methods: 10 clinical strains of Proteus mirabilis and 10 strains of Pseudomonas aeruginosa. Biofilm was formed by the test strains in the wells of polystyrene 96-well plates. After 24 hours, the absorbance value of formazan, a metabolic product of 2,3,5-triphenyltetrazolium chloride (TTC) used to stain the biofilm, was read. In order to include only reproducible results in the analysis, the test was performed in triplicate, with three determinations in each repetition. After calculating the mean absorbance of the test sample, the standard deviation and the coefficient of variation for each strain, five mean absorbance results for P. aeruginosa strains and four mean absorbance results for P mirabilis strains, which had too high coefficients of variation betweenreplicates, were rejected. This confirms the importance of r epetition in biofilm studies using colourimetric methods in order to obtain reliable results. A prerequisite for proper analysis of the test results is to obtain reproducible absorbance values between individual runs. Only values that were considered reproducible were included in the detailed analysis of the results obtained.

Results: After calculating the mean absorbance of the test sample, the standard deviation and the coefficient of variation for each strain, five mean absorbance results for P. aeruginosa strains and four mean absorbance results for P mirabilis strains, which had too high coefficients of variation between replicates, were rejected. This confirms the importance of repetition in biofilm st udies using colourimetric methods in order to obtain reliable results. A prerequisite for proper analysis of the test results is to obtain reproducible absorbance values between individual runs. Only values that were considered reproducible were included in the detailed analysis of the results obtained.The metabolic activity, measured by the formazan absorbance value, of the biofilm formed by the P. aeruginosa strains is higher than that of the P. mirabilis strains tested, 0.1407 and 0.1211, respectively.

Conclusions: P. aeruginosa strains form a more metabolically active biofilm than P. mirabilis strains. This may be related to the higher number of cells in the P. aeruginosa biofilm or the higher metabolic activity of the same number of cells as in the P. mirabilis biofilm. Quantitative biofilm culture studies are needed to determine and compare the number of cells in biofilms formed by both of the bacterial species tested. This may have implications for the selection of antibiofilm therapy in CAUTI.

Protective properties of cinnamic acid derivative in a doxorubicin-injured cardiomyocyte model

Authors: Aleksandra Łapa, Jakub Sikorski, Angelika Ziaja, Ulyana Nosavich

Tutors: dr Paulina Koczurkiewicz-Adamczyk

Affiliation: Department of Pharmaceutical Biochemistry, Faculty of Pharmacy, Jagiellonian University Medical College

Introduction: Doxorubicin (DOX) is an anthracycline antibiotic, commonly applied in cancer treatment. Although it is highly effective in inhibiting the growth of tumor cells, the compound simultaneously damages cardiomyocytes. As a result, despite the completion of DOX therapy, patients begin to face cardiovascular conditions including

arrhythmias, cardiomyopathy, impaired muscle contraction, congestive heart failure or blood pressure disorders. [1]

In recent years, there has been intense search for safe and entirely effective compounds of cardiac cells to prevent DOX- induced cardiotoxicity. They are based on stimulating metabolic pathways that trigger a cascade of repair processes in the mitochondria of cardiomyocytes. [2] An interesting alternative for those compounds are cinnamic acid derivatives. They exhibit well documented anti-inflammatory and cytoprotective effects by reducing oxidative stress and apoptosis, however their exact mechanism of action is still not well established.

[1].Paulina Koczurkiewicz-Adamczyk, Katarzyna Klas, Agnieszka Gunia-Krzyzak, Kamil Piska , Kalina Andrysiak, Jacek Stępniewski, Sławomir Lasota, Katarzyna Wójcik-Pszczoła, Józef Dulak, Zbigniew Madeja and Elżbieta Pękala. Cinnamic Acid Derivatives as Cardioprotective Agents against Oxidative and Structural Damage Induced by Doxorubicin. International Journal of Molecular Sciences. 2021 May; 22(12), 6217; DOI: 10.3390/ijms2212621

[2] Bin Bin Wu, Kam Tong Leung, Ellen Ngar-Yun Poon. Mitochondrial-Targeted Therapy for Doxorubicin-Induced Cardiotoxicity. International Journal of Molecular Sciences. 2022 Feb 9;23(3):1912; doi: 10.3390/ijms23031912.

Aim of the study: The purpose of our study was to investigated the cardioprotective properties of cinnamic acid derivative (compound 1a) in cardiomyocytes model and compared its activity with dexrazoxrane (DEX).

Materials and methods: Rat cardiomyocyte (H9c2) model was used in the study. Cells were preincubated in the presence of analyzed compounds 1a or DEX, then DOX was added for 24 hours incubation. Ability of compounds to DOX-prevent damage was investigated using cytotoxicity and apoptosis assays and cell morphology assessment.

Results: Results of our study showed that both analyzed compounds 1a and DEX protected cardiomyocytes against DOX-induced injury in time and dose dependent manner. The effect of DEX and 1a was comparable, however their mechanism of action was different.

Conclusions: Analyzed cinnamic acid derivative-1a possess interesting cardioprotective activity in DOX injured cardiomyocytes, the mechanism of its action needs to be studied in more detail.

Characteristics of HSA nanoparticles as a potential drug carrier

Authors: Bogusław Kowalski, Jakub Pawłowski, Alicja Szatanik

Tutors: dr n.med. Maria Dąbkowska

Affiliation: Independent Pharmacokinetics and Clinical Pharmacy Laboratory

Introduction: Pharmaceuticals used in the therapy of malignancies usually are defined as having a short half-life and many side effects. Consequently, the length and frequency of chemotherapy infusions present patients with limited drug penetration into tumor tissue. The researchers are constantly looking for methods of supplying cytostatics used in the treatment to improve bioavailability and prolong their action.

Aim of the study: The study aimed to produce a biodegradable, non-toxic, non-immunogenic, soluble in water, easy-to-access drug delivery carrier that can accumulate in malignant tissue.

Materials and methods: The focus has been directed toward synthesizing nanocapsules with human serum albumin (HSA) core using ethanol desolvation method. For this purpose, a modulating system for add-ing the alcohol to the sample under defined conditions was designed by preparing a special dropping apparatus. Our study group employed a technique that used EDC as a crosslinker instead of glutaraldehyde,

resulting in a decreased synthesis period. The project investigated the HSA-nanoparticle's properties compared to the globular plasma protein molecule. The study was conducted with the Malvern ZetaSizer, using dynamic light scattering and microe-lectrophoresis methods to determine the size and zeta potential of the biomacromolecules.

Results: The study obtained the monodisperse nanosphere of an average 220nm size and poly-dispersity index of 9% (without aggregates). The zeta potential of particles measured in phos-phate buffer (PBS) with pH 7.4 and ionic strength of 0.16M was approximately -24 mV. The Coomassie and BCA kit tested the concentration of the particle's protein. The mentioned pa-rameters (particle size, polydispersion index, zeta potential, and concentration) were also measured one month after synthesizing the nanoparticles, storing them at -4°C. These multiple trials were conducted to determine their stability. The physicochemical characteristics of na-noparticles are crucial for the drug's biological activity, enabling us to employ them during in vitro laboratory tests.

Conclusions: Although we are just starting to investigate the properties of HSA nanoparticles in vitro settings, synthesized molecules may provide better bioavailability and increase the pharmacodynamic and pharmacokinetic effect of cytostatics administered in the future.

Synthesis and biological evaluation of novel serotonin 5-HT$_6$ receptor ligands in the group of 1,3,5-triazine derivatives

Authors: Kinga Kaczor, Kinga Czarnota-Łydka, Grzegorz Satała, Gniewomir Latacz

Tutors: Prof. Jadwiga Handzlik, PhD

Affiliation: Department of Technology and Biotechnology of Medicines, Faculty of Pharmacy, Jagiellonian University, Medyczna 9, 30-688 Kraków, Department of Medicinal Chemistry, Institute of Pharmacology, Jerzy Maj PAS, Smętna 12, 31-343 Kraków

Introduction: Alzheimer's disease is an incurable and progressive neurodegenerative disorder that is the most common cause of dementia in the elderly. Available treatments are palliative and often only slightly reduce the symptoms of the disease, so intensive research into new drugs is constantly being conducted.

Aim of the study: Over the past two decades, the 5-HT$_6$ receptor has emerged as a promising biological target for the modulation of central nervous system dysfunction. The study presents a series of novel triazine derivatives as selective ligands of the 5-HT$_6$ receptor.

Materials and methods: The synthesized compounds were designed based on previous studies in which 1,3,5-triazine derivatives showed significant procognitive effects in behavioural tests using animal models.The structures were obtained by a three-step synthesis using Williamson reaction and cyclization reaction, while the main areas of modification included linker branching and tetrahydronaphthalene substitution.

Results: The biological activity of the compounds was determined by radioligand binding assays. All newly obtained compounds exhibited high affinity and selectivity towards the

5-HT$_6$ receptor. In addition, ADME-tox screening with a focus on metabolic stability and toxicity was performed for the derivatives.

Conclusions: Of particular note are the compounds WK-2 and WK-3, which stand out for their impressive affinity value for the 5-HT$_6$ receptor (K_i<15 nM), which indicates the possibility of a pro-cognitive effect in treatment of Alzheimer disease.

Sorafenib inhibits proliferation, migration and invasion of bladder cancer cells

Authors: Zuzanna Wadowska, Anna Misterka, Julia Rybak, Maksym Patena, Malgorzata Lasota

Tutors: Malgorzata Lasota, PhD

Affiliation: SSG of Targeted Therapy and Supramolecular Systems, Jagiellonian University Medical College, Cracow, Poland; Chair of Medical Biochemistry, Jagiellonian University Medical College, Cracow, Poland

Introduction: Bladder cancer is the second most frequently diagnosed cancer of the genitourinary system in Europe, characterized by frequent recurrences and a high risk of progression. Protein kinase dysregulations play an important role in bladder cancer progression.

Aim of the study: The aim of our study was to investigate the effect of sorafenib on the growth, migration and invasion of bladder cancer cell lines with different malignancy potential (RT4, T24).

Materials and methods: The effect of sorafenib on tumour cell proliferation was evaluated using the MTS assay. We characterize cell migration in the scratch assay. Cell invasion was assessed by a transwell invasion assay.

Results: We found that sorafenib has a cytostatic and cytotoxic effect on bladder cancer cells. Importantly, sorafenib inhibited the migration and invasion of bladder cancer cells in vitro.

Conclusions: Tyrosine kinase inhibitors such as sorafenib and its complex with the selected carrier represent a promising class of therapeutic agents for the treatment of bladder cancer.

We acknowledge the financial support of the Polish Ministry of Education and Science through grants (SKN/SP/533486/2022) ‘Student Scientific Group create innovations”.

Cardiovascular Case Report

Poster Session

Scientific Committee

prof. Krzysztof Bryniarski, MD, PhD

prof. Olga Kruszelnicka-Kwiatkowska, MD, PhD

Bernadetta Chyrchel, MD, PhD

Aleksander Siniarski, MD, PhD

Coordinator

Jakub Batko

IMSC

Acute myocardial infarction with non-obstructive coronary arteries

Authors: Michalina Jelonek, Michał Okarski

Tutor: Associate Professor. Paweł Kleczyński MD, PhD

Affiliation: Students' Scientific Group of Modern Cardiac Therapy at the Department of Interventional Cardiology, Institute of Cardiology, Jagiellonian University Medical College John Paul II Hospital, Krakow, Poland

Introduction: The mechanism of myocardium damage in patients with myocardial infarction (MI) and non-obstructive coronary arteries (MINOCA) is diverse, which means, different prognoses and treatment strategies.

Cardiology organizations define MINOCA as a MI with a lack of significant narrowing of coronary arteries in angiography (stenosis diameter <50%), which together with coronary microcirculation impairment may be linked to a diagnosis of MINOCA. There are many disorders mimicking MINOCA and not directly related to coronary circulation for example, heart, and large vessel diseases, causing cardiac malfunctions, such as tachyarrhythmia, heart valve defects, cardiomyopathy (including stress-cardiomyopathy), or aortic diseases A significant minority (24%) of patients diagnosed with MINOCA have been shown to develop major adverse cardiac events during a one-year clinical follow-up. Therefore, in this group of patients, the improvement of prognosis and quality of life depends on the appropriate diagnosis, and therapy oriented towards the etiology and disease mechanism of MINOCA.

Case report: A 66-year-old female presenting with symptoms of the acute coronary syndrome was admitted urgently to our department. Her ECG revealed ST segment elevation in precordial leads, initial diagnosis of STEMI was established. Her comorbidities included hypertension, hypercholesterolemia, history of arrhythmia (ventricular ablation in the past), and mild aortic regurgitation.

Echocardiography on admission revealed preserved left ventricle ejection function of 60%, a mild mitral and aortic insufficiency. Then she had an emergency coronary angiography (CA) performed, but no obstructions in the coronaries were observed.

The patient has been given a conservative treatment typical for MINOCA patients, and a pursue for final diagnosis was initiated, including cardiac magnetic resonance, showing the signs of fresh MI. In Holter-ECG no arrhythmias were found. Finally, a diagnosis of vasospastic angina was established.

The patient was then discharged from the hospital and prescribed to continue the conservative treatment of antiplatelet therapy along with pressure-lowering drugs.

Conclusions: European (ESC) and American (AHA) cardiology organizations published statements on MINOCA emphasizing the heterogeneity of MINOCA patients. Both recommend using MINOCA as a working diagnosis directly after confirming non-obstructive coronary artery disease by angiography in patients manifesting with MI. Next, the search for underlying causes of secondary myocardial injury should be investigated.

Chronic thromboembolic pulmonary hypertension - can new AD 2022 recommendations change the treatment of our patient?

Authors: Wiktoria Smyła, Patrycja Piłat

Tutor: Dr hab. n. med. Jolanta Nowak

Affiliation: Student's Scientific Society, III Department of Cardiology, School of Medical Sciences in Zabrze, , Katowice

Introduction: Chronic thromboembolic pulmonary hypertension (CTE-PH) is a rare form of pulmonary hypertension. The primary treatment for CTE-PH is pulmonary arteries endarterectomy (PTE) but it only applies to patients with lesions in Jamieson's Class 1-3.

Case report: 64-year-old female patient with confirmed CTE-PH and signs of progression of a heart failure underwent planned hospitalization in the Cardiology Department with the purpose of making decisions about further treatment. Over 30 years ago, a patient underwent acute pulmonary embolism in the course of thromboembolism in the postpartum period, treated with an anticoagulant therapy. During the diagnostic process, thrombophilia was excluded. Due to the thromboembolism progression, after 30 years, the CTE-PH was diagnosed. Because of its persisting symptoms, inferior vena cava filter implementation and pulmonary arteries thromboendarterectomy (PTE) with simultaneously tricuspid valve repair was performed. On the grounds of maintaining pulmonary hypertension after the surgery, patient was qualified to the therapy with riociguat. However, after 2 years, the therapy had to be terminated because of drug intolerance. Currently, the patient is in class II by WHO NYHA Classification. An echocardiography examination presented the enlargement of the right heart with a moderator impaired right ventricle systolic function and a high probability of pulmonary hypertension. Additionally, a slightly decreased left ventricle ejection fraction (LVEF) was observed (LVED=45%). A lung scintigraphy confirmed abnormalities in both perfusion and ventilation. A right-heart catheterization was also provided, obtaining a mean pulmonary artery pressure at a level of 38 mmHg. A pulmonary arteriography showed contracture defects at the level of the subsegmental arteries.The patient was introduced with the HEART-TEAM consultation where she was qualified for a conservative treatment. At present, a treprostinil treatment is under consideration.

Conclusions: Patients with CTE-PH require an individual approach. In addition to the conservative treatment, we now dispose of new pharmacotherapy options which are still expanding.

Hypertension resistant to treatment as a symptom of primary hyperaldosteronism - a case report

Authors: Paweł Szajewski

Tutor: Agnieszka Żyłka MD, PhD

Affiliation: Student's Scientific Society "ThyoIdea" of Department of Oncological Endocrinology and Nuclear Medicine, Maria Skłodowska-Curie National Research Institute of Oncology, Warsaw

Introduction: Primary hyperaldosteronism (PA) may cause high blood pressure in up to 10% patients. This disease requires different diagnostic and therapeutic measures than primary hypertension. Most patients do not present any characteristic symptoms. One of the causes of PA may be an aldosterone-producing adrenal cortex adenoma.

Case report: The case presents a 47-year-old patient with a history of pain on the left side of

the lumbar spine area. An ultrasound examination of the abdominal cavity showed a focal change in the lower pole of the left kidney. The focal change was confirmed in contrast computed tomography with radiological characteristics of a pheochromocytoma. The patient had a history of regularly administered elevated blood pressure levels (up to 180/100mmHg). He also suffered from hypertension, diabetes, dyslipidaemia and obesity. The results of the laboratory studies showed a normal circadian rate of cortisol release and methoxycatecholamines in the normal range. Laboratory values at lying position and 2 hours after verticalization revealed elevated aldosterone and aldosterone/renin ratio (ARR) levels and normal renin level. Due to a suspicion of PA, a saline infusion test was performed. Results of a saline infusion test showed elevated aldosterone and ARR levels and decreased renin level. Norcholesterol scintigraphy was planned to confirm the lateralization of the tracer uptake in the adrenal lesion, which showed that the lesion in the left adrenal gland is consistent with a mineralocorticoid secreting adenoma. A left-sided adrenalectomy was performed.

Conclusions: Initially, it was suspected that the patient's hypertension was due to his concomitant obesity and unhealthy lifestyle. However, this case underlines the importance of a multidirectional diagnostic process, which can lead to a correct diagnosis in patients with multiple non-specific symptoms.

Malposition of central venous catheter into coronary sinus throughout the persistent left vena cava superior with complications: a case report

Authors: Barbara Syska, Anna S. Veer, Patrycja S. Matusik, Jarosław D. Jarczewski, Katarzyna Krzanowska, Tadeusz J. Popiela

Tutor: Patrycja S Matusik, MD, PhD, Department of Diagnostic Imaging, University Hospital

Affiliation: Department of Diagnostic Imaging, University Hospital, Kraków, Poland.

Introduction: Central venous catheter (CVC) is an instrument placed into a central vein, permitting venous access for administration of intravenous therapy or for the purpose of dialysis. The most common location for CVC is the superior vena cava or right atrium. Placement of the CVC utilizes different assist techniques including but not limited to ultrasounds or real time X ray. Misplacement is one of the most common complications associated with CVC's, whilst this mistake can be attributed to several different factors, the case reported focuses on persistent left superior vena cava (PLSVC) which is a rare vascular anomaly.

Case report: A 72-year-old woman with renal insufficiency in the course of anti-glomerular basement membrane diseases, was admitted to the hospital due to recurrent bleeding from permanent CVC placed in the right common jugular vein, probably caused by mechanical injury. Said catheter required replacement, following an unsuccessful attempt, a secondary catheter was placed in the left jugular vein. Subsequently the patient developed swelling of the neck and face. Radiological techniques including x-ray and computed tomography (CT) were utilized and depicted a catheter placement in the PLSVC and coronary sinus, and hematoma

of the posterior mediastinum. Subsequently the CVC was removed, and further CT studies were utilized to assess patient progress and regression of the hematoma was observed. Finally, the permanent CVC was removed from the PLSVC and a temporary CVC was implanted into the left femoral vein. One month later, temporary CVC was complicated by an extensive hematoma of the soft tissues of the thigh, and the patient required surgery. Two months later, the patient was hospitalized due to catheter dysfunction. It was decided to insert a long permanent CVC into the right femoral vein, and now the patient is waiting for creation of an arteriovenous fistula for dialysis.

Conclusions: This case highlights the importance of the use of imaging techniques for both the procedural technique and detection of congenital anomalies when placing a CVC. Clinicians who routinely place CVC should be well versed with the possible complications of the procedure, especially in high-risk patients.

Mitral annular disjunction leading to cardiac arrest: case report

Authors: Kinga Glądys

Tutor: Michał Chyrchel MD, PhD; Bernadeta Chyrchel MD, PhD

Affiliation: Student Scientific Group at the Second Department of Cardiology, Jagiellonian University Medical College, Kraków, Poland

Introduction: Mitral annular disjunction (MAD), defined as the systolic separation between the ventricular myocardium and the mitral annulus, is a structural abnormality of the mitral annulus fibrosus, which is reported as a common finding in patients diagnosed with mitral valve prolapse (MVP). MAD is characterized as an atypical motion of the mitral annulus in systole, known as curling. It is crucial to bear in mind an association between the presence of MAD and life-threatening ventricular arrhythmias or sudden cardiac death as well as the fact the detection of MAD is most likely underreported in clinical practice.

Case report: A 30-year-old woman without any previous medical history was referred to the cardiology department after having suffered from cardiac arrest due to ventricular fibrillation. The guiding purpose of admission was to provide extended diagnostic evaluation. During the admission many extensive investigations were undertaken. Firstly, computed tomography angiography (CTA) excluded obstructive coronary artery disease. Cardiac magnetic resonance imaging (CMR) revealed the mitral annular disjunction measuring 5 mm in the two-chamber projection and 9 mm in the three-chamber projection. CMR additionally showed myocardial fibrosis in the area of MAD and the basal segment of the right ventricle free wall as well as late gadolinium enhancement (LGE) in the inferolateral wall. A transthoracic echocardiogram (TTE) confirmed the presence of mitral annular disjunction. Furthermore, Holter ECG monitoring revealed numerous ventricular extrasystole. The patient was discharged after receiving an implantable cardioverter defibrillator (ICD) as a secondary prevention.

Conclusions: MAD as a phenomenon leading to malignant ventricular arrhythmias or sudden cardiac death is often underestimated in clinical practice. This case study highlights the importance of awareness of the presence of the mitral annular disjunction and its clinical significance which is not often considered as a primary cause for severe patient outcomes. As shown in this case, MAD can be easily detected on echocardiogram and cardiac magnetic resonance imaging.

Uncovering Hidden Coronary Lesions: The Importance of Sequential ECG Testing and Imaging Modalities

Authors: Zoheir Boutaleb

Tutor: Marek Jakub Wawrzacz MD

Affiliation: 1st Department and Clinic of Cardiology

Introduction: The objective of this clinical case report is to highlight the importance of sequential ECG testing while managing ACS (acute coronary syndrome) patient and using other imaging modalities to assess true severity of the lesion in coronarography.

Case report: This study presents a 49-year-old patient who was admitted to the hospital with epigastric and chest pain radiating to the jaw and left upper limb. Based on the symptoms, an ECG was performed, T wave inversions were noted in leads V2-V5. Patient reported having hypertension, statin-treated hyperlipidaemia and active smoking. Few hours later, when the patient was smoking, they experienced severe chest pain, another ECG was made that showed pseudonormalization of T waves with ST segment elevations. Due to the clinical and electrocardiographic instability, the patient was immediately transferred for a coronary angiography. It was noticed that the trunk of the left coronary artery had narrowed by 50%. An echocardiography was performed, which showed akinesis of the apex with hypokinesis of the inferior and lateral wall and reduced ejection fraction of 39%. Simultaneously an Intravascular Ultrasound of the trunk was performed, revealing the presence of an atherosclerotic plaque which was significantly narrowing the lumen of the vessel. The minimum luminal area was 5.3mm2. The left anterior descending branch showed diffuse atherosclerotic changes, narrowing the lumen of the vessel to 75%. Angioplasty of the lesion in the left main coronary artery and the anterior descending branch were performed with the implantation of two Everolimus-Eluting stents. Peri and postoperative period were without complications. During further hospitalization, the patient had no recurrence of chest pain, signs of heart failure or arrhythmias in monitoring. They were discharged in good general condition.

Conclusions: In conclusion, while ECGs are the primary and time efficient diagnostic tool for heart diseases, clinicians must remain alert and be open to performing ECGs multiple times to look for changes. It is impossible to diagnose pseudonormalization without previous results and without it, a severe narrowing would have been missed and the patient's life would have been put in danger.

Acute stent thrombosis in a patient presenting with STEMI

Authors: Jan Roczniak, Mikołaj Derewońko

Tutor: prof. Paweł Kleczyński MD, PhD

Affiliation: Students' Scientific Group of Modern Cardiac Therapy at the Department of Interventional Cardiology, Institute of Cardiology, Jagiellonian University Medical College John Paul II Hospital, Krakow, Poland

Introduction: Stent thrombosis is a rare but serious complication limiting the effectiveness of percutaneous coronary angioplasty (PCI). Stent thrombosis can be divided according to the definition into acute, subacute, late and very late. The most important risk factors include stent underexpansion, multiple stent layers, bare metal stent implantation, significant marginal dissection, plaque prolapse, premature antiplatelet therapy discontinuation, and smoking. This serious complication may result in death or myocardial infarction, which is why it is so important to optimize the PCI using intravascular ultrasound (IVUS). IVUS allows precise measurements of the artery and choice

of adequate stent dimensions, as well as stent optimization, thus reducing most of the risk factors for stent thrombosis.

Case report: A 54-year-old patient was admitted to the cathlab due to acute coronary syndrome with ST segment elevation as the first manifestation of ischemic heart disease. An urgent coronary angiography was performed, confirming the critical occlusion of the left anterior descending artery (LAD). Primary PCI with thrombectomy was performed ad hoc, under IVUS control, with implantation of 2 drug eluting stents (DES). The patient had aspirin and ticagrelor administered. Optimal result (TIMI3) of the PCI was achieved and a stable, pain-free, patient was transferred to a cardiac care unit. After a few hours stenocardia reocurred and the patient underwent subsequent coronary angiography, which revealed acute occlusion in the LAD in the previously implanted DES. The patient was diagnosed with an acute stent thrombosis and treated with a thrombectomy and a balloon expansion of the previously implanted stent, as the analysis of previously performed IVUS revealed stent underexpansion. Ticagrelor was replaced with prasugrel, to reduce the risk of further thrombosis. In the following days there was no recurrence of stenocardia. Echocardiography showed impaired systolic function (LVEF 35%) without significant valvular disease. After 4 days the patient was discharged home in good condition.

Conclusions: IVUS guidance for PCI is important as it can prevent stent malposition, which is one of the risk factors for stent thrombosis. In addition to performing a vascular ultrasound examination, a meticulous assessment of its result is also crucial.

Percutaneous coronary intervention (PCI) of left main (LM) and left anterior descending (LAD) artery with orbital atherectomy and left ventricular assist device (LVAD) support in a patient with non-st-elevation myocardial infarction (NSTEMI)

Authors: Ewa Kwiatkowska, Katarzyna Welgan

Tutor: prof. Paweł Kleczyński MD, PhD

Affiliation: Students' Scientific Group of Modern Cardiac Therapy at the Department of Interventional Cardiology, Institute of Cardiology, Jagiellonian University Medical College John Paul II Hospital, Krakow, Poland

Introduction: In the case of heavily calcified coronary artery lesions, preparation of atherosclerotic plaques using advanced devices (atherectomy, lithotripsy) may be necessary, as standard PCI may be insufficient. In combination with impaired left ventricular function (LVF), such a comprehensive procedure is referred to as high-risk percutaneous coronary intervention (hrPCI) where left ventricular assistance (LVAD) may also be required.

Case report: A 66-year-old female with non-ST-elevation myocardial infarction (NSTEMI) and multivessel disease (MVD) involving the LM with classical atherosclerotic risk factors and severely impaired left ventricular ejection fraction (15-20%) was referred to a reference centre for further treatment. Upon admission, the patient had residual chest pain and dyspnoea in NYHA class II/III. The electrocardiogram showed sinus rhythm at a rate of 54/min, pathological left axis deviation, LAH, negative T and QS waves.

Laboratory tests showed positive troponin values and elevated NT-proBNP (12278) and no other abnormalities. Echocardiography revealed severely impaired contractility of the enlarged left ventricle chamber and moderate/severe mitral valve regurgitation. CT of the aorta, iliac and femoral arteries confirmed suitable vascular access for LVAD implantation. After appropriate preparation, 19F sheath was inserted into the right femoral access under angiographic control. An LVAD (Impella CP) was then introduced into the left ventricle. The procedure was performed with constant device support. Orbital atherectomy was performed under intravascular ultrasound (IVUS) guidance in the LM and LAD. Sequential pre-dilation with non-compliant balloons was performed. After appropriate lesion preparation, two drug-eluting stents (DES) were implanted, and the result was optimized with non-compliant balloons, as confirmed by IVUS and angiography. Impella CP support was discontinued, and the system was removed. In a follow-up angiography cessation of flow in the common femoral artery was observed. Percutaneous Transluminal Angioplasty (PTA) to regain flow was carried out. The further course of hospitalization was uneventful. Immediately post-procedure, the left ventricular ejection fraction improved by 5-10%.

Conclusions: The presented case highlights the challenges and potential solutions like Impella CP or orbital atherectomy for managing high-risk PCI in patients with severely impaired LVF and MVD. These devices mitigate the risk of the procedure by improving coronary artery flow and maintaining patency during intervention.

Persistent left superior vena cava – accidental finding with clinical implications

Authors: Julia Hypnar, Emilia Lis

Tutor: Marcin Waligóra MD, PhD

Affiliation: Jagiellonian University Medical College, Faculty of Medicine, Pulmonary circulation centre

Introduction: Persistent left superior vena cava (PLSVC) is a common abnormality of the thoracic venous system. It occurs in 0.3 to 0.5% of cases in the general population and is even more frequent in the group of patients associated with other congenital heart diseases (4 to 8%).

It originates during fetal development of cardiovascular system, as the proximal part of the left anterior cardinal vein persists during further formation of circulatory system. Physiologically this part of cardinal vein should involute. The PLSVC usually drains into the right atrium (in 80–92%) through a dilated coronary sinus (CS). PLSVC is usually asymptomatic and may be identified incidentally during echocardiography, tomography or right heart catheterization. PLVSC however may pose some clinical challenges. Firstly, it may cause difficulties in accessing the right heart (from right jugular or subclavian access), secondly there is a bigger risk of incorrect or loose placement of central venous-access devices, such as cardiac pacemakers (CP) and implantable cardioverter defibrillators (ICD). Moreover, its presence may prompt search for additional congenital abnormalities. Despite that, its presence is often neglected in transthoracic echocardiography and is rarely described. Herewith we present presentation in accessible images of PLSVC and describe clinical anatomy of this variation.

Case report: We present a case of 37 years old woman admitted to the hospital for diagnosis of pulmonary hypertension. In transthoracic echocardiography the round shaped cavity close to left atrium was identified and recognized as PLSVC. We present image of typical localization of PLSVC and modified views to show its connection through dilated coronary sinus to right atrium. Such localization might be confused with dilated left atrial appendage or descending aorta. Its presence has been confirmed during right heart catheterization and by transition of Swan-Ganz catheter into PLSVC and injecting contrast to left subclavian vein.

Conclusions: Persistent left superior vena cava (PLSVC) is an asymptomatic, anatomical variant which is often detected incidentally but also often overlooked. However, it might be identified by echocardiography where it manifests as oval-shaped vein laterally to right atrium, which drains to the coronary sinus.

A case report of Takotsubo cardiomyopathy caused by an unknown factor

Authors: Andrė Pacaitytė, Karolina Ridikaitė

Tutor: Agnė Liuizė MD

Affiliation: Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania; Department of Cardiology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania

Introduction: Takotsubo cardiomyopathy (TCM) - typically characterized by transient systolic dysfunction, limited elevation in cardiac biomarkers and newly presented changes in ECG. This pathology mimics acute coronary syndrome (ACS), however, TCM is mostly associated with physical or emotional stress. In our study we present the case of TCM caused by an unknown factor.

Case report: A 70-year-old female was hospitalized in a regional hospital with sudden chest pain, which spread to the neck and back. ECG demonstrated ST elevation in I, II, III, aVF, V3-6 leads, in laboratory tests troponin I was 1700 ng/L (normal range < 2 ng/L). The patient with suspected ACS was transferred to our department for further investigations and treatment. An emergency coronary angiography was performed, which showed normal coronary arteries without stenosis, but indicated severe left ventricular (LV) systolic dysfunction. Furthermore, during ventriculography it was noticed that the shape of LV was similar to the octopus trap due to the characteristic apical ballooning appearance - this diagnostic finding is specific to TCM. Anyway, the patient's medical history did not reveal any signs of acute physical or emotional stress. A sudden echocardiogram was performed, the findings included hypercontraction of the LV basal segments, left ventricular ejection fraction (LVEF) 34%. Finally, after cardiac magnetic resonance (CMR) imaging results, the patient was diagnosed with TCM. The echocardiogram was repeated four days later, at which time showed minimal positive dynamic changes in LVEF (evaluated to 40%), but there also was found a thrombotic mass in the apex of LV as a complication of TCM. The appropriate medicament treatment was prescribed, the patient's condition had improved, and she was discharged for further outpatient follow-up. Three months later the patient arrived for a CMR scan, which results showed regression in the LV: LVEF increased to 64% and the thrombus from the apex had vanished out too.

Conclusions: Stress is one of the main risk factors for TCM, but the syndrome can also develop in the presence of an unknown factor, like in our case. Thus, it is necessary to properly differentiate this disease, even in the absence of the usual clinical manifestations.

Emergency Ballon Aortic Valvuloplasty as bridge-therapy before Transcatheter Aortic Valve Implantation – Case study

Authors: Michał Okarski

Tutor: dr hab. prof. UJ Paweł Kleczyński MD. PhD, prof. dr hab. Jacek Legutko

Affiliation: Student Scientific Group of Modern Cardiac Therapy at the Department of Interventional Cardiology, Jagiellonian University Medical College, Kraków, Poland,

Clinical Department of Interventional Cardiology, John Paul II Hospital, Kraków, Poland, Jagiellonian University Medical College, Institute of Cardiology, Department of Interventional Cardiology, John Paul II Hospital, Kraków, Poland

Introduction: Balloon Aortic Valvuloplasty (BAV) is one of the hemodynamic procedures being used by interventional cardiologist in severe aortic stenosis. Although the long term follow-up of only BAV strategy is not as promising as experts used to believe, BAV as a method has found its place in the cath lab as a crucial bridge procedure for too sick patients for further TAVI and as such it is now recommended in European Guidelines.

Case report: A patient was 71-year-old male, who was admitted to the hospital in order to perform cardiovascular examinations. He presented tiredness and dyspnoea without any steno cardiac pain. He had been suffering from chronic coronary artery disease, hypertension, mixed hyperlipidaemia, COPD, impaired fasting glucose, paroxysmal atrial fibrillation and ventricular tachycardia.

At admission the patient was in good condition. In echocardiography, severe aortic stenosis with gradient of 101/58 mmHg and AVA 0,65 cm^2 had been observed. Left ventricle ejection fraction (LFEV) was around 40%.

Next day the patient condition collapsed, as orthopnoea and pulmonary oedema occurred. Vital parameters were suggesting the development of cardiac shock. The patient has the intubation performed and pressing amines infusion started as soon as it was possible to. After the consultation with cardiac surgery unit, he was qualified for emergency BAV. The procedure was successful in the second attempt, with aortic valve mean pressure gradient was 36 mmHg, without any regurgitation.

After the further stabilization of patient's condition in the Intensive Care Unit, with AVA 0,9-1,0cm, LVEF 55%, he underwent standard TAVI procedure. After the optimalization of drug therapy the patient was discharged from the unit.

Conclusions: This case can be described as challenging. It required a lot of fast decision making and experience. It emphasizes the need for further investigation on the topic of balloon aortic valvuloplasty and shows that as a method of treatment it cannot be treated dismissively.

Multidisciplinary diagnostic and therapeutic challenges in young patient with incidentally diagnosed third-degree atrioventricular block

Authors: Natalia Nawrocka, Anna Gil

Tutor: Prof. Agnieszka Olszanecka, MD, PhD

Affiliation: Students' Scientific Group at the Ist Department of Cardiology, Interventional Electrocardiology and Hypertension, Jagiellonian University Medical College, Krakow, Poland

Introduction: Third-degree atrioventricular block (AV block) rarely appears among young patients. The diagnostic process requires differentiation between congenital and acquired AV block, related to underlying condition including Lyme disease or lupus. We present a case of asymptomatic third-degree AV block in young woman, followed by pacemaker implantation and lupus diagnosis.

Case report: A 20-years-old previously healthy woman was admitted to hospital for elective tonsillectomy. In the electrocardiogram (ECG) third-degree AV block was diagnosed. The patient did not complain of any symptoms. Due to inconsistent results of the Borrelia antibodies' level, the patient was treated for Lyme disease for 1 month without any impact on ECG results. No underlying reversible cause was discovered and one year later eventually the DDD cardiac pacemaker was implanted. After 6 months

postprocedural left subclavian vein thrombosis was detected. The anticoagulation treatment was implemented. At the 3-year follow-up, third-degree AV block changed into a first-degree AV block. The device explantation was considered, however it was postponed.

After 2 years she reported herself to dermatologic outpatient due to subcutaneous nodi on hands and erythema on her left cheek. Based on immunological and histopathological examination systemic lupus erythematosus was diagnosed. She was treated with methylprednisolone and hydroxychloroquine. Thrombophilia was excluded, but the anticoagulation treatment continued.

After 4 years the patient got pregnant. In prevention of placenta-mediated pregnancy complications LMH and aspirin were implemented. At 27 weeks of gestation, an episode of supraventricular tachycardia occurred in gravida; the AV block progressed to 3rd degree. The patient was referred to the pacemaker's control. The patient gave birth to a healthy baby via the caesarian section for obstetric indications.

Conclusions: This case presents how important multidisciplinary approach and close monitoring of symptoms are, even in young and healthy people. Our previously asymptomatic 20-year-old patient was diagnosed with a third-degree AV block, that in this case, might be the very first symptom of manifesting (developing) SLE. Timely diagnosis and appropriate treatment enabled to curb systemic symptoms such as arterial thromboembolism. As a result, the patient was able to maintain a healthy pregnancy and delivery proceeded without any complications.

Pulmonary artery fistula, a rare cause of cryptogenic stroke and exercise desaturation

Authors: Marianna Zygmunt, Maria Smorąg

Tutor: Marcin Waligóra MD, PhD

Affiliation: SKN Krążenia Płucnego i Chorób Zakrzepowo-Zatorowych

Introduction: The majority of ischemic strokes are due to cardioembolism, large vessel atherothromboembolism, small vessel occlusive disease, or other unusual mechanisms. However, many ischemic strokes occur without a well-defined etiology and are labeled as cryptogenic.

Case report: Herewith we present a case of 67-year old patient after two episodes of strokes at the age of 40-ty that were classified for 20 years as cryptogenic, that turned out to be caused by a pulmonary artery fistula draining directly into left atrium.

The patient was initially referred for an evaluation due to low levels of peripheral pulse oximetry records, which she was recommended remotely by physician to perform routinely due to past COVID-19 infection. However, after recovery from the disease, persistent desaturations remained. After a normal result of chest X-ray she had performed angioCT to exclude pulmonary embolism, which revealed one minor arteriovenous malformation and one significant arteriovenous fistula from the left lower lobe pulmonary artery which was responsible for draining the unoxygenated blood directly to the left atrium. The resting arterial gas saturation was 92%, and after exercise it was dropping to 88-89%.

Echocardiography showed no signs of right ventricle overload, and NT-proBNP levels were normal. In right heart catheterization normal pulmonary artery pressures and pulmonary, cardiac output and pulmonary vascular

resistance were within a normal range. The first procedure included percutaneous closure of minor malformation in the left segmental artery IX, with a use of Amplatzer Vascular Plug (AVP) IV (12mm length and 7 mm of device diameter). The second percutaneous procedure included closure of major arteriovenous fistula, originating from left inferior lobe pulmonary artery with a use of AVP II of 12 mm diameter that resulted in a total closure of drainage to the left atrium. The periprocedural hospitalization was further uneventful.

Conclusions: The both procedure resulted in withdrawal in exercise desaturations. Moreover a cause of ischemic strokes was definitely treated, that could otherwise result in its recurrence.

Lung tumour in left hilum as possible cause of Left Internal Mammary Artery-to-Pulmonary Artery Fistula

Authors: Agata Pszczółka, Małgorzata Kurowska

Tutor: Bartłomiej Guzik, MD, PhD, FESC

Affiliation: The Department of Interventional Cardiology, Jagiellonian University Medical College, John Paul II Hospital, Cracow, Poland

Introduction: Coronary fistulas are extremely rare phenomenon occurring with the frequency of 0.08% - 0.4%. They can be congenital or acquired. Majority of acquired left internal mammary artery (LIMA)-to-PV fistulas have been linked to coronary artery bypass graft surgery (CABG) but there are also cases linked to inflammatory states, trauma, or malignancy. The mechanism of IMA fistula development is not fully understood. Fistula formation can be associated with all processes that may promote neovascularization: pleural and lung parenchymal injuries, infection, hematoma, inproper surgical technique during LIMA branch ligation or neoplasia.

Case report: A 60-year-old man with atherosclerosis, hypertension, and CAD status post-CABG (which was performed in 2005) was admitted to the department in 2018. Chest pain was substernal and was associated with dyspnoea. The coronary angiography confirmed the picture of multivessel coronary artery disease with stenoses of the bypassed anterior interventricular branch, the preserved result of the previous angioplasty of the circumflex branch (NSTEMI in 2016) and the preserved function of the venous bypass to the occluded right coronary artery. Bypassography revealed a pathological connection between the left internal thoracic artery and the left pulmonary artery. The patient underwent an effective percutaneous closure of the main fistula LIMA-to-PA, a small additional leak was revealed, which was qualified for conservative treatment. The perioperative course was uncomplicated. Stenocardial complaints resolved completely (NYHA 0 CCS 0) for 4 years. In February 2022, the symptoms recurred (CCS II). In May, exercise echocardiography with dobutamine was performed – test was negative. In January 2023, continuing CCS II, referral for a check-up. Further cardiological diagnostics was interrupted due to a lung tumour in the left hilum anatomically adjacent to the stump of the closed LIMA-PA fistula.

Conclusions: The fistula between the LIMA and the pulmonary artery caused the steal syndrome that led to severe angina symptoms which occurred despite the lack of significant stenoses of the coronary arteries. Percutaneous closure of the fistula resulted in complete resolution of the symptoms. Moreover, the formation of a fistula seems to be related to the developing at this location cancer, due to the known vascular proliferative effects of factors produced by tumour cells.

Rotational atherectomy of a highly calcified coronary lesion in a hemodynamically unstable patient

Authors: Mateusz Korowacki, Mikołaj Kondracki

Tutor: Oscar Rakotoarison MD

Affiliation: Scientific Circle of Invasive Cardiology, Department and Clinic of Heart Diseases, Medical University of Wrocław

Introduction: Rotational atherectomy is an effective method in the treatment of highly calcified coronary lesions. Such high-risk percutaneous coronary intervention could require mechanical circulatory support, especially in patients suffering from heart failure with reduced ejection fraction. Additional intracoronary imaging is helpful in calcium modification assessment.

Case report: A 69-year-old patient was transferred from another facility after in-hospital cardiac arrest to a hemodynamic laboratory of our Institute due to cardiogenic shock (Society for Cardiovascular Angiography and Interventions stage - C) caused by non-ST-elevation myocardial infarction. Past medical history revealed heart failure with reduced ejection fraction, hypertension, and diabetes. Bedside echocardiography showed lowered left ventricular ejection fraction (25%). Coronary angiography revealed severe calcifications and 90% stenosis of the left main and 80% of the left anterior descending artery. Immediate Heart Team consultation qualified patient to high-risk coronary angioplasty protected with mechanical circulatory support. Impella CP pump was introduced via the right femoral artery, guiding the catheter through left radial access. Due to unsuccessful balloon catheter dilatation at 16 atm, in the left anterior descending, 1.25 mm burr, rotablation at 145000–155000 RPM with RotaPRO system was performed and allowed the full expansion of 2.5/12 mm balloon catheter. Intravascular ultrasound showed maximal 360˚ calcification with multiple calcium cracks. Three drug-eluted stents 2.75/22, 3.0/38, and 3.5/12 mm were implanted (max.14 atm), and post-dilatations were made with 3.0/15, 3.5/20, and 4.0/12 mm non-compliant balloon catheters at max—16 atm. The patient was dependent on mechanical left ventricular support during the procedure, even though temporal catecholamine escalation was required. Intravascular ultrasounds and angiography showed a good result of the procedure.

Conclusions: Mechanical circulatory support could allow high-risk percutaneous coronary intervention even in patients with reduced ejection fraction and cardiogenic shock. Intracoronary imaging help in the assessment of appropriate modifications after the use of calcium-dedicated tools.

From labour ward to cath lab – safety and efficacy of innovative strategy in the treatment of peripartum pulmonary embolism

Authors: Patrycja Kurczyna

Tutor: Jakub Stępniewski MD, PhD

Affiliation: Students' Scientific Group of Pulmonary Circulation and Thromboembolic Diseases, Faculty of Medicine, Jagiellonian University Medical College, Kraków, Poland

Introduction: Pulmonary embolism (PE) is an important contributor to maternal morbidity and mortality in developed countries. Full-dose systemic intravenous thrombolysis is regarded by the European Society of Cardiology as a primary reperfusion technique for life-threatening PE in pregnancy and post-partum, despite significant risk of bleeding complication. Catheter-directed, low-dose local thrombolysis (CDL) has been proven to be an effective and

safer alternative, however, there exists limited evidence of its utility in pregnancy and peri-partum. Therefore, we present a case of young woman with acute PE treated with CDL short after labour.

Case report: A 25-year-old female was urgently transferred to cardiology clinic 6 hours after natural delivery with diagnosis of acute PE. Her symptoms started with dyspnoea and chest pain at rest early morning, followed by syncope at midday. She was admitted to obstetric ward where she gave birth to a healthy baby at 36th pregnancy week. Persistence of symptoms urged a suspicion of PE. Echocardiography showed enlargement of right ventricle (RV), and computed tomography angiography revealed saddle pulmonary thrombus. Unfractionated heparin was started immediately. In the afternoon she was transferred by air to the Pulmonary Embolism Response Team (PERT) centre for further management. At admission she was dyspnoeic with respiratory rate of 36/min and oxygen saturation (SatO2) of 89% at room air. Her blood pressure was 140/90 mmHg and heart rate (HR) 120/min. Cardiac troponin and NT-proBNP levels were elevated (0.316 ng/ml, 2340 pg/ml, respectively). Her risk of early decompensation was defined as intermediate-high and due to no improvement despite anticoagulation the PERT decision was to perform urgent percutaneous reperfusion therapy. Catheter-directed embolectomy was used initially, but resulted in insufficient reduction of thrombus burden, and thus CDL with bilateral infusion catheters was conducted with total alteplase dose of 20 mg delivered over 10-hour infusion. This led to relief of dyspnoea, improvement in HR, SatO2, and RV function. No complications occurred. Warfarin was chosen to allow breast-feeding. The patient was discharged home on the 5th postprocedural day.

Conclusions: We showed in this report, that innovative strategy, such as CDL, was safely and successfully used to treat life-threatening PE in peripartum period.

Internal Medicine Original Work

Poster Session

Scientific Committee

prof. Kalina Kawecka-Jaszcz, MD, PhD

prof. Paweł Matusik, MD, PhD

prof. Jacek Musiał, MD, PhD

prof. Michał Ząbczyk, MD, PhD

Magdalena Celińska-Löwenhoff, MD, PhD

Katarzyna Holcmann, MD, PhD

Marta Opalińska MD, PhD

Agata Schramm-Luc, MD, PhD

Coordinators

Gabriela Kanclerz

Jakub Popielak

IMSC

Predictors of carotid atherosclerosis in patients with coronary disease

Authors: Michał Błaszkiewicz, Kamila Florek

Tutors: Joseph A. Moutiris MD, MSc, PhD, FESC

Affiliation: Wroclaw Medical University, Wroclaw, Poland; Paphos Hospital, University of Nicosia, Nicosia 8100, Cyprus.

Introduction: Atherosclerosis is considered a generalized disease and the connection between coronary artery disease and peripheral atherosclerosis is significant. There are many guidelines and recommendations for symptomatic atherosclerosis, but not for the patients with asymptomatic carotid artery stenosis.

Aim of the study: The aim of this study is to evaluate frequency and predictive factors of carotid atherosclerosis in patients with coronary artery disease.

Materials and methods: This was a prospective observational study. We as pre-trained students, under doctor supervision, used the carotid ultrasound to detect the stenosis. We examined 20 consecutive patients, 5 females (25%) and 15 males (75%); the mean age was: 71,5. Carotid atherosclerosis was defined according to the newest guidelines.

Results: Plaque in Carotid arteries occurred in 14 out 21 patients (67%). Those were older (74,9±7,9 vs 71,5±10,4 p=0,03) and their BMI more often was lower (27,1±3,4 vs 28,6±4,3 p=0,01) as well they were less often obese (14% vs 43% p=0,02). Although moderate plaques were observed with lower frequency in obese patients- BMI≥30 (14% vs 43% p=0,02), in patients using antiplatelet drugs (57% vs 71% p=0,02). Plaques in carotid arteries were more common in patients taking anticoagulant medications (14% vs 0% p=0,02).

In stenosis positive population univariate logistic regression models revealed: age

(OR=1,1; Cl 1,0-1,3; p=0,004) as positive, BMI (OR=0,6; CL 0,3-1,02; p=0,05), obesity (OR=0,3; CL 0,06-1,01; p=0,05) as negative predictors. In patients with moderate plaque it was revealed: antiplatelets (OR=0,25; Cl 0,6-0,97; p=0,04) as a negative predictor. The multivariable model showed that age (OR=1,12; Cl 1,001-1,25; p=0,04) was an independent predictor.

Conclusions: The results of our analysis showed that carotid atherosclerosis was more often in patients with lower BMI, while obesity was a negative predictor. Older age was an independent positive predictor. Antiplatelet drugs were revealed as a negative predictor of moderate carotid stenosis.

The association between work pattern and control of arterial blood pressure in hypertensive patients

Authors: Michał Ziobro, Anna Gil, Marcin Zuwała, Wojciech Siłka, Anna Ruszecka

Tutors: prof. Agnieszka Olszanecka, MD, Phd; Justyna Bączalska, MD

Affiliation: Students' Scientific Group at the Ist Department of Cardiology, Interventional Electrocardiology and Hypertension, Jagiellonian University Medical College, Krakow, Poland

Introduction: Hypertension with an age-standardized prevalence of 42.7% is the strongest cardiovascular risk factor, significantly influenced by lifestyle agents. According to Eurostat 2021 data, 29.2% of active employees work day shifts and 2% work night shifts. The latter lifestyle fosters development of hypertension and affects its control through disturbances in sleeping patterns and biological rhythm or medication non-adherence.

Aim of the study: The aim of this study was to compare blood pressures values and metabolic characteristics in hypertensive patients with different work patterns.

Materials and methods: Population consisted of currently employed patients of Hypertension Outpatient Clinic at the Ist Department of Cardiology in Krakow. The data was collected using the questionnaire regarding medical information, work pattern and subjective stress load during routine checkup at the Clinic. Additional data, including echocardiography, ambulatory blood pressure measurement (ABPM), as well as laboratory tests results were collected if available from participants' medical history. Exclusion criteria were: non-employed, secondary hypertension, pregnancy and lasting hypertension diagnostics.

Results: The study population consisted of 127 participants, 45.7% (n=58) were women. Median age was 52.9 [43.8-59.5] years. 53.5% (n=68) of participants worked only day shifts (Group 1), whereas 46.5% (n=59) worked in different work pattern (night shifts only, rotating shifts, non-standard work pattern) (Group 2). Statistically significant difference in 24-hour mean systolic blood pressure (SBP) measured in ABPM was noted (median results: 124.50 [115-131] mmHg vs 136 [124-144] mmHg for Group 1 and Group 2, respectively) (p=0.01). Also daytime mean SBP measured in ABPM was significantly elevated in patients from Group 2 compared with Group 1 (median results: 138 [129-153] mmHg vs 128 [118-134] mmHg, respectively) (p=0.01). Similar observations were noted for both systolic and diastolic blood pressure (DBP) measured in ABPM at night (median results: 125 [113-134] mmHg (Group 2) vs 108 [102-123] mmHg (Group 1) for systolic and 74 [68-78] mmHg (Group 2) vs 66 [62-74] mmHg (Group 1) for diastolic blood pressure) (p=0.001 for SBP and p=0.008 for DBP).

Conclusions: Patients who work on shifts or at night are more likely exposed to worse control of hypertension compared with day-time workers. The difference is seen especially in SBP measurement and in blood pressures measured at night.

Types of Conduction Disturbances in Patients with Noncompaction Cardiomyopathy

Authors: Nikola Serge

Tutors: Prof. Oskars Kalejs, Dr. Ligita Zvaigzne

Affiliation: Riga Stradins University, Pauls Stradins Clinical University Hospital

Introduction: Usually referred to as an isolated condition, left ventricular noncompaction is a structural defect of the left ventricle that can occasionally be linked to other structural cardiac diseases. It is yet to be determined whether a distinct noncompaction in particular segments of the left ventricle correspond to specific abnormalities in ECGs.

Aim of the study: The aim of this study was to assess conduction disturbances in patients with noncompaction cardiomyopathy at Pauls Stradins Clinical University Hospital.

Materials and methods: Retrospective single-center study included adult patients who had cardiac MRI performed at Pauls Stradins Clinical University Hospital in the timespan from January 1, 2019, to October 1, 2022. In order to assess the compacted and noncompacted layers of the myocardium, syngo.CT Cardiac Function software was used. Mathematical data processing was performed using descriptive statistics.

Results: Out of 1011 cardiac MRIs that were performed in the respective period of time, noncompaction cardiomyopathy was detected in 3,6% (n=37) of the cases. 49% of the patients (n=18) were women and 51% (n=19) were men. In 16% (n=6) of the cases, patients presented with atrial fibrillation, 35% (n=13) with ventricular extrasystoles, 24% (n=9) with left

bundle branch block, 3% (n=1) showed sinoatrial node block, 3% (n=1) nonspecific ST-T segment changes, and 3% (n=1) presented with intraatrial conduction disturbances. In 16% (n=6) of the ECGs there were no abnormal findings. It was concluded that most of the conduction disturbances presented in patients who had the highest noncompacted versus compacted myocardial layer ratio in segments 1, 7, and 12.

Conclusions: In our study, most of the conduction disturbances were observed in patients who displayed the highest noncompacted versus compacted layer ratio in anterior and lateral portions of the left ventricle.

Operative topography of anterior coronary bypass grafting route with right internal mammary artery

Authors: Wojciech Olejek, Jakub Batko, Daniel Rams

Tutors: prof. Krzysztof Bartuś, MD, PhD, Radosław Litwinowicz, MD, PhD, DSc

Affiliation: SSG of Minimally Invasive and Experimental Cardiac Surgery

Introduction: Coronary artery bypass grafting is a revascularization method recommended by European Society of Cardiology for patients with complex coronary artery disease. It can be performed through various approaches, minimally invasive included, and graft sources, including saphenous vein, right and left internal mammary artery.

Aim of the study: The aim of this study was to evaluate operative topography of coronary artery bypass grafting by anterior route with use of right internal mammary artery.

Materials and methods: The thorax, pleural cavity, heart and right internal mammary artery was segmented and visualized from 105 scans (age: 63±10, 45.0% females) angio- CT scans. Anterior route was measured to the point of the left coronary artery bifurcation. It was divided to the two parts: from right internal mammary artery to the middle of left leaflet of pulmonary artery and from pulmonary artery to the left coronary artery bifurcation. Route distances from the level lower margin of second and third rib were assessed and compared. Right internal mammary artery length was measured. Data was statistically analyzed.

Results: Distance from right internal mammary artery to the pulmonary artery left leaflet was 80.4 ± 10.8mm and 86.4 ± 10.4 mm respectively. Distance from the pulmonary artery left leaflet to the coronary artery origin was 36.0±5.6 mm. Mean anterior rout from the level of lower margin of second rib was 116.3 ±12.9 mm and from the level of lower margin of third rib was 122.4±12.9 mm. Right internal mammary length between those margin was 28.9±5.9 mm.

Conclusions: Operative topography of anterior coronary artery bypass grafting route is crucial for safety and quality of performed procedure. Our results support high preparation approach, however right internal mammary artery length is sufficient to reach left coronary artery from lower preparation levels.

Mitral valve reconstruction operative relations and topography for tendinous chords reconstruction

Authors: Wojciech Olejek, Jakub Batko, Daniel Rams

Tutors: prof. Krzysztof Bartuś MD, PhD, Radosław Litwinowicz MD, PhD, DSc

Affiliation: SSG of minimally invasive and experimental cardiac surgery

Introduction: Mitral valve disease causes are complex, however its repair is regarded as optimal treatment, despite the etiology. The strongest supporting evidence for repair over

replacement is in case of degenerative mitral regurgitation. In this treatment method, tendinous chords reconstruction may be necessary.

Aim of the study: The aim of this study was to evaluate operative topography of mitral valve and papillary muscles for tendinous chords reconstruction and valve repair.

Materials and methods: The mitral valve, papillary muscles of left ventricle and left atrium segmented and visualized from 105 scans (age: 63±10, 45.0% females) angio- CT scans. On each mitral valve leaflet 7 points were placed – on the beginning and end of the each leaflet part and in its middle. Distance from each zone to the each papillary muscle head was measured. Papillary muscles detailed morphometry was assessed.

Results: Distance from the middle of the anterior leaflet to the anterolateral papillary muscle anterior head was 31.3 ± 6.9 mm and posterior head was 38.5 ± 6.1 mm. Distance from the middle of the anterior leaflet to the posteromedial papillary muscle anterior head was 37.0 ± 8.0 mm and posterior head was 40.9 ± 7.1 mm. Anterolateral papillary muscle length was 33.2 ± 6.3 mm and posteromedial papillary muscle length was 32.2 ± 5.2 mm.

Conclusions: The most optimal muscle for tendinous chords repair is anterolateral muscle, especially anterior head. Three dimensional visualization is useful tool for mitral valve evaluation. Preoperative evaluation may be useful for supporting clinical decision about proper choice of mitral valve repair procedure

Evaluation of Risk Factors of Delayed Wound Healing among Patients with Diagnosed Diabetic Foot Syndrome and Type 2 Diabetes Mellitus

Authors: Kamil Tkacz (3), Marcin Kleibert (1), Klaudia Łakomska (2), Iga Płachta (3), Beata Mrozikiewicz-Rakowska (4)

Tutors: prof. Agnieszka Cudnoch-Jędrzejewska, MD, PhD (1)

Affiliation: (1) Laboratory of Centre for Preclinical Research, Department of Experimental and Clinical Physiology, Medical University of Warsaw, 02-097 Warsaw, Poland; (2) Faculty of Medicine, Wroclaw Medical University, 50-367 Wrocław, Poland; (3) Faculty of Medicine, Medical University of Warsaw, 02-091 Warsaw, Poland; (4) Department of Endocrinology, Centre of Postgraduate Medical Education, Bielanski Hospital, 01-809 Warsaw, Poland

Introduction: The healing process of diabetic foot ulcers is significantly delayed and associated with the risk of life-threatening complications, e.g. sepsis and acute ischemia of the lower extremity. The estimation of the risk of delayed wound healing is essential to introduce proper treatment and reduce the risk of complications. The aim of the study was to establish the most important risk factors which have an impact on the healing process.

Aim of the study: The aim of the study was to establish the most important risk factors which have an impact on the healing process.

Materials and methods: The retrospective analysis was conducted on patients with type 2 diabetes mellitus in the University Clinical Centre of the Medical University of Warsaw. The baseline characteristics (gender, age, weight, comorbidities, used drugs, wound area and its characterization, presence of diabetes complications) were gathered from the medical

history of patients. The observation lasted 12 months. The primary outcome was complete healing of the wounds, the secondary outcome was a need for vascular intervention or the occurrence of a new wound. The data were compared and examined with a chi2 test analysis of the odds ratio in the SAS 9.4 program.

Results: 64 patients (13 women and 51 men) with mean weight of 101.48kgs (±22.4) and age of 60.59 years old (±9.14) were analyzed. The mean baseline area of all patients' wounds was 7.75cm2 (±16.46). 42.19% (n=27) of patients achieved the primary outcome. The new wound occurred among 39.06% (n=25), and 21.88% (n=14) needed vascular intervention. Area of wounds bigger than 5cm2 was associated with a higher risk of having unhealed wounds (OR=7.58, p<0.05). Anemia or cigarette smoking was associated with a higher risk of new wound development (OR=9.5, p<0.05 and OR=3.8, p<0.05). None of the analyzed factors had an impact on the risk of vascular intervention.

Conclusions: The simple characterization of wounds and patients can be useful in estimating of risk of having an unhealed wound or the occurrence of a new wound 12 months after the first visit. This knowledge can be used in selecting patients with a higher risk of complications, which may be potentially reduced by increasing the number and frequency of visits.

Using Liver Fibrosis-4 score to predict mortality in critically ill COVID-19 patients

Authors: Ivan Szergyuk, Maria Helena Santos de Oliveira, Giuseppe Lippi, Ahmed Al-Jabbary, Amal H Al-Najjar, Marzooq A Albadi, Mohammed F Abosamak

Tutors: Dr. Brandon Michael Henry MD

Affiliation: Faculty of Medicine, Jagiellonian University Medical College, Krakow, Poland

Introduction: Emerging evidence suggests that liver dysfunction in the course of coronavirus disease 2019 (COVID-19) illness is a critical prognostic factor for mortality in COVID-19 patients. The Fibrosis-4 (FIB-4) score, an index combining AST and ALT levels, with age and platelet count, developed to reflect the level of hepatic fibrosis, has been associated with adverse outcomes in hospitalized COVID-19 patients.

Aim of the study: This study aimed to examine the association between the FIB-4 score and various clinical endpoints in critically ill COVID-19 ICU patients, a subpopulation at the highest risk of mortality, research on which is lacking.

Materials and methods: This retrospective cohort study examined FIB-4 scores and clinical endpoints including death, acute cardiac injury (ACI), acute kidney injury (AKI), and need for mechanical ventilation in critically ill COVID-19 patients, without prior hepatic disease, throughout the course of ICU stay.

Results: Of 60 patients enrolled, 35% had ICU admission FIB-4 >2.67. Among non-survivors, FIB-4 was significantly higher at admission (median 3.19 vs. 1.44; P<0.001) and only a minority normalized <1.45 (36.0%). Each one-unit increment in admission FIB-4 was associated with 67.4% increased odds of death (95% CI, 9.8-162.6%; P=0.017). FIB-4 >2.67 was associated with a median survival time of 18 days from ICU admission versus 40 days with FIB-4 <2.67 (P=0.016). Admission FIB-4 was also higher in patients developing ACI (median 4.99 vs 1.76; P<0.001). FIB-4 correlated with age (r=0.449; P<0.001), and AST with ALT (r=0.674; P<0.001) and LDH (r=0.618; P<0.001).

Conclusions: In conclusion, a significant proportion of ICU COVID-19 patients with no pre-existing liver disease have an FIB-4 score highly suggestive of advanced hepatic fibrosis. High ICU admission FIB-4 is associated with mortality in critically ill COVID-19 patients, with failure to normalize at time of death. This is likely the result of generalized COVID-19 related

cytotoxicity. Given that elevated FIB-4 score on admission was found to have high prognostic value for mortality, we recommend regularly checking FIB-4 scores, derivative parameters of which are simple, cost-effective, and routinely measured, to identify particularly vulnerable patients.

Antibiotic resistance of Klebsiella pneumoniae in patients with Covid-19

Authors: Carina Nicoleta Bobohalmă, Giulia Andreea Rîsteiu, Sara Alexia Roman

Tutors: Dan Alexandru Toc MD, PhD(c)

Affiliation: "Iuliu Hatieganu" University of Medicine and Pharmacy Cluj-Napoca

Introduction: Secondary Bacterial Infections of respiratory system became a major problem in patients with COVID-19 since the pandemic began. In recent years, infections caused by multidrug resistant strains of K. pneumoniae have been a major public health concern.

Aim of the study: Our study aims to evaluate the dynamics of antibiotic resistance in patients infected with K. pneumoniae during the COVID-19 pandemic; as bacterial resistance to multiple classes of drugs has become alarming worldwide.

Materials and methods: We retrospectively collected data from 106 patients admitted to the Emergency County Clinical Hospital, Cluj-Napoca, that were further analyzed using Microsoft Excel and IBM SPSS Statistics. The parameters that interested the study were: the sex of the patients, COVID-19 status, the number of hospitalization days, the discharge status and of course the antibiogram for each patient regarding different samples from which we concluded some profiles of resistant phenotypes. We included patients from November 2020 to April 2022 divided in 3 periods of 6 months: A, B and C. We isolated 44 strains of Klebsiella pneumoniae and performed PCR for the NDM-1 gene.

Results: Regarding ticarcillin-clavulanic acid we established that the patients with a resistant phenotype to this combination were hospitalized for a period longer with an average of 19 days. The same phenomenon was brought out for ceftazidime, but with an average of 20.5 more days. Furthermore we concluded via an exact Fisher test that the odds of death for patients with resistant phenotype to cefepime are 7.648 larger for the infected ones. One of the isolated strains is NDM-1 positive.

Conclusions: Both ticarcillin-clavulanic acid and ceftazidime resistance, leaded to a longer hospitalization. This may prove to be a burden for the healthcare system due to the large amount of resources needed for the treatment of these patients. Moreover, we noticed that the mortality is increased in patients with resistant strains. One consequence of this phenomenon is that these strains become more difficult to treat. NDM-1 is a metalo-beta-lactamase with nearly complete resistance to all beta-lactam antibiotics. Due to the high epidemiological risk further surveillance is required.

Deep Brain Stimulation impact on the saccadic eye movements in Huntington's Disease

Authors: Antoni Cierniak, Michał Piotrowski, Paulina Więcławek, Jakub Jucha, Julianna Dąbrowa

Tutors: Piotr Walecki MSc, PhD

Affiliation: SCC for Digital Medicine and Robotics, Jagiellonian University Medical College

Introduction: Huntington's disease (HD) is a neurodegenerative disorder characterized by motor, psychiatric and cognitive impairment. Characteristic manifestations of HD are saccadic

eye movement disturbances. Saccades are defined as quick, simultaneous movements of eyes that appear when the center of a gaze is directed from one point to another. One of the experimental therapies that may reduce HD symptoms is Deep Brain Stimulation (DBS). There is very limited literature data investigating the relationship between DBS and oculomotor abnormalities in HD.

Aim of the study: The aim of the study was to examine whether saccadic eye movements in HD patients are influenced by the DBS and compare saccades of healthy subjects with HD patients.

Materials and methods: The participants of the study (n=10) were voluntarily recruited and divided into two categories: the control group (n=5) and the HD group with DBS (n=5). The experimental session using a Saccadometer (Ober) was performed in both groups. HD patients were tested twice with DBS being turned on and off. Session parameters comprised 12 calibration trails and 50 experiment trails, with one trail corresponding to one saccade. Every saccade was automatically measured by the device. The saccades number, latency, amplitude, velocity, and more, were estimated for every subject.

Results: The healthy controls had 97.2±6.26% (mean± standard deviation) correct saccades, while those with HD with DBS turned off (HD-OFF) had 20±14.63%, and 52.8±21% with DBS turned on (HD-ON). In the control group, the average latency of correct saccades was 204.6±30.33ms, and in HD-OFF 447.6±294.63ms, compared to 328±77.96ms in HD-ON. In the third quartile, the average latency was 210.6±26.85ms in the control group, and 733±623.01ms in HD-OFF, compared to 406.2±138.75ms in HD-ON. In the third quartile, the average amplitude of correct saccades was 10.72±0.52deg, and in HD-OFF 19.86±12.59deg, compared to 12.04±7.15deg in HD-ON.

Conclusions: Study limitations included low sample size, group heterogeneity, and the severity of the disease symptoms increase after DBS disconnection. The remarkable individual differences between patients with HD were found, suggesting the progressive character of saccades impairment. Results despite being not statistically significant may suggest that DBS improves eye movements in HD.

Epidemiology and etiology of a neglected devastating infection in Turkana: Mycetoma

Authors: Javier Vilela Martin, Raquel Puchol Paseiro

Tutors: Prof. Francisca Colom Valiente, Carmen Hernandez Perez

Affiliation: Complutense University of Madrid, Surgery in Turkana, Miguel Hernandez University

Introduction: Mycetoma is one of the 20 Neglected Tropical Diseases (NTDs) defined by World Health Organization (WHO). It is a chronic devastating infectious disease of the subcutaneous tissue acquired by fungi or bacteria found in the soil and on thorny shrubs.

Aim of the study: To study the epidemiology of the disease, the causal agents involved and their response to treatment in Turkana (Kenya).

Materials and methods: The study was conducted in the Lodwar County Referral Hospital (LCRH), Turkana, through a group of Medical Micology from the UMH and the NGO Surgery in Turkana, which involves medical students as volunteers. During the campaigns of 2019, 2020 and 2022, 60 cases and 57 samples were included. We collected demographic data (age, sex, profession, use of footwear) and clinical data of the lesions (time of evolution, size, location, presence of secretion with grains and its color). Samples were washed and cultured, and DNA was extracted to perform PCR followed by Sanger Sequencing.

Results: We obtained data from 58 patients, of which 43 are men (74%) and 15 women (26%). They are between 13 and 78 years of age, and the mean is 37.3 years of age. Most of them work in the fields (57.14%). The most common location of the lesions was the feet (84.75%). Out of the 56 samples that were cultured, we obtained 13 strains of fungi and 11 strains of bacteria as possible causal agents of mycetoma. In terms of sequencing, we obtained 17 positives for fungi and 4 for bacteria. After sequencing, some of the detected species had not been reported before as causal agents of mycetoma, such as Cellulosimicrobium cellulans and others.

Conclusions: Mycetoma is endemic in Turkana region, especially affecting feet of young men under the age of 30 years old that work in the fields. The identification of agents of mycetoma that are uncommon or that were not described before highlights the importance of the identification of species in each geographic area, as they might differ in their antimicrobials' susceptibility.

FibroScan and FIB-4 calculator - how do they communicate?

Authors: Anna Olejarz, Mirela Hendel, Krzysztof Irlik

Tutors: prof. Katarzyna Nabrdalik, MD, PhD

Affiliation: Department of Internal Medicine, Diabetology and Nephrology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia in Katowice

Introduction: 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.

Aim of the study: The aim of this study was to determine the cohesion between fibrosis assessment via FibroScan (a modified ultrasound examination of the liver) and the use of fibrosis index based on four factors (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 on a larger group of patients.

Infectious complications after kidney transplantation

Authors: Vladimír Doboš

Tutors: Matej Vnučák MD, PhD[2] prof. Ivana Dedinská MD, PhD[1]

Affiliation: [1]1st Department of Internal Diseases, University Hospital Martin and Jessenius Medical Faculty in Martin, Comenius University in Bratislava, [2]Transplantation Center, University Hospital Martin and Jessenius Medical Faculty in Martin, Comenius University in Bratislava.

Introduction: Introduction: Infections remain the most common non-cardiac cause of mortality after kidney transplantation (KTx). Therefore the main objective of immunosuppressive treatment is to create balance between decreasing incidence of acute kidney rejection and avoiding the incidence of infections, at the same time.

Aim of the study: The goal of our study was to identify risk factors associated with higher risk of recurrent infections after KTx and acute kidney rejection.

Materials and methods: We performed retrospective, monocentric analysis of patients who underwent kidney transplantation from 2011 to 2020 with different types of induction immunosuppressive therapy. We monitored the incidence of infections in terms of etiology, localization and the severity in different intervals after KTx.

Results: Our study included 78 patients (56 men, 22 women), the average age was 45 years. Subsequently, we divided patients based on the induction therapy to 2 identical groups – basiliximab and ATG group, both consisted of 28 men and 11 women. In ATG group, we noticed higher proportion of recurrent bacterial infections (56.4 % vs. 5.1%), multidrug resistant infections (20.5% vs. 2.6%) and 23,1% urogenital tract infections (23.1% vs. 2.6%) 1st month after KTx. On the other hand, the incidence of CMV and viral infections from 1st to 6th month after KTx were higher in basiliximab group (both 10.3 % vs. 5.1%). In our study, the severity of infections expressed by need for hospitalization increased from 2.6% 1 month after KTx to 15.4% in period from 1st to 6th month after KTx in patients with ATG. On the contrary, no patient in basiliximab group needed hospitalisation because of infection 1st month and from 6th-12th month after KTx.

Conclusions: Based on presented results, induction with ATG has higher risk of developing recurrent and severe infections with need for hospitalisation decreasing the maximal benefit of KTx.

Prothrombotic state in patients with exacerbation of heart failure with reduced ejection fraction and sinus rhythm. Comparison of fibrin clot properties and thrombogenesis during hospitalization and long-term observation. A pilot study.

Authors: Alicia del Carmen Yika, Aleksandra Karcinska, Anna Matrejek

Tutors: Karol Nowak,MD; Jaroslaw Zalewski,MD,PhD

Affiliation: Students' Scientific Group at the Department of Coronary Artery Disease and Heart Failure, Jagiellonian University Medical College, Cracow.

Introduction: In accordance with observational studies heart failure (HF) with reduced ejection fraction (HFrEF) is significantly associated with an increased risk of thromboembolic events, especially during hospitalization due to

exacerbation of symptoms and the time following discharge. This also applies to patients without atrial fibrillation (AF)and another indication for anticoagulation treatment. In the latest guidelines, there are no recommendations for thrombosis prevention including anticoagulants in HFrEF patients with sinus rhythm.

Aim of the study: In the current pilot study we sought to analyze the changes in prothrombotic parameters in patients with exacerbated HFrEF with sinus rhythm and after a period of complete HF treatment.

Materials and methods: 31 patients with exacerbation of HFrEF and without a diagnosis of AF or other indications for anticoagulation treatment were included in the study. The exclusion criteria were renal failure defined as creatinine level above 225 mmol/l, active cancer, acute coronary syndrome, or stroke within 3 months before inclusion. The blood samples were collected during the first 3 days of hospitalization and during the outpatient visit at least after 3 months after discharge. Plasma fibrin clot permeability, clot lysis time, and calibrated automated chromatogram were determined.

Results: The mean age of contributors was 64.1 ± 13.2 years, 27 (87.1%) of them were males and 26 (83.9%) were assessed as NYHA III/IV. The mean left ventricular ejection fraction was 24.6 ± 8.6%. In the detailed analysis of blood prothrombotic properties, after at least 3 months of complex HF treatment according to guidelines, patients were characterized with higher levels of clot permeability expressed as Ks (3.87 ± 1.42 vs 4.74 ± 1.89 x 10−9 cm2, P = 0.03), but there were no differences in terms of clot lysis time (123.2 ± 31.8 vs 125.9 ± 39.4 min, P = 0.50) and the thrombogram parameters including endogenous thrombin potential (1981.1 ± 317.6 vs 1932.5 ± 310.8 nM*min, P = 0.45) and peak value (343.3 ± 79.5 vs 349.7 ± 81.5 nM, P = 0.66) in comparison with in-hospital samples.

Conclusions: The improvement of fibrin clot properties, but not the less prothrombotic thrombin generation was observed after at least 3 months of complex HFrEF treatment. Further studies about the prothrombotic state in HFrEF patients with sinus rhythm are necessary to better understand the thromboembolic risk in this group of patients.

Internal Medicine Case Report

Poster Session

Scientific Committee

Mateusz Gajda, MD, PhD

Małgorzata Kloch, MD, PhD

Agata Stalmach-Przygoda, MD, PhD

Coordinators

Julia Jagieła

Magda Dymek

IMSC

Blood flow restriction training as an innovative method to improve arterial and venous functions in patient with peripheral arterial disease

Authors: Natalia Nawrocka, Aleksandra Włodarczyk

Tutor: Mikołaj Maga, MD

Affiliation: Jagiellonian University Medical College, Students Scientific Group of Clinical Angiology

Introduction: Blood flow restriction (BFR) training is increasingly used innovative rehabilitation method in order to improve muscle strength and cause muscle hypertrophy. It hasn't been well studied in aspect of improving endothelial function in patients with peripheral arterial disease (PAD). We report a case of PAD patient treated with the BFR training with obtaining the optimal arterial and venous blood flow.

Case report: The 52-year-old man, with frequent physical activity and history of smoking, reported himself to the angiology outpatient with swelling and pain in right leg. In ultrasound examination femoral vein thrombosis was diagnosed. Patient underwent the orthopedic surgery and he had not been provided with perioperative antithrombotic pharmacotherapy. During the next 12 months he was treated with the therapeutic dose of anticoagulant, compression therapy and regular physical activity. At 1 year follow-up in ultrasound examination the hyperechogenic clots were revealed in great saphenous and popliteal vein.

After 10 years he reported himself to the angiology outpatient with hip and thigh pains. After couple of weeks, short-distance intermittent claudication occurred in right calf. During the ultrasound examination the occlusion of popliteal and anterior tibial arteries was diagnosed. As due to the movement limitation caused by joint disfunction, walking training was not possible to be introduced. The experimental form of exercise with the BFR training was introduced. It was performed in sitting position with special pressure calf placed on arms and legs. The 21 minutes-long sessions were conducted 3 times per week for 3 months. As the result the distance of claudication had been lengthened up to 1000 meters and increase of ABI and TBI was observed.

At this point, 3 years later patient is walking without any limitations or symptoms of intermittent claudication. In control ultrasound examination popliteal and anterior tibial arteries are occluded. Posterior tibial and fibular arteries are patent, supplied by collateral vessels circulation. In distal part of femoral and popliteal veins partially recanalized hyperechogenic fibrotic clots are present.

Conclusions: The level of ischemia in patients with an early phase of PAD can be reduced by angiogenic process by providing new blood flow pathways to the tissues during the BFR training.

COVID-19 infection and benign paroxysmal positional vertigo: a case report and review of the literature

Authors: Domas Turčinas, Aistė Paškonienė

Tutor: Aistė Paškonienė MD

Affiliation: Clinic of Ear, Nose, Throat, and Eye Diseases, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Introduction: Benign paroxysmal positional vertigo (BPPV) is a vestibular disorder characterized by brief episodes of rotary vertigo triggered by specific head positions or movement relative to gravity. BPPV is the most

common cause of peripheral vertigo, with its prevalence being 2.4%. It manifests mostly in middle-aged and elderly people, with women being more affected. Due to its benign nature, this disorder is frequently treated only by repositioning maneuvers but there are cases in which it is treatment-resistant. During the SARS-COV-19 pandemic cases of intensified BPPV were observed. We report a female patient with treatment-resistant benign paroxysmal positional vertigo after a COVID-19 infection.

Case report: A 44 - year old female patient presented to her general practitioner with complaints of severe attacks of circular dizziness and nausea, typically occurring when lying in bed, driving, doing physical activities, or swiftly turning the head to the side. The diagnosis of benign paroxysmal positional vertigo was established. The patient was treated with Tab. Cinnarizinum et Dimenhydrinatum 20/40mg and Tab. Bromasepamum 1.5mg. The symptoms subsided for a period of time, yet after being diagnosed with SARS-COVID-19, the symptoms returned and aggravated. The patient started experiencing vertigo, “incoherently moving” sight while driving, and nausea. The diagnosis of anterior semicircular canal canalolithiasis was established based on straight-back head-hanging maneuver, while the Dix-Hallpike maneuver provoked vertical nystagmus. Betahistine 24mg was added to the treatment. Head magnetic resonance imaging (MRI) was without pathological findings. The laboratory value of vitamin D was within the normal range. The Epley and modified Yacovino repositioning maneuvers did not alleviate the symptoms, furthermore provoked nausea. The patient is still under treatment but the BPPV is ruled treatment-resistant.

Conclusions: This case report presents a treatment-resistant benign paroxysmal positional vertigo post-COVID-19 infection. In various literature, there is proof that this condition is rare but possible. However, due to the known SARS-COVID-19 neurotropic nature, we suggest that patients with BPPV should be thoroughly assessed after being diagnosed with SARS-COVID-19.

Diffuse large B-cell lymphoma - from palliative therapy to full remission

Authors: Kintija Gritane

Tutor: dr. Sigita Hasnere

Affiliation: Oncology

Introduction: The patient developed a mass on the anterior chest wall. She received chemotherapy and radiologically achieved complete remission. Brain progression was observed over time and treatment was initiated according to the CNS (central nervous system) lymphoma protocol.

Case report: A 35-years old woman was referred to Pauls Stradins Clinical University hospital, Latvia, due to massive formation on the left side of the chest. CT revealed lesions in both adrenal glands, in the tail of the pancreas (7x 5.5 cm). A transthoracic biopsy was performed, which confirmed diffuse large B cell lymphoma. The patient received 6 cycles of R-CHOP therapy. PET/CT showed complete metabolic remission. Two months after achieving full remission, the patient developed paresis of the left arm and leg, left arm edema. She was started on high-dose methotrexate. After receiving second course, her neurological condition significantly worsened, and an MRI of the brain showed progression and edema were noted. The patient was discontinued from high dose metotrexate and started on dehydration therapy. The patient's condition improved slightly and radiation therapy for CNS lymphoma was started. In the last cycle of radiation therapy, the patient tested positive for Covid-19 and radiotherapy was stopped. During the disease, the patient developed a gluteal abscess, and drug-induced diabetes, which was successfully

controlled. Despite the unfinished radiation therapy, the patient is still in remission (from March 2022).

Conclusions: Despite the poor prognosis, the interrupted radiation therapy due to Covid-19, the added gluteal abscess, and medication-induced diabetes, the patient survived and is still in full remission and comes for follow-up visits to doctors.Thanks to a timely, correct diagnosis, correct treatment tactics, perseverance of doctors and the patient's willpower, it is possible to achieve remission of the disease even when the patient's prognosis is poor.

Drug resistant epilepsy in Parry-Romberg Syndrome

Authors: Melissa Szmukala, Esther Akande

Tutor: Monika Służewska-Niedźwiedź, MD PhD

Affiliation: Department of Neurology, ul. Borowska 213, 50-566 Wroclaw

Introduction: Epilepsy is a disorder, in which patients experience uncontrolled, unprovoked seizures due to abnormal electrical activity in the brain. In drug resistant epilepsy (DRE) at least two anti-epileptic medications (AEM) are unable to stop seizure episodes. Parry-Romberg syndrome (PRS) is a rare autoimmune condition of focal atrophy of head and face that may be associated with focal epilepsy. Because no randomized clinical trials were made on management of this population, case reports offer the best way to understand epilepsy in PRS.

Case report: We present a 39-year-old woman diagnosed with Parry-Romberg syndrome and DRE.

Progressive facial atrophy was first observed at age 25 and required surgical treatment. Two years later first neurological signs occurred and ASM was started due to the first epileptic seizures. From 2019 she was followed up in an out-patient neurological clinic in Wroclaw Medical University Hospital because of recurrent paroxysmal paresthesia and spasms of the left side of the face, neck, and left arm with or without impairment of awareness. Seizures occurred once a week despite ASM (lamotrigine). Physical examination showed progressive right facial and tongue atrophy, left lower limb weakness, exaggerated deep reflexes, positive pyramidal signs such as Babinski and positive frontal release signs. EEG revealed paroxysmal theta, delta waves and sharp wave complexes in the right hemisphere. Repeated MRI showed progressive cortical atrophy of the right frontal and parietal lobe with widening of the right lateral ventricle. Moreover, increased signals of the right hippocampus and right amygdala in flair sequences were found to be secondary to recurrent epileptic discharges. Many drugs were tried (including levetiracetam, lamotrigine, lacosamide, pregabalin, brivaracetam, clonazepam) without lasting seizure control.

Conclusions: Drug-resistant epilepsy because of Parry-Romberg syndrome is a challenge. DRE is a major concern when it comes to complex treatment possibilities, with unpredictable seizures having

a great impact on quality of life. With Parry Romberg syndrome, neurological deterioration in affected patients such as this one has widespread consequences. Changes observed in neuroimaging studies secondary to epileptic discharges may affect memory and attention. More intensive research must be done about causes and management of the disease.

Graft versus Host Disease in Myelodysplastic Syndrome

Authors: Melissa Szmukala, Izabella Basiora

Tutor: Dr. n. med. Marta Sobas

Affiliation: Department of Hematology, Blood Cancer and Bone Marrow Transplantation, wyb. Ludwika Pasteura 4, 50-367 Wrocław

Introduction: Myelodysplastic neoplasms are a group of rare blood disorders that cause abnormal blood cell development in the bone marrow. In cases of high-risk myelodysplastic syndromes (MDS), allogeneic hematopoietic stem cell transplantation (alloHSCT) is required.

Due to the improvement of supportive care, transplant-related mortality is constantly decreasing. Nevertheless, graft versus host disease (GvHD) and viral reactivation are still major concerns.

Case report: We introduce a 65-year-old male with MDS 6 months after alloHSCT, who presented with severe GvHD complicated by CMV reactivation and secondary engraftment failure after cessation of immunosuppression.

Initial presentation of transfusion-dependent anemia and thrombocytopenia. Bone marrow biopsy revealed MDS with multilineage involvement and fibrosis (MDS-MLD-F). AlloHSCT from an unrelated, compatible HLA-10/10 donor was performed without any significant complications. As prevention for GvHD, cyclosporin A (CSA), methotrexate, and anti-thymocyte globulin were used. At day +30 post-alloHSCT, chimerism was assessed as 100%. After 6 months, post-alloHSCT immunosuppression was stopped. One week later, the patient presented with a skin rash, icterus, a bilirubin level of 24 mg/dL, as well as increased liver enzymes. Therapy with CSA and methylprednisolone was ineffective. CMV reactivation was confirmed, and therapy with cymevene was started, under which the patient recovered. As the level of CSA was insufficient, immunosuppression with tacrolimus and mycophenolate mofetil (CellCept) was started. While improvement in hepatic tests was observed, morphology results were getting worse. All myelotoxic drugs (including CellCept) were stopped, which led to no improvement in morphology and an increase in bilirubin. The patient required G-CSF, EPO, RBC and platelet transfusions.

Extracorporeal photopheresis (ECP) and ruxolitinib were added to tacrolimus. Under this therapy, the level of bilirubin was normalized. A second hematopoietic stem cell transfusion and CD34+ cell selection were performed. 11 days after the second infusion, the patient's morphology started to recover, and hepatic tests were normal.

Currently, he is continuing ECP with ruxolitinib and tacrolimus in decreasing doses.

Conclusions: GvHD and viral reactivation in patients with alloHSCT are still major concerns, especially with prolonged immunosuppression. Fast and appropriate treatment is essential for reducing transplant-related mortality. Ruxolitinib is a drug with superior outcomes to steroids in the treatment of GvHD.

Hereditary angioedema – a considerable, yet treatable, impact on the patient's quality of life

Authors: Petre Alber, Paval Ioana Daria

Tutor: Dr. Irena Pintea

Affiliation: "Iuliu Hatieganu" University of Medicine and Pharmacy, Allergy and Immunology Discipline

Introduction: Angioedema is a condition characterized by cutaneous or mucosal swelling, typically present in areas with loose connective tissue, such as the lips, eyelids, throat, larynx, bowel wall, etc. While angioedema is associated with anaphylaxis, the hereditary form (Hereditary Angioedema, HAE) causes recurrent

angioedema attacks that considerably impact the patient's quality of life and that are potentially lethal, due to asphyxia.

Case report: We present the case of a 61-year-old female patient with recurrent episodes of isolated angioedema, lasting from 1 to 7 days, during which she would notice extreme swelling of the face, throat, extremities, and upper-thorax. These episodes are intermittently accompanied by intense, crushing abdominal pain (most likely caused by intestinal swelling), or a similar pain in the swollen extremities, dyspnea, dysphagia, and orthopnea. Symptoms had onset at age 5, and have a median frequency of 3-4 episodes per week. Patient's file documents over 150 laryngeal attacks. The condition was misdiagnosed and mistreated until age 51 when the patient presented to the emergency care unit for a severe laryngeal attack. Due to the condition not responding to otherwise ineffective treatment for HAE, such as antihistamines, corticosteroids, or adrenaline, she is transported to the Pilot Centre of HAE, Targu-Mures, where she is given frozen fresh plasma as emergency treatment and, fortunately, survived without any sequelae. After the correct diagnosis is established, she is included in the national HAE program and she is given the treatment for acute attacks (icatibantum). In 2022, prophylactic long-term treatment with lanadelumabum is started, along with the on-demand treatment, resulting in almost negligible episodes that would last for a few hours at the most.

Conclusions: This case illustrates the potential for severe consequences in patients suffering from hereditary angioedema, and the importance of delivering an early diagnosis for this rare, but severe disorder. Initiating proper treatment for this illness will be met with an outstanding improvement in the patient's quality of life. There is a need for increased awareness of the diagnosis of HAE among doctors of any specialty.

Idiopathic Intracranial Hypertension Presenting as Seizures

Authors: Rochelle Maria Justin

Tutor: Dr Krishnan Balagopa

Affiliation: Kerala University of Health Sciences

Introduction: Idiopathic Intracranial Hypertension is a disorder of elevated CSF pressure of unknown cause with normal CSF composition. The common clinical symptoms include headache, pulsatile tinnitus, transient visual obscurations and visual loss usually in obese females of childbearing age. Clinical signs are diplopia and papilledema . Seizures are a rare symptom seen in IIH patients (incidence 0.9/100,000). Here is a case of a 28 year old obese female who presented with long standing headache and two episodes of seizures. MRI brain showed features of IIH with bilateral temporal encephalocoeles.

Case report: A 28 year old obese (BMI-25) female presented with a history of recurrent episodes of dull aching holocranial headaches since 6 months, not associated with any other symptoms. She presented with two episodes of generalised tonic clonic seizures followed by post ictal confusion. No history of fever, past or family history of seizures. There were no focal neurological deficits or meningeal signs. Routine blood investigations were within normal limits. EEG showed generalised slowing suggestive of the post ictal state. MRI Brain showed features of IIH with partial empty sella, tortuous bilateral optic nerves with buckling of posterior sclera, herniation of left anterior temporal lobe with encephalocoele, brain herniation into arachnoid granulation, right temporal lobe herniation into the right transverse sinus. MR Venogram showed filling defects in the right transverse sinus with no thrombosis. ASL imaging showed increased perfusion in the right temporal lobe. Ophthalmological examination revealed grade 1

papilledema with normal visual field assessment. There was elevated CSF pressure (28 cm water), normal proteins, sugar and cells. She was started on Levetiracetam for seizures, Acetazolamide for the raised CSF pressures and Topiramate for headache. She had significant improvement in headache, was seizure free at follow up and will be kept under regular follow up with periodic visual field assessments.

Conclusions: Seizures are an important though rare symptom associated with IIH. The presence of temporal lobe encephalocoeles may be responsible for the same. IIH should be looked for in patients with epilepsy and temporal encephalocoeles. Brain herniation into arachnoid granulations is a rare entity and more research is needed to explain its pathogenesis.

IgG4-related ophthalmic disease mimicking Graves orbitopathy

Authors: Anna Drynda

Tutor: Grzegorz Sokołowski MD, PhD

Affiliation: Jagiellonian University Medical College, Students' Scientific Group at the Department of Endocrinology, Kraków, Poland

Introduction: IgG4-related disease is a relatively recently recognized condition of autoimmune etiology. Although every tissue can be involved, it seems that there are predilections for some of them. The orbits and lacrimal gland involvement seem to be particularly prevalent. Thyroid orbitopathy and IgG4-related ophthalmic disease can have similar clinical presentations, resulting in underdiagnosing the latter. The lack of accurate biomarkers and pathognomonic findings in both conditions makes differentiating them challenging.

Case report: We report the case of a 75-year-old female who has been previously diagnosed with thyroid associated orbitopathy. The diagnosis was based on the 10-year history of primary autoimmune hypothyroidism and nodular goiter, accompanied by exophthalmos, eyelid redness, eyelid swelling, diplopia. TRAb levels were unremarkable in multiple measurements; ANA, ANCA, myositis panel, and IgG4 levels were also within the normal range. Due to progressing symptoms of compressive neuropathy, the patient underwent pulse corticosteroid therapy. The cumulative dose of methylprednisolone administered within four months was 5750mg. The treatment alleviated the symptoms, but the abnormalities in orbit MRI, i.e., bilateral extraocular muscle enlargement with mild optic nerve compression, persisted. After over a year, she was admitted with exacerbated ocular symptoms, including impaired visual acuity and color vision and right eyelid ptosis. Emergency treatment of prednisolone was administered. Subsequent orbit MRI showed bilateral infiltrations. The infiltration in the right orbit was more extensive, reaching the optic canal and superior orbital fissure. The histopathology of orbital tissues biopsy revealed fibrosis, vascular wall thickening, and lymphocytic infiltrations in lacrimal gland tissue, containing numerous plasmacytes IgG4+ (>100/high-power field) with IgG4:IgG >70%. Thus, the diagnosis of IgG4-related disease was facilitated.

Conclusions: One should consider histopathological verification if imaging and biochemical findings are atypical for thyroid orbitopathy. Comorbidities attributable to IgG4-related disease in autoimmune thyroiditis support suspicion of the former condition.

Immunotherapy in metastatic melanoma: activating the immune system beyond the goal

Authors: Olga-Maria Iova, Gheorghe-Eduard Marin

Tutor: Claudia-Cristina Burz MD, PhD

Affiliation: Faculty of Medicine, Iuliu Hatieganu University of Medicine and Pharmacy, 400349 Cluj-Napoca, Romania

Introduction: Since its introduction in medical practice, immunotherapy has revolutionized oncology, increasing the survival rates of cancers once thought to be rapidly fatal. Immunotherapy works by activating the patient's own immune system, priming it to halt the growth and eliminate existing tumors. Immune checkpoint inhibitors, monoclonal antibodies such as nivolumab and ipilimumab, work by blocking specific T-cell receptors like PD-1 and CTLA-4, thus increasing T-cell activity. This extra activation, although beneficial in cancer treatment, can also lead to auto-immune conditions, which affect the patient's quality of life.

Case report: This case presents a 50 y/o female, priorly diagnosed with metastatic melanoma, who developed several auto-immune endocrine conditions post immunotherapy. After the excision of the primary tumor and several metastases, an inoperable axillary metastasis remained, thus treatment with nivolumab/ipilimumab was initiated. Although her metastasis shrunk and no other second determinations were observed, the auto-immune conditions begged the question of whether immunotherapy should continue or not. In her case, it continued, the side effects being treated with proper medication.

After several rounds of treatment, the level of TSH significantly increased, while FT4 remained normal, and she was diagnosed with auto-immune hypothyroidism. Liver function also degraded, due to auto-immune hepatitis, with grade 4 hepatocytolysis, therefore ipilimumab was stopped, and she started therapy with methylprednisolone, hepatoprotective drugs and thyroxine. Treatment with nivolumab continued, although it was stopped several times due to adverse effects. Her thyroid and liver functions improved, but she developed auto-immune diabetes mellitus, and started oral antidiabetic agents and insulin therapy. Her state altered, complaining of asthenia, loss of appetite, dizziness, weight loss, suggesting a primary adrenal insufficiency, and, although asymptomatic, she also suffered of colitis, both most probably auto-immune induced. Lastly, she suffered hair depigmentation and vitiligo. Despite all these side effects, the treatment is effective, the disease is stable, and the patient is recovering.

Conclusions: Immunotherapy is a key therapy in a multitude of cancers, improving life expectancy in more and more patients. Therefore, it is of utmost importance to discover and manage the arising side effects, to decide whether or not to continue the treatment, all in order to improve the patient's life.

Many faces of clear cell renal cell carcinoma

Authors: Natalia Sak, Przemysław Hałasiński

Tutor: Iwona Krela-Kaźmierczak MD-PhD, Professor of Medical University

Affiliation: Student Society of Gastroenterology and Dietetics at the Department of Gastroenterology, Dietetics and Internal Diseases, Poznan University of Medical Sciences

Introduction: Renal cell carcinoma constitutes about 3% of all malignant tumors in adult population. The most common primary renal neoplasm is clear cell renal cell carcinoma (ccRCC). At the time of diagnosis, approximately 20-30% of patients have distant metastases,

with the most common locations being lung, bone, liver, brain, and adrenal gland, respectively. This cancer is characterized by distant metastases occurring after radical surgical treatment. To date, no standards have emerged for the treatment of a patient with metastatic ccRCC in unusual locations such as the pancreas, but surgical removal is recommended.

Case report: A 73-year-old man was admitted to the Department of Surgery in August 2021 due to severe anemia, significant weight loss (13 kg) and features of upper gastrointestinal bleeding. He had a history of hypertension and a right nephrectomy for ccRCC 10 years earlier.

One month later the patient admitted to the gastroenterology department due to marked weakness over the past weeks, constipation and abdominal discomfort. Gastroscopy confirmed the presence of duodenal infiltration, from which specimens were taken, and ultrasound revealed multiple pancreatic lesions. The results of histopathologic analysis of the collected tissue were clearly suggestive of ccRCC. Computed tomography of the chest and abdomen confirmed the presence of multifocal lesions in the pancreas, distal part of the duodenum, and the right lobe of the thyroid gland, while whole body scintigraphy with labeled somatostatin analogues (SSTR) showed SSTR expression in the indicated locations.

After endocrinological consultation, taking into account the histopathological result of duodenal biopsy and the same character of pancreatic lesions on computed tomography, the possibility of neuroendocrine tumors was excluded. The multiple lesions were confirmed to be distant metastases of ccRCC and treatment with sunitinib was instituted.

Conclusions: 1. It is important to remember that ccRCC is a cancer that can give metastases even several years after nephrectomy.

2. Diagnosis and treatment of metastatic lesions after nephrectomy may be difficult due to wide range of possibilities of localization of metastases.

3. Atypical locations of metastases after nephrectomy such as the pancreas or duodenum should be taken into consideration.

Rhabdomyolysis: a rare manifestation of primary hyperaldosteronism

Authors: Adela-Diana Pitforodeschi

Tutor: Prof. Adriana ALBU, MD, PhD

Affiliation: 2. Semiology Discipline, Iuliu Haţieganu University of Medicine and Pharmacy, Cluj-Napoca

Introduction: Primary hyperaldosteronism is an often-overlooked cause of severe hypertension. The clinical signs that should indicate further investigations are hypokalaemia and incidental adrenal masses. Hypokalaemia may manifest as muscle cramps and weakness. However, rhabdomyolysis induced by hypokalaemia is a rare presenting symptom.

Case report: A 35-year-old male patient with severe hypertension, which was poorly controlled with a combination of β-blockers, angiotensin-conversing enzyme inhibitors, and imidazoline receptors agonist, came into the emergency room for sudden muscle pain, limb weakness and paraesthesia. After further questioning he recalls similar muscle pain episodes, that would wear off after a few days. The patient denies having heavy exercise recently. His vital signs were stable except for elevated blood pressure (171/98 mmHg). Laboratory results show hypokalaemia (1.5 mEq/l), metabolic alkalosis, elevated creatinine kinase (CK) and aspartate aminotransferase (ASAT). Based on the clinical features and data, hypokalaemia-induced rhabdomyolysis was diagnosed. Further, serum aldosterone and plasma renin activity were measured, with positive results for primary hyperaldosteronism. To avoid false negative results his medication

with β-blockers and angiotensin-conversing enzyme inhibitors was suspended. Ultrasound investigation gave inconclusive results because the adrenal glands were difficult to assess. Therefore, abdominal contrast-enhanced computer tomography (CT) was requested. The CT scan reveals a 27/20mm right adrenal adenoma.

The patient was first treated for his rhabdomyolysis and severe hypokalaemia with intravenous fluids, potassium supplements, and his thiazide diuretic medication was replaced with mineralocorticoid receptor antagonist (spironolactone). After treatment, the potassium, CK, and ASAT levels were restored to normal. His general state improved, and the muscular pain went into complete remission. A surgical procedure is available in this case, and the patient undergoes laparoscopic right adrenalectomy. Postoperative blood pressure follow-up is better controlled (135/80 mmHg) with minimal hypertensive therapy and no recurrence of hypokalaemia-induced rhabdomyolysis was reported.

Conclusions: The situation where rhabdomyolysis is a presenting manifestation of primary hyperaldosteronism is rare, with few cases presented in the literature. This might make it harder to orientate towards the right diagnosis. Therefore, a patient with elevated CK and transaminase, with no signs of liver disease, but with hypokalaemia and resistant hypertension should be checked for primary hyperaldosteronism as a possible cause.

The importance of correctly diagnosing attenuated MUTYH-associated polyposis

Authors: Tania-Francesca Vulpeș, Ștefan Șonea

Tutor: Lecturer Andreea Cătană MD

Affiliation: Iuliu Haţieganu University of Medicine and Pharmacy

Introduction: MUTYH-associated polyposis is an autosomal recessive inheritable cancer predisposition syndrome caused by a defective MUTYH gene. MUTYH is a gene encoding the glycosylase enzyme involved in the DNA base excision repair mechanism, as it is a tumour suppressor gene, thus leading to a phenotype of increased risk of colorectal cancer and moderately high risk of extraintestinal tumours. The biallelic mutation of this gene is present in about 1% of people diagnosed with colorectal cancer.

Case report: In May 2019, a 42-year-old woman, with no family history of cancer, presents with a sudden intestinal obstruction caused by a proliferative mass in the transverse colon, for which a left hemicolectomy was performed. Histopathological examination confirms the existence of a moderately differentiated adenocarcinoma with pT3N0MxL0V0 staging. Molecular testing for germline mutations (NGS technology) identified a pathogenic homozygous mutation in the MUTYH gene. The somatic molecular analysis of the tumour revealed a G12C K-Ras activating mutation. The immunohistochemistry staining shows a tumour displaying high levels of microsatellite instability (MSI-H), suggesting Lynch-like characteristics for this familial adenomatous polyposis entity. Coupling the homozygous MUTYH somatic mutation and the Lynch-like characteristics of the tumour (reduced number of polyps and MSI-H) the diagnosis of attenuated MUTYH-associated polyposis is attributed. In July 2020 a metastatic liver mass was found, followed by full

VIIIth segment and partial VIIth segment resection. There was no eligibility for molecular targeted therapy with anti-epidermal growth factor receptor (anti-EGFR) agents due to the existence of KRAS somatic mutations. MSI-H tumours have low sensitivity to 5-Fluorouracil, therefore after careful evaluation the treatment with Pembrolizumab was instituted.

Conclusions: MUTYH-associated polyposis is a rare inheritable cancer predisposition syndrome with particular histology and medical management. The association of somatic mutations in the KRAS gene and the MSI-H tumours in this patient raise serious problems in treatment, since very few options remain suitable. This is why correctly diagnosing this form of attenuated MUTYH-associated polyposis, is vital. Pembrolizumab, a type of immunotherapy generally used in treating melanoma, is administered. The outcome is positive and momentarily the patient presents non-evolutive metastatic disease.

A rare neurological manifestation of autoimmune polyglandular syndrome 1 (APS 1)

Authors: Kacper Dykas, Magdalena Król

Tutor: Małgorzata Trofimiuk-Müldner MD, PhD, Grzegorz Sokołowski MD, PhD

Affiliation: Chair and Department of Endocrinology, Jagiellonian University Medical College

Introduction: The autoimmune polyglandular syndrome type 1 (APS1) is a rare autosomal recessive disorder caused by a mutation in the AIRE gene involved in the development of immunological tolerance. Typical manifestations include early-onset chronic mucocutaneous candidiasis, hypoparathyroidism, and adrenal insufficiency, but conditions such as primary hypogonadism, pernicious anemia, alopecia, vitiligo, autoimmune hepatitis, and autoimmune thyroid diseases may also coexist. There are only a few case reports on limbic encephalitis complicating APS1.

Case report: 18-year-old woman with APS1 was admitted to the Endocrinology Department due to altered consciousness, confusion, agitation, and tachycardia. Physical examination revealed temporary tremors of the limbs, a heart rate of 180 bpm, a decrease in SpO2 was also noted. The pulmonary embolism was excluded, based on chest CT the patient was diagnosed with pneumonia. During hospitalization, the neurological symptoms worsened - the patient temporally lost verbal contact and stopped following the instructions. Due to a history of epilepsy, the nonconvulsive status epilepticus was suspected, and appropriate treatment was administered. As the patient did not respond to the therapy, herpes simplex encephalitis was suspected, and acyclovir was initiated. Brain MR was uncharacteristic for viral infection, limbic encephalitis was suggested. The patient was transferred to the Neurology Department where the diagnosis was confirmed, despite negative testing for typical antibodies in cerebrospinal fluid (CSF) (only anti-GAD antibodies were found). Intravenous immunoglobulins (IVIG) resulted on partial resolution of neurological symptoms, and the patient was discharged home.

Conclusions: Limbic encephalitis is a rare condition caused by an autoimmune process most commonly associated with antibodies anti-Hu, anti-Ma and anti-NMDAR, but other antibodies (including anti-GAD) can also be detected in CSF. It is mainly considered paraneoplastic syndrome, but may be also associated with autoimmune disorders. To the authors' knowledge, only 4 cases of limbic encephalitis accompanying APSs have been reported so far. Interestingly, anti-GAD antibodies were also found in CSF in one of those cases, which suggests their pathogenic role in the development of this condition.

Bell's palsy following the second dose BNT162b2 (Pfizer-BioNTech) SARS-CoV-2 vaccine: A case report

Authors: Gytis Liutkauskas, Erika Abromavičiūtė

Tutor: Jolanta Sauserienė, MD

Affiliation: Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania; Department of Family Medicine, Faculty of Medicine, Medical Academy, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania

Introduction: Bell's palsy occurs when inflammation at the facial nerve impairs peripheral function. Even though no definitive link has been established, Bell's palsy has been described as a potential side effect of SARS-CoV-2mRNA vaccines. We present the case of a 74-year-old female patient with no relevant medical history, who developed Bell's palsy 10 days after receiving the second dose of the BNT162b2 vaccine.

Case report: A 74-year-old woman presented to her local hospital with symptoms such as sore throat, left maxilla and neck pain and fever that lasted a week. The patient received the second dose of Pfizer vaccine 10 days ago. According to the patient, a few days after the vaccine she noticed a painful lymph node in the armpit, swollen left side of the face, pain on the left side of the neck, which prevented from drinking fluids. Objective assessment: the mucous membrane of the mouth was reddened, swollen, with white plaques. Symptoms were similar to stomatitis. Patient was treated with Amoxicillin 2 g/d. After a few days the woman's condition worsened: left side facial droop, absence of forehead wrinkles, lip-buccal sulcus and nasolabial fold, head dizziness, hearing loss on the left side, asymmetrical facial muscles. Complete blood count, basic metabolic panels and a computed tomography were without pathological changes. The neurology, ENT departments confirmed the diagnosis of acute unilateral Bell's palsy, the facial and the trigeminal nerves damage, vestibular syndrome. The patient was treated with prednisone at 60 mg/day for 7 days, which was subsequently tapered according to the scheme.

Conclusions: Our patient's general condition improved though incoordination and deafness in the left ear maintained. While we are unable to prove that Bell's palsy was an adverse reaction to the Pfizer BNT162b2 mRNA vaccine in our patient, an increasing body of evidence obliges us to reflect on the close relationship between both events.

Multiple endocrine neoplasia Type 2: A rare case report.

Authors: Karolina Ridikaitė, Andrė Pacaitytė

Tutor: Milda Danelienė MD

Affiliation: Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania; Department of Endocrinology, Academy of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania; Department of Endocrinology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania

Introduction: Multiple endocrine neoplasia type 2 (MEN2) is a rare inherited condition, that is related to mutation in the RET proto-oncogene. A clinical diagnosis of MEN2A could be suspected if the patient has two or more of the endocrine tumors such as medullary thyroid carcinoma, pheochromocytoma (PC) and primary hyperparathyroidism and the syndrome could be confirmed via genetic testing. We present a rare clinical case of bilateral PC in the patient with MEN2A syndrome.

Case report: A 53-year-old woman with MEN2A syndrome was admitted to our department due to a left adrenalectomy for suspected PC. Her medical history revealed that 20 years ago she had partial thyroidectomy, but there are no medical records about histological findings. Later

in 2010 right adrenalectomy revealed malignant PC.

Assessing the diagnosis of malignant PC at an early age (41 years at that time) and the history of thyroid surgery, a molecular genetic method was performed and detected a pathological mutation in exon 10 of the RET gene p.Cys611Trp (C611W) - the patient was diagnosed with MEN2A syndrome. The patient was followed by oncologists for possible contralateral pheochromocytoma. Unfortunately, after 12 years, an abdominal computerized tomography scan revealed a probable malignant mass in the left adrenal gland. A surgery was recommended. Before operation she had PC attack episode accompanied by headache, flickering eyes, hot flushes, general weakness, blood pressure increase of 182/111 mmHg. Patient underwent a preoperative preparation with alpha blocker and successful laparoscopic left adrenalectomy was performed, histopathology report confirmed PC. For adrenal insufficiency replacement therapy with hydrocortisone and fludrocortisone was prescribed. The patient was discharged from the hospital in stable condition and referred for further outpatient follow-up. The case was discussed by the multidisciplinary team, due to the high risk of MTC prophylactic total thyroidectomy was recommended. The operation is planned to be performed in the near future.

Conclusions: Patients with MEN2A require regular screening for MEN2A-associated tumors and multidisciplinary team management because this can significantly prolong survival.

A rare case of myelodysplastic syndrome in the course of sarcoidosis with a confirmed deletion of the long arm of chromosome 5

Authors: Anna Bereta, Olga Tuleja

Tutor: Jarosław Nowakowski MD

Affiliation: Department of Rheumatology and Immunology

Introduction: Sarcoidosis is a systemic immune-mediated inflammatory disease with protean manifestations that commonly involves the lymph nodes and lungs. Myelodysplastic syndrome is a malignancy of the haematopoietic system that causes peripheral blood cytopenia and dysplasia of single or multiple cell lines. We present an unusual case of a 70-year-old woman with multiorgan sarcoidosis affecting also bone marrow who developed treatment resistant bicytopenia eventually diagnosed as myelodysplastic syndrome.

Case report: A 70-year-old woman with a history of erythema nodosum in the past 2 months was admitted to the Department of Rheumatology and Immunology with malaise, dyspnea on exertion, fever, night sweats, significant weight loss, and severe pain in the lower legs, ankles, and feet. Chest radiograph revealed bilateral hilar lymphadenopathy and pulmonary venous congestion, which were absent 1.5 months earlier. A chest CT showed bilateral ground-glass opacities, disseminated lung nodules, and enlargement of the lymph nodes of the liver hilum. Laboratory tests were notable for hypercalciuria, hypercalcemia, hypergammaglobulinemia with monoclonal IgG-kappa gammopathy , moderate normocytic anemia and leukopenia with neutropenia. Due to constitutional symptoms and bicytopenia, a bone marrow biopsy was performed that led to identification of non-caseating granulomas.

Examination of the eyes confirmed uveitis. A diagnosis of sarcoidosis was made and oral prednisone was started at a dose of 1 mg/kg, which resulted with general improvement. After 6 weeks, the patient was readmitted due to severe normocytic anemia and agranulocytosis. In thoracic CT regression of interstitial lung lesions was observed, however, bicytopenia did not respond to steroids and G-CSF and the patient became transfusion dependent. Another bone marrow biopsy prompted cytogenetic tests that detected a deletion of the long arm of chromosome 5.

The patient was diagnosed with a myelodysplastic syndrome. In subsequent months, the patient contracted Covid-19 and suffered recurrent bacterial infections that led to the patient's death.

Conclusions: Our patient was diagnosed with multiorgan sarcoidosis involving lungs, lymph nodes, eyes, and, unexpectedly, bone marrow. Steroid treatment allowed partial resolution of lung and eye lesions. The lack of hematologic response warranted a broadening of diagnostic work-up that allowed the final diagnosis of 5q-del myelodysplastic syndrome.

Diagnostic challenge of unusual and late manifestations of warfarin overdose - case study

Authors: Dariusz Łaszczych, Aleksandra Czernicka

Tutor: Jakub Husejko MD

Affiliation: Department of Geriatrics, Faculty of Health Sciences, Nicolaus Copernicus University in Toruń Ludwik Rydygier Collegium Medicum in Bydgoszcz, Bydgoszcz, Poland

Introduction: Despite the increasing access to new anticoagulants, warfarin is still widely used in the treatment of venous thromboembolism. The main reason for choosing warfarin is the economic status of patients. Due to its narrow therapeutic index, warfarin requires frequent blood coagulation monitoring. Supratherapeutic level of warfarin may cause bleeding manifested as hematuria, gastrointestinal or intracranial bleeding. The subject of our work is to present and discuss unusual and late manifestations of warfarin overdose.

Case report: A 80-year-old man was admitted to the Emergency Department with symptoms of gastrointestinal bleeding (GI). The patient had a burdened cardiovascular history and was on warfarin therapy due to a history of pulmonary embolism. The patient had chronic lower GI bleeding due to radiation proctitis. The day before hospitalization, the patient noticed hematemesis. Subsequent laboratory tests showed Hgb=11 g/dl and INR=6. Fresh frozen plasma (FFP) and phytomenadione were administered to reverse warfarin activity. To identify the source of bleeding, gastroscopy and colonoscopy were performed. No abnormalities were found in gastroscopy. Colonoscopy showed rectal telangiectasias, which were ablated during the procedure. During hospitalization, the patient's condition deteriorated. Few days after the endoscopy, the patient developed massive edema of the lower limb. Due to prostate cancer in the past, lymphedema was suspected. Laboratory tests indicated elevated D-dimers levels. To exclude deep vein thrombosis and lymphatic obstruction, ultrasound scan of lower limb and abdominal cavity was performed. Ultrasound result excluded both suspicions but revealed subcapsular hematoma in the left kidney and massive hematoma within the right quadriceps muscle. Compression therapy with bandage was applied. Additionally, the patient was given etamsylate to reduce haematoma growth.The patient was discharged from the hospital in good condition.

Conclusions: The haematoma of quadriceps femoris muscle is a rare, late manifestation of warfarin overdose. Unusual and delayed presentation of symptoms related to warfarin overdose can be a diagnostic challenge even for experienced physicians. It is worth noting that

massive haematomas appeared almost 2 weeks after warfarin overdose. We wanted to highlight this issue because of the many clinical difficulties related to diagnosis and appropriate treatment.

Is it just a cough with a high fever? Hodgkin's lymphoma complicated by hemophagocytic lymphohistiocytosis case report

Authors: Weronika Ploch

Tutor: Dorota Szcześ, MD

Affiliation: Student Scientific Association of Hematology, Department of Hematology, Oncology and Internal Medicine, Medical University of Warsaw

Introduction: Hemophagocytic lymphohistiocytosis (HLH) is a self-accelerating hyperactivation of the immune system. Release of the inflammatory cytokines stimulates the macrophages in bone marrow leading to uncontrolled phagocytosis. Usually, it's triggered by a malignancy, autoimmune disease, or an infection. Although there is no pathognomonic symptom of HLH, it is crucial to establish the diagnosis and look for underlying disease, because untreated HLH is fatal.

Case report: A 46-year-old patient with inherited protein S deficiency, leading in childhood to right nephrectomy, has been dealing with an unproductive cough for years. In the last 6 months, he lost 10 kg and started having episodes of pyrexia up to 40°C with shivers every few days. He didn't experience any specific symptoms. His condition was deteriorating, he became thrombocytopenic (PLT 94 thousand/mm3) and developed hypertriglyceridemia (TG 531 mg/dL) with iron deficiency. His WBC and Hgb remained within normal range. To narrow down the diagnosis, tests for infectious and rheumatological diseases were performed but all came out negative. A PET scan revealed increased metabolism in the bone marrow and a focused lesion located in the nephrectomy bed. Then his WBC dropped to 2.2 thousand/mm3, ferritin level reached 1670 ng/mL and myelogram showed increased hemophagocytosis.

After these results patient was admitted to the Department of Hematology, Oncology and Internal Medicine due to suspicion of secondary HLH. At that moment he met 7 of 8 HLH diagnostic criteria with fever, splenomegaly, cytopenia (NEU 0.56; HGB 7.9; PLT 71), hyperferritinemia (1388 ng/ml), hemophagocytosis in bone marrow, elevated sCD25 concentration (25435 u/ml) and hypertriglyceridemia (503 mg/dL). To distinguish between inflammatory and neoplastic triggering factors, a histopathological examination was necessary. Due to the patient's portal vein and vena cava thrombosis and collateral circulation, surgical access to the tumor was denied to avoid massive hemorrhage. Core-needle lymph node biopsy results allowed to establish the diagnosis of Hodgkin's lymphoma stage IV. Then ABVD (adriamycin-bleomycin-vinblastine-dacarbazine) treatment was initiated.

Conclusions: Although HLH symptoms are nonspecific such as pyrexia or cough they aggravate over time. It is important to diagnose this syndrome as soon as possible and find its triggering factor to start adequate treatment and prevent patient's death.

Public Health

Poster Session

Scientific Committee

prof. Andrzej Galbarczyk, PhD

prof. Iwona Malinowska-Lipień, PhD

Marcin Grysztar, MSc

Urszula Zwierczyk, Eng

Coordinator

Natalia Zamorska

IMSC

Acceptance of illness and satisfaction with life of a young patient after liver transplantation

Authors: Konrad Tomczyk, Julia Pieczykolan

Tutors: Ilona Kuźmicz, PhD; Agata Reczek, PhD

Affiliation: SSC at the Department of Internal and Environmental Nursing, Faculty of Health Sciences, Jagiellonian University Medical College

Introduction: Transplants save lives all over the world. An inseparable element of transplantation is immunosuppressive therapy, which has many side effects. They affect the life of patients after the procedure to a varying degree, leading not only to somatic, but also psycho-social problems. Nevertheless, after the transplant, the acceptance of illness and the sense of satisfaction with life should remain at a high level.

Aim of the study: The aim of this study was to assess acceptance of illness and life satisfaction in a patient after liver transplantation.

Materials and methods: The examined person was a 38-year-old patient, 18 years after a liver transplant. The study used the diagnostic survey method and the AIS and SWLS scales in Polish translation. The AIS scale is used to measure the degree of acceptance of illness, where the higher the score, the greater the degree of acceptance of illness. The SWLS scale is used to assess the patient's satisfaction with life. The higher the sum of points, the greater the degree of satisfaction with life.

Results: The patient scored 24 points out of 35 on the AIS scale. The patient assigned the lowest number of points to the statements concerning self-sufficiency and a sense of completeness, and the highest scores to those relating to the feeling of uselessness and being a burden to relatives. The patient scored 16 out of 35 on the SWLS scale. The patient indicated the lowest number of points for the statement regarding the lack of willingness to change in life, and the highest number of points for the statement about achieving goals. A comparative analysis of the results of the above-mentioned scales of the examined patient with the results of studies conducted by other authors was performed.

Conclusions: Acceptance of the patient's illness remains at an average level, and satisfaction with life at a low level. Compared to the results of other authors, the patient obtained lower results in both scales. Side effects of immunosuppressive treatment may also cause psychosocial problems in transplant patients.

Accessing epidemiological trends of tuberculosis infections in Ukraine over the last 5 years

Authors: Mary Matthew, Adeleke Oluwaseun Dorcas, Oleshchenko Halyna Pavlivna, Wireko Andrew Awuah, Toufik Abdul-Rahman

Tutors: Mr Sikora

Affiliation: Sumy State University

Introduction: 76% of persons who developed TB are of working age –from 18 to 54 years old, the age group of 25-44 years of age accounts for 50.7% of TB patients.

Aim of the study: Aim of this study was to monitor the epidemiological trends of MtB in the Sumy Region(in Ukraine) for 5 years.

Materials and methods: Data from the electronic TB patient registry (e-TB Manager) were used. For the 5-year period, a total of 3148 TB patients were recorded. The number of TB cases was then divided into the following years: 2017, 2018, 2019, 2020, and 2021. We also monitored the outcomes of new MtB trends after the introduction of devices for molecular

genetic diagnostics (specifically PCR) in multidisciplinary medical centers in the city.

Results: Throughout the 5 years, the number of TB cases decreased steadily. For the years 2018, 2019, 2020, and 2021, the reduction percentages were 8.14%, 15.43%, 44.4%, and 43.3%, respectively. Furthermore, Rifampicin-Resistant Tuberculosis (RR-TB) was recorded at a higher rate (50%) than other forms of TB after PCR diagnostics were introduced in 2018.

Conclusions: The drastic reduction in TB cases can be attributed to the use of moreeffective diagnostics and treatment methods.

Disseminate information about clinical trials to patients

Authors: Jakub Dulniak

Tutors: dr Paweł Lipowski

Affiliation: Student Scientific Association Law in Health, Institute of Public Health, Faculty of Health Sciences, Jagiellonian University Medical College

Introduction: Clinical trials aim to discover or confirm the clinical effects of medicinal products (especially drugs). This involves obtaining a suitable population as a prerequisite for reliable study results. Since participation in a clinical trial must be a fully informed and independent decision by the patient. It is very important for the patient to be able to find out on his own about the possibility of participating in such a trial. Therefore, it is very important also to medical students: how and with what content this information will be communicated to the patient.

Aim of the study: The purpose of this paper is to provide author's analysis of selected guidelines on the principles of publishing and disseminating information about clinical trials to patients.

Materials and methods: Review of regulations: international (European) public law and Polish law – relating to participation in scientific research in medicine (clinical trials), through legal information systems, using online sources.

Results: Medical care providers (f. e. hospitals) conducting clinical trials, are bound by a number of legal norms regarding information about the scope and type of the clinical trial. Compliance with the above norms determines the subjective and informed will of the patient to participate in the clinical trial. Therefore, the information provided by the various medical care providers should be a simple and neutral message in content and form, bearing in mind the welfare of potential trial participants (patients).

Conclusions: The (public) law formulates legal requirements for those wishing to conduct clinical trials, also medical students. They indicate the conditions that medical care providers should meet in the sphere of informing patients about clinical trials. In the countries of the European Union, these rules were introduced by the Regulation of the European Parliament and (EU Council) No. 536/2014 of 2014. In Poland, the rules regarding information on clinical trials can be found in the Pharmaceutical Law (2001) and resolutions of the Supreme Medical Council (for Physicians and Dentists) and recommendations of the Medical Research Agency.

Prevalence and Risk Factors of Smoking among Secondary School Students

Authors: Yousif Luay Ahmed Albadri, Alaa Luay Ahmed Albadri

Tutors: Prof. (Consultant Family Physician): Lujain Anwar Alkhazrajy

Affiliation: University of Baghdad / Alkindy medical college

Introduction: Smoking is the main preventable risk factor for many diseases. This risky behavior is common among adolescents. Secondary students are at high risk of smoking as they become exposed to greater availability of cigarettes, Vapes and Shisha also intimate association with smoking peers

Aim of the study: to estimate the prevalence and risk factors of smoking among secondary school students and to find out if there was any association between these risk factors and smoking of this group

Materials and methods: A cross-sectional study was conducted in Baghdad city, of one year duration, eight high schools were chosen. A total of 1200 students responded to the pre-designed questionnaire. SPSS were chosen to analyze data. Chi square test were chosen to show if there was any significant relation between studied variable of smoking and certain demographic variables of students

Results: the study found that among 1200 students (600 male, 600 female), the prevalence of smoking was 19.3%, the smokers were 29% of male students and 9.7% of female students. A significant association has been found between smoking and older age, male, twelfth stage, increasing in the pocket money especially for male also the larger family size, presence of smokers in the family. The dominant type of smoking was cigarette smoking followed by hookah" shisha".

Conclusions: The high prevalence of smoking was revealed among secondary school students, and some factors like Family, friends, social life and psychological problems play a major role for initiation. Hence, preventive measures need to be applied.

The conspiracy beliefs predict the dissatisfaction with governmental performance during the pandemic

Authors: Paulina Smoła, Julia Jędrasik, Katarzyna Kuciel, Katarzyna Jankowska, Justyna Wcisło

Tutors: Mariusz Duplaga, MD, PhD

Affiliation: Students' Scientific Circle of Health Promotion, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow, Poland

Introduction: The performance of governments during the pandemic was widely criticized in many countries. Negative assessment made by the opposition parties seem to be obvious. However, it is not clear if conspiracy beliefs are independent predictor of such dissatisfaction.

Aim of the study: The main aim of the study was the assessment of the relationships between general conspiracist beliefs (GCB) and COVID-19-related conspiracy beliefs (C19CB), and satisfaction of government performance (GP) and opinion about justification for restrictions (JfR) during the pandemic after adjusting for sociodemographic variables (SDV) and political sympathies (PS).

Materials and methods: The analysis was based on the data originating from the online survey performed among 2410 Polish adult Internet users in May 2021. The relationships between categorical variables was assessed with Fisher exact or chi2 test; differences in continuous variables after grouping based on categorical variables with t-Student or U Mann-Whitney test. The effects of variables significantly associated with opinions about GP or JfR were analyzed with multivariate logistic regression (MLR).

Results: The mean age (standard deviation, SD) of the study group was 40.50 (13.65), GCB score was 3.00 (0.81), C19CB score was 19.38 (7.41).

Supporters of governing Law and Justice party (LJP) assessed GP more positively and less often questioned JfR than supporters of other partiers. GCB was adversely associated with the attitude toward GP (yes vs other response: 2.93 (0.81) vs 3.03 (0.80), p=0.001) and positively with opinion questioning JfR (3.20 (0.75) vs 2.79 (0.81), p<0.001). Similar relationships were seen for C19CB (yes vs other response: 18.91 (7.54) vs 19.60 (7.35), p=0.018, and 22.04 (7.05) vs 16.55 (6.71), p<0.001, respectively)

MLR revealed that negative effect on opinion about GP was maintained both by GCB (odds ratio (OR), 95% confidence interval (95%CI): 0.84, 0.72-0.98) and C19CB (OR, 95%CI: 0.98, 09.97-0.999). Persons with higher than lower C19CB were also more likely to question JfR (OR, 95%CI: 1.12, 1.10-1.14).

Conclusions: Multivariate analysis, after adjusting for SDV and political views, showed that C19CBS remains a significant independent predictor both of opinions about GP and JfR, and GCB only of opinions about GP.

The level of men's knowledge about the prevention and early detection of testicular cancer

Authors: Agnieszka Janas, Aleksandra Ćmiel, Kinga Kaczmarczyk, Emilia Sygiet, Agnieszka Jańdziak, Zuzanna Nowak

Tutors: dr Iwona Bodys – Cupak, prof. UJ, dr Alicja Kamińska

Affiliation: The Institute of Nursing and Midwifery UJ CM

Introduction: Testicular cancer is the most common cancer among young men. Unfortunately, it is often detected at an advanced stage, which significantly reduces the chances of full recovery. The most important role is played by prevention, aimed at strengthening men's pro-health activities and increasing their awareness of this cancer.

Aim of the study: The aim of the study was to assess the level of knowledge of young men on the prevention and early detection of testicular cancer.

Materials and methods: The study was conducted among 102 men aged 18-40 using the diagnostic survey method. The research tool was a self-designed questionnaire consisting of 24 questions.

Results: The research showed that 71% of the respondents did not perform self-examination of the testicles. The most recommended is to perform this test once a month, of which only 10.8% of men gave this answer. The respondents declared that the sense of shame and fear of diagnosis were the main factors causing late reporting to the doctor. More than half of the respondents assessed their knowledge as insufficient.

Conclusions: Men's knowledge of testicular cancer was insufficient. The respondents did not use the advice of a urologist and did not perform self-examination, which translated into a late diagnosis of cancer. There is a need to introduce education on cancer and to disseminate preventive programs at the secondary school level.

VYSHKIL – a new approach to traning first aid skills

Authors: Liliia Tverdokhlib, Yuliia Filiak, Khrystyna Hafiichuk

Tutors: MD, Ph.D., Professor, Chief of Traumatology, Orthopaedic and Emergency Military Surgery Department of Ivano-Frankivsk National Medical University Vadym Sulyma

Affiliation: Ivano-Frankivsk National Medical University

Introduction: The main problem of hybrid wars is the high level of death among the civilian population. Among all data, there is difficult for civilians to find out the most necessary information.

Training (VYSHKIL) is based on Peython's teaching approach and includes the MARCH algorithm(TCCC (Tactical Combat Casualty Care)) which is easy to memorize and repeat in an extreme situation.

Aim of the study: Design and assess the effectiveness of "VYSHKIL" on skill acquisition for civilians.

Materials and methods: Approximately 62 training sessions were held.

VYSHKIL is built up of 2 main parts – theoretical(TP) and practical(PP).

Time: 2 hours. TP is provided by a military surgeon and contains an animated lecture (30 min).

PP is provided by 6 instructors and allows to train practical skills. Duration: 1,5 hours. According to the MARCH algorithm, there are 3 main stations. The feedback form includes points for theoretical and practical parts. The average age of civilians is 35,3 y.o. I group - is people 18 to 35 y.o. and the II group - is 36 and older.

Analysis was provided with Statistica 6.0.

Results: We defined that 57% of people were without medical education, 26% - were employees of educational institutions, 13% - were military soldiers, and 4% - were surgeons.

I group noted that the most remembered knowledge was on M (Massive Hemorrhage)(18% and 25%), and another 18% noted that all the information was useful or paid attention to other aspects. It should be noted that 21% did not leave any comments.

II group was more active (8% - leave any feedback). Participants also noted that bleeding control was vulnerable (39%), and 29% considered important all the information, which is 1.6 times more than in group I.

People assess the usefulness of the lecture in 9,6 out of 10 points and memorization of practical skills in 9,4 out of 10 points.

Conclusions: VYSHKIL is a useful training method for civilians as a life-saving course. This teaching approach is more adaptable for different age groups despite the difference in the apprehension of information.

PP should include from 6 to 10 people (more than 10 people in one group needs more time or instructors).

Contribution of Ukrainian authors to publications on the current Russia-Ukraine war

Authors: Saloni Mitra, An Incision Ukraine Research Scholar program Initiative.

Tutors: Dr Ahmed Negida MD, Habib Olatunji Alagbo

Affiliation: Affliation of tutor: Program in Global Surgery and Social Change, Department of Global Health and Social Medicine, Harvard Medical School, Boston, Massachusetts, USA.

Introduction: The Russia-Ukraine war has undeniably impacted global science and healthcare in Ukraine. Many Ukrainian

researchers have had their projects disrupted by this war. They either needed to flee the country and their institutions due to the massive destruction, among other reasons, causing such disturbances in their work. But despite these challenges, the voice of these researchers must continue to be heard.

Aim of the study: We aim to highlight the contribution of Ukrainian authors to publications on the current Russian-Ukrainian war.

Materials and methods: We performed a literature search using two databases (Scopus and Pubmed) for publications related to the ongoing russia-ukraine war using keywords like war, conflict, invasion, Ukraine, Russia, etc. We added articles only related to healthcare. We then extracted and analyzed the bibliometric data.

Results: One hundred and eighty-three articles were identified, including 12 (6.56%) original articles, 26 (14.21%) cross-sectional studies, 19 (10.38%) letters to the editor, 10 (5.46%) commentaries, 5 (2.73%) perspectives, 35 (19.13%) editorials, 2 (1.09%) randomized controlled trials, 11(6.01%) correspondences, 13 (7.10%) opinions, 8 (4.37%) reviews and 42 (22.95%) are identified as others. 180 (98.36%) studies were in English, and 3 (1.64%) were in German. 54 (29.51%) papers on the war had at least one author affiliated with a Ukrainian institution, and 29 (15.85%) studies had authors with Ukrainian affiliation as first authors.

Conclusions: There has been a significant number of publications on the Russia-Ukraine war. Despite this high number of publications, Ukrainian authors are underrepresented.

Surgical Case Report

Poster Session

Scientific Committee

Mirosław Dolecki, MD, PhD

Tomasz Kruszyna, MD, PhD

Czesław Osuch, MD, PhD

Justyna Rymarowicz, MD, PhD

Coordinator

Anna Kaczmarska

IMSC

Masked depressive episode in a bariatric patient and post-surgery effects

Authors: Julia Kowalska

Tutor: Aleksandra Ćwięk, MA, CP

Affiliation: Student Scientific Association at the Department of Health Psychology, Faculty of Health Sciences, Jagiellonian University Medical College; Department of Clinical Psychology, University Hospital in Krakow, Center for the Surgical Treatment

Introduction: Bariatric surgery remains the most effective method of treatment for severely obese patients. The effectiveness of surgery depends on psychological readiness to lose weight in the preoperative period. Multiple failed attempts to lose weight may indicate an untreated masked depresssion (MD) episode. Male, 39 years old, diagnosed with morbid obesity (BMI: 55 kg/m2), experienced many unsuccessful attempts to lose weight. The patient is in good condition, responsive, cognitively efficient. During the interview, no emotional problems were mentioned, just nagging fatigue. No abnormalities were found during physical examination.

Case report: : In the course of psychological and dietary consultations, he declared his full readiness to change his dietary habits. At the declarative level, he reported no connection between negative emotions and the intake of high-calorie meals. Psychologist decided to consult his case with psychiatrist in order to verify if there is no psychopathological cause of continuos inability to lose weight over long period of time. The biggest weight gain was found to be related to period of patient's divorce. NEO-PI-R showed a very low declarative level of neuroticism, in contrast to the very high scores for the Depressiveness component. The EAT-26 questionnaire highlighted the predisposition for binge eating. The predicted diagnosis of masked depressive episode was confirmed and pharmacological treatment was implemented. Both objective and subjective affect was improved and significant weight loss was found (189 kg vs. 148 kg). The patient was finally successfully qualified for surgical treatment, and the weight loss after surgery reached 99 kg (12 months follow-up) and remained stable over time.

Conclusions: Failed weight loss attempts are often psychopathological in origin. The detection of a psychopathological cause and the treatment applied during the preoperative period increases the probability of long-term effects of bariatric surgery. Psychological diagnosis should be performed even if the patient does not explicitly declare the occurence of mental problems, nor does he have a history of psychiatric treatment

Application of 5-fluorouracil in management of odontogenic keratocysts in 38-year-old male patient. Case report.

Authors: Kacper Loster1, Filip Bąk1, Zuzanna Kruczała1

Tutor: Aleksander Gut2, DDS

Affiliation: 1SSG Oral Surgery, Department of Oral Surgery, Jagiellonian University, Medical College, Cracow, Poland 2Department of Oral Surgery, Dental Institute, Medical Faculty, Jagiellonian University, Medical College, Cracow, Poland

Introduction: In 2017 an odontogenic keratocyst (OKC) was reclassified into the group of odontogenic cysts. The authors of the new classification do not provide a specific algorithm for a surgical management of OKC. Thus, multiple therapies are used in the treatment of the cyst, including: marsupialization, enucleation followed by application of Carnoy's solution, modifed Carnoy's solution (MCS), liquid nitrogen or peripheral osteotomy. Early encouraging results (with a relatively low recurrence rate and

risk of paresthesia) for the use of 5-FU as an adjunct, contribute to growing interest in this innovative therapy method.

Case report: A 38 year old male patient presented to Clinic of Oral Surgery with some swelling on the lower right side of the face and numbness in the area innervated by the mental nerve. The patient was diagnosed with OKC based on a result from a histopathological examination of the lesion sample. The first enucleation was not fully successful and after twelve months the cyst reappeared. Due to that, more invasive method was required to be applied. Following the receipt of the patient's informed consent, afresh surgical enucleation of the cyst was performed. Then, 5-FU was applied into the surgical cavity. A gauze ribbon with an active agent was removed 24 hours after the procedure. No Vincent's symptom was observed. The patient remains under regular observation.

Conclusions: 5-FU has been used so far in the treatment of i.e. basal-cell carcinoma. The presence of BCC-like features in OKC and the coexistance of OKC and BCC in patients with Gorlin-Goltz syndrome inspired the use of 5-FU also in the treatment of an odontogenic keratocyst. This therapy method has a potential to become a beneficial alternative to the therapies that are currently in use

Asymptomatic post-infarction left ventricular pseudoaneurysm diagnosed incidentally

Authors: Agnieszka Adamowska

Tutor: prof. Bartłomiej Perek MD, PhD

Affiliation: Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu

Introduction: Left ventricular pseudoaneurysm is a rare but life-threatening complication of acute myocardial infarction. Its diagnosis is challenging, as the disease manifests with non-specific symptoms that can mimic myocardial infarction or heart failure. The treatment of choice is surgical repair, as untreated pseudoaneurysm has a 30-45% risk of fatal rupture.

Case report: In this case report, a 62-year old woman with a history of inferior myocardial infarction with ST segment elevation (STEMI) was diagnosed with left ventricular pseudoaneurysm that was found incidentally in a scheduled post-infarction follow-up visit. The diagnosis was suspected in echocardiography and later confirmed by cardiac magnetic resonance imagining. A pseudoaneurysm measuring 19x20mm with the presence of a 15x9mm thrombus was located within the middle segment of the inferolateral wall. The only symptom reported by the patient at that time was general fatigue that intensified after the infarction. It was attributable to patient's prior diagnosis of chronic heart failure (NYHA II/III), accompanying paroxysmal atrial fibrillation, hypertension, obesity and a history of COVID-19 infection at the time of myocardial infarction. After the diagnosis, patient was qualified for the operation. The procedure of pseudoaneurysm excision was performed in support of cardiopulmonary bypass more than one year after STEMI. The postoperative course was uneventful and on the 7th day patient was discharged home in good clinical status.

Conclusions: Asymptomatic pseudoaneurysm is an extremely rare complication of STEMI, particularly in the era of relatively easy access to percutaneous coronary interventions. Cardiac surgical operation considered as a treatment of choice for all patients, due to a high risk of sudden death caused by a rupture of false aneurysm, is associated with good outcomes. This case emphasizes the significance of meticulous clinical and echocardiographic follow-up after STEMI.

Chronic trimalleolar fracture-dislocation of the left ankle

Authors: Horia-Mihnea Fotescu 1,4, Ciprian-George Ceian MD 2

Tutor: Assist. Prof. Dragoș Apostu MD, PhD 3

Affiliation: 1) ” Iuliu Haţieganu” University of Medicine and Pharmacy, Cluj-Napoca, Romania 2)Department of Paediatric Orthopedics, Rehabilitation Hospital, Cluj-Napoca, Romania 3)Department of Orthopedics and Traumatology,” Iuliu Haţieganu” University of Medicine and Pharmacy, Cluj-Napoca, Romania 4)Romanian Student Surgical Society, Cluj-Napoca, Romania

Introduction: Complex ankle fractures are challenging and they demand rigorous preoperative planning. A neglected tibiotalar dislocation associated with a trimalleolar fracture is an uncommon injury seen in modern clinical practice and it is associated with posttraumatic arthritis, chronic pain, increased risks of infection and impaired functional outcomes. Patients with delayed presentations are associated with higher rates of postoperative complications and worse outcomes compared to acute injuries. The treatment is a combined approach between preoperative planning, specialized surgical procedures and postoperative functional recovery.

Case report: We are presenting the case of a 42-year-old male patient that presented at our institution with a trimalleolar fracture of the left ankle associated with a posterior ankle dislocation that was left untreated for 2 months. The cause of injury was represented by a fall from a height of approximately 2 meters. The patient underwent 3 staged surgical procedures at our institution. The first procedure was an application of an external fixator to elongate the ankle in order to progressively reduce the old posterior dislocation. Following the next 17 days, we progressively restored the length of the leg. A second surgical procedure was performed consisting in three steps: 1) open reduction of the posterior ankle dislocation followed by a tibiotalocalcaneal K-wire fixation; 2) open reduction and internal fixation (ORIF) of the posterior malleolus and medial malleolus fractures with 2 screws each; 3) ORIF of the lateral malleolus fracture using one K-Wire. A good anatomic reduction was obtained in order to achieve the reconstruction of the ankle. The third intervention was made after 6 weeks to remove the 2 Kirschner Wires that were used to stabilize the ankle and respectively the fibula fracture. The patient returned to daily activities after 3 months, at which point weight-bearing was possible.

Conclusions: Neglected ankle fracture-dislocation remains a challenge for the orthopedic surgeon and requires special surgical treatment plans. Because it is such a rare case, there is a lack of recommendations in the literature and there is a need for further clinical research. The staged procedures and gradual reduction using an external fixator are generally considered the most optimal treatment plan to achieve a successful outcome.

Differential diagnosis of the lumbar disc herniation - the role of the clinical examination in the decision making: case series and literature review

Authors: Plamen Penchev1, Petar-Preslav Petrov2

Tutor: Dr. Edvin Vasvi, MD3

Affiliation: 1Faculty of Medicine, Medical University of Plovdiv, Bulgaria 2Department of Anatomy, Histology and Embryology, Medical University of Plovdiv, Bulgaria 3Clinic of Neurosurgery, Acibadem City Clinic, Varna, Bulgaria

Introduction: Often the symptomatology of disc herniation overlaps with the symptomatology of hip joint pathology. Radicular pain can resemble pain from hip pathology. The purpose of these clinical cases is to illustrate the importance of clinical examination before making a definitive diagnosis and the importance of imaging studies of both the spine and hip joints when tandem pathology is suspected.

Case report: Our first patient had clinical manifestation of back pain with irradiation to the left leg. On clinical examination it was discovered that the pain in the leg was worse than the back pain. The patient had positive left FABER test, left sacroiliac pain and left peroneal paresis. MRI of the lumbal region and the hip joints has discovered aseptic idiopathic osteonecrosis of the left hip joint and incidental finding of asymptomatic disc herniations at L4-L5 and L5-S1. The second patient had symptomatology of back pain and left leg pain from two years. On clinical examination it was dicovered that the patient had positive left FABER test, and pain in the left linguinal area and on the back surface of the left leg. MRI of the hip joints and lumbal region has discovered asymptomatic disc herniation of L5-S1 and avascular necrosis of the left hip joint. The last patient had back pain from 2 weeks and pain in the right hip joint region from 3 years. Clinical examination discovered right positive FABER test, left sacroiliac pain and left peroneal paresis. MRI scan of the hip joints and lumbal region discovered avascular necrosis of the right hip joint and asymptomatic disc herniation of L5-S1.

Conclusions: It is recommended if necessary and in doubt - to do modern imaging studies - CT, MRI of both spine and hip joints, because an x-ray of the hip joint can miss, for example, avascular necrosis, while an MRI will definitely make the diagnosis - avascular necrosis of the hip joint

How far can a metastatic disease spread?- case report of lung adenocarcinoma metastasizing to the thyroid gland.

Authors: Paulina Kalman

Tutor: Agnieszka Żyłka MD, PhD

Affiliation: 1Student's Scientific Society "ThyroIdea" of Department of Oncological Endocrinology and Nuclear Medicine, Maria Sklodowska-Curie National Research Institute of Oncology, Warsaw

Introduction: Thyroid cancer occurs in about 4% of malignancies in women and 0. 5% in men and primary tumours are the most common. Metastases to the thyroid gland are unusual with a reported frequency of up to 2.1% among all thyroid malignancies. We report a case of a patient with lung adenocarcinoma metastasizing to the endocrine glands- adrenals, pancreas and, after more than ten years, thyroid gland.

Case report: The case of a 78-year-old patient who had a nodular lesion in her right lung which was revealed in a control radiography study after a respiratory infection in 2010. The computed tomography (CT) study showed a mass in an upper segment of the right lung and two nodules in the left adrenal gland, confirmed in a dynamic CT scan as metastases. On the basis of a histopathological examination of the bronchoscopic material, an adenocarcinoma of the lung was diagnosed. After three cycles of cisplatin 110 mg + etoposide 500 mg chemotherapy, the patient did not experience any regression. An upper right-sided bilobectomy and a left-sided adrenalectomy were performed. In 2013 the head of the pancreas showed a focal lesion with increased fluorodeoxyglucose (FDG) metabolism on positron emission tomography (PET-CT). A metastasizing lung adenocarcinoma was confirmed postoperatively after Whipple surgery A follow-up ultrasound in 2021 revealed

hypoechogenic solid lesions and enlargement of both thyroid lobes. A fine-needle aspiration biopsy (FNAB) showed metastasis of lung cancer in the left thyroid lobe. The patient was classified for left-sided lobectomy with a postoperative diagnosis of metastases of lung adenocarcinoma Napsin A[+], TTF-1[+], CK19[+], Thyroid globulin (TGB) [-].

Conclusions: In case of thyroid metastases, renal cell carcinoma is the most common primary malignancy. A lung adenocarcinoma metastasizing there is an ominous sign, as patients survive only a few months even after a total thyroidectomy.

Intracranial abscess and granuloma caused by pneumonia- case report

Authors: Darija Savinova, Danielė Navickaitė

Tutor: Doc. dr. Neringa Balčiūnienė

Affiliation: Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania; Lithuanian University of Health Sciences, Department of Neurosurgery, Kaunas, Lithuania

Introduction: Brain abscess is often a localized brain infection, requiring prompt surgical intervention and high-dose antibiotic therapy. In most cases, brain abscesses are caused by a contiguous spread of infections, such as sinusitis or otitis. We present a case report of patient with pneumonia complicated by a brain abscess.

Case report: A 58-years-old man presented to his local hospital with symptoms of dyspnoea, fever around 39.5°C and disorientation lasting for five days. Laboratory investigation revealed high inflammatory markers. The chest X-ray (CXR) showed lung infiltration on the left. Patient was admitted to the Intensive care unit (ICU) with severe respiratory failure and was intubated because of hypercapnia, hypoxemia and acidosis. Treatment with cefuroxime was started. The next day, inflammatory markers increased and cefuroxime was changed to ampicillin-sulbactam. Computed tomography (CT) scan revealed abscess in right frontal lobe and edema near the corpus callosum. Patient was emergently transferred to the Neurosurgical center of the university hospital for further care. There he underwent urgent stereotactic puncture of the intracerebral abscess, about 7 ml of yellow-green pus gushed out and a pus sample was collected during the operation. During surgery, ventriculitis was suspected and external ventricular drainage was formed. The patient was treated with ceftriaxone, vancomycin and metronidazole combination. He remained critically ill, with abscessed pneumonia on both sides, unstable hemodynamics and shock. Head CT was repeated: intracerebral abscess with positive dynamics, but was found ischemic lesions of cerebellar. Abdominal and chest CT was performed, showing abscesses of the lungs, pleura and thrombosis of the splenic artery. Clindamycin was additionally administered as sepsis and Multiple Organ Dysfunction Syndrome (MODS) progressed. Despite treatment, shock and hypoxemia deteriorated with 2 vasopressors at maximum doses. On the third day, the patient died without response to cardiopulmonary resuscitation.

Conclusions: Brain abscess is a focal infection that originates from locally inflamed areas of the brain parenchyma and develops into a collection of pus surrounded by a well-vascularized capsule. It is a rare but severe disease and can result in severe disability or even death, especially if misdiagnosed or improperly managed.

Intracranial hemorrhage in acquired hemophilia – a case report

Authors: Danielė Navickaitė, Darija Savinova

Tutor: Doc. dr. Neringa Balčiūnienė

Affiliation: Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania; Department of Neurosurgery, Lithuanian University of Health Sciences, Kaunas, Lithuania

Introduction: Acquired hemophilia A (AHA) is a rare disease of the coagulation system caused by autoantibodies to clotting factor VIII (FVIII) with no personal or family history of diseases related to coagulation. In this thesis, we present a case of AHA complication, which presented with intracranial hemorrhage.

Case report: A 61-year-old man presented to his local hospital with symptoms of disorientation. The day before he complained of severe headache and increased blood pressure. The patient's Glasgow Coma Scale (GCS) was 9 (E2; V2; M5). Computed tomography (CT) scan revealed a possible rupture of anterior choroidal artery aneurysm. The patient was sedated, intubated, and emergently transferred to the Neurosurgical center of the university hospital. Clinical examination revealed hematomas at the site of injection on the forearms. Laboratory investigation showed anemia, an activated partial thromboplastin time (aPTT) of 86.0 s. Liver function tests were within the normal ranges. Urgent head CT revealed signs of obstructive hydrocephalus and intraventricular hemorrhage. CT angiography (CTA) showed no aneurysms. The patient was admitted to the Neurointensive care unit. Due to the observed increase in the aPTT and suspected coagulopathy two units of fresh frozen plasma was infused before the surgery. The patient underwent placement of a right external ventricular drain. Next day, the coagulation tests were available, which revealed a reduction in FVIII activity (1%). The patient was prescribed with activated prothrombin complex concentrate and methylprednisolone. Red blood cell transfusion was performed. Later CT scan demonstrated hemorrhages in the brainstem, signs of cerebral edema and herniation. Further surgery was not considered due to his difficult condition. Sedation was discontinued and hemodynamics was maintained with noradrenaline. Following day CTA was performed and results showed no intracerebral blood flow in any of major arteries of the brain. The patient died on the 4th hospital day.

Conclusions: Intracerebral hemorrhage is a severe complication that is relatively common among patients with hemophilia. Most patients are diagnosed with AHA on the basis of prolonged aPTT and additional tests after massive bleeding. If the patient delays going to hospital and arrives without an established clotting disease, even with appropriate treatment, the outcome can be fata

Nursing care of a patient after amputation of the lower limb due to diabetic foot syndrome – case report

Authors: Ewa Mirek, Agnieszka Falkowska

Tutor: Lucyna Ścisło, PhD

Affiliation: Students' Scientific Group of Surgical Nursing, Jagiellonian University Medical College, Kraków, Poland

Introduction: Diabetic foot syndrome is defined as the infection, ulceration or destruction of the deep tissues of the foot (including the bone) in diabetic patients. It affects approximately 15% of diabetic patients. It is also frequently accompanied with peripheral arterial disease (PAD) and neuropathy. Rest, relief of pressure, and elevation of the affected foot are the initial necessary treatments. Antibiotics are prescribed to treat polymicrobial infections. Vascular debridement or resection are surgical

procedures that may be needed in severe cases. Untreated ulcers may lead to full or partial amputation.

Case report: A 52 year old man diagnosed with type 2 diabetes (T2DM) and with neuro-ischaemic DFU was admitted to the hospital due to an acute exacerbation of the infection and an extensive abscessing of the foot stump. Patient was qualified for urgent amputation in order to control the infection and save the patient's life. The guillotine amputation of the right lower leg under general anesthesia was successfully performed. After stabilization of the patient's condition and confirmation of proper healing of the stump the patient was qualified for another amputation of the right lower leg at a higher level together with the preparation of the stump for a prosthesis. The patient's main problems were: postoperative wound pain, risk of postoperative complications such as postoperative wound haemorrhage, infection or wound dehiscence, patient self-care deficit and patient's health anxiety. The interventions undertaken allowed for the satisfaction of the patient's needs. As a result of the amputation, the patient experienced a depressed mood, which improved after discharge. After the surgery, the patient was mobilized to the extent that he could provide for his own needs. The patient was prepared for self-care and physical rehabilitation at home.

Conclusions: The realization of planned interventions based on the diagnosis and the patient's condition made it possible to provide adequate nursing care, mental support and preparation of the patient for self-care at home and further preparation for a prosthesis.

Pericarditis with tricuspid regurgitation after cardiac surgery. Non-specific postoperative course

Authors: Wiktoria Smyła, Sebastian Krych

Tutor: Dr n.med. Tomasz Hrapkowicz

Affiliation: Sebastian Krych-Department of Cardiosurgery, Transplantology and Vascular Surgery, School of Medical Sciences in Zabrze, Medical University of Silesia, Katowice; Wiktoria Smyła-Student's Scientific Society, III Department of Cardiology, School of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Introduction: Despite multiple preoperative risk scales, observations and extensive experiences in surgical procedures, surgical interventions are always associated with the risk of complications.

Case report: A 70-year-old man was admitted to the cardiology department 5 months after coronary artery bypass graftingwith a diagnosis of severe tricuspid valve regurgitation, moderate right and left ventricular dysfunction and chronic left pleural fluid accumulation. Based on imaging techniques myocarditis andpulmonary embolism were excluded and coronary artery grafts patency was confirmed. Transesophageal echocardiography showed severe tricuspid regurgitation caused by stiff pericardiumlocally compressing the tricuspid valve ring and leading to its regurgitation.Small atrial septal defect also was found. The patient was qualified for pericardiectomy with simultaneous tricuspid valve repair and septal defect closure. The surgical procedure was performed by resternotomyon extracorporeal circulation on the beating heart.After opening the chest thickened, rigid pericardium compressing the inferior and anterior walls of the right ventriclewas resected. Old hematoma located between inferior wall of the heart and the diaphragm was evacuated. The atrial septal defect was closed, tricuspid valve was repairedby implantation of an annuloplasty rigid ring 32mm and artificial chordae to the septal leaflet, achieving regression of severe to minor regurgitation. Additionaly, in the middle part of the tricuspid valve's anterior leaflet, a post infective perforation was found and closed by continuous suture.The patient's postoperative course was uncomplicated, decreasing drainage of fluid from the pleural cavities was observed until the fourth postoperative day, when it was

possible to remove the drain and discharge the patient home.

Conclusions: The development of pericarditis in this patient could be associated with the inflammatory response on the persistent pericardial hematoma or/and infective endocarditis. We must remember that the risk of postoperative complications are constantly present and require diagnosis and implementation of appropriate treatmen

Surgical reconstruction in a particular case of congenital ptosis

Authors: Sara Alexia Roman, Giulia-Andreea Rîsteiu, Carina-Nicoleta Bobohalmă

Tutor: Maximilian Muntean MD, PhD, Lecturer

Affiliation: Iuliu Haţieganu University of Medicine and Pharmacy, The Oncology Institute "Prof. Dr. Ion Chiricuţă" Cluj-Napoca

Introduction: Congenital ptosis is a rare condition characterized by the maldevelopment of the levator palpebrae superioris muscle resulting in eyelid drooping, apparent since birth or within the first year of life. If the ptosis is severe, vision development is impaired, the visual axis is partially covered, leading to amblyopia if left uncorrected. The ptosis can be corrected with different types of operations, each with its own specificity. In a congenital ptosis with good levator function, with an unscarred lid, a levator-Müller's muscle resection, gapping formula, can be used. In case of a scarred lid, the options are a levator-Müller's muscle resection Berke procedure or an external tarsoaponeurectomy. In a ptosis with poor levator function, a frontalis suspension can be done using a fascia lata graft, in patients older than ten or with silicone rods for those under the age of ten.

Case report: We present the case of a 31-year-old female with congenital left palpebral ptosis, no scarring present. Because the levator muscle's contractility and function were reduced, combined with the age of the patient, a decision of correcting the ptosis by a frontalis suspension with fascia lata graft was taken, converting the lifting power from the levator to the frontalis muscle. A single sling configuration, positioned centrally, in line with the pupil, in a pentagonal shape, was approached, for an ideal upper lid contour. An autologous fascia lata graft, of about 15/0.5 cm, was collected. A single brow incision was made, for attaching the suspensory material to the frontalis muscle, and an eyelid crease incision was created for direct connection of the fascia graft to the tarsus. Dissection with tunnelisation was performed for placing the fascial graft, which was fixed in place in a pentagonal configuration. Postoperatively no complications appeared, the ptosis being successfully corrected.

Conclusions: In this particular case of long-standing congenital ptosis with loss of function, the frontalis suspension with fascia graft was the most advantageous form of treatment, offering, by connection to the frontalis muscle, the eyelid lifting power needed for a proper correction.

The type B aortic dissection with in situ laser fenestration and off-label stenting

Authors: Adrian Bednarek

Tutor: Jerzy Leszczyński MD, PhD

Affiliation: First Department of Cardiology, Medical University of Warsaw, Warsaw, Poland

Introduction: Aortic dissection is a life-threatening disease occurring in 3.5 out of 100.000 patients. Sometimes, a close position to the aortic arch contributes to insufficient stent sealing, which can be overcome by covering the left subclavian artery (LSA) ostium. In these cases, to minimize the risk of left upper limb ischemia and stroke, the revascularization of the

LSA should be performed. When there is no time to wait for branch stent-graft deliverance, the usage of a custom-made device can be an effective technique. Here we present the case of extensive type B aortic dissection, with the LSA revascularization approach by in situ laser fenestration and off-label implantation of aortic BeGraft stent.

Case report: A 62-year man was admitted for the recommended surgical treatment of Stanford type B aortic dissection. A computed tomography scan revealed extreme narrowing of the true canal on the level of visceral arteries and the obstruction of the superior mesenteric artery, which was associated with a high risk of visceral impairment. Dissection reached up to the left common iliac artery and the right external iliac artery. The thoracic endovascular repair (TEVAR) with ZENITH TX2 thoracic stent-graft was performed for the closure of the primary entry. Due to the short neck of the aneurysm localized close to the ostium region of the LSA, the coverage of this part for a better stent-graft seal was carried out. To ensure blood flow, the in situ laser fenestration was performed in the on-shelf thoracic stent-graft. To prevent ischemia, the self-expanding ZILVER and covered BeGraft stents were implanted across fenestration to the LSA. The control aortography revealed the elimination of the dissection's primary entry, enlargement of the true canal, and improved circulation in the visceral arteries with the restoration of the superior mesenteric artery. The patient in stable condition, without the limbs and viscera ischemia symptoms, was qualified for home discharge and further observation.

Conclusions: The in situ laser fenestration and implantation of BeGraft stent to the LSA connected with the TEVAR procedure may be a functional approach for preventing the left upper limb and cerebral ischemia, even in extensive acute type B aortic dissections.

Intrasellar pneumocephalus (pneumosella) presenting with pulsating tinnitus after transsphenoidal endoscopic surgery of Rathke's cleft cyst

Authors: Aleksander Gorzeń

Tutor: Jacek Kunicki, MD, PhD

Affiliation: Medical University of Warsaw, Department of Central Nervous System Tumor, Maria Skłodowska-Curie National Research Institute of Oncology, Warsaw

Introduction: Healing disorders after operations in the area of the sella turcica most often lead to leaks in the meningeal barriers. This results in the presence of CSF-leak or pneumocephalus. Such complications are observed in 0,5 to 5 % of operated patients.

Case report: An 80-year-old patient presented with a symptomatic Rathke's cleft cyst. A transsphenoidal endoscopic operation was performed - the cyst was evacuated, the tumor bed was filled with hemostatic material and the opening of the sella turcica was closed with a collagen matrix and partially covered with the mucous membrane of the sphenoid sinuses. After 4 weeks, the operation site was incompletely healed, thus, irrigation and antibiotic therapy were recommended and a follow-up visit was scheduled in 3 weeks. However, the patient presented earlier with tinnitus lasting several days, the rhythm of which was correlated with the patient's heart rate. MRI of the pituitary gland and endoscopy of the nasal cavity and sinuses revealed a sphenoid-sellar fistula, filling the sella with air and a pulsating sellar diaphragm in the operation site. Examinations excluded CSF-leak and purulent infection. By using hemostatic material and the patient's blood clot, the fistula was obliterated. One week later, the patient returned with pulsating tinnitus. Reconstruction surgery and

obliteration of the sella turcica with an adipose tissue graft were performed. Symptoms resolved immediately after treatment. The follow-up endoscopic examination showed complete healing of the operated site.

Conclusions: The case of a sphenoid-sellar fistula with pneumocephalus is a very rarely observed complication. A similar complication after transsphenoidal surgery has not been described so far. Management of the case suggests reoperation as soon as possible. It is advisable to perform imaging and endoscopic examinations in cases of atypical symptoms reported by the patient.

Neoadjuvant therapy in high-risk resectable melanoma – case study

Authors: Arkadiusz Moskwa

Tutor: prof. Anna Małgorzata Czarnecka MD, PhD

Affiliation: Medical University of Warsaw and Department of Soft Tissue/Bone Sarcoma and Melanoma, Maria Sklodowska-Curie National Research Institute of Oncology, Warsaw

Introduction: Melanomas are relatively rare in Poland – approximately 3800 cases per year. Nevertheless, the incidence is increasing. Therefore, there is still a need to develop the most appropriate treatment approach. According to recent literature, neoadjuvant therapy may be an effective approach to consider when treating marginally resectable melanomas.

Case report: Thirty-nine years old man with vitiligo was referred to National Institute of Oncology (NIO) after surgical resection of a right cheek skin melanoma pT4b eight months earlier. Surgery in the regional hospital was not accompanied by radicalization or sentinel node biopsy. At the initial visit, the patient presented with a stiff 5 cm tumor, which had been palpable for 2 months. The patient also complained of a second lump behind the sternocleidomastoid muscle. PCI confirmed recurrent malignant melanoma. Molecular analysis showed BRAF gene V600 mutation and low PDL-1 expression (2%). On admission, CT revealed also enlarged lymph node in the right pulmonary hilus and a tumor in the right lung. In addition, subsequent CT in NIO revealed enlarged lymph nodes of all groups in the neck, and in the parotid gland. Due to the fast progression of non-resectable disease, the patient was qualified for immunotherapy with nivolumab (anti-PD-1) and ipilimumab (anti-CTLA-4). With this treatment, the patient achieved a partial response in 3 months with regression of cervical lymph node metastases. The patient was referred for right side lymphadenectomy and continued nivolumab treatment. Since the patient has been under constant observation for 5 months without additional treatment, the disease has not progressed.

Conclusions: A nivolumab + ipilimumab combination seems promising in the treatment of melanoma. As a result of the treatment, the patient, who was initially non-resectable and contraindicated for lymphadenectomy, now responds well to the treatment.

Presence or absence of nasal CSF-leak as surgeon's dillema - comparative analysis of two case reports

Authors: Arkadiusz Moskwa

Tutor: Eliza Brożek-Mądry MD, PhD

Affiliation: Department of Otolaryngology, Faculty of Medicine and Dentistry, Medical University of Warsaw

Introduction: Comminuted fractures of the skull base are often manifested by the presence of CSF-leak from the nose. However, this is not a rule, so qualifying a patient for surgery may be difficult. In addition, fractures in the area of the roof of the ethmoid can be operated with

intranasal (endoscopic) or external access, therefore it is crucial to correctly assess the extent of the injury.

Case report: A 46-year-old patient was admitted to the hospital after a craniofacial injury two days prior. Left-sided watery nasal discharge was observed. A fracture with displacement of the anterior and posterior walls of the left frontal sinus and a fracture of the left orbit were revealed. The patient was qualified for the procedure and after two weeks an osteoplasty of the craniofacial bones was performed, with the insertion of titanium plates, as well as surgery on the anterior cranial fossa using external access.

A 34-year-old man was admitted to the hospital after a head injury. No nasal CSF-leak was observed. Multiple fractures of the frontal bone with displacement and a fracture of all walls of the right maxillary and sphenoid sinuses were revealed by a CT-scan. The patient was discharged home after hospitalization. One month later, the patient was admitted again, this time with a nasal CSF-leak and with an developing encephalomeningocele. A transnasal endoscopic surgery was performed to close the site of the leak.

Both patients were consulted laryngologically and neurosurgically.

Conclusions: Surgery may reduce the degree of intracranial complications, but it also carries some risk of complications. Therefore, it is imperative to determine whether surgery is necessary. The presence of CSF leaks is a significant indication of the procedure, but it can sometimes take a long time for them to appear. Besides considering the necessity of surgery, the cooperation between laryngologist and neurosurgeon is essential to perform successful operation.

Unusual appearance of intestinal obstruction secondary to gallstone ileus: A case report

Authors: Grozea Daniela-Maria, Heghes Maria-Elena

Tutor: Socaciu Mihai Adrian, Assistant Professor, MD, PhD

Affiliation: Iuliu Haţieganu University of Medicine and Pharmacy, Cluj-Napoca, Romania

Introduction: Gallstone ileus (GI), or Bouveret's syndrome, is an uncommon cause of small bowel obstruction, representing a complication of cholelithiasis. Elderly patients are commonly affected, which contributes to the high morbidity and mortality rates associated with this condition. Computed tomography (CT) has great sensitivity in diagnosing GI, detecting bowel loops dilatation, pneumobilia or ectopic gallstone. Nonetheless, isodense stones relative to intestinal fluid can't be accurately detected on CT and therefore can lead to a delayed diagnosis. This case report aims to highlight an unusual appearance of a life-threatening surgical emergency.

Case report: An 80-year-old woman was admitted to the emergency department with a 3 days history of nausea, vomiting, loss of appetite, and constipation. She has a background of senile dementia so her medical history was impossible to be obtained. Abdominal examination showed a distended, non-tender abdomen. Laboratory tests showed leukocytosis and mild renal dysfunction. Abdominal radiograph demonstrated the presence of hydro-aeric levels in the left hypochondrium, and pneumobilia. Contrast-enhanced CT revealed only dilated jejunal loops and pneumobilia, without clear signs of mechanical obstruction. After 48 hours she started to vomit repeatedly. A second CT was performed, suggesting the presence of a choledochoduodenal fistula and a noncalcified, isodense gallstone inside the jejunum producing

the subocclusive syndrome. She underwent an emergency laparotomy which proved the gallstone ileus and the impacted stone was removed. Postoperative evolution was without incidents.

Conclusions: Gallstone ileus should always be high in the differential diagnosis when assessing an aged person with intestinal obstruction. This case study has demonstrated an atypical presentation of GI because gallstone could not be seen directly on two different CT scans and it had an unusual site of impaction. It is highly unlikely that all radiological signs will be seen in patients with Bouveret's syndrome, but a combination of several findings increases the likelihood of an accurate diagnosis, as revealed by our case.

Hepatic small vessel neoplasm (HSVN) - vasoformative neoplasm with benign behaviour

Authors: Igor Jaszczyszyn, Mikołaj Kuncewicz

Tutor: Marcin Morawski MD

Affiliation: Department of General, Transplant and Liver Surgery of the Medical University of Warsaw

Introduction: Hepatic small vessel neoplasm (HSVN) is a rare, vascular neoplasm, which is believed to have benign course. However, its long-term malignancy should be assessed by further studies. In 2019 HSVN was added to the WHO classification of tumours of the digestive system. During differential diagnosis, hepatic angiosarcoma (AS) should be ruled out, because of its similar histopathological characteristics. To date, HSVN cases have been described nearly 30 times in the literature, which makes them a rarity for clinicians.

Case report: A 50-year-old male was admitted to the Department of General, Transplant and Liver Surgery of the Medical University of Warsaw for the liver resection (LR) in order to remove hepatic tumour present in his left liver lobe. Based on tumour characteristics present in magnetic resonance imaging (hyperintense lesion in T2 weighted images and patchy contrast enhancement on the intersection of liver segments II and III) initial diagnosis of HSVN was proposed.

The patient underwent laparoscopic LR of the segment III and was discharged from the hospital in good general condition on the 4th postoperative day. Histopathological examination revealed that the vast majority of the tumour was composed of vascular septa, in which erythrocytes were marked. Immunohistochemical staining for vascular markers was positive (CD31, CD34). The lesion showed low proliferative index and for p53 staining it showed weak positive signal. These results are consistent with other descriptions of the HSVN, and gave possibility to differentiate it from the hepatic AS, which normally shows much higher Ki-67 index as well as stronger positive p53 staining. Patient has been in the follow-up for over 2 months now and he will be monitored further, however any evidence of metastasis was not observed in the previous studies.

Conclusions: HSVN is a vasoformative neoplasm which can be difficult to diagnose and differentiate from AS and other tumours mimicking it. According to the recommendations, the method of choice during HSVN treatment should be LR. Mechanism of neoplasm development is not fully understood and patients after radical and non-radical treatment should be carefully monitored.

Case report of neoadjuvant pembrolizumab treatment of a patient with metastatic melanoma

Authors: Piotr Błoński

Tutor: Prof. Anna M. Czarnecka, MD PhD, DSc

Affiliation: Department of Soft Tissue/Bone Sarcoma and Melanoma, Maria Sklodowska-Curie National Research Institute of Oncology, 02-781 Warsaw, Poland, Faculty of Medicine, Medical University of Warsaw, 02-091 Warsaw, Poland

Introduction: Anti-PD-1 antibodies are one of preferable medications for treatment of patients with metastatic or inoperable melanoma and also for adjuvant therapy. Usage of these agents in neoadjuvant setting is currently a subject of clinical trials and so far has not been included in clinical practice guidelines.

Case report: A 50-year-old male had been diagnosed with BRAF negative cutaneous melanoma of occipital region and underwent excision of the scar without sentinel lymph node biopsy in primary care centre, despite available guidelines. At the moment of diagnosis no metastases were detected. Patient remained under observation until clinically overt metastases in occipital lymph nodes were discovered 4 years later. The metastases had been assessed as inoperable and the patient started systemic immunotherapy with pembrolizumab, which led to regression of nodal metastases. Because the disease was successfully controlled, the patient discontinued systemic therapy after two years and was referred to further observation. Within next 3 months another metastases in right parotid lymph nodes were detected and pembrolizumab treatment was reintroduced. Newly discovered metastases were resectable, thus within a month patient underwent Modified Radical Neck Dissection (MRND) of right side of the neck. After the surgery adjuvant radiation therapy was applied and the patient has been treated with pembrolizumab for following 18 months without progression.

Conclusions: In this case combination of pembrolizumab systemic treatment with surgery and radiation therapy provided long-lasting control of metastatic melanoma. It needs to be evaluated if neoadjuvant Anti-PD-1 immunotherapy should be included in clinical practice guidelines. Moreover, patients with melanoma should be treated by clinicians experienced in management of this malignancy.

Invasive cervical resorption of an impacted mandibular second premolar: a case report

Authors: Liveta Rastokaite, Pedram Hosseinzadehfard

Tutor: Greta Lodiene Dds, PhD. Egle Zasciurinskiene dds, PhD

Affiliation: Department of Dental & Oral pathology, Faculty of Odontology, Academy of Medicine, Lithuanian University of Health Sciences, Lithuania.

Introduction: Tooth impaction is diagnosed when two-thirds of the root length is developed, but natural eruption is not expected. The present case report describes a rare condition of lower second premolar impaction.

Case report: An 11-year-old female patient presented with anteroposterior dental discrepancy, midline shift, and occlusal cant. Intraoral examination revealed the absence of the lower right second premolar with no space available for eruption. X-ray examination revealed an impacted #45 tooth with two-thirds of the root length developed in a vertical position and tilting of the adjacent teeth. The treatment plan included orthodontic space opening using a fixed appliance with a coil spring. Natural eruption of the tooth was expected according to dental age and root development. When space was opened, no change in position

of #45 was observed. Surgical exposure and active traction were scheduled. Later observation showed the adjacent teeth were intruded and tilted and no vertical change of #45. Tooth #45 was considered ankylosed, as no physiological tooth mobility was recorded. To continue the traction, the decision was made to perform surgical luxation and osteotomy of the coronal alveolar bone of an impacted tooth. Consequently, the crown of #45 emerged and the bracket was placed together with micro-screw, which was inserted between the roots of maxillary right premolars. 6 months later tooth stopped to erupt. The second luxation was performed with the fibrotomy around the impacted tooth. Following the traction of 170 g. elastic force, no vertical displacement of a tooth was observed in the subsequent appointments. The third surgical intervention included the reimplantation of a tooth. X-ray examination revealed radiolucency in the coronal third of the root. The patient was referred to the endodontist, and CBCT revealed invasive cervical root resorption (ICR) in the reparative stage. The tooth was asymptomatic, so a decision was made to monitor the tooth annually. Tooth remained in infraocclusion and lingual position.

Conclusions: The diagnosis of ICR should be taken into consideration in cases where orthodontic-surgical treatment of an impacted tooth is unsuccessful

Rare Case of BRCA-2 Positive Male Patient with Breast Cancer Showing Uncommon Imagistic Findings

Authors: Tudor Mihai Băiceanu (1,3); Larisa-Rucsandra Gheghe MD (2)

Tutor: Anca Ciurea MD, PhD (2)

Affiliation: ” Iuliu Haţieganu” University of Medicine and Pharmacy Cluj-Napoca, Romania (1); Department of Medical Imaging,” Iuliu Haţieganu” University of Medicine and Pharmacy, Cluj-Napoca, Romania (2); Romanian Student Surgical Society, Cluj-Napoca, Romania (3)

Introduction: Breast cancer (BC) in men is rare, representing 1% of all BC. Men tend to be diagnosed with this disease at an older age and a more advanced stage. Currently, there is no standard of care for male BC; consequently, the need for research and therapeutic options is high. Male BC is almost exclusively hormone receptor-positive and more than 13.3% of these patients tested positive for one or more gene mutations. BRCA-2-positive male patients face substantial lifetime risks for the development of both breast and prostate cancer.

Case report: We present the case of a 47-year-old male patient, with no family history of BC, referred to our department for a tender, firm and mobile retroareolar mass on the left side. The mammogram revealed a round, well-circumscribed radiopaque mass associated with suspicious calcifications. On ultrasound, the lesion presented as a complex cystic mass, with a poor vascular pattern on power Doppler and soft on elastography, while the axillary lymph nodes had benign features. Tru-cut biopsy was performed with a pathological result of luminal A invasive ductal carcinoma, no special type (NST). Due to the associated calcifications, an MRI was recommended to rule out an associated in situ component. On MRI, the mass was well defined, with an inhomogeneous appearance on T1 and T2 weighted images. After contrast administration, the lesion had an inhomogeneous internal signal, with a type II dynamic. No findings suggestive of an in situ component were present. The patient presented no distant metastasis and was referred for a left simple mastectomy with sentinel lymph node biopsy. The post-operatory result confirmed the initial diagnosis and showed fatty infiltration of the lymphnodes. Adjuvant therapy consisted of 6 cycles of chemotherapy. The genetic testing results indicated a BRCA-2 positive mutation.

Conclusions: Breast cancer is a very rare pathology in male patients, with no typical clinical presentations or therapeutic options.

Imaging diagnosis is usually simple but in a low percentage of cases, lesions may mimic benign or rare pathology. Considering the lack of homogeneity regarding the existing data, there is a high need for research in this field.

Overestimating the effectiveness of antibiotics: A case study of infectious discitis

Authors: Gheorghe-Eduard Marin, Olga-Maria Iova

Tutor: Cristina Nistor MD

Affiliation: Department of Neurosciences, University of Medicine and Pharmacy, Cluj-Napoca, Romania

Introduction: Discitis is described as the inflammation of intervertebral disks, commonly associated with infections. Due to its common nature, insidious evolution, and potentially life-threatening complications, discitis needs to be quickly diagnosed and properly treated. Because of complications such as epidural abscesses, antibiotherapy alone will not be effective, surgery being required for a full recovery.

Case report: DV is a 61 y/o male who presented to the neurology department with dorsal thoracic pain, debuting a month ago, after a sudden rotation movement. He was previously known with ischemic cardiomyopathy, hypertension, and chronic toxic hepatopathy (alcohol abuse). A CT scan revealed chronic inflammatory changes of T8-T9 vertebra in the form of reduced vertebral height, osteolysis, and osteophytes, associated with an epidural abscess and significant medullar stenosis. Initial neurosurgical consult advised for conservative treatment with antibiotics and Hessing corset use. The patient's condition did not improve after a week of vancomycin and ciprofloxacin, therefore a second neuro-surgical examination was performed, with the indication for surgical intervention. After sectorial discectomy and laminectomy, the abscess was drained and pathological product was used for a microbiological culture, which returned negative. Under continued antibiotic treatment and post-surgical care, the patient made a full recovery.

Conclusions: Due to the multiple comorbidities like the slight immunodeficiency caused by alcohol abuse and associated hepatopathy, the patient was predisposed for hematogenic dissemination of infections. Even though the original infection was completely cured by the time of admission (a supposed dental infection), the discitis progressed slowly and asymptomatically before it became apparent due to its complications. The delayed diagnosis of discitis is the reason why this affliction still has a high morbidity and mortality, which is not helped by overestimating the effect of antibiotics. As seen in this case, even though the site was sterile by the time of surgery, due to proper antibiotics, the abscess itself did not resolve, causing recurrent pain generated by medullar stenosis, which threatened to paralyze the patient. While surgery should not become the main approach in the treatment of discitis, it should also not be overlooked in the case severe complications arise, which could not be resolved with antibiotics alone.

Case report of an accidentally detected bronchial lipoma in 66-year-old woman

Authors: Sofiia Popovchenko

Tutor: Jakub Szadurski MD, PhD

Affiliation: Department of Thoracic Surgery, John Paul II Hospital, Krakow

Introduction: Bronchial lipoma is a very rare kind of benign tumour, which is more common in men. In most cases, bronchial lipoma is misdiagnosed as lung cancer. This tumour is

often discovered incidentally during an X-ray. Endoscopic treatment is first line, unless the size of the tumour or parenchymal damage necessitates surgical resection.

Case report: A 66-year-old woman presented at the clinic reported productive cough and recurrent respiratory infections in the last 6 months. The patient was referred to the thoracic surgery department for diagnosing and treatment, after detecting a tumor in the left lung during the treatment of pneumonia. Chest auscultation demonstrated wheezing in left lower lobe. An X-ray revelated a mass located near the segmental bronchus of the left lower lobe.The patient underwent interventional bronchoscopic management to remove the tumor by using an eloctrosurgical snare. The next day after surgery the patient was discharged home in good condition. In a week, the result of histopathological examination confirmed that the tumor was not malignant and it was a lipoma.

Conclusions: This case suggestes that an endobronchial lipoma can present as multiple lesions. Endobronchial lipoma often confused with lung cancer. In case of patients with a lung tumor in X-ray, it is worth performing bronchoscopy.

Systematic Review

Poster Session

Scientific Committee

Magdalena Koperny, PhD

Elżbieta Paszek, MD, PhD

Joanna Zając, PhD

Coordinator

Aneta Kotlarek

IMSC

Targeting factor XI as a compromise between thrombosis and bleeding - new hopes and expectations.

Authors: Michał Pałuchowski, Aleksandra Żuk, Olga Jakubik

Tutors: Aleksandra Gąsecka MD, PhD

Affiliation: Medical University of Warsaw / Department of Cardiology

Background: Thromboembolic conditions were associated with 1 in 4 deaths worldwide in 2010 and persistently are one of the main causes of mortality. As the conventional medications preventing thrombosis, including heparins, vitamin K antagonists or direct oral anticoagulants, are mostly effective, their usage is often associated with an increased risk of bleeding. Experimental data suggests that severe FXI deficiency provides protection against arterial and venous thrombosis without compromising haemostasis in animal models.

FXIa represents an attractive target for antithrombotic therapy due to its involvement in thrombus progression and much less in haemostatic mechanisms. Currently many drugs targeting this mechanism are coming into existence. The aim of this study is to summarise all of those agents and provide a much needed overview in this cutting-edge therapy method.

Methodology: Major online medical databases such as PubMed, Web Of Science, Scopus, Embase and Google Scholar were searched to find studies regarding inhibition of factor XI with a main focus being all currently or previously developed medication using this mechanism of action.

Main results: A number of oral (asundexian, milvexian) and parenteral (abelacimab, osocimab, xisomab, IONIS-FXIRX and fesomersen) factor XIa inhibitors are being tested for prevention of thromboembolism.

Abelacimab provides better risk–benefit balance than currently available treatments after a total knee arthroplasty.

Milvexian was proved to work well in patients undergoing knee arthroplasty as well as those with mild/moderate liver or moderate/severe renal impairment - especially the group with coexisting cardiovascular disease.

Asundexian provided a dependable FXIa suppression and had lower rates of bleeding events compared to inhibition with apixaban in patients suffering from atrial fibrillation.

Conclusions: The development of drugs which specifically inhibit factor XI, has significantly advanced the field. It offers new treatment options for thrombosis in patients with various conditions, including those undergoing knee arthroplasty, suffering from atrial fibrillation, cancer-associated venous thromboembolism or with kidney or liver disorders.

Oral agents have the potential to be an alternative to DOAC in patients at high bleeding risk. Weekly or monthly subcutaneous injections might help to improve patient adherence to long-term anticoagulation.

Obesity and an increased risk of infection and severe course of COVID-19

Authors: Marcin Rojek, Martyna Żurek

Tutors: Prof. Zbigniew Nawrat

Affiliation: Medical University of Silesia

Background: In 2019, a new virus called SARS-CoV-2 emerged, causing the COVID-19 disease. The course of the disease and its associated complications vary significantly among patients, with a severe course characterized by decreased blood oxygen saturation and respiratory failure. This often requires the use of a respirator, increased hospital care, and a higher risk of death and complications. It was necessary to

identify the risk factors for a severe course of the disease. Data from the early stages of mass hospitalization suggested a more severe course in obese individuals. Further analyses confirmed this trend, and several theories explaining this relationship have been proposed.

Methodology: Using major search engines such as Google Scholar and PubMed, we searched for 1600 articles for a preliminary review. We used keyword search terms such as "obesity," "COVID-19," and "overweight."

Main results: Ultimately, we cite 60 sources in our work, including review articles, other publications, and 5 online sources from the WHO and government websites. Studies on hospitalization indicate obesity as both a risk factor for a severe course of the disease and complications and death. The theories explaining this relationship include hidden vitamin D deficiencies, hyper-inflammatory reactions related to adipokine profiles, and physical impairment of respiratory function. It has also been noted that this relationship's importance decreases with age.

Conclusions: Obesity has been identified as a significant risk factor for hospitalization, complications, and death due to a severe course of COVID-19, and several theories have been proposed to explain this relationship. Although the COVID-19 pandemic has already peaked, the research collected during this time may be significant in determining prevention and prophylaxis for similar events in the future.

Alice in wonderland syndrome - Lewis Carroll's novel in a real life: a systematic literature review

Authors: Vainius Zajankauskas, Paulina Tursaitė, Algirdas Musneckis

Tutors: Algirdas Musneckis Department of Psychiatry, Lithuanian University of Health Sciences, Kaunas, Lithuania

Affiliation: Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Background: The neurological disorder known as Alice in Wonderland Syndrome (AIWS) is uncommon, disorienting, and perceptual, affecting human perception of sight, sound, touch, and feeling [1]. People with AIWS may develop metamorphopsias, which are changes in how they perceive the size of things or their own body parts [2]. AIWS is still a poorly understood and typically misdiagnosed syndrome [1]. Currently, there is no definitive cause of AIWS [8].

Methodology: Scientific sources were reviewed and analyzed. Publications were searched in English language in the international medical databases PubMed and Google Scholar. Keywords used for the research: “Alice in wonderland syndrome“, “body image“, “ metamorphopsias“. Of the 139 results, only those which specifically identified the Alice in wonderland syndrome, its clinical features and treatment were collected.

Main results: The name is a reference to Lewis Carroll's children's novel Alice's Adventures in Wonderland, in which the main character suffers changes in feeling, including the perception that certain body parts have changed size or form or that she has grown too tall or short. [2,4]. Affected individuals can experience alterations in perception, including micropsia (objects appear small), macropsia (objects appear large), teleopsia (objects appear further away than they

are), and pelopsia (objects appear closer than they are) [3]. They may also have hallucinations or illusions of their own body image expanding, contracting, or distorting in addition to these changes in perception [5]. Another distinct hallucination includes animals. These hallucinations, known as zoopsia, may feature swarms of little animals or lonelier groupings of bigger animals [6]. AIWS can occur at any age but appears to be more common during childhood. Most patients outgrow these episodes [4]. There is currently no treatment for AIWS. More study is required to determine the precise cause or causes of AIWS and to develop effective therapies for the condition. [7].

Conclusions: AIWS consists of metamorphopsia (seeing something in a distorted fashion), bizarre distortions of their body image, and bizarre perceptual distortions of form, size, movement.

There are no current treatments for AIWS.

Generalized anxiety disorder - clinical features and treatment: a systematic literature review

Authors: Vainius Zajankauskas, Paulina Tursaitė, Algirdas Musneckis

Tutors: Algirdas Musneckis Department of Psychiatry, Lithuanian University of Health Sciences, Kaunas, Lithuania

Affiliation: Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania

Background: Generalized anxiety disorder (GAD) is a common and disabling illness that is often undertreated [1]. Although antidepressant medications are efficacious, many elderly individuals require augmentation treatment [5].

Methodology: Scientific sources were searched and analyzed. Publications were searched in English language in the international medical databases PubMed and Google Scholar. Keywords used for the research: “generalized anxiety disorder symptoms “, “anxiety disorders “, “treatment of anxiety disorders “. Of the 421 results, only those which specifically identified the generalized anxiety disorder, its symptoms and treatment were collected.

Main results: Symptoms of GAD include chronic, pervasive anxiety accompanied by physical and psychological symptoms (restlessness, fatigue, difficulty concentrating, irritability, muscle tension, or sleep disturbances). Psychotherapy (typically cognitive behavioral therapy (CBD)) and pharmacotherapy, such as selective serotonin reuptake inhibitors, are examples of effective therapies [1,8]. Modern research shows that first-line treatments for GAD is CBD in conjunction with either an SSRI or an SNRI. Pregabalin and buspirone are suitable second-line or adjunctive medications [2,7]. Atypical antipsychotics have also been mentioned in the literature as a potential treatment for GAD. For quetiapine, the most data have been gathered. Findings suggest that approximately 50% of participants tolerate the side effects, most commonly sedation and fatigue. Among this subset, those who continue treatment demonstrate significant reductions in GAD when used as adjunctive therapy or monotherapy [3]. According to several studies, those with GAD who practiced mindfulness showed a larger decrease in the stress hormone ACTH. During the stress test, those in the mindfulness group also had a larger reduction in pro-inflammatory cytokines. Findings suggest that mindfulness meditation training may have helped participants cope better with subsequent stress also with GAD [4]. Cannabidiol has also been shown to have significant potential as a therapy for a variety of anxiety disorders, according to recent research (including GAD) [6].

Conclusions: First-line treatment for GAD is thought to be SSRI.

Psychotherapy for GAD can be just as beneficial as medication. The most evidence-based treatment is cognitive behavior therapy.

Can a hedgehog help cure sarcomas? The role of the Hedgehog signaling pathway in the pathogenesis and treatment of sarcomas – a review

Authors: Dominika Kurpiewska (1), Natalia Banaszek (1)

Tutors: Paweł Sobczuk MD (2)

Affiliation: 1. Students' Scientific Association Onkosfera, Medical University of Warsaw 2. The Maria Sklodowska-Curie National Research Institute of Oncology, Warsaw

Background: Sarcomas are a diverse group of malignant neoplasms of non-epithelial origin. They develop rarely, but due to poor prognosis they are a challenging and significant clinical problem. Currently available therapeutic options are not very effective. The Hedgehog (Shh) signaling pathway is involved in both embryonic development and mature tissue repair, as well as in carcinogenesis. Emerging evidence suggests its significant role in the pathogenesis of sarcomas. Better understating of this involvement may help develop more efficacious therapies in the future.

Methodology: Databases such as PubMed and Google Scholar were searched to find all relevant data on the subject.

Main results: Increased activity of the Hedgehog signaling pathway has been demonstrated in many sarcomas, including osteosarcoma, Ewing's sarcoma, chondrosarcoma, rhabdomyosarcoma, leiomyosarcoma and malignant rhabdoid tumor. In vitro studies have demonstrated the effectiveness of inhibitors of the Hedgehog pathway in both inhibiting the growth and reducing the number of metastases in those sarcomas, in which the components of the pathway have been overexpressed. These results were confirmed by in vivo studies, which additionally proved the influence of Shh inhibitors on limiting the growth, size and number of proliferating sarcoma cells. However, until now, the efficacy of sarcomas' treatment with Shh pathway inhibitors has not been established in clinical trials. The reason for that may be the non-canonical activation of the pathway or interactions with other signaling pathways, such as Wnt or Notch.

Conclusions: The Shh signaling pathway plays an important role in the pathogenesis of sarcomas; the details of its activation, however, have still not been fully understood. Further basic and translational research, as well as the search for new non-canonical Shh inhibitors, is urgently needed.

The risk of methylphenidate pharmacotherapy in adults with attention deficit hyperactivity disorder (ADHD) – systematic review.

Authors: Rafał Bieś

Tutors: Prof. Marek Krzystanek, MD, Ph.D.

Affiliation: Faculty of medicine. Medical University of Silesia in Katowice, Poland. Psychiatric Rehabilitation Clinic. Department of Psychiatry and Psychotherapy.

Background: Attention deficit hyperactivity disorder (ADHD) is one of the most common neurodevelopment disorders. It used to be thought, that it is a disorder exclusive to children. Now we know, undiagnosed people in childhood still have symptoms in adult life. Symptoms of ADHD such as hyperactivity and

impulsiveness do not disappear with age. Nowadays, appreciation for late diagnosis and treatment of adults with ADHD is more common. The first-line drug in pharmacotherapy is methylphenidate, and information about its adverse effects in adults has not been as extensively described as in the children population.

Methodology: The authors of the study compared the risk of using methylphenidate among patients with ADHD and the population of patients using a placebo. The literature review focused on people who were diagnosed with ADHD only in adulthood (after the age of 18). In total, 19 randomized clinical trials and 4 case reports presenting rare disorders resulting from methylphenidate therapy were analyzed.

Main results: The most commonly reported side effects were: decreased appetite, weight loss, dry mouth, sleep problems, headache, and nausea. In addition, rare but with a significant cause-and-effect correlation, episodes of reversible ischemic stroke, myocardial infarction, and psychotic episodes were listed.

Conclusions: Treatment with methylphenidate is well tolerated, with side effects reported in severity as mild to moderate. However, pharmacotherapy is not without its risks, and long-term research about the safety of using methylphenidate is still an unmet medical need. Due to side effects, methylphenidate may not be the first drug of choice for every patient.

How does the endovascular treatment influence the vascular endothelium in patients with peripheral arterial disease? A systematic review.

Authors: Natalia Kachnic, Oliwia Madej

Tutors: Paweł Kaczmarczyk MD, Paweł Maga Associate Professor, MD, PhD

Affiliation: Department of Angiology

Background: Peripheral arterial disease (PAD) is a major public health problem. Endothelial dysfunction represents an important mechanism in the development and progression of atherosclerosis, in part attributable to inflammation, platelet and smooth muscle activation, and arterial stiffening. The aim of this study was to explore the impact of lower limb revascularization on endothelial function in patients with PAD.

Methodology: We performed a comprehensive search of the academic literature using the PubMed and Embase databases to screen suitable records. The full search identified 1113 hits, of which 1078 were excluded after title and abstract inspection. The remaining 35 articles were screened by full-text inspection, leading to the exclusion of another 27 articles. Following application of our search strategies, a total of eight studies were included in this review.

Main results: Most of the studies that analyzed FMD revealed its significant improvement after successful revascularization. Studies included in our review that assess the influence of PTA on arterial stiffness parameters, showed a favorable effect on endothelial function. Studies that examined the RHI did not provide cohesive data.

Conclusions: Despite limited available evidence, the dearth of the academic literature suggests that revascularization has a positive effect on endothelial functioning. The effects of endovascular revascularization on endothelial functioning in patients with PAD is subject to further research.

Cannabis use and schizophrenia: a literature review

Authors: Vainius Zajankauskas, Matas Tamošiūnas

Tutors: Algirdas Musneckis, MD

Affiliation: Department of Psychiatry, Lithuanian University of Health Sciences, Kaunas, Lithuania

Background: One of the most consumed drugs in the world is marijuana. Understanding how it affects our mental health is incredibly important. Its impact on the schizophrenia spectrum needs requires particular attention. Uncertainty persists on whether cannabis use raises the risk of psychosis or whether the same genes that increase the risk of psychosis may also increase the risk of cannabis use.

Methodology: Scientific sources were reviewed and analyzed. Publications were searched in English language in the international medical databases PubMed and Google Scholar. Keywords used for the research: “schizophrenia“, “cannabis use and psychosis“. Of the 260 results, only those which specifically identified the associations between cannabis use and schizophrenia were collected.

Main results: Cannabis use is observationally associated with an increased risk of schizophrenia, but whether the relationship is causal is not known. Prospective observational studies with decades of follow-up have repeatedly shown an association between cannabis use and an elevated risk of schizophrenia or other similar illnesses while controlling for a wide range of potential confounding variables (such as family history). Moreover, cannabis use is associated with tobacco consumption and the latter has been observationally related to risk of schizophrenia meaning smoking could confound the link between cannabis and schizophrenia. Another study found that compared to non-users of cannabis, schizophrenia patients with a history of cannabis use spent a considerably greater time in in-patient care. Cannabis not only increases the likelihood of developing schizophrenia, but research suggests that schizophrenia patients with cannabis use may also have worse outcomes than those with schizophrenia generally. Additionally, research shows that schizophrenia and lifetime cannabis usage have certain similar genetic variations. Individuals with a stronger genetic predisposition to schizophrenia are more likely to initiate cannabis use and consume more cannabis over their lifetime.

Conclusions: Marijuana and schizophrenia are closely related. Our findings point to the necessity of public education efforts regarding the dangers of psychosis linked with cannabis usage.

Metabolic control of type 2 diabetes by targeting the glut 4 glucose transporter.

Authors: David Ibeojo, Lakshita Purushotham, Elvis Francelino Serafim Caleia, Mohd Arsalan Siddiqui

Tutors: Iryna Avramenko, PhD, Associate Professor

Affiliation: Department of Internal Medicine, Kyiv Medical University.

Background: Type 2 diabetes mellitus is a chronic metabolic disorder with a rising burden that is a major concern in healthcare worldwide and it is characterized by high levels of glucose in the blood (hyperglycemia). One of the key mechanisms involved in the development of type 2 diabetes is the inability of the body to effectively transport glucose into the cells where it is needed for energy production. The GLUT4 glucose transporter is one of the transporters responsible for mediating the uptake of glucose into the cells. In individuals with type 2 diabetes, there is a decreased number and/or function of GLUT4 transporters, which leads to reduced

glucose uptake and elevated blood glucose levels.

Methodology: In this study, we reviewed a number of literatures on the role of the GLUT4 glucose transporter in the development of type 2 diabetes and evaluated various strategies for targeting the GLUT4 transporter to improve glucose metabolism and control type 2 diabetes.

Main results: Targeting the GLUT4 glucose transporter has emerged as a potential strategy for improving glucose metabolism and controlling type 2 diabetes. Several approaches have been proposed for this, including:

1. Increasing GLUT4 expression: This can be achieved by using drugs that stimulate the activation of the GLUT4 transporters or by genetically modifying cells to increase the number of GLUT4 transporters.

2. Improving GLUT4 function: This can be achieved by using drugs that enhance the activity of the GLUT4 transporters or by genetically modifying cells to improve the function of the GLUT4 transporters.

3. Increasing insulin sensitivity: Insulin is a hormone that stimulates the uptake of glucose into the cells. Increasing insulin sensitivity can enhance the effect of insulin on GLUT4 transporters and improve glucose uptake.

Conclusions: Overall, targeting the GLUT4 glucose transporter holds great promise as a strategy for metabolic control of type 2 diabetes. However, more research is needed to fully understand the underlying mechanisms and to determine the most effective and safe approaches for improving glucose uptake in individuals with type 2 diabetes.

The effectiveness of ultrasound in the diagnosis of pneumonia including COVID-19 - a systematic review.

Authors: Rafał Rajski

Tutors: Medical Faculty of the University of Opole

Affiliation: Medical Faculty of the University of Opole

Background: Ultrasonography is a non-invasive, widely available and highly effective technique in the diagnosis of pneumonia. Its greatest increase in popularity occurred with the beginning of the SARS-CoV2 pandemic, in which it was widely used in the diagnosis and monitoring of COVID-19. Currently, the number of literature reports on lung ultrasonography is dynamically increasing and its use in everyday clinical practice is becoming more and more common.

Methodology: The work included the selection and analysis of original papers on ultrasound diagnostics of pneumonia and COVID-19 in the adult population. Pubmed service was used for this purpose. The analysis was divided into non-SARS-CoV2 related pneumonia and COVID-19.

Main results: In the group of non-SARS-CoV2 related pneumonia, 10 selected original papers were analyzed in the years 2004-2015. The mean sensitivity and specificity in this group were 92% and 87%, respectively. In the group of COVID-19, the analysis covered 8 original papers published over the years 2020-2021, where the average sensitivity was 91% and specificity 63%.

Conclusions: Ultrasound diagnosis of pneumonia is a technique of high sensitivity and specificity, therefore it can be successfully used in everyday clinical practice. High sensitivity in the diagnosis of COVID-19 allows for effective monitoring of the course of the disease, but due to the relative low specificity, it does not allow to clearly confirm the etiology of SARS-CoV2.

Cordyceps militaris, Opiocordyceps spp along with medical mushrooms vs "The last of us".

Authors: Kamil Hnatyk, Jan Lazur

Tutors: prof. Bożena Muszyńska

Affiliation: Jagiellonian University Medical College, Faculty of Pharmacy, Department of Pharmaceutical Botany, 9 Medyczna Street, 30-688 Kraków, Poland

Background: In the television series called “The last of us” Cordyceps spp. brain infection [CBI] caused by global warming (and therefore Cordyceps spp.to mutate and thrive en-masse via human hosts) is a parasitic fungal infection which virtually annihilated mankind. CBI ends with the death of the host or the loss of their 'humanity' and manipulating the host's will due to hallucinogens present in selected species from the Cordicipitaceae family (750 species) now belong to Ophiocordyceps spp. The infected person becomes hyper-aggressive and unable to reason or think rationally with a desire to spread the infection. Since the series and the video game of the same name are popular, many articles have emerged on whether the infection is actually possible. Global warming is a growing concern in the modern world, and by adding those two facts, the topic created by “The last of us” caused a great stir and questionable content in the Cordyceps.

Methodology: The analysis covered articles from various websites, such as onet.pl, (in Poland), elle.com, vox.com, and esquire.com. In addition to articles, analysis of an interview with João Araújo was also a part of methodology along with a detailed breakdown of the television series. The total number of articles analyzed was 5 (n=5). The analysis was performed over the course of one month from 11 to 15 of February 2023.

Main results: Having analyzed materials, the articles at first had intimidating titles, so someone who sees them and has no knowledge of mushroom biology may have already felt the fear of a possible fungal invasion. Television series seemed reliable with its arguments. Articles themselves, however, well present the situation as depicted in the film, after which they provide reliance, for example, on an interview with the João Araújo that it is almost impossible for such a situation to occur.

Conclusions: CBI is very well presented and convincingly described, so it was natural for most people to think that it can happen in the real world. Cordyceps militaris for example in fact is one of the healthiest fungi, however simple ignorance along with popularity of series led to only controversial titles of articles.

Visual snow – pixelated television static without any abnormalities in ophthalmic examination

Authors: Wiktoria Stańska, Przemysław Rusztyn, Anna Maria Torbus

Tutors: Piotr Maciejewicz, MD, PhD

Affiliation: Students' Scientific Club "LENS", Department of Ophthalmology, Medical University of Warsaw, Poland

Background: Visual snow (VS) is a rare clinical entity in the field of neuro-ophthalmology. It is described as the bilateral presence of dynamic, flickering dots affecting the whole visual field, often compared by patients to snow or pixelated television static. It can be a lifelong condition or have an acute onset. What is essential is that it can be an alarming symptom for many patients, lowering the comfort of life and making them seek help from different medical professionals.

Methodology: This systematic review aims to describe the updates in the etiology and treatment of visual snow. We searched for articles in English, presenting original data and published after December 2019. As it is a relatively new term in medicine our purpose is also to increase awareness of this disease because many healthcare professionals have difficulty identifying symptoms and diagnosing visual snow quickly.

Main results: Different studies show inconsistent data. Thus, it is impossible to conclude the exact pathophysiology of visual snow. Neuroimaging studies found, among others, hypermetabolism of the lingual gyrus, changes in the occipital cortex, increased gray matter in different brain areas, and altered connectivity in visual pathways. However, these findings are not present in all patients. Interestingly, visual snow patients often do not have abnormalities in the ophthalmic examination.

The pathophysiology of VS remains unknown. That is why mechanism-based therapy cannot be performed. According to the literature, among the most effective drugs are lamotrigine and topiramate. Unfortunately, they also carry a risk of worsening the symptoms. It is crucial to remember that visual snow can be worsened or induced by alcohol, recreational drugs, and certain medication like antidepressants. In terms of treatment, nonpharmacological approaches like color filters and repetitive Transcranial Magnetic Stimulation are also made.

Conclusions: Further studies are needed to understand the nature of VS fully. Even though the pathophysiology of the condition remains unknown and there is no strong recommendation for effective treatment, expanding the knowledge about visual snow can impact the comfort of patients. That is why hearing what the symptoms are is an immense relief for a patient and shortens the diagnostic path.

Advances in Babesia Vaccine Development: An Overview

Authors: Albert Gandurski, Marta Tokaj, Michał Jerzak, Weronika Stachera, Magdalena Szuba

Tutors: Dr n. med. Monika Dybicz

Affiliation: Katedra Biologii Ogólnej i Parazytologii

Background: Babesiosis is a tick-borne zoonotic disease, which is caused by various species of intracellular Babesia parasite. It is a problem not only for the livestock industry but also for global health. Significant global economic losses, in particular in cattle production, have been observed. Since the current preventive measures against babesiosis are insufficient, there is increasing pressure to develop a vaccine that would not only reduce symptoms among animals but also prevent the further spread of the disease. In this review, we survey the achievements and recent advances in the creation of antibabesiosis vaccine. The scope of this review includes the development of a vaccine against B. microti, B. bovis, B. bigemina, B. orientalis and B. divergens. Here, we present different strategies in their progress and evaluation. Molecular candidates for the production of a vaccine against various Babesia spp. are presented. Our study also describes the current prospects of vaccine evolution for successful Babesia parasites elimination.

Methodology: Systemic review was based upon 105 articles searched for in PubMed. Following search details were used: (Babesia[Abstract]) AND Vaccine[Abstract]. Additional insight was provided by papers cited in the original 105 searched articles.

Main results: This review summarizes information on vaccines against Babesia species, specifically B. microti, B. bovis, B. bigemina, B. divergens, and B. orientalis. Molecular candidates for the production of vaccines have been presented. The list of candidates includes BMSA, BmSA1, BmSP44, B. microti heat shock

protein 70, BmPROF, BboPROF, BbigPROF, BmAMA-1, BmRON2, N-terminal and C-terminal fragments of BmRON2 for B. microti, MSA, ribosomal phosphoprotein P0, RAP-1, BbTRAP2 for B. bovis, BbiTRAP-1, MIC-1, RAP-1, HAP2/GCS1, TROSPA for B. bigemina, BoMSA-2c1 for B. orientalis, BdAMA1 and BdP0 for B. divergens.

Conclusions: Protein-based subunit vaccines and whole-parasite vaccines against B. microti were described. Several of their advantages, as well as disadvantages, were pointed out. Trials to use an attenuated vaccine for B. bovis and B. bigemina were also reported. The process of transfection was also proposed as a method to fight against babesiosis. The gathered conclusions suggest significant progress in the development of a vaccine against Babesia spp. and, at the same time, show the need for further research

IMSC Team

Jerzy Krzeszowiak

Maciej Zając

Julia Jurga

Dominika Kondyjowska

Jakub Rusinek

Natalia Zmysłowska

Tomasz Kozioł

Justyna Sraga

Natalia Zamorska

Gabriela Kanclerz

Paulina Smoła

Natalia Kulicka

Dorota Komuńska

Jakub Batko

Aleksandra Borowiec

Mateusz Kozioł

Paulina Orszulak

Jakub Popielak

Michał Ziobro

Konrad Tomczyk

Magda Dymek

Olga Wilk

Julianna Dąbrowa

Viktoriia Popadynets

Julia Jagieła

Karolina Jałowiecka

Magdalena Śladowska

Katarzyna Sekulak

Patryk Sajkiewicz

Julia Pieczykolan

Maria Kurek

Hubert Borecki

IMSC

Mateusz Kęska

Marianna Zygmunt

Natalia Mroczek

Jagoda Sarad

Agnieszka Czapska

Magdalena Gumułka

Julia Pałka

Anna Kaczmarska

Michalina Jelonek

Aneta Kotlarek

Kinga Glądys

Agnieszka Piechowicz

Anna Yevstifeieva

Dominik Skoczylas

Aleksander Osiowski

Maksymilian Osiowski

Anna Książek

Kamila Siuda

Dominika Szumilas

Jan Jamroś

Natalia Gołąbek

Lizaveta Vashchelina

Katarzyna Jankowska

Maria Rozpłoch

Marta Kłosek

Wiktoria Sobocińska

Zuzanna Wyleciał

Aleksandra Flis

Photographers

Izabela Łysoń

Kajetan Żakowski

IMSC

SPONSORS


LAPARO
Medical Simulators


Med Coach
szkolenia dla wymagających


KLUB POD JASZCZURAMI
Kraków
Rynek Główny 8


mpec
kraków

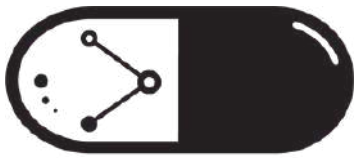

mindray
healthcare within reach


Saturn
Fitness


STANDARDY
MEDYCZNE
pediatria


BioCer


CRC INTERCARD
CLINCIAL RESEARCH CENTER


więcej niż LEK


KDM


medycyna praktyczna


LEPOLEK


medantlers


peels©


MEDHOODIE


MediaMarkt


Compendium
Medicine


POZycja
pierwsza


corpus mind


EgzaminLEK.pl


AMBOSS


SOFT COMMUNICATION
Training • Consulting • Recruitment


medu


IPSEN
Innovation for patient care


Camedica
for endoscopy


APARTAMENTY
BONEROWSKA 5


INPOINT
APARTMENTS


Medcases


homelyapartments
Kraków Old Town


HK
HOTELE KAZIMIERZ


Hotels Group
LARIS

PARTNERS

MR AME

MIXED REALITY ADVENCED MEDICAL EDUCATION

3. Konferencja CHOROBY JELITA GRUBEGO

CECH RZEMIOSŁ SPOŻYWCZYCH W KRAKOWIE

MAŁOPOLSKA

MEDICS 2023

issc 26th INTERNATIONAL STUDENT SCIENTIFIC CONFERENCE

BIMC Bukovinian International Medical Congress

CURSO DE GESTÃO EM SAÚDE

AIMS MEETING

JUVENES PRO MEDICINA

ICHAMS INTERNATIONAL CONFERENCE FOR HEALTHCARE AND MEDICAL STUDENTS

WIMC WARSAW INTERNATIONAL MEDICAL CONGRESS

SKY

SURGICON

RSU ISC 2023

IASSS POLAND

IMSC

MEDIA PATRONAGES

Radio Kraków

ALMA MATER
MIESIĘCZNIK UJ

PULS Medycyny
pulsmedycyny.pl

Konsylium24.pl
LEKARZE DLA LEKARZY

Perspektywy