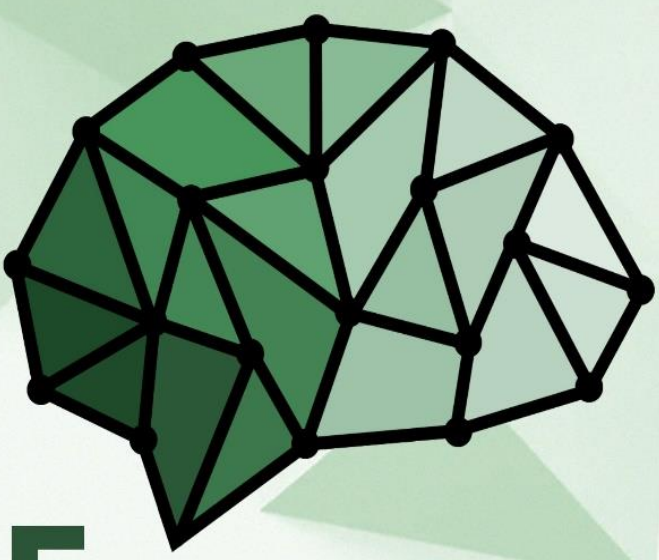
19TH INTERNATIONAL AND 61ST POLISH CONFERENCE

JUVENES PRO MEDICINA

Lodz, POLAND
11-14/05/2023



BOOK OF ABSTRACTS

The Official Abstract Book of Juvenes Pro Medicina 2023 Conference

ISBN: 978-83-67198-00-4

The Students' Scientific Association is not responsible for the content of abstracts contained in the book.

President of the JPM 2023 Conference: Agata Ptaszyńska

Main Coordinator: Joanna Kućmierz

Conference Supervision: Professor Ewa Sewerynek, MD, PhD

Workshops Coordinator: Michał Jeziorski

Financial Coordinator: Agata Ptaszyńska

Internal Affairs: Mateusz Matczak, Michał Jeziorski

External Affairs: Julia Reich, Alton Ajay Mathew

Social Media Coordinator: Michalina Bawor, Kacper Wiertelak-Makała

Organizing Committee Members: Piotr Dreja, Joanna Bogus, Olga Woźniak, Julia Ławniczak, Maciej Saar, Julia Jaromirska, Hanna Turkiewicz, Julia Kołodziejska, Szymon Turkiewicz

Book Editors:

Editor-in-Chief: Hanna Turkiewicz, Agata Ptaszyńska

Typesetting and Editorial: Hanna Turkiewicz, Agata Ptaszyńska, Kacper Wiertelak-Makała

Graphic Designer: Łukasz Suligorski, Klaudia Lipińska, Kacper Wiertelak-Makała, Agata Ptaszyńska

BASIC SCIENCE

11th of May 2023

Coordinators:

Mohamad Mahdi Mortada

Karolina Oleksiewicz

Olga Racińska

Jury:

Adrian Gajewski MD, PhD

Aleksandra Wardzyńska MD, PhD

Marta Zielińska MD, PhD, Assoc. Prof.

Dominika Danowska-Klonowska MD, PhD

Małgorzata Fabijańska MD, PhD

Angelika Adamus-Grabicka MD, PhD

Regulatory effect of Extracellular Matrix components and α2β1 integrin on connexin 43 density in cardiac fibroblasts.

Hoang Bao Ngoc Tran

Presenting author: Hoang Bao Ngoc Tran

Tutors: Prof. Jack Drobnik, Malgorzata Galdyszynska, MSc.

Co-authors: Prof. Jack Drobnik, Malgorzata Galdyszynska, MSc.

Affiliations: Medical University of Lodz

Introduction: Accumulation of an extracellular matrix (ECM) within the heart is the main feature of cardiac fibrosis. Recent studies have pointed out the connection between level of expression of Connexin 43 (Cx43, GJA1) and the activation of fibroblast which not only initiates, but also sustains the progression of the cardiac fibrosis. Collagen and laminin of ECM components can bind the adhesion receptors of fibroblasts and in this way regulate cell function. Different adhesion receptors are involved in this process (discoidin domain receptors, α1β1, α2β1, α10β1, α11β1 integrins). Regulatory involvement of only α2β1integrin in collagen accumulation by cardiac fibroblasts was described.

Aim of the study: The present study is aimed at examining whether collagen, laminin and α2β1 integrin exerts a regulatory effect on the expression of Cx43 on cardiac fibroblasts.

Materials and methods: The study was performed using stable cardiac fibroblast cell line cultured on three different substrates: collagen, laminin and bovine serum albumin (BSA). Density of Cx43 was estimated using flow cytometry. Effect of α2β1 integrin on Cx43 level was measured by cell based ELISA. Cells were treated with α2β1 inhibitor TC-I 15. Additionally the Cx43 expression level was measured using qPCR.

Result: The expression of GJA1 in cardiac fibroblasts which were cultured on collagen and laminin was higher than those were cultured on BSA. The density of Cx43 was significantly higher in both collagen and laminin coated plates. The effects of collagen or laminin was almost the same. For further experiments we used collagen as a main substrate. Inhibition of α2β1 integrin by TC-I 15 applied at concentration of 10 -7M and 10-8M increased connexin 43 (normalized by GADPH) density.

Conclusion: Both extracellular collagen and laminin exert a regulatory effect on Cx43 density on cardiac fibroblasts. The two tested ECM compounds increased CX43 density on the cells as well as elevate Cx43 gene expression. Meanwhile, inhibiting α2β1 integrin which is the receptor for both collagen and laminin increased Cx43 density. Identification of the main signaling pathway responsible for collagen and laminin effect on Cx43 in cardiac fibroblasts will be the task of the further study. "

Oral health status of patients in the days of pandemic covid 19

Oliwia Kowalczyk

Presenting author: Oliwia Kowalczyk

Tutors: Bartosz Bielecki-Kowalski PhD, Aleksandra Kroc-Szczepkowska DDS

Co-authors: Maja Podziewska, Paulina Agier

Affiliations: Medical University of Lodz

Introduction: The relation between oral cavity and sars-cov virus is the subject of numerous studies. The ACE2 and TMPRSS2 receptors, having an affinity for sars-cov virus, have been found in epithelial cells of the salivary gland mucosa and the entire oral cavity. The above receptors overexpresses in patients with periodontal disease. COVID-19 manifests in the mouth in the form of: blisters, vesicles, erosions, ulcers, plaque, halitosis, verrucous tongue, pustules, petechiae and even necrosis. Most of the common risk factors for severe sequelae of COVID-19 are strongly associated with poor oral health, tooth loss and periodontitis. Vaccine immunization is considered to be the best form of protection against Sars-Cov infection reducing morbidity and mortality.

Aim of the study: The purpose of this study was to analyze the dental status of patients reporting for treatment at the Institute of Dentistry during the coronavirus pandemic and the relationship with covid-19 vaccination.

Materials and methods: In study, data and examination charts of 2034 dental patients treated in Institute of Dentistry of the Medical University of Lodz in 2020-2022. For each patient, DMFT (Decayed-missed-filled-teeth) and dental treatment index indicators were calculated. Factors such as the enrollment reason, residence, distance from the dental institute and the number of vaccine doses received were also taken into account. The obtained data were subjected to statistical analysis using statgraphics centurion 18 program.

Results: 1368 patients were vaccinated with at least 1 dose of the vaccine, 655 were unvaccinated. The unvaccinated had statistically significantly more teeth with caries. Vaccinated patients had a higher intensity of dental treatment. Vaccinated patients were statistically significantly older than unvaccinated patients, the difference in median age was 11 years. The number of teeth with caries, filled and extracted teeth and the DMFT index increase statistically significantly with the age of the patients. Vaccinated patients had statistically significantly more teeth extracted than unvaccinated ones, and the DMFT inde was also higher. Those from countryside areas had a statistically significantly lower PUW index than those from urban areas.

Conclusions: The number of extracted, filled teeth and teeth with caries as well as the DMFT index increased with age. This is a relationship that has been confirmed by numerous studies including ours. No direct relationship between vaccination of patients and oral health has been proven. The group of vaccinated patients are statistically significantly older than the unvaccinated, and the statistically significant differences between the above groups is most likely due to the difference in the average age of patients in the two groups. The relationship between the DMFT index and intensity of treatment and area of residence is interesting. Our study showed a lower average PUW index and a higher treatment intensity index in people from countryside than in those living in a large city. In this aspect, our study stands in opposition to existing research findings. The results can be explained by likely logistical difficulties in the era of pandemics and lockdown. From rural areas, motivated patients in the course of treatment already started before the pandemic reached the institute, while from the urban area mainly patients with pain arrived.

Conquering the “silent thief of sight”- novel treatment strategy to target primary open-angle glaucoma at the molecular level

Julia Barczuk

Presenting author: Julia Barczuk

Tutors: Wioletta Rozpędek-Kamińska MD, PhD; Grzegorz Galita MD, Natalia Siwecka MD, Prof. Ireneusz Majsterek

Co-authors: Wioletta Rozpędek-Kamińska MD, PhD; Grzegorz Galita, Natalia Siwecka, Prof. Ireneusz Majsterek

Afiliations: Department of Clinical Chemistry and Biochemistry at Medical University of Lodz

Introduction: Glaucoma is characterized by neurodegeneration of the optic nerve and irreversible vision loss. Primary open-angle glaucoma (POAG) is the most prevalent type of glaucoma worldwide. Elevated eye pressure is a common phenomenon in POAG, which promotes Endoplasmic-Reticulum (ER) stress, subsequently leading to Unfolded Protein Response (UPR) pathway activation and POAG progression. Protein-kinase RNA-like endoplasmic reticulum kinase (PERK) is a crucial enzyme of the UPR pathway, hence its inhibition might pose an innovative approach to POAG treatment.

Aim of the Study: This study aimed to investigate a pre-selected small molecule PERK inhibitor’s properties. For that reason, the inhibitor’s cytotoxicity, apoptosis activation, and inhibition efficiency were measured.

Materials and Methods: The experiments were conducted on primary human trabecular meshwork (HTM) cells. The PERK inhibitor’s cytotoxicity was measured with the XTT assay. Apoptosis level was determined by caspase-3 assay. HTM cells were preincubated with the investigated inhibitor (3 μM-50 μM) and then incubated with the ER stress inducer- thapsigargin (Th) (500nM). HTM cells incubated with staurosporine constituted the positive control and HTM cells incubated in the cellular medium only were the negative control. RNA was isolated from all the HTM cells and transcribed to cDNA. Afterwards, the expression of three, crucial ER-stress-related genes- ATF4, DDIT3, and BAX was measured to determine the analyzed inhibitor’s efficiency.

Results: No significant cytotoxicity was shown at any applied concentration of the PERK inhibitor. Compared to the negative control, the investigated PERK inhibitor notably decreased the expression of the three main proapoptotic genes- ATF4, DDIT3, coding CHOP, and Bax. The inhibitor’s efficiency was the highest at 25 μM, significantly reducing apoptosis and caspase-3 activity.

Conclusions: The above-described results suggest that the investigated PERK inhibitor may offer a novel treatment strategy against POAG.

This research was funded by grant OPUS no. 2016/21/B/NZ5/01411.

Assessing the role of HIF-1 in the signaling pathways of BDNF and ProBDNF in individuals with obstructive sleep apnea

Julia Jaromirska

Presenting author: Julia Jaromirska

Tutors: Agata Gabryelska MD, PhD; Marcin Sochal MD, PhD

Co-authors: Filip Grzybowski, Szymon Turkiewicz, Marta Ditmer, Mikołaj Malicki

Affiliations: Medical University of Łódź

Introduction: Obstructive Sleep Apnea (OSA) is a chronic condition characterized by intermittent hypoxia associated with multiple comorbidities, including psychiatric disorders, such as depression, insomnia, and cognitive impairment. The brain-derived neurotrophic factor (BDNF) and proBDNF singling pathways have been shown to be involved in this group of diseases. Furthermore, their expression might be affected by hypoxia-inducible factor 1 (HIF-1), which is an oxygen sensitive transcription factor due to its alpha subunit.

Aim of the study: Therefore, this study aimed to evaluate the association between HIF-1α, BDNF, and proBDNF protein levels among OSA patients.

Materials and methods: This study included 40 individuals who underwent polysomnography (PSG) and were divided into the OSA group (n = 20; AHI ≥ 30) and healthy control (n = 20; AHI < 5) based on the apnea−hypopnea index (AHI). All participants had their peripheral blood collected in the evening before and the morning after the PSG. BDNF, proBDNF, and HIF-1α protein concertation measurements were performed using ELISA.

Results: No differences were found in BDNF, proBDNF, and HIF-1α protein levels between OSA and the control group, both in the evening and in the morning. In the OSA group, i.e., the linear regression model, the morning BDNF protein level was predicted by age (ß = −0.389, p = 0.023) and the mean SpO2 of desaturations during sleep (ß = −0.577, p = 0.002). This model accounted for 63.3% of the variability in the morning BDNF protein level (F = 14.639, p < 0.001). The morning proBDNF protein level was predicted by age (ß = −0.395, p = 0.033) and HIF-1α morning protein level (ß = −3.192, p = 0.005). This model accounted for 52.4% of the variability in the morning BDNF protein level (F = 9.355, p = 0.002).

Conclusions: The obtained results suggest that the HIF-1 transcription factor might be involved in the pathway activated by proBDNF, which may have protective properties from hypoxia in OSA patients.

Evaluation of cytotoxicity of new platinum based complexes with flavonoids

Karolina Oleksiewicz

Presenting author: Karolina Oleksiewicz

Tutors: Małgorzata Fabijańska, PhD, Prof. Joanna Sikora

Co-authors: -

Affiliations: Medical University of Łódź

Introduction: Cisplatin is commonly used to treat solid tumors, e.g., ovarian and breast cancer. It is one of the most frequently used medications in anticancer therapy. However, its application is limited by serious side effects such as nephrotoxicity, myelotoxicity, ototoxicity, allergy, and the development of resistance in tumor cells. Chemoprevention with the use of natural or synthetic compounds, such as flavonoids, may inhibit or prevent cancer progression, which is why it has become an attractive strategy to fight cancer. Combination therapies using platinum (II) compounds with documented anticancer properties is a new concept in the search for new ways to treat cancer.

Aim of the study/purpose: The aim of this study was to synthesize three new compounds of flavonoid derivatives and estimate their cytotoxicity towards breast cancer cell lines in vitro.

Material and methods: The structure of newly synthesized compounds was determined by elemental analysis, IR, 1H NMR spectroscopy and electrospray mass spectrometry. The biological part of experiment was conducted on MCF-7 human breast adenocarcinoma cells and MDA-MB-231 human breast adenocarcinoma cells. Cell lines were cultured in standard conditions and recommended medium with supplementations. The viability of cancer cells was determined using colorimetric WST-1 assay and IC50 values were calculated. The biological activity of these three compounds was studied with regard to non-modified cisplatin.

Results: A series of platinum(II) complexes of the type [PtL2Cl2]; [L=7-amino-2-methylchromone, 7-aminoflavon and 6-aminoflavone] was synthesized by the reactions of K2PtCl4 salt with different flavonoid derivatives at molar ratios of 1:2. The structure of obtained compounds was confirmed by elemental and spectroscopic analysis. Study revealed different cytotoxicity of tested cisplatin analogs towards cancer cells in vitro. MCF-7 and MDA-MB-231 cells were very sensitive to cisplatin, with an IC50 value below 1 μM. Pt(II) complex with 7-aminoflavone revealed great cytotoxicity towards tested cancer cell lines, with IC50 values comparable to cisplatin (IC50=1μM). However, platinum complex with 6-aminoflavone had lower cytotoxicity, with an IC50=30 μM value about an order of magnitude higher than those of compound with 7-amioflavones. Pt(II) complex with 7-amino-2-methylchromone ligands was not cytotoxic up to 100 μM. Based on the results, two compounds were selected for further in-depth studies to elucidate their mechanism of cancer cell growth inhibition.

Conclusions: Results may indicates the importance of the number and position of substituents in the aromatic ring in relation to the intensity of cytotoxic properties of flavonoid-based complexes. Therefore, additional investigation is necessary, as the compounds could be a promising candidates for further preclinical research.

Is the variability of the infraspinatus muscle constant? – a comparative study on human fetuses and adults

Krzysztof Koptas

Presenting author: Krzysztof Koptas

Tutors: Łukasz Olewnik, D.P.T, PhD, Assoc. Prof.

Co-authors: Nicol Zielinska

Affiliations: Medical University of Lodz, Department of Anatomical Dissection and Donation

Introduction: The infraspinatus muscle is one of the rotator cuff muscles. It consists of two parts: the superior – transverse and the inferior – oblique. The transverse part origin is located on the inferior surface of the spine of the scapula and insertion is located on the tendinous part of the oblique part of the infraspinatus muscle. The oblique part of the infraspinatus muscle originates from the infraspinous fossa, below the transverse part and is fan-shaped. It inserts onto the middle and lateral impression of the head of the humerus. During ontogenesis, the deltoid, infraspinatus, supraspinatus and teres minor muscles arise from a common premuscle mass. The main function of the infraspinatus muscle is an external and lateral rotation of the humerus. It also provides dynamic stabilization to the glenohumeral joint.

Aim of the study: This study aims to compare the variability of the infraspinatus muscle in adults and human fetuses. Our purpose was to check if the variabilities are defined during the ontogenesis

Material and methods: The research, we dissected 100 human adults' upper limbs and 50 upper limbs of human fetuses. All cadavers were fixed in a 10% formalin solution. Upon dissection, the following morphological features of the infraspinatus muscle were assessed: the number of bellies of the oblique part of the infraspinatus muscle, the fusion with the teres minor muscle, morphometric measurements of the infraspinatus muscle.

Results: After examination of adults' upper limbs, we have defined two Types of the infraspinatus muscle, based on the number of bellies of the oblique part of the infraspinatus muscle. Type I - single belly and single tendon. Its origin is on the infraspinous fossa and insertion on the greater tubercle of the humerus. Type II - two bellies, two tendons. The superior one originates from the upper half of the infraspinous fossa and inserts onto the greater tubercle of the humerus. The inferior one originates from the lower half of the infraspinous fossa and has its insertion on the greater tubercle of the humerus just below the upper belly insertion. The frequency of Type I was 77% and Type II was 23%. Another variation we have found is the fusion of the infraspinatus and teres minor muscles. We have found it in 10 cases. Using classification made on the adult population we have examined the fetuses. We have found both types of the infraspinatus muscle and the fusion with teres minor muscle. On human fetuses, the frequency of Type I was 74% and Type II is 26%. We have found a fusion of the infraspinatus and teres minor muscles in 6 cases.

Conclusion: The frequencies of the variations of the infraspinatus muscle in adults and fetuses are similar. Taking this into account, we can conclude that the morphological variability of the infraspinatus muscle is determined during the ontogenesis.

IMMUNOLOGY

11th of May 2023

Coordinators:

Bernadine Abassah

Kacper Kuczyński

Jury:

Marcin Kurowski PhD

Adrian Bekier PhD

Adrian Gajewski PhD

Aleksandra Likońska MD

Aleksandra Wardzyńska PhD

U50488 exerts anti-inflammatory action in experimental colitis

Emilia Januszkiewicz

Presenting author: Emilia Januszkiewicz

Tutors: PhD, Associated Professor Marta Zielińska

Co-authors: BSc Mikołaj Mierzejewski, MSc Weronika Machelak

Affiliations: Medical University of Łódź

Introduction: One of the primary risk factors for the onset of gastrointestinal malignancies is inflammation. Kappa Opioid Receptors (KOP) localized in gastrointestinal tract seems to possess a preventive role in colitis development.

Aim of the study: was to determine anti-inflammatory potential of U50488, a synthetic, selective KOP agonist in the mouse model of the intestinal inflammation.

Materials and methods: In our study, Dextran Sulfate Sodium (DSS) was given to induce both acute and chronic inflammation in the colon. In acute model, DSS was given to mice for 5 days, following 3 days of tap water to induce colitis. To induce chronic inflammation, DSS was given for 7 days, following 14 days of this cycle was repeated twice. In acute colitis, U50488 was administrated at different doses (1- 5 mg/kg, i.p.) and different time points. In case of chronic colitis, U50488 was given at the dose of 1 mg/kg. Colonic tissues were isolated for molecular analysis after macroscopic scoring. RAW 264.7 macrophage cell line was used in in vitro experiments, and lipopolysaccharide (LPS) was used to mimic inflammation. To investigate how U50488 affected the viability and cytotoxicity of the cells, the Griess test and MTT assay were performed.

Results: U50488 possesses anti-inflammatory effect as indicated by the macroscopic scoring. Anti-inflammatory potential was verified in both chronic and acute colitis model using RT-PCR, expression of, NOS2, IL-1B, IL-6 indicates that U50488 exerts anti-inflammatory potential. Moreover, mRNA expression levels in several claudins, involved in the maintenance of the intestinal barrier, are elevated in groups treated with U50488. In vitro results show that, U50488 influenced cell viability and reduced a release of NO in vitro, suggesting its anti-inflammatory properties.

Conclusions: U50488 does exert anti-inflammatory potential in experimental colitis.

Coinfection of syphilis and HIV – epidemiological evaluation at Dermatology Department

Iryna Predko

Presenting author: Iryna Predko

Tutors: Prof. Aleksandra Lesiak MD, PhD

Co-authors: Natalia Bień, Julia Kołodziejska

Affiliations: Medical University of Lodz

Introduction: Syphilis and HIV are sexually transmitted diseases, which affect similar patients' groups. There is a dependency that syphilis facilitates the transmission and acquisition of HIV. Moreover, HIV infection has been reported to accelerate the natural history of syphilis. The most common concomitant diseases of these two infections are gonorrhea, chlamydiosis, HBV or HCV infection.

Aim of the study: The purpose of this study was to analyze a group of patients hospitalized at the dermatology department between 2015-2022 because of both syphilis and HIV infection.

Material and methods: A 7-year retrospective analysis of patients with a syphilis and HIV infection was conducted. The study group consisted of patients who were admitted to the Department of Dermatology. Patient data were analyzed for age, gender, length of stay, medical diagnosis (ICD-10), comorbidities, treatment methods and clinical signs of syphilis and HIV infection.

Results: In our research out of the 511 patients hospitalized because of syphilis at the dermatological department between 2015-2022, 98 of them had concomitant HIV infection. Among patients with both syphilis and HIV infection there were 96 males (97.9%) and 2 females (2.1%). The average age of patients was 35.6 years. The youngest patient was 18 years old and the oldest was 70 years old. Most of the hospitalizations were one-day stays (83%) that were related to drug administration. 63.3 % of our patients had concomitant diseases. The most common comorbidities were hepatitis C (29.6%), gonorrhea (15.3%) and psychiatric disorders (15.3 %). During the study period, there was an increase in the number of HIV infections in the group of syphilis-positive patients (from 2015 in 5.3% to 2022 in 28.4%). 50% of patients presented symptoms of syphilis and the most common of them were macular rash (19.4%) and ulcerations (17.4%). Analogously, 45% of patients presented symptoms of HIV and most frequent were lymphadenopathy (24.5%), fever (11.2%) and loss weight (11.2%).

Conclusions: During the last few years, we could observe a considerable increase in the number of patients diagnosed with coinfection of syphilis and HIV. The significantly higher number of them were observed in men especially among men who have sex with men (MSM). The most common concomitant disease among syphilis-infected and HIV-positive patients was HCV infection, gonorrhea, and psychiatric disorders. The above analysis underscores the ongoing public health challenges associated with these disorders and the need for increasing population awareness and preventive efforts.

The potential protective effect of eosinophils in the infection of human lung vascular endothelium by the human coronavirus 229E

Jonatan Rataj

Presenting author: Jonatan Rataj

Tutors: Maciej Chałubiński, MD, PhD, Assoc. Prof.

Co-authors: Mateusz Gawrysiak M.Sc.

Affiliations: Medical University of Łódź

Introduction: Human coronaviruses can cause recurrent respiratory infections of upper and lower airways commonly, but they are also responsible for heavy exacerbations of chronic respiratory diseases, including HCoV-229E which constitute 5-10% of all upper respiratory tract infections in adults. Recent studies have shown a possible role of eosinophils in eliminating viral pathogens. As a matter of fact eosinophils are equipped with an assortment of toolkit that makes them capable of recognizing, responding and coordinating an antiviral response, especially to RNA viruses. Among the cytokines produced by eosinophils are the type I and type II interferons that contribute to the induction of an antiviral state. It is possible that eosinophils may actively participate in antiviral immune responses. Especially, their role in the modulating of the infection of the lung vascular endothelium by coronaviruses is not known.

Aim of the study: The aim of the study was to assess if eosinophils may display antiviral properties and support the vascular endothelium in immune responses against coronavirus 229E infection.

Material and methods: Eosinophils have been isolated via density gradient centrifugation followed by negative immunomagnetic selection using anti-CD16 antibody-coated magnetic beads. For the inflammatory activation of eosinophils was used an in vitro model with TLRs agonists: poly I:C and R848, which are able to activate TLR3 and TLR7/8 receptors. Incubation with TLR-agonists was performed for 24 hours and analysed mRNA expression of several markers of antiviral response using real time pcr: interferons, interferon stimulated genes (OAS-1, PKR, MX-1), IL-6, eosinophil derived neurotoxin (EDN). Protein concentration was assessed by ELISA assay.

Results: Results showed that after 24 hours of eosinophils incubation with TLR agonists there was mRNA up-regulation, firstly of interferons, and also proteins of intracellular mechanisms of antiviral immunity – 2'-5'-oligoadenylate synthetase 1 (OAS-1), protein kinase R (PKR) and interferon-induced GTP-binding protein Mx-1 (MX-1). Eosinophils after stimulation produced RANTES and IFN-beta. These results suggest that activated eosinophils may support vascular endothelium during viral infection but further studies are needed.

Conclusions: Eosinophils can display antiviral properties and therefore play a significant role in antiviral response of lung endothelium infected with HCoV-229E.

Thrombospondin-1 serum concentration predicts infectious complications in patients treated with BeEAM/BEAM conditioning regimen and autologous stem cell transplantation

Kacper Kościelny

Presenting author: Kacper Kościelny

Tutors: Damian Mikulski MD

Co-authors: -

Affiliations: Medical University of Lodz

Introduction: Autologous stem cell transplantation (AHSCT) is a procedure indicated for the treatment of multiple hematologic malignancies. Infectious complications of AHSCT are the most common adverse effects of the therapy, resulting in prolonged hospitalization and deterioration of patient well-being.

Aim of the study: The purpose of this study was to examine the serum levels of thrombospondin-1 (THBS-1) as a potential biomarker for predicting bacteremia and other infectious complications in AHSCT recipients.

Materials and methods: Blood samples were collected from 30 patients treated with AHSCT with the BeEAM/BEAM (bendamustine/carmustine, etoposide, cytarabine, melphalan) conditioning regimen at four time points (at first day of BeEAM/BEAM regimen administration, Day 0 (AHSCT), Day +7, Day +14) during AHSCT. ELISA kits were used to determine the THBS-1 levels according to the manufacturer's instructions. Adverse events were assessed according to the CTCAE (NCI Common Terminology Criteria for Adverse Events) v. 5.0. A blood culture was considered positive (bacteremia) when an organism grew in one or more bottles, with the exception of coagulase-negative Staphylococci (CoNS), for which two separate positive blood cultures with the same antibiogram were required to be considered true bacteremia.

Results: The study group consisted of 30 patients, and the mean age was 45 ± 13 years. The main indication for AHSCT treatment in the group was Hodgkin lymphoma (40%) followed by Mantle Cell lymphoma (23.3%).The median time to neutrophil engraftment was 11 days. The most prevalent infectious adverse events in the study group were febrile neutropenia (FN) (83.3%), infectious enterocolitis (20.0), and bacteremia (36.7%). At the first day of administration BeEAM/BEAM regimen mean serum concentration of THBS-1 was 18.55 ± 9.34 μg/ml, at Day 0 decreased to 8.94 ± 5.60 μg/ml ($p=0.0003$), at Day +7 again decreased to 1.18 ± 1.00 μg/ml ($p=0.0001$) and at Day +14 increased to 3.09 ± 3.06 μg/ml ($p=0.0002$). Using the ROC curve, the predictive value of the THBS-1 concentration obtained before conditioning chemotherapy was determined (AUC=0.732, $p=0.0186$) and cut-off point was established on a THBS-1 concentration of 12.9 μg/ml resulting in 64% sensitivity and 84% specificity. Patients with THBS-1 concentrations below the mean at first day of BeEAM/BEAM regimen developed FN more rapidly during AHSCT (median:12 days IQR: 9.5 - 14) than those with THBS-1 concentration above the mean (median:18.5 IQR: 14 - 29) ($p=0.0037$). Also, patients who developed Clostridium difficile enterocolitic infection during hospitalization had lower THBS-1 mean concentration at Day +7 (0.53 ± 0.32 μg/ml vs. 1.35 ± 1.06 μg/ml, $p = 0.0307$).

Conclusions: Patients with a low concentration of THBS-1 had a higher risk of bacteremia, shorter time to febrile neutropenia and tend to develop C.difficile infection, indicating THBS-1 concentration's potential value as an infectious complications biomarker.

The effect of human rhinovirus HRV16 and coronavirus 229E co-infection on the inflammatory activation of human lung vascular endothelium

Marta Chuncia

Presenting author: Marta Chuncia

Tutors: Maciej Chałubiński, MD, PhD, Associate Professor

Co-authors: Mateusz Gawrysiak, MSc

Affiliations: Medical University of Łódź

Introduction: Respiratory viral infections caused by rhinoviruses (HRV) and coronaviruses (HCoV) are common and often result in mild to severe respiratory diseases. Recent studies have suggested that co-infections of these two viruses are possible, especially that the seasonal peaks for HRV and HCoV are overlapping. However, the effects of co-infection with HRV16 and HCoV229E on endothelial cells have not been extensively studied.

Aim of the study: The aim of this study was to investigate the effect of co-infection with HRV16 and HCoV229E on the human lung microvascular endothelium (HMVEC-L).

Material and methods: HMVEC-Ls were infected with HRV16, HCoV229E or both simultaneously in an in vitro model. We assessed cytopathic effect (in the light microscope), metabolism (in the MTT assay and the resazurin assay) and also expression of interferons (IFN-β), inflammatory cytokines (RANTES, IL-8), prothrombotic factors (TF), anti-viral agents (OAS-1, PKR) and pattern recognition receptors (TLR7, RIG-I) in real-time PCR. We also assessed the number of viral copies in real time PCR. Protein concentration was assessed by ELISA assay.

Results: Results showed that HRV16 infection of lung endothelium was rapid and stronger than HCoV229E which was delayed. Single HRV16 infection contributed to a rapid and stronger expression of IFN-β, interferon-dependent genes (OAS-1, PKR, MX1) and pattern recognition receptors (TLR7, RIG-I) compared to a single infection of HCoV229E. Regarding the co-infection the expression of these genes was comparable to a single HRV infection. The expression of RANTES, IL-8 and TF were increased especially in single HRV infection and co-infection as factors of inflammatory and pro-thrombotic activity. In the light microscopy was observed that in HRV infection in short-time caused cytopathic effect, but then endothelial monolayer was restored. HCoV229E infection caused a strong cytopathic effect after 48h of infection. What is most important is that in co-infection there were less death cells than in the single infection of HCoV229E. MTT assay confirmed that HRV16 inhibits metabolism in short-time, but HCoV229E 48h after infection. Examining the number of HCoV copies we observed that in co-infection the number of copies of HCoV is reduced compared to single infection.

Conclusion: It seems that HRV16 and HCoV229E have different effects on endothelial cells - HRV16 induces a strong and rapid inflammatory effect in contrast to HCoV229E which induces delayed immune response. Furthermore, it appears that co-infection of the vascular endothelium of HRV16 and HCoV229E does not result in a stronger cytopathic effect than single infections but in co-infection HRV16 can inhibit HCoV299E replication. It is possible that this is due to the innate antiviral response induced by HRV.

This study was funded by grants of Medical University of Lodz, Poland no. 564/1-000-00/564-20-049.

ONCOLOGY

11th of May 2023

Coordinators:

Weaam Elrashid

Klaudia Szatanik

Jury:

Szymon Janczar, PhD

Prof. Hanna Romańska-Knight

Prof. Agnieszka Kołacińska-Wow

Targeting the Unfolded Protein Response in colorectal cancer treatment

Kamil Saramowicz

Presenting author: Kamil Saramowicz

Tutors: Natalia Siwecka, MD , Wioletta Rozpędek-Kamińska, PhD, Danuta Piotrzkowska, PhD, Grzegorz Galita, MSc; Dariusz Pytel, PhD ; Professor Ewa Kucharska, MD, PhD; Prof. Łukasz Dziki, MD, PhD; Prof. Adam Dziki, MD, PhD; Prof. Ireneusz Majsterek, PhD

Co-authors: Zuzanna Granek

Affiliations: Medical University od Lodz

Introduction: Hypoxia and nutrient deprivation are characteristic features of tumor microenvironment. Such unfavorable conditions affect the protein folding and induce endoplasmic reticulum (ER) stress. As a result, the PERK branch of the Unfolded Protein Response (UPR) signaling pathway become activated in order to maintain protein homeostasis and restore oxidative balance. In cancer cells, PERK acts mainly cytoprotective and is implicated in tumor growth and progression. Therefore, PERK may be a potential target for development of new antineoplastic therapies.

Aim of study: The main purpose of the present study was to evaluate the effectiveness of the small-molecule PERK inhibitor NCI 12487 (NCI) in an in vitro model of colorectal cancer (CRC).

Materials and methods: The effectiveness of NCI was examined in terms of cytotoxicity, apoptosis, and cell cycle progression. The study was conducted on human colon adenocarcinoma (HT-29) cells and normal human colon epithelial cell line (CCD 841 CoN). For cytotoxicity assessment, cells were treated with the PERK inhibitor at concentrations of 0.75-100μM + 50mM or 0.1% DMSO (vehicle). Untreated cells constituted a negative control, and cells treated with 100% DMSO – a positive control. After 16, 24, and 48h, the cytotoxicity was measured by colorimetric XTT assay. Evaluation of apoptosis was performed by caspase-3 assay, and cell cycle analysis – by flow cytometry, after incubation of cells with NCI at 3-100μM or with 0.1% DMSO for 24h. Positive control constituted cells treated with 1μM staurosporine or nocodazole, respectively, for 16h, whereas untreated cells served as negative control. Additionally, to explore the efficacy of PERK inhibitor upon ER stress conditions, cells were pretreated with 3μM or 25μM of NCI for 1h and then treated with 500nM thapsigargin (Th), an ER stress inducer, for 24h.

Results: Cytotoxicity assessment revealed that the selected PERK inhibitor significantly reduced HT-29 cells viability in a dose- and time-dependent manner with no notable cytotoxic effect in normal CCD 841 CoN cells. NCI at the concentration of 25μM was the most effective, regardless of incubation time. NCI also induced caspase-3 activity and evoked cell cycle arrest in the G2/M phase in cancer cells, without affecting normal cell line. Importantly, under Th-induced ER stress conditions, the tested compound enhanced proapoptotic events in cancer cells, and at the same time rescued normal cells.

Conclusion: Considering the heterogeneity of cancers and their resistance to currently available therapies, the development of innovative, effective, and safe treatment strategies have become an essential goal of modern medicine. As demonstrated above, it can be concluded that small-molecule PERK inhibitors may in fact be promising candidates for development of novel targeted cancer therapy.

This work was supported by grant OPUS no. 2016/23/B/NZ5/02630 from the Polish National Science Centre.

Assessment of colonization and infection epidemiology in patients undergoing allogenic hematopoietic stem cell transplantation – a single-centre study

Kamila Stańczak

Presenting author: Kamila Stańczak

Tutors: Agnieszka Pluta MD, PHD

Co-authors: -

Affiliations: Medical University of Lodz

Introduction: Infections are one of the main causes of death after allogeneic (allo) hematopoietic stem cell transplantation (HSCT).

Aim of study: The aim of the study was an evaluation of the colonization and infections epidemiology in patients undergoing allo-HSCT in the full period 2012 – 2022 in one Hematology Department.

Materials and methods: We performed a single-center, retrospective analysis to evaluate the colonization with pathogenic microorganisms, the incidence of infections up to 100 days after allo-HSCT, and the effectiveness of the prophylaxis used in patients undergoing allo-HSCT. All 44 patients with median age 45 years (range: 18 – 68 years) underwent allo-HSCT transplantation in the full period 2012 – 2022 in the Department of Hematology of the Medical University of Łódź.

Results: Colonization was observed in 84.1% patients before allo-HSCT, and the most common location was anus area 55.4% (Klebsiella pneumoniae). Multi-drug resistant bacteria (MDR) accounted for 50.7% of positive colonization cultures before allo-HSCT. In the post-transplantation period, infections occurred in 86.4% of patients after allo-HSCT. Bacteremia was observed in 47.7% patients, and it was mostly caused by methicillin-resistant coagulase-negative Staphylococcus epidermidis (MRCNSE) - 39.4%. Infection of the skin near the central-line was found in 27.3% of patients, urinary tract infections - in 56.8% and gastrointestinal infections – in 38.6%. MDR pathogens accounted for 58.1%. The most common one was extended-spectrum beta-lactamase (ESBL), observed in 50.8%. Fungal infections were reported in 31.8% and viral infections in - 29.5%.

Conclusions: Colonization evaluation can be an effective tool to identify patients with a high risk of secondary infections with the colonizing pathogen, potentially resulting in a prompter implementation of targeted treatment and improved infection outcome.

Dosimetric predictors of the severity of lymphocyte depletion among patients undergoing radical radiotherapy for non-small cell lung cancer

Mateusz Łaszczych

Presenting author: Mateusz Łaszczych

Tutors: Zuzanna Nowicka, Bartłomiej Tomasik, Wojciech Fendler

Co-authors: Kasper Kuna, Bartosz Sobocki, Michał Dąbrowski

Affiliations: Medical University of Gdańsk

Introduction: Over 60% of patients with non-small cell lung cancer (NSCLC) are treated with radiation therapy (RT). Low-dose spill observed in modern RT techniques such as volumetric modulated arc therapy (VMAT) or intensity-modulated radiotherapy (IMRT) may lead to lymphopenia. Given the rising importance of immunotherapy, suppression of the immune system may be counterproductive in patients treated with this method and radiotherapy.

Aim of the study: We aimed to investigate the impact of treatment plan parameters, RT technique, and clinical factors on lymphopenia occurrence in patients treated for NSCLC.

Material and methods: Retrospective clinical, laboratory, and dosimetric data of patients from two oncology centers (Department of Teleradiotherapy Copernicus Memorial Hospital in Łódź and Department of Oncology and Radiotherapy Medical University of Gdańsk) were extracted. Dosimetric data included dose-volume histogram parameters for planning tumor volume, lungs, heart, and whole body. Lymphopenia was defined as absolute lymphocyte count (ALC) <0.5×10^3/µl. Spearman correlation-based feature selection was used to choose variables most strongly related to the change in lymphocyte levels, defined as a difference between ALC prior to RT start and ALC nadir during 3 months after the end of RT treatment.

Results: Between 2010 and 2022, 303 patients were treated with VMAT or IMRT. Median pre-RT ALC equalled 2.03×10^3/µl (Q1 1.55 - Q3 2.59) and decreased to 0.57×10^3/µl (Q1 0.40- Q3 0.81) post-RT (p<0.001). Lymphopenia was noted in 124 patients (41%) during or immediately after RT. ALC decrease correlated with all DVH parameters. The strongest correlation was observed for body V55, defined as the percentage of organ volume receiving more than 55 Gy, (p <0.001, r =0.29), lung sum mean dose (p <0.001, r=0.29), and heart V50 (p<0.001, r=0.28). Univariate analysis showed that patients treated with IMRT developed lymphopenia more frequently than patients treated with VMAT (chi2, p=0.002). In multivariable logistic regression adjusted for patient sex and age, body V55 (Odds Ratio=1.28, 95% CI 1.01-1.61, p= 0.038), lung sum mean dose (OR=1.16, CI 1.17-1.25, p<0.001) and baseline ALC (OR=0.38, CI 0.26-0.57, p<0.001) were significant predictors of RT-related lymphopenia. The radiotherapy technique (VMAT vs IMRT) and heart V50 were not significant (p=0.828 and 0.352, respectively). The model achieved an area under the ROC curve (AUC) of 0.78 with a sensitivity of 0.62 and a specificity of 0.72.

Conclusions: Dosimetric parameters are associated with the occurrence and severity of RT-induced lymphopenia. Extrapolation of our results to clinical outcomes in immunotherapy-treated individuals would require further studies.

Prognostic role of [18F] FDG-PET/CT standardized metabolic parameters in cervical cancer

Matylda Sobczak

Presenting author: Matylda Sobczak

Tutors: Prof. Wojciech Fendler, Marcin Miszczyk

Co-authors: Emilia Staniewska

Affiliations: Medical University of Lodz

Introduction: Cervical cancer is the third leading malignancy among women worldwide. In 2020, there were 3,862 new cases of cervical cancer and 2,137 deaths recorded in Poland. Identifying prognostic factors is crucial for optimizing treatment strategies and providing patients and their families with information regarding the risk of recurrence or mortality.

Aim of the study: The aim of the study was to evaluate the prognostic role of fluorodeoxyglucose positron emission tomography with computed tomography ([18F] FDG-PET/CT) examination in cervical cancer.

Materials and methods: This was a retrospective analysis of 230 patients treated for histopathologically confirmed cervical cancer with definitive CRT between 2011 and 2017 at the IIIrd Department of Radiotherapy and Chemotherapy, Maria Skłodowska-Curie National Research Institute of Oncology, Gliwice, Poland who underwent [18F] FDG-PET/CT before the start of treatment. Information on tumor staging and patient demographic characteristic were recorded. Based on clinical variables and metabolic parameters of the tumor evaluated in PET: total lesion glycolysis (TLG) and median-standarised uptake volume (SUVmedian), two Cox proportional hazards models were created to predict overall survival of patients with cervical cancer. Then, the quality of both models was compared based on the -2 Log Likelihood and Akaike Information Criteria (AIC). Metabolic parameters were obtained using the threshold of 30% SUVmax within the margin of the tumor.

Results: The median age of patients was 57 years (25-75% 49-64 years). Of 230 cases, 193 (84%) were FIGO stage III tumors. The vast majority of patients (n=219, 95%) had squamous cell carcinoma. In univariate analyses high TLG30% [g] and high ZUBROD score predicted reduced overall survival with hazard ratios of 1.001 (95% CI, 1.000-1.001) and 4.2 (95% CI, 1.5-11.5), respectively. The quality of the multivariate model containing only clinical variables (FIGO stage, ZUBROD score and histological type of cancer) had AIC of 912, while the model with tumor metabolic parameters from FDG-PET/CT (total lesion glycolysis and median-standarized uptake volume) and clinical variables had an AIC of 904 what indicates a better model fit.

Conclusions: Metabolic parameters of tumor (TLG30% and SUVmedian 30%) were associated with survival outcomes in cervical cancer patients. Full model containing clinical factors as prognostic factors and metabolic parameters of the tumor evaluated in [18F]FDG-PET/CT had better prognostic value compared to a model that only includes clinical factors.

Bioinformatic analysis of the clinical significance of the HMGA1 gene in gastric cancer

Michał Wosiak

Presenting author: Michał Wosiak

Tutors: Aleksandra Sałagacka-Kubiak, PhD, Associate Professor

Co-authors: -

Affiliations: Medical University of Lodz

Introduction: Gastric cancer (GC), despite the constantly improving knowledge of its pathogenesis and novel ways of treatment, remains one of the most lethal cancers. The currently proposed pathological pathways in gastric carcinogenesis (Correa's and Carneiro's) build on several molecular disturbances similar to all cancerous diseases. A novel approach could be the HMGA1 gene, coding a small non-histone nucleic protein from the High Mobility Group family commonly associated with various cancers. It is often called the "architectural factor" or the "hub of nuclear function" for it partakes in various gene expression regulatory processes. While its cancerous role and specific pathways are still being investigated, high levels of both HMGA1 mRNA and its protein were already reported in lung, breast, prostate, cervical, liver and also gastric cancers.

Aim of the study: The study aimed to verify the significance of HMGA1 expression level in GC and its connection with various clinical factors, such as histology, cancer stage, node metastasis, sex, age, population affinity, TP53 mutation and H. pylori infection status. Furthermore, the association of the HMGA1 expression level with the survival of GC patients, as well as methylation and sequence alterations of the HMGA1 gene, were analysed.

Materials and methods: Publicly available large-scale genomic data about HMGA1 expression in gastric cancer were retrieved, analysed and visualized using selected online OMICS tools: TIMER 2.0, TNMPlot, KM Plotter, UALCAN, GEPIA2, MEXPRESS, and cBioPortal.

Results: Increased HMGA1 expression in GC tumours compared to both the adjacent non-malignant gastric tissues and non-tumour gastric tissues of healthy individuals was stated. HMGA1 gene alteration was found in 1,5% of GC cases. Methylation of some HMGA1 regions had a significantly negative correlation with HMGA1 expression in GC. Significant differences in HMGA1 expression levels between different histological subtypes of GC were found. High HMGA1 expression significantly correlated with worse overall survival, a shorter time before first progression and worse survival after progression of gastric cancer patients.

Conclusions: The study confirmed that HMGA1 expression increased during gastric carcinogenesis. Higher gene expression along with lower DNA methylation can indicate this mechanism as the reasoning behind expression increase. As only some gene regions proved significant for this correlation, this may point towards only specific gene parts being responsible for HMGA1 expression regulation. The significant differences among some histological GC subtypes can suggest HMGA1 participation in only some of the cancerous pathways. The negative impact of high HMGA1 expression on survival could also point towards this gene joining the family of GC risk factors to be considered during treatment.

Thyroid Lobectomy in the Management of Thyroid Nodules: Experience of a Reference Center

Paulina Filipowicz

Presenting author: Paulina Filipowicz

Tutors: Prof. Marek Dedecjus MD, PhD

Co-authors: Paulina Kalman, Paweł Szajewski

Affiliations: Medical University of Warsaw

Introduction: Choosing the best treatment strategy for patients with thyroid neoplasms requires the cooperation of various specialists and a personalized approach. The risk assessment is often challenging, especially in category III and IV lesions diagnosed in fine-needle aspiration biopsy according to the Bethesda system. The diagnostic and therapeutic process presented in the Polish recommendations is based on guidelines created by American and European societies. However, the recommendations present a specific approach adapted to the Polish conditions. Thus, there is a need to address clinical issues in thyroid neoplasms management with national data to provide a better perspective.

Aim of the study: We aimed to analyze the characteristics of patients with thyroid nodules treated by lobectomy and assess the association between preoperative factors, risk of malignancy and requirement of completion thyroidectomy.

Materials and methods: We retrospectively analyzed clinical and pathological data of consecutive patients treated by thyroid lobectomy in the Maria Sklodowska-Curie National Research Institute of Oncology in Warsaw between 2018 and 2021. Mann-Whitney U test, Shapiro–Wilk test and chi-square test were used for statistical analyses.

Results: 492 patients (405 females, 87 males), with a median age of 43 years (range: 17-86) at the time of the primary lobectomy were included in the study. The majority of patients qualified for the surgery had fine-needle aspiration biopsy results of the Bethesda V or IV category in 47.6% and 25.1% of cases, respectively. Cancer was found in 73% of all specimens (n=358) with papillary thyroid carcinoma (PTC) as the most prevalent histotype (n=217, 60.6%). No significant association was noted between preoperative factors: age, sex, BMI, tumor diameter, Tg, TgAb, TPOAb, TSH concentrations and diagnosis of cancer in Bethesda category IV lesions ($p>0.05$). Patients with category V and VI lesions outside of the low-risk group (n=165) were qualified for completion thyroidectomy, mostly due to tumor diameter>1cm (40.6%) and multifocality (29.7%). Cancer in the contralateral thyroid lobe and/or lymph node metastases were found in 36 cases (21.8%). According to the new Polish recommendations 2022, 20 patients (12%) who previously underwent completion thyroidectomy could be qualified for observation. However, in 4 cases pathological examination revealed malignancies in the second lobe and 2 patients were diagnosed with lymph node metastases. We did not observe a statistically significant association between sex, BMI, TgAb, TPOAb and qualification for completion thyroidectomy.

Conclusions: Qualifying patients for lobectomy and completion thyroidectomy requires consideration of multiple factors. Despite using risk stratification systems, some high-risk characteristics are discovered only during pathologic examination of tissue specimens. There is still a need for further research on markers and characteristics useful for choosing the best treatment for the patients.

SURGERY AND TRANSPLANTOLOGY

11th of May 2023

Coordinators:

Shruti Kuhan

Marlena Gajczak

Jury:

Prof. UM Michał Mik, MD, PhD

Aleksandra Gawłowska-Marciniak, MD, PhD

Piotr Koza, MD, PhD

Knowledge and attitude towards transplantation among university students in Lodz

Katarzyna Banasiak

Presenting author: Katarzyna Banasiak

Tutors: prof. Ilona Kurnatowska, Monika Górska MD, Maja Nowicka MD

Co-authors: Joanna Duda, Kacper Kościelny

Affiliations: Medical University of Łódź

Introduction: Allograft transplantation (Tx) is a life-saving procedure in numerous conditions; utilized tissues and solid organs may be obtained from deceased (DD), and, less frequently, living donors (LD). In Poland the number of Tx is limited by the insufficient amount of donated organs; and the number of DD per million population is lower than in most European countries. These results could be potentially improved by raising social awareness regarding living and deceased donations.

Aim of the study: Aim of the study was to evaluate the knowledge regarding Tx in university students of Lodz and to investigate their general attitude towards Tx and factors which affect it.

Material and methods: Self-designed questionnaire was distributed via social media. It consisted of 39 questions, divided into personal data (13 questions), knowledge (14 questions) and attitude (12 questions) sections. Knowledge was assessed using 9 multiple-choice questions, each scored as 1 point. Attitude toward organ donation was assessed using a 6-point Likert scale and closed-ended questions.

Results: Questionnaire was completed by 271 from Medical University of Lodz (N=100, 36.9%), Lodz University of Technology (N=96, 35.4%) and University of Lodz (N=71, 26.2%). Most of the responders were women (71.2%). Median age was 21 (IQR 20-23). Median sum of points from the knowledge test was 4 (IQR: 3 - 5) out of 9. Vast majority of the responders (N=270, 99.7%) agreed that organ donations are necessary, 94% declared they would donate an organ as LD to their relatives, 92.3% declared they would donate their organs after death and 67.8% approved organ donation from their deceased relatives even if then did not know their will. If necessary, 91.1% would like to receive DD organ donation and 85.6% would like to receive LD organ donation. Roughly half (54.2%) of responders ever talked about transplants with their relatives and only 101 (37.3%) encountered the topic of Tx in everyday life. Main concerns regarding donations were organ trafficking (N=64, 23.6%) and possibility of treatment failure (N=46, 16.9%). Catholic students were less willing to donate organs after their death (p=0.0472) and to donate organs from their deceased relatives while not knowing their will (p=0.0147). Responders who talked about Tx with their relatives were more likely to donate organs after their death (p=0.0001) and to agree for organ donation from their deceased relatives (p=0.0001). Medical students (p=0.0001), men (p=0.0452), atheists (p=0.0067) and only children (p=0.0322) were less concerned about Tx. Students from cities with fewer than 20 thousand citizens more often were afraid of organ trafficking (p=0.0002).

Conclusions: Most students present a positive attitude towards organ donation, with some deviations associated with their faculty, faith, gender and family size. However, it is not a topic they frequently raise with their relatives, which can be a target of future education campaigns.

The Role of Questionnaires in Assessment of Severity and Outcomes of Minimally Invasive Surgery for Snoring and Obstructive Sleep Apnea

Natalia Olszewska

Presenting authors: Natalia Olszewska

Tutors: Ewa Olszewska, professor, MD, PhD

Co-authors: Ewa Olszewska, professor, MD, PhD

Affiliation: Medical University of Bialystok

Introduction: Purpose of the study was to prospectively assess correlations between objective sleep parameters (sleep studies) and subjective sleep parameters (sleep questionnaires) in patients that underwent minimally invasive surgery for snoring and obstructive sleep apnea syndrome (OSAS).

Materials and Methods: A total of 61 patients (51 male, 10 female) with mean age of 40,0±10,9 and mean body mass index of 27,5±3,2 underwent palatoplasty and tongue base volume reduction with/without lower turbinate reduction due to snoring and/or OSAS. The surgery was performed under local anaesthesia using radiofrequency induced thermotherapy method. The patients had a pre- and post-operative workup according to the study protocol including: endoscopy of upper airways, sleep study at home and sleep questionnaires. Following sleep parameters were evaluated: apnea-hypopnea index (AHI), oxygen desaturation index (ODI), mean percentage of snoring time (ST), lowest oxygen saturation (LOS), mean oxygen saturation (MOS), and time of desaturation<90% (TD). Following questionnaires were analysed: Epworth Sleepiness Scale (ESS), the visual analogue scale for snoring loudness (VAS), Short Form Health Survey 36 (SF-36), STOP-Bang, and Pittsburgh Sleep Quality Index (PSQI).

Results: Pre-operative sleep parameters were: AHI of 16,4±11,0, ODI of 14,4±11,4, ST of 20,7±0,2, LOS of 83,8±7,1, MOS of 94,4±0,0, and TD of 2,8±7,2. Pre-operative questionnaires scores were: ESS of 8,9±5,4, VAS of 8,2±2,0, SF-36 of 41,4±22,4, STOP-Bang of 3,6±1,2, and PSQI of 6,5±3,2. Post-operative sleep study parameters were: AHI of 10,8±10,0, ODI of 10,3±10,0, ST of 12,1±0,1, LOS of 84,0±12,6, MOS of 94,7±0,0, and TD of 2,5±7,3. Post-operative questionnaires scores were: ESS of 6,8±4,4, VAS of 4,5±3,0, SF-36 of 34,2±21,3, STOP-Bang of 2,6±1,4, and PSQI 4,8±2,0. Changes with surgery showed decrease in the following parameters: 33,7% - AHI, 28,2% - ODI, 41,3% - ST, 12,6% - TD, ESS - 23,25%, VAS - 45,21%, PSQI - 27,02%, STOP-Bang - 27,27%, and SF-36 - 17,4%. Pre-operatively, positive correlations occurred: between STOP-Bang and AHI and ODI; between ST and SF-36 and PSQI. Post-operatively, positive correlations occurred: between STOP-Bang and AHI, LOS and ODI; between VAS and LOS and TD.

Conclusions: Subjective sleep parameters (sleep questionnaires) are essential tools that are useful in the workup and monitoring outcomes of treatment for snoring and OSAS. Nonetheless, having compared them to objective sleep parameters (sleep study), we observed differences in their ability to identify the presence, quantify the severity and predict the changes with treatment for snoring and OSAS.

PHYSIOTHERAPY AND ORTHOPEDICS

11th of May 2023

Coordinators:

Weaam Elrashid

Martyna Martka

Nyasha Yvonne Sherekete

Olga Kowalczyk

Jury:

Prof. Marcin Domżalski, MD, PhD

Prof. Jarosław Fabiś, MD, PhD

Anna Puzder, MD, PhD

Magdalena Kwaśniewska, MD, PhD, prof. UM

Prof. Andrzej Grzegorzewski, MD, PhD

Comparison of treatment regiments for patients after high-energetic pelvic injury in leading clinical centres in Europe and USA

Ewa Bokiniec

Presenting author: Ewa Bokiniec

Tutors: Jarosław Brudnicki PhD

Co-authors: Olaf Hajnus, Patrycja Kłaptocz, Katarzyna Łukoś

Affiliations: Jagiellonian University Collegium Medicum

Introduction: Pelvic ring fractures make up 3-6% of all skeletal fractures and they are associated with both high mortality and morbidity rates. This is due to substantial haemorrhage in the first 24 hours after trauma and with multi-organ failure as it’s consequence. Many reference centres dealing with pelvic injuries have developed procedures responding to the treatment of a patient after such an injury in order to increase the patient's chances of survival as much as possible.

Aim of the study: The aim of the study was to summarize and compare management algorithms for patients with pelvic fractures in reference centres.

Material and methods: Analysis of articles from the last 10 years found in PubMed database and comparison of management algorithms for patients with pelvic fractures in reference centres. 94 articles were found after entering the keywords: pelvic fracture, pelvic stabilization, external fixator, unstable pelvic ring injuries in the database. Articles that did not meet the criteria of the subject of the study were rejected and 17 articles, which dealt with the use of an external fixator, were selected.

Results: Management algorithms for patients with pelvic fractures are mainly based on distinguishing whether the patient is haemodynamically stable or not by using rapid diagnostics, e.g. FAST, or after examining the general condition of the patient. Depending on that, a decision is being made whether these patients should undergo angiography, CT scan or pelvic stabilization in the operating room.

Conclusions: We came to the conclusion that the main focus is on the quick assessment of the hemodynamic status of the patient since it is crucial for the next steps. If the patient is hemodynamically stable, we can perform more tests and expand imaging diagnostics, e.g., computer tomography. If the patient is hemodynamically unstable, extra tests can delay life-saving interventions that is the reason way they are not recommended. An important task, highlighted in most articles, is an early fracture stabilization. Using the appropriate sequence of procedures significantly increases the patient's chance of survival and prognosis. It is important to remember that our actions shouldn't delay any lifesaving treatments.

Assessment of the urinary incontinence incidence in women

Julia Antos

Presenting author: Julia Antos

Tutors: Katarzyna Glibov, PhD

Co-authors: Katarzyna Glibov

Affiliations: Medical University of Łódź

Introduction: Urinary incontinence (UI) is defined as its involuntary loss. The condition affects both men and women around the world, presenting both medical and social challenges. According to research presented by the International Society of Continence, among women, the frequency of occurrence of NTM at any time ranges from 5 to 69 percent. (according to the most frequently reported data – 25–45 percent).

Purpose: The aim of the study was to assess the incidence of urinary incontinence in women and the awareness of methods of preventing and treating this disease

Materials and methods: The study covered 22 women aged 20-55. In the study the PFDI - 20 questionnaire was used to assess the quality of life and the ICIQ - Fluts LF questionnaire to assess the severity of symptoms. Tanita scale, height indicator, centimeter and fold meter were used to perform anthropometric measurements.

Results: The average age of the surveyed women was 36 years old. Urinary incontinence was found in 38% of the subjects. Stress urinary incontinence was present in the majority of subjects, urgency, overflow, extra-sphincteric and mixed urinary incontinence were reported less frequently. The frequency of urinary incontinence increased with the number of given birth, BMI, abdominal circumference and skinfold size.

Conclusions: Urinary incontinence affects women of all ages. The number of pregnancies, the number of natural births, the type of work performed on a daily basis and the type and frequency of physical activity have a decisive impact on the occurrence of the disease.

The bright and dark side of sport - assessment of the impact of running on human functioning on the example of amateur athletes from the Lodz region

Justyna Marczyk

Presenting author: Justyna Marczyk

Tutor: Anna Stasiak, MD, PhD

Co-authors: Przemysław Dżereń

Affiliations: Student Science Brain Club, Department of Hormone Biochemistry, Medical University of Łódź, Poland

Introduction: Regular physical activity plays a crucial role in health maintenance and disease prevention. However, excessive exercise has the potential to have adverse effects on both physical and mental health. Running, due to its ease of access, is currently one of the most popular sports disciplines.

Aim of the study: The aim of the study was to analyze the impact of systematic physical activity on the daily functioning of runners and motives to undertake it. An important aspect of the study was also the assessment of sport addiction.

Material and methods: The study group consisted of 103 amateurs who regularly practiced running for at least a year. The research was carried out during organized running events in the Lodz region, based on the diagnostic survey method. The study used an own questionnaire, which allowed to collect basic information about the participants (taking into account age, gender, training characteristics, motivations for physical activity and its benefits). In runners, the quality of life and the degree of addiction to sport were also assessed using the WHOQOLBREF questionnaire and The Exercise Addiction Inventory and the Dr. Stoliaroff test, respectively. In addition, the resting heart rate was measured as an indicator of adaptation to systematic endurance activity.

Results: The runners trained on average 3-4 times a week for over 60 minutes, usually running about 10 km. The average duration of training in the study group was 4.4 ± 4.0 years. The longest average distance run in the group of women was 25.10 ± 14.71 km, in the group of men - 36.86 ± 29.23 km. Most of the respondents indicated the following as the reasons for starting running training: a way to maintain activity and reduce stress, as well as health aspects. As the benefits of running, study participants listed: improved well-being and health, maintaining physical fitness, stress reduction and weight loss. Most runners assessed their quality of life as good (about 70%) and as very good (about 20%). A resting heart rate (under 60 beats per minute) indicated a tendency to bradycardia. There was a statistically significant inversely proportional relationship between heart rate at rest and running experience. Stoliaroff's test showed that about 60% of the surveyed runners already have symptoms of running addiction. According to The Exercise Addiction Inventory, the problem may affect 28 out of 103 respondents.

Conclusions: The conducted research has shown that systematic activity brings many benefits to runners, both in the physical and mental spheres. However, symptoms of addiction are a source of concern among amateur athletes. Resting bradycardia is a response to regular endurance training and an expression of adaptive changes in the body. The scheme of training and the results of tests assessing addiction to running suggest that running over time ceases to be just a form of physical activity, and becomes a lifestyle.

Sonographic characterization of the pericruciate fat pad (PCFP) with the use of compression sonoelastography

Michał Kanak

Presenting author: Michał Kanak

Tutors: Prof. Marcin Domżalski, Jędrzej Lesman

Co-authors: Natalia Pawłuś, Marcin Mostowy, Marcin Piwnik

Affiliation: Medical University of Lodz

Introduction: The pericruciate fat pad (PCFP) is one of four fat pads in the knee joint. Fat pad fibrosis is associated with ligamentous or cartilaginous injuries, osteoarthritis and surgeries. PCFP is a scarcely studied structure, and its sonographic appearance has not yet been described.

Aim of the study: The primary aim of the study was to describe the sonoanatomy of the PCFP, its echostructure, echogenicity, elasticity, and vascularization among healthy patients. The secondary aim was to compare echogenicity and elasticity of the PCFP among healthy and post-traumatic patients.

Materials and methods: Ultrasound examination (US) of 50 patients (100 knees) aged 18-35 years was performed. The healthy group was formed with 69 patients without any gross knee pathology confirmed by anamnesis and physical examination. The control group consisted of 31 knees with meniscal or ligamentous injuries and post-surgery knees. The PCFP was visualized by the posterior cruciate ligament (PCL) scanning technique. Echogenicity of the PCFP, PCL, medial head of gastrocnemius (MHG) and subcutaneous fat (SCF) were assessed by pixel intensity calculation. Vascularity was assessed with the use of Color Doppler. Compression elastography and ElaXto software were used to measure the elasticity of the PCFP, MHG and SCF in both groups. Using the red-blue-green color scale from 0 to 100 ElaXto software assessed the elasticity of the tissues. Hard tissue was represented by red color and lower score and soft tissue by blue and green color with higher scores. Comparisons were made inside the control group and between the groups. Inter- and Intrarater agreement was calculated by Cohen's kappa coefficient (ICC) for echogenicity and considering a value greater than 0.8 as excellent. Student's t test for unrelated samples and the Wilcoxon signed ranks test were used as parametric and non-parametric options, respectively. p value <.05 was considered as significant. Statistica 13.3 (StatSoft, Polska) was used.

Results: The PCFP presented a homogenic and hiperechoic echostructure.The echogenicity of the PCFP, PCL, MHG and SCF differed significantly ($p<0,05$) inside the control group. Echogenicity of the PCFP in the study group had significantly higher scores ($p<0,05$) than in the control group. ICC for intra- and interrater reliability had values of 0.934 and 0,821, respectively. Blood flow was detected in 82% of the fat pads. The elasticity of the PCFP was similar to the SCF and was significantly higher in the study group ($p<0,05$).

Conclusions: Our study presented the first description of the normal sonographic characteristics of the PCFP, which may increase the clinical usefulness of the US in differentiation of the PCFP pathologies. After trauma or surgery the echogenicity and elasticity of the PCFP increases. This phenomenon may help to detect and monitor meniscal or ligamentous injuries and hypothetically other knee pathologies.

Is quadriceps tendon layering the same as there are supranumerary heads? - pilot study

Nicol Zielinska

Presenting author: Nicol Zielinska

Tutors: Professor Łukasz Olewnik, DPT, MD, PhD,

Co-authors: -

Affiliation: Medical University of Lodz

Introduction: It might seem that the quadriceps femoris tendon (QT) has been thoroughly understood, nothing could be further from the truth. Most orthopedic textbooks or scientific studies indicate that the QT consists of three layers: superficial, intermediate and deep. However, recent studies indicate that QT consists of four layers, not three, which may significantly translate into surgical procedures in the knee joint area. As there is currently no consensus on which tendons / ligaments to use for the reconstruction of an ACL rupture, advantages of sampling from QT should be highlighted. More and more bolder attempts are made to QT grafts to perform ACL reconstructions, because pain at the harvest site is reduced compared to bone-patellar tendon-bone, and the risk of failure is much lower than in the case of hamstring grafts.

Aim of the study: The purpose of this study was to qualitatively and quantitatively describe the anatomy of the QT including its size, accessory tendons of the accessory heads of the QF, layers and the relationship between layers.

Material and Methods: 60 lower limbs fixed in 10% formalin were examined. Lower limbs with evidence of surgical intervention in the dissected area were excluded. The thigh region was dissected according to pre-established protocol. The next step was to see if there were any additional quadriceps femoris heads. Finally, the tendons were dissected to identify potential additional tendon bands. The tendons were thoroughly cleaned and checked for layering. The places of attachment and layering of the tendons of the additional quadriceps femoris heads were thoroughly checked.

Results: Five types of QT layering have been observed depending on the accessory heads of the quadriceps muscle:

Type 1 (four heads) – it consisted of four layers and the first layer was formed by the rectus femoris tendon and fascia, the second was composed of the vastus medialis and superficial part of the vastus lateralis muscle. The third layer was composed by the intermediate part of the vastus lateralis muscle. The last – fourth layer was composed by the vastus intermedius.
Type 2 (five heads) – the first four layers were the same as in Type 1, but the accessory tendon of the fifth head of the quadriceps femoris muscle was located underneath them, and created the deepest layer.
Type 3 (six heads)–consisted of five layers.
Type 4 (seven heads)–consisted of four layers.
Type 5 (eight heads) – consisted of five layers.

Conclusion: The findings of this study provide a detailed anatomy of the QT including accessory tendons of the accessory heads of this structure. The accessory heads of the quadriceps femoris contribute to the layering of the QT. The second great value of this work is the development of safe distances depending on the types, and it turned out that not all types are perfect for a harvesting.

INTERNAL MEDICINE

12th of May 2023

Coordinators:

Katarzyna Krawiranda

Maciej Saar

Devesh Godbole

Jury:

Adam Poliwczak, MD, PhD

Melania Mikołajczyk-Solińska, MD, PhD

dr hab. Jacek Kasznicki, MD, PhD

Monika Żurawska-Kliś, MD, PhD

Comparison of alcohol levels in victims of intentional and accidental drownings

Julita Ciuruś

Presenting author: Julita Ciuruś

Tutors: Tomasz Konopka, PhD

Co-authors: Monika Armatys, Natalia Grochal, Marlena Leśniak

Affiliations: Jagiellonian Univeristy Medical College in Kraków

Introduction: Drownings in the Krakow area occur every year. Drownings happen both in rivers, ponds and water reservoirs. Often drownings occur under the influence of alcohol.

Aim of study: The study aimed to compare alcohol levels in the bodies of people who died as a result of intentional drowning in the Vistula River and victims of accidents in reservoirs.

Methods: A retrospective analysis of autopsy protocols from the Department of Forensic Medicine at the Jagiellonian University Medical College in Krakow was carried out. We collected the data of 88 people fished out of the Vistula River in 2011-2020. 83 persons were included - the inclusion criterion was circumstances indicating a suicide (psychiatric disorders, wearing weights, farewell letter, no strong evidence pointing to an accident), while the exclusion criterion was circumstances indicating an accident (swimsuit, witness testimony). This data was compared with information collected for the presentation of the topic ""Alkohol u ofiar utonięć w materiale Zakładu Medycyny Sądowej w Krakowie w latach 1993-2012"", by: Anna Kot, Ewelina Młyńska, Karolina Polak and made available by the Department of Forensic Medicine in Krakow. In the study mentioned above the data of 431 people were collected - 146 persons bathing in water reservoirs in 1993-2012 were included. The inclusion criterion in this study was swimsuit, underwear alone or nudity, possibly special circumstances and witness testimony, whereas the exclusion criterion was established psychiatric illnesses. The traits such as the presence and level of blood alcohol by gender and the age of the victims were analyzed.

Results: Data of 146 people who drowned in reservoirs - 136 men (93.2%) and 10 women (6.9%), and data of 83 people who drowned in the Vistula - 25 women (30.1%), 58 men (69.9%) - were used for analysis. Blood alcohol levels >0.2‰ were shown in the blood of 110 victims (75.3%) of accidents and 41 victims of intentional drowning (49.4%). The average blood alcohol level was 1.7 ‰ (males 1.7‰; females 0.6‰) in the reservoir drowning group and 0.8‰ in the blood (males 1.0‰; females 0.3‰) in the Vistula drowning group. The average age is 31 (4-79) for the group of drownings in reservoirs, while 45 (19-82) for the group of drownings in the Vistula. The highest number of drownings was recorded in July for accidental drownings and in February for the intentional drowning group.

Conclusions: The number of people under the influence of alcohol is high among drowning victims regardless of whether they are intentional or accidental. However, the average alcohol level is much higher among those who drown in bodies of water while swimming. Victims of intentional drowning tend to be older than victims of accidents. Men are a group more likely to drown regardless of intentionality.

Evaluation of circadian clock proteins and the effect of CPAP treatment among OSA patients

Szymon Turkiewicz

Presenting author: Szymon Turkiewicz

Tutors: Agata Gabryelska, MD, PhD; Marcin Sochal, MD, PhD

Co-authors: Marta Ditmer, Julia Jaromirska, Filip Grzybowski

Affiliations: Medical University of Lodz

Introduction: Obstructive sleep apnea (OSA) is characterized by intermittent hypoxia causing nocturnal desaturations and arousals sleep resulting in sleep fragmentation. The circadian clock is composed of a set of genes, which function as activators – CLOCK and BMAL1, and repressors PER1 and CRY1, their concentrations change in a 24-hour cycle affecting sleep pressure and a vast number of other processes in the human body.

Aim of the study: The study aimed to evaluate circadian clock protein levels among OSA and healthy individuals, their diurnal changes, the effect of continuous positive air pressure (CPAP) treatment on their concentrations, and their association between each other and with polysomnography (PSG) variables.

Materials and methods: Seventy individuals underwent PSG and based on the apnea-hypopnea index (AHI), were divided into 2 groups: OSA patients (AHI≥5; n=56) and healthy controls (AHI<5; n=16). Out of the OSA group, 30 participants (CPAP group), who qualified for treatment with CPAP had PSG examination repeated with a CPAP trial. Peripheral blood was collected in the evening before and in the morning after PSG and PSG with CPAP trial. Protein concentrations of circadian clock proteins were measured using ELISA. Founding: National Science Centre (Poland) grant no. 2018/31/N/NZ5/03931.

Results: OSA group had a higher concentration in the evening and morning of CLOCK ($p=0.044$ and $p=0.008$, respectively), CRY1 ($p=0.027$ and $p<0.001$, respectively) and PER1 ($p=0.002$ and $p=0.018$, respectively). No diurnal changes were observed (evening to morning) in OSA, control, and CPAP groups in any of the circadian rhythm protein levels ($p>0.05$) during PSG examination while in the CPAP group CLOCK, concentration increased in the morning following the CPAP trial ($p=0.006$). Furthermore, in the CPAP group, the difference between morning and evening CLOCK protein levels was higher after the CPAP trial compared to baseline PSG ($p=0.012$). Additionally, in the OSA group, CLOCK protein in the morning and evening correlated with OSA severity ($r=-0.455$, $p=0.002$ and $r=-0.371$, $p=0.006$, respectively), total sleep time ($r=-0.410$, $p<0.001$ and $r=-0.297$, $p=0.029$, respectively), and arousal index ($r=-0.351$ $p=0.009$ and $r=-0.351$, $p=0.009$, respectively).

Conclusions: OSA patients present with disruption of circadian clock proteins. Particularly affected is the activator protein CLOCK, which responds to CPAP treatment and is greatly associated with OSA severity. Further studies are needed to understand the mechanisms responsible for the dysregulation of the circadian clock among OSA patients.

Role of the regulation of endocannabinoid system activity in inhibition of the intestinal fibrosis in IBD

Zofia Misztal

Presenting author: Zofia Misztal

Tutors: Adam Fabisiak, Ewa Małecka-Panas

Co-authors: Maria Wołyniak, Adam Fabisiak, Ewa Małecka-Panas

Affiliations: Medical University of Lodz

Introduction: Intestinal fibrosis is a common complication of Inflammatory bowel diseases (IBD) characterized by increased secretion of extracellular matrix (ECM) and crosslinking enzymes by intestinal mesenchymal cells. The advanced process of fibrosis leads to strictures often requiring surgical treatment. Therefore new treatment methods of intestinal fibrosis are sought with endocannabinoid system (ES) as a potential therapeutic target. Cannabinoid receptors 1 and 2 (CB1 and CB2, respectively) are classic receptors of the ES responsible for regulation of inflammation and permeability of the intestinal mucosa. Studies show that the regulation of ES activity can affect the process of fibrosis in various preclinical models of fibrosis.

Aim of the study: To evaluate the effect of selective CB1 agonist, WIN 55, 212-2 (WIN) on expression of fibrosis regulatory proteins: alpha smooth muscle Actin 2 (Acta2), Collagen I (Col1), Fibronectin 2 (Fn2), SMAD family member 3 (Smad3) in a mice model of Dextran sulfate sodium (DSS)-induced intestinal fibrosis. Moreover, differences in expression of the named proteins were sought in colonic samples of patients with ulcerative colitis (UC) and healthy controls (HC).

Materials and methods: Chronic colitis and fibrosis in mice model were induced by oral administration of 1.5% DSS in rotation with tap water for 3 weeks in three cycles. WIN was administrated starting from day 10th and continued every other day until day 77th, control mice were administered with saline. The mice were sacrificed on day 78th, their colon was excised and samples were taken for histological and molecular analysis. Colonic samples from patients with UC and HC were collected and frozen for further exploration. The expression of genes encoding Acta2, Smad3, Col1, Fn2 in mouse and human material was assessed by Real Time RT-PCR. Statistical analysis was conducted using Student's t-test to compare means of expressed molecules.

Results: We found lower relative expression of genes encoding assessed fibrosis regulatory proteins in mice treated with WIN than in inflamed mice: 4698±2323 vs. 9656±6032 for ACTA2, 4774±1073 vs 8510±2906 for COL1 , 20993±7280 vs. 52148±17877 for FN1 and 373±31 vs. 478±77 for SMAD3. In human samples we noticed higher relative mean expression level of COL1 and SMAD3 in patients with UC compared to 7 HC 37422±6554 vs. 23816±2681 and 2134±261 vs. 1593±255, respectively.

Conclusions: We observed a decrease in relative expression of FN1, ACTA2, COL1, SMAD3 in samples from mice treated with CB1 agonist compared to inflamed mice. Also, a difference in expression of these proteins were found in intestinal samples from UC patients compared to HC, indicating a contribution of these molecules to intestinal fibrosis. Our results show that regulation of ECS activity play role in the inhibition of the intestinal fibrosis in IBD and appears as a potential therapeutic target in patients at high risk of developing strictures.

NEUROLOGY

12th of May 2023

Coordinators:

Kishore Muthukumar

Aleksandra Marek

Jury:

Prof. Dariusz J. Jaskólski, MD, PhD

dr hab. Anna Jurewicz, MD, PhD

Karol Jastrzębski, MD, PhD

Innovative therapeutic strategy against Parkinson's Disease with use of small-molecule PERK inhibitor

Zuzanna Granek

Presenting author: Zuzanna Granek

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

Co-authors: Kamil Saramowicz

Affiliations: Medical University of Lodz

Introduction: Accumulation of misfolded protein α-synuclein in Parkinson's Disease (PD) is associated with the activation of Unfolded Protein Response (UPR) signaling pathway. The main UPR sensor, Protein Kinase RNA-Like ER Kinase (PERK), is activated under Endoplasmic Reticulum (ER) stress. PERK in turn induces phosphorylation of Eukaryotic Initiation Factor 2alpha (eIF2α) to maintain cellular proteostasis and redox balance. However, upon chronic ER stress, PERK branch of UPR ultimately triggers apoptosis and leads to neurodegeneration. Thus, PERK could be a perfect target for development of novel treatment strategies against PD.

Aim of the study: The primary objective of the present study was to evaluate the effectiveness of the selected small-molecule PERK inhibitor LDN-0060609 (LDN) in PD cellular model.

Materials and methods: The effectiveness of the selected PERK inhibitor was assessed via measurement of p-eIF2α level using Western blot technique. Rat astrocytes derived from diencephalon (DI TNC1) cells were exposed to the inhibitor at a concentration range of 3-50 μM for 1h, and subsequently treated with the activator of ER stress-related apoptosis, thapsigargin (Th), at 500nM for 2h. Cells treated only with Th at 500nM for 2h served as a positive control, whereas untreated cells – as a negative control. Cells pre-treated with commercially available PERK inhibitor GSK2606414 (GSK) constituted an additional control. The cytotoxicity analysis of LDN was defined by the colorimetric MTT assay. The experiment was conducted on DI TNC1 cell line at concentrations of the inhibitor ranging from 0.75 μM to 50 μM + 0.5 mM, and the incubation lasted 3, 16, 24 and 48 h. To assess the cytotoxicity of the solvent for the tested compound, cells were incubated with media containing 1 μL DMSO. Positive control comprised untreated cells, whereas cells exposed to 50% ethanol served as a negative control.

Results: Western blot analysis demonstrated a significant, 10% greater than GSK, inhibition of eIF2α phosphorylation by LDN at the concentration of 50μM in cells pre-treated with Th. Importantly, cytotoxicity analysis revealed that viability of DI TNC1 cells was not significantly impaired upon treatment with LDN, regardless of all concentrations and incubation times used.

Conclusions: As currently used treatment strategies against PD are only symptomatic, it is essential to design new, effective drugs, that would specifically target the molecular pathways implicated in disease pathology. As proven above, we may assume that targeting components of the PERK-dependent signaling pathways via small-molecule inhibitors may contribute to the development of a novel treatment strategy against neurodegenerative diseases, that would provide neuroprotection and have no cytotoxic effect.

This work was supported by the Medical University of Lodz, Poland (grant no. 503/5-108-05/503-51-001-19-00) and by the National Science Centre, Poland (grant no. 2021/43/O/NZ5/02068 and 2016/23/B/NZ5/02630).

NEPHROLOGY

12th of May 2023

Coordinators:

Armanda Wojtasińska

Alton Ajay Mathew

Kishore Muthukumar

Jury:

Katarzyna Muras-Szwedziak, MD, PhD

Piotr Nowak, MD, PhD

Is it possible to predict muscle spasms among hemodialysis patients?

Gabriela Kot

Presenting author: Gabriela Kot

Tutors: Prof. Michał Nowicki, Agnieszka Makówka, MD

Co-authors: Agata Wróbel, Kasper Kuna

Affiliations: Medical University of Łódź

Introduction: Painful muscle spasms are common among patients treated with hemodialysis (HD) and lower their quality of life. The effective methods of their prevention and treatment are lacking. The risk factors of muscle cramps occurrence during dialysis are poorly recognized and unreliable.

Aim of the study: Analysis of the relations between body composition parameters in hemodialysis patients and the incidence of muscle spasms during or after hemodialysis.

Material and methods: The study comprised 67 patients chronically treated with hemodialysis 3 times a week. Patients took part in a validated survey consisted of 9 multiple-choice questions about the prevalence of muscle spasms. Based on the survey results, the patients were divided into two sub-groups with (n=39) and without (n=28) muscle spasms. Body composition parameters were assessed with the multifrequency bioimpedance method at the beginning of three consecutive hemodialysis sessions.

Results: Out of the 67 patients included in the research, there were 39 males (58%) and 28 females (42%) (mean age 60.07 SD 15.86 ± years). The mean Body Mass Index (BMI) was 26.7 kg/m2 (SD ± 5.47). Furthermore, the mean total body water (TBW) was 44.8 L ± 10, including mean extracellular water (ECW) 20.3 L ± 4.7 and mean intracellular water (ICW) 25.0 L ± 6.2. Other measured means were: dry weight 75.8 kg ± 20.7; urea distrib volume 43.75 L ± 9.87; adipose tissue mass (ATM) 25.4 kg ± 13.85; lean tissue mass (LTM) 50.6 kg ± 12.0. Univariate analysis showed that the patients who developed muscle spasms had significantly greater median BMI (Mann-Whitney test, 27.5 Q1 24.7 - Q3 31.3 vs 24.3 Q1 21.4 - Q3 26.9; p=0.003) and median dry weight (Mann-Whitney test, 78.0 Q1 67.5 - Q3 93.5 vs 65.0 Q1 59.75 - Q3 72.75; p= 0.004) than the patients free of these complications. Is worth mentioning that among patients with spasms, the level of extracellular water is higher than in the control group (p=0.05). Those data are on the edge of statistical significance, but EBW is a parameter related to overhydration, which can be easily modified during hemodialysis therapy. In a multivariable logistic regression, using backward stepwise regression for variable selection, intracellular water (ICW) was a significant predictor of muscle spasms during hemodialysis (Odds Ratio = 1.113, 95%CI 1.007 - 1.230, p-value = 0.035, AUC = 0.71) with a sensitivity of 0.74 and specificity of 0.65.

Conclusions: Spasms affect more than half of chronic hemodialysis patients. They are more common among patients with higher BMI, dry weight, and a higher level of intracellular water (ICW).

Glomerular diseases pattern before and during SARS-CoV-2 pandemic

Michał Olkowski

Presenting author: Michał Olkowski

Tutors: Maja Nowicka, MD, prof. dr hab. Ilona Kurnatowska

Co-authors: lek. Maja Nowicka, Barbara Piekarska, Prof. dr hab. n. med. Małgorzata Wągrowska-Danilewicz, Prof. dr hab. n. med. Ilona Kurnatowska

Affiliations: Medical University of Łódź

Introduction: Glomerular diseases (GDs) are most often associated with immunological disturbances. The SARS-CoV-2 infection or/and vaccination against it may disturb the immunological system balance and subsequently lead to development of autoimmune diseases, including GDs.

Aim: The aim of our research is to assess the prevalence of different GD types in Lodz Voivodeship before and during COVID-19 pandemic.

Material and methods: Histopathological reports of all consecutive kidney biopsies (KBs) performed in Lodzkie Voivodeship (2.45 million inhabitants) between 01.04.2018 to 31.03.2022 and analyzed in a single nephropathology center were collected. Prevalence of GDs was compared in periods before/during (preCOV, 01.04.2018 – 31.03.2021) and after (postCOV, 01.04.2021 – 31.03.2022) SARS-CoV-2 infection peak in Poland.

Results: A total of 781 (567 preCOV, 214 postCOV) KBs were performed, including 86.4%, n=675 (84.5%, n=479 preCOV vs 91.6%, n=196 postCOV, p=0.010*) of native kidneys. Out of these, 91.7%, n=619 (92.1%, n=441 preCOV vs 90.8%, n=178 postCOV, p=0.593) were performed for a first-time diagnosis and of adequate material. Most frequent histopathological findings were glomerular changes (81.74%, n=506; 82.3%; n=363 preCOV; 80.3%, n=143 postCOV; p=0.565) followed by tubulointerstitial changes (7.4%, n=46; 7.7%, n=34 preCOV; 6.7%, n=12 postCOV; p=0.678). Considering prevalence of different GDs, both in preCOV and postCOV period the most frequent was mesangioproliferative glomerulonephritis (18.6%, n=82; 25.8%, n=46 respectively; p=0.044*), including IgA nephropathy (16.3%, n=72; 24.7%, n=44 respectively; p=0.015*). Its detection in KBs was significantly higher in the postCOV period. No similar changes in incidence were observed in case of other types of GDs, which included focal segmental glomerulosclerosis (13.6%, n=60 vs 11.8%, n=21 respectively; p=0.546), membranous nephropathy (8.4%, n=37 vs 9.0%, n=16 respectively; p=0.810), minimal change disease (4.5%, n=20; 5.1%, n=9 respectively; p=0.781), lupus nephritis (4.1%, n=18; 4.5%, n=8 respectively; p=0.817) and vasculitis (3.9%, n=17; 2.3%, n=4 respectively; p=0.317). Diabetic nephropathy was observed in smaller percentage of KBs in the postCOV period (10.9%, n=48 vs 4.5%, n=8; p=0.012*)

Conclusions: An increase of IgA nephropathy diagnosis in KBs was observed after SARS-Cov-2 infection peak in Central Poland.

PEDIATRICS

12th of May 2023

Coordinators:

Karolina Grabowska

Martyna Grabowska

Jury:

Prof. dr hab. Jolanta Słowikowska-Hilczer, MD, PhD

Prof. dr hab. Marcin Tkaczyk

Justyna Maria Walenciak, MD, PhD

Filip Pierlejewski, MD, PhD

Renata Szmigielska, MD, PhD

Unwanted summer friends - seasonality of eosinophilia among pediatrics patients and correlation with the presence of parasites

Aleksandra Adamczyk

Presenting author: Aleksandra Adamczyk

Tutors: Aleksandra Olejniczak, MD Hanna Kuśmierczyk-Kozieł, MD

Co-authors: Jakub Wąsik, Jagoda Rogowska

Affiliations: Medical Univeristy of Lodz

Introduction: Eosinophilia is defined as an increase in the absolute eosinophil count to >500 cells/μL in the peripheral blood. It is most commonly found in response to infections (such as parasitic diseases) and allergic disorders. Children spending time outdoors and not abiding by hygiene rules, are especially vulnerable to parasitic infections. As spring and summer months come, they spend even more time outdoors - therefore more are prone to acquiring such uninvited guests. Increased eosinophil count can also be caused by neoplastic disorders or drugs. Thus, clinical evaluation and context are important for interpretation of eosinophilia. Negative consequences of parasite infection include not only gastrointestinal problems, such as intestinal obstruction, inflammation or mechanical injuries but also serious damage to other organs due to enzymes produced by parasites, dysfunction in blood clotting, or even cerebral paralysis.

Aim of the study: Evaluation of the seasonality of eosinophilia in the pediatric patients and its connection with parasites infection.

Materials and methods: The retrospective analysis of hospital admissions (January 2021-December 2022) n=3570 to the Department of Pediatrics, Diabetology, Endocrinology and Nephrology, Medical University of Lodz were used. Patients' morphology (especially eosinophil count and its percentage) along with data about allergies, drugs taken, admission type, nationality, gender, age, diagnosis, and symptoms were analyzed. Patients without morphology tests were excluded from the study.

Results: Among 3570 analyzed patients most had normal eosinophil count. Eosinophilia was observed in 2,5% of patients, with the majority diagnosed in early summer (March-May). 27% of them had documented allergies, 6% had symptoms suggesting parasitic infection (stomachache, diarrhea, loss of appetite). 28,5% have been tested for parasites with a positive result in 55%. An interesting finding was a group of patients that have been tested for parasites without any aberration in morphology, based on gastrointestinal symptoms. In that group about 18% received a positive parasite result.

Conclusions: Parasites are more common in children than we would like to admit, with the risk of infection increasing during early summer months. Most of those diseases are asymptomatic, sometimes with the sign of increased eosinophil count. It seems important to actively look for parasites in children with eosinophilia to avoid negative consequences of the infections.

Assessment of body composition of patients with osteoporosis based on bioimpedance

Magdalena Gąsior

Presenting author: Magdalena Gąsior

Tutors: Elżbieta Jakubowska-Pietkiewicz, Prof. UM, PhD, MD; Agnieszka Byrwa-Sztaba

Co-authors: Hanna Frankenstein, Aleksandra Oto

Affiliations: Medical University of Łódź

Introduction: Osteoporosis is a systemic skeletal disease characterized by low bone mass and impaired bone microarchitecture, resulting in increased fracture susceptibility. Osteoporosis can affect patients' quality of life and lead to disability without appropriate treatment.

Aim of the study: The aim of the study is to analyze the body composition of patients with osteoporosis based on bioimpedance.

Materials and methods: The study included 23 patients diagnosed with osteoporosis who were hospitalized at the Department of Pediatrics, Neonatal Pathology and Metabolic Bone Diseases of Medical University of Lodz. On admission, all patients had anthropometric measurements taken from which BMI (Body Mass Index) was calculated and values were plotted on centile grids for height, weight, and BMI. The WHO centile grids for children aged 0 - 5 years and OLAF for children aged 5 - 18 years were used. In all patients, bioimpedance measurements were taken with a Tanita Pro device.

Results: In the study, girls accounted for 39% of the patients (n=9). The median age of the children was 13 years. Abnormal body weight was present in 39.1% of children (n=9). Underweight characterized 8.7% of children (n=2), overweight 17.4% (n=4), and obese 13.0% (n=3). Differences between the mean values of measurements obtained from the bioimpedance test were analyzed according to body weight. Linear relationships were analyzed between the values of measurements obtained from the bioimpedance test with respect to bone mass. A linear regression model was then created, in which variables showing statistically significant correlations with bone mass were included. Variables showing collinear relationships were excluded from the model. The model was statistically significant $p<0.001$. Increasing the proportion of total muscle mass in body composition by 1% increases bone mass by less than 50g.

Conclusions: Total muscle mass is the strongest predictor of bone mass.

Child's age vs. type of preferred carbohydrate snack

Magdalena Stabrawa

Presenting author: Magdalena Stabrawa

Tutors: Agnieszka Byrwa – Sztaba, MD PhD Elżbieta Jakubowska – Pietkiewicz, prof. UM

Co-authors: Wiktoria Zawiślak, Paulina Madura

Affiliations: Medical University of Łódź

Introduction: Research shows that improper nutrition in childhood has a negative impact on the human body in adulthood. Creating awareness of proper eating habits, and thus proper nutrition in children, can contribute to their optimal physical, mental, and social development.

Aim of the study: The purpose of the study was to determine the type of the most preferred snack in children during a festival held on the occasion of Children's Day.

Materials and Methods: The pilot study of the Grow Healthy program was conducted by the Department of Pediatrics, Neonatal Pathology and Metabolic Bone Diseases together with the Health Department of the Provincial Office in June 2022. 108 children participated in the study. In all children, anthropometric measurements (height, weight) were taken, based on which BMI was calculated. The results of the measurements were plotted on centile grids: WHO for children aged 0-5 years and OLAF for children aged 5-18 years. Underweight was defined as BMI <3 percentile, overweight between the 85th and 95th percentile for BMI, and obesity above the 95th percentile. A p-value <0.05 was considered statistically significant.

Results: 59.8% (n=64) of girls and 40.2% (n=43) of boys participated in the study. The median age was 7 years. Abnormal body weight was found in 21.5% (n=23) of patients: 15% (n=16) were overweight, 1.9% (n=2) were obese, and 4.7% (n=5) of children were underweight. The most preferred snack in all age groups was lollipop: 71% (n=76) of children, and the least preferred was fruit mousse: 4,7% (n=5). These preferences were statistically significant ($p<0.001$) but were not related to children's gender ($p>0.05$). The median age of children who chose lollipop is about 6 years old and is statistically significantly lower than the median age of children who chose crisps of 8 years old ($p<0.05$). The differences in the median ages of children choosing the other snacks are not statistically significant.

Conclusion: According to the analysis, the preference for snack choice changes with the age of the child, the youngest children tend to choose simple carbohydrates the most, while older children choose snacks made of complex carbohydrates.

Comparison of selected auxologic indexes, control of disease and frequency of autoimmune comorbidities in Ukrainian and Polish children with type 1 diabetes (case-control study)

Michał Suchowiński

Presenting author: Michał Suchowiński

Tutors: Prof. Joanna Smyczyńska, MD, PhD

Co-authors: Kacper Kopeć, Przemysław Seliga

Affiliations: Uniwersytet Medyczny w Łodzi

Introduction: Type 1 diabetes mellitus (DM1) is an autoimmune disease leading to insulin deficiency which has a huge potential impact on patient's development, requiring optimal treatment. Migration of Ukrainians to Poland after Russian aggression have provided an opportunity to compare in one center children with DM1 diagnosed and treated in Ukraine (UA) and in Poland (PL).

Aim of the study: to compare PL and UA children with DM1 with respect to methods of insulin administration, glucose monitoring, selected auxological indexes and autoimmune comorbidities.

Material and methods: data on 114 patients, age 11.4±4.2 years (mean±SD), with DM1 lasting from 4.3±3.8 years; 38 UA children during first hospitalization in Poland and 76 PL ones, matched by age, sex and DM1 duration, by k-nearest neighbors algorithm. The groups were compared with respect to: methods of insulin administration, glucose monitoring, height and BMI SDS, concentrations of: HbA1c, vitamin D (vitD), TSH, FT4, antibodies anti-TPO, anti-Tg and anti-transglutaminase. Height SDS and BMI SDS were calculated according to Polish reference charts (Kułaga et al. 2011 & 2013). For comparisons T-student test was used for quantitative variables with normal distribution (height SDS, BMI SDS), U-Mann-Whitney test for others (HBA1c, vitD), while Chi-square test for qualitative variables.

Results: Insulin pumps were significantly more used by PL than UA children (84.2% vs 34.2%, $p<0.001$). The sensors usage (CGM or FGM) was higher in PL than in UA (77.6% vs 63.2%, $p=0.03$). There was no difference between HbA1c levels [%] in PL and UA groups (7.4 vs 7.9, $p=0.16$). Nevertheless, there was a difference in HbA1c with respect to using pump or pens, significant in UA (7.0 vs 8.3, $p=0.04$) and borderline in PL (7.2 vs 8.2, $p=0.053$). Patients height SDS was significantly lower in UA than in PL (-0.37±1.12 vs 0.09±1.18, $p=0.05$), with no difference in BMI SDS. In UA children on pens BMI SDS was lower than in these on pumps (-0.19±0.98 vs 0.64±1.00, $p=0.02$), while in PL it was similar (0.31±1.11 vs 0.23±0.77, $p=0.77$). VitD concentrations were significantly lower in UA than in PL (21.2±7.3 vs 29.8±12.4 ng/ml, $p<0.001$) with no difference with respect to method of insulin administration within country, but with significant difference in UA children using sensors or not (23.3±6.3 vs17.5±7.6 ng/ml). The incidence of vitD deficiency was higher in UA than in PL (42.1% vs 15.8%, $p=0.002$). Autoimmune thyroiditis was diagnosed in 18.4% PL and 21.4% UA ($p=0.74$), while coeliac disease in 6.6% PL and none of UA children.

Conclusion: Usage of more advance methods of insulin administration (pumps) and sensors provided better DM1 control and is associated with better auxological development. Thyroid autoimmunity and vitamin D deficiency are common problems in children with DM1. Further research on larger populations with unified DM1 management should be conducted to optimize treatment of DM1 and comorbidities.

The assessment of plaque psoriasis treatment with etanercept among the paediatric population - single centre study

Zofia Jakubczak

Presenting author: Zofia Jakubczak

Tutors: Prof. Aleksandra Lesiak MD, PhD; Katarzyna Krupa MD

Co-authors: Joanna Wojtania, Paulina Wasiewicz

Affiliations: Medical University of Lodz

Introduction: Psoriasis is a chronic, multisystem, inflammatory disease that affects approximately 1% of children and is significantly reducing their health-related quality of life. Effective treatment is essential in this group of patients to avoid development of serious comorbidities and stigmatisation. Psoriasis can be treated with a variety of topical drugs, oral systemic medications, phototherapy and biological therapies. Etanercept is a biologic fusion protein in the TNF blocker class of medications. It is one of the medicines used in the B.47 drug programme among the population of children.

Aim of the study: The purpose of the retrospective study was to assess the efficacy-safety profile of etanercept treatment in paediatric patients with moderate-to-severe plaque psoriasis.

Material and methods: From the start of Etanercept therapy in the Department of Dermatology, Paediatric Dermatology and Oncology in Łódź to 2022, 40 paediatric patients were treated with etanercept for plaque psoriasis, including 20 females and 20 males. Patients ranging from 6 to 17 years old treated with etanercept (50mg per week) were included into the study. Outcome of the treatment was evaluated based on Psoriasis Area and Severity Index (PASI), Body Surface Area (BSA) and Children's Dermatology Life Quality Index (CDLQI). Safety profile was analysed according to adverse events in the patient's medical history. 75% or higher decrease of baseline PASI at week 16 was assessed as an adequate therapy which was the primary endpoint. In addition, a sufficient response was 50% of improvement in PASI (PASI50) and a decrease of 5 points in CDLQI. Patients were disqualified from the drug programme in case of ineffectiveness or severe adverse events.

Results: The average age of inclusion to our study was 13 years old. There was visible improvement of each measure used to analyse response to psoriasis therapy. Mean baseline BSA was 21.8, which decreased to 3.6 in the 16th week. DLQI decreased from 17.8 in the beginning to 4.7 after 4 months. Significant change was also noticeable for PASI, which decreased from 16.4 to 2.4. The psoriasis therapy resulted in an average improvement of 84.7% of the Psoriasis Area and Severity Index. PASI75, which was the primary endpoint, was achieved by 82.5 % of the study group. 4 patients were disqualified due to inadequate response to etanercept - PASI50 was not achieved. Adverse events were not observed.

Conclusions: In our study, etanercept proved to be effective in reducing the severity of plaque psoriasis symptoms. It improved not only patients' condition including the skin lesions but also quality of life. Moreover, it was safe and well tolerated among the paediatric population included into the study.

PhD

12th of May 2023

Coordinators:

Julia Ryniecka

Klaudia Korona

Jury:

Prof. Piotr Białasiewicz, MD, PhD

Małgorzata Mrowicka, MD, PhD

Monika Kujawa-Hadryś, MD, PhD

Prof. Ireneusz Majsterek, MD, PhD

Crucial role of interferon and interferon-dependant antiviral mechanism in eradication of rhinovirus during lung vascular endothelium infection

Mateusz Gawrysiak

Presenting author: Mateusz Gawrysiak

Tutors: Prof. Maciej Chałubiński, MD, PhD

Co-authors: Robert Szewczyk, Adrian Gajewski, Izabela Gulbas, Sylwia Michlewska

Affiliations: Medical University of Lodz

Introduction: HRV16 may infect human lung vascular endothelium via ICAM-1 entry receptor and cause strong antiviral response. However, the relevance of antiviral immune responses orchestrated by virus-infected endothelial cells in asthma exacerbations is unknown.

Aim of the study: The aim of this study was to assess the antiviral role of IFNs, OAS-1 (oligoadenylate synthase-1) and PKR (protein kinase R) during rhinoviral infection of lung vascular endothelium.

Material and methods: Human primary lung microvascular endothelial cells (HMVEC-L) were incubated with HRV16 (MOI 3.0) for 3h, washed and cultured for 72h. Virus copy number, interferon, OAS-1 and PKR expression were assessed by real time PCR. OAS-1 and PKR expression were assessed also in flow cytometry and confocal microscope. OAS-1 and PKR gene silencing by siRNA transfection was performed. IFN-β blocking was performed after HRV16 infection using anti-IFN-β antibodies.

Results: In HMVEC-L, virus copy number reached peak at 5h upon incubation with HRV16, then decreased. The decrease of viral load observed after 5h was accompanied by up-regulation, firstly, of IFNs and, secondly, of OAS-1, PKR mRNA expression and increase at protein level. These enzymes lead to virus degradation and inhibit its replication. When OAS-1 or PKR were successfully silenced, higher viral copy numbers were observed in comparison to HMVEC-Ls without transfection of siRNA. But we also observed that siRNA alone strongly stimulates antiviral response before HRV infection which results in more efficient inhibition of replication. IFN-β blocking caused the decrease of expression of OAS-1 and PKR accompanied by the increase of viral RNA replication in cells.

Conclusions: Lung endothelium may be involved in the immunopathology of rhinoviral infection as a potent source of antiviral immunity. IFN response is essential for sustaining the first line of antiviral defence and gives time for effective activation of adaptive antiviral response. Based on our model, we demonstrated that OAS-1 and PKR, as a proteins responsible for inhibition of HRV16 replication, are strongly associated with antiviral immunity of endothelium. NCN 2021/41/N/NZ5/02464

The impact of the original board game „Zdrowyścig” on the level of healthy lifestyle knowledge among children at an early school education

Natalia Płóciennik

Presenting author: Natalia Płóciennik

Tutors: Assoc. Prof. Magdalena Wrzesińska Phd

Co-authors: -

Affiliations: Medical University of Lodz

Intrduction: Health education enables transferring knowledge, popularizing and shaping health-related behaviours among children. The issue of education is lack of involvement and motivation in learning process and the use of various educational methods is recommended to improve the effectiveness of impacts.

Aim of the study: To evaluate and compare the influence of using the original board game, e-learning and a seminar on the level of healthy lifestyle knowledge among children at early school education.

Materials and methods: 126 students (60 girls and 66 boys) aged 7 to 9 (Me=7.8; SD = 0.76) participated in the study. Health promotion intervention focused on healthy lifestyle were applied in three groups of students with using a board game titled Zdrowyścig, e–learning and seminar. 15-question test of knowledge was performed before and after interventions.

Results: The smallest increase in level of knowledge about healthy lifestyle was noticed after the seminar ($p<0.01$).Compared with e-learning and a seminar, Zdrowyścig improved knowledge about healthy life style at the highest level (13 p.p).

Conclusions: The study confirmed varied effectiveness of examined educational methods. Board game is a solution tailored to the needs of users (children, parents, teachers) who positively assessed its graphic design and content and has positive impact on increase of knowledge in a group of students.

The role of synthetic and natural compounds as potential adjunctive agents supporting anti-tumor chemotherapy

Pola Głowacka

Presenting author: Pola Głowacka

Tutors: dr hab. Monika Witusik-Perkowska, MD, PhD, Agnieszka Pudlarz, PhD

Co-authors: Joanna Wasiak, BSc

Affiliations: Medical University of Lodz

Introduction: Glioblastoma (GB) is the most frequent malignant tumor of CNS, of extremely poor prognosis with the 5-year survival rate of 5% and high recurrence percentage. Currently applied chemotherapy, based on temozolomide (TMZ), is hindered by its triggering pro-survival responses, like autophagy and cellular senescence, what often results in tumor therapy escape mechanism and propagation of drug-resistant cell populations. State-of-the-art synthetic compounds and addition of autophagy inhibitors could solve this problem. Moreover, current findings show bacterial metabolites to have promising properties as potential adjunctive agents in anticancer therapy.

Aim of the study: Analysis of anti-neoplastic properties of the new aziridine-hydrazide hydrazone derivatives, as well as comparison of the therapy effectiveness with addition of the autophagy inhibitor (chloroquine) and bacterial metabolites in contrast to standard TMZ treatment on a glioblastoma in vitro model.

Material and methods: In vitro GB model was used to assess anti-tumor properties of tested compounds. Tested candidate drugs and TMZ were added to cell cultures for 48-96 hours with and without the addition of CQ or bacterial metabolites, which were derived from lactic acid bacteria cultures. Cells viability was measured with CCK 8 test. Flow cytometry was performed to analyze apoptosis/necrosis with the Annexin V-FITC Apoptosis Detection Kit and autophagy with Autophagy Detection Kit. Apoptosis was also verified by immunofluorescence analysis of active form of caspase-3.

Results: Newly synthesized compounds present proapoptotic potential higher than TMZ against GB cells in vitro, but they are also able to stimulate treatment induced autophagy. Addition of autophagy inhibitor (chloroquine) to tested compounds results in significant increase of apoptosis efficiency within beginning period of treatment ($p<0.05$). Initial results demonstrate that LAB-derived postbiotics slightly influence viability of tumor cells in vitro but the effect of combined treatment with candidate drugs or TMZ depends on individual cell line sensitivity and type of applied chemotherapeutic.

Conclusion: Output of our in vitro study suggests that adjunctive treatment seems to be promising option to enhance effectiveness of not only standard chemotherapeutics but also candidate anti-cancer drugs. Implementing a treatment with optimal combination of apoptosis inducer and autophagy inhibitor may facilitate neoplastic cell death and in consequence minimize the risk of tumor therapy escape. However, influence of postbiotic metabolites on cellular processes related to tumor resistance and therapy response requires further investigation.to evaluate their utility as potential adjunctive agents.

PSYCHIATRY AND PSYCHOLOGY

12th of May 2023

Coordinators:

Tasmia Fayyaz

Anna Broniecka

Jury:

Prof. Dominik Strzelecki, MD, PhD

Magdalena Kotlicka-Antczak, MD, PhD, Prof. UM

Katarzyna Wachowska, MD, PhD

The stigmatisation of psychiatric disorders by healthcare professionals

Agnieszka Murgrabia

Presenting author: Agnieszka Murgrabia

Tutors: Justyna Sobolewska- Nowak, MD

Co-authors: Aneta Kondratowicz, Witold Chmielnicki, Wiktoria Izdebska, Dominik Sendecki, Klaudia Cudak, Justyna Sobolewska-Nowak

Affiliation: Medical University of Lodz

Introduction: Stigmatisation is a common issue of unequal treatment and discrimination, which might be especially difficult for psychiatric patients. As frequent users of the general healthcare system, they are prone to experience stigmatisation and discrimination from healthcare professionals. This phenomenon may negatively affect the mental health condition of the patients and their treatment effects.

Aim of the study: This study aims to investigate the scale of stigmatisation towards psychiatric patients and the impact of unequal treatment on their mental health condition. The purpose of the investigation is to improve awareness of the issue in the medical environment.

Material and methods: Patients admitted to the Department of Adult Psychiatry at Jozef Babinski Psychiatric Hospital in Lodz asked to complete a questionnaire regarding sex, age, education and the reason for staying in the ward. In the next part of the examination, patients were questioned about the stigma experience and the form of unequal treatment they had experienced. The questionnaire consisted of 1 open and 34 closed author's questions.

Results: For now, 17 patients participated in the study, including 71% men and 29% women, from 18 to 73 years. Participants had no medical education. Ninety-four per cent were in the hospital voluntarily, while 1 person was admitted without their own will. Patients were hospitalised for schizophrenia, depression, personality disorders, delusional disorder, bipolar disorder, psychosis, anxiety disorders, drug dependence, and alcohol dependence. More than 17% of respondents claimed that medical staff treated individuals with mental disorders worse than those suffering from non-psychiatric conditions. Over 23% admitted to having experienced unpleasantness from medical staff. The emotions which emerged among the patients in the effect of the discrimination include anger, low self-esteem, sadness, disappointment, hopelessness, and irritability.

Conclusions: The data collected so far indicate that the problem of stigmatisation of mental illness is present in the behaviour of educated medical personnel. The results suggest the validity of continuing the research.

Single center screening for ADHD in children with type 1 diabetes – the role of a student in clinical trials

Ewa Klejman

Presenting author: Ewa Klejman

Tutors: prof. Agnieszka Szadkowska, MD PhD; Arkadiusz Michalak, MD

Co-authors:-

Affiliation :Medical University of Lodz

Introduction: Attention-deficit hyperactivity disorder (ADHD) is a neurodevelopmental condition affecting ~5% of school-aged children. If undiagnosed and untreated ADHD can lead to poor school performance, conduct disorders and depression. Moreover, ADHD often complicates the treatment of other co-existing pediatric chronic diseases such as type 1 diabetes (T1D). T1D is increasingly more common in children and its therapy requires rigorous self-control. Current reports show that ADHD might be more common in those with T1D than in general population, and that co-existing ADHD impairs T1D therapy outcomes. Despite those facts, ADHD remains heavily underdiagnosed in Poland (~1/10 cases are diagnosed), and no data are available for Polish children with T1D.

Aim of the study: To assess the prevalence of ADHD in youth with T1D after 6 months of screening campaign in a single center and describe diabetes control in this specific population.

Materials and methods: The study is a part of multicenter project "LamainDiab" funded by Medical Research Agency; the student's involvement is limited to assistance at its various stages. The screening protocol (approved by local Bioethical Committee – No RNN/280/21KE) involves a first-line short (~10-15 min) psychological consultation with the short version of the Conners 3 questionnaire. Patients with a high probability of ADHD (Conners 3 score ≥1SD / ≥60 points) are invited to second-line procedures: on-site psychological consultation (developmental, social, and school-related interviews and extended Conners 3 questionnaire), background pediatric check-up by the leading diabetes care physician and a teleconsultation with a specialist in child and adolescent psychiatry. A summary report is provided to the patient's treatment facility. A diagnosis of ADHD confirms the patient's eligibility for the randomized clinical trial.

Results: Between 01.06.2022 and 14.03.2023, 89 patients were approached and offered to participate (out of 553 of eligible patients treated in the clinic) – 77 (87%) accepted and 60 already completed all screening procedures. Among them 10 patients have been diagnosed with ADHD, which translates to minimal ADHD prevalence of 2% (10/553) and estimated prevalence of 16.6% (95%CI: 8.3-28.5%) should the current diagnostic rate remained unchanged. Those with ADHD presented nonsignificantly higher HbA1c concentration (worse diabetes control) compared with those not having ADHD (8.13+/-1.45% vs 7.54+/-1.45%, p=0.152).

Conclusions: The screening protocol proposed in this study is effective in the pediatric diabetes centre's environment and allowed to detect multiple undiagnosed cases. Prevalence estimates are preliminary due to a short duration of screening but agree with available literature. Diabetes control in children with T1D and ADHD might be worse than those with T1D alone, necessitating improvements in coordinated care.

The association between mood, reaction speed and physical activity during sleep deprivation

Marta Ditmer

Presenting author: Marta Ditmer

Tutors: Agata Gabryelska, Piotr Białasiewicz, Dominik Strzelecki, Marcin Sochal

Co-authors: Szymon Turkiewicz, Filip Karuga

Affiliation: Medical University of Lodz

Introduction: Sleep deprivation (SD) has long been experimentally used in treatment of affective disorders like depression or bipolar disorder. Results of such studies are highly variable regarding the intensity of mood enhancement and its transient character. Thus, it is necessary to find new factors accounting for the heterogeneity of outcomes to develop more effective therapeutic protocols.

Aim of the study: The study aimed to evaluate the impact of physical activity on mood and reaction speed after SD.

Materials and Methods: The study group comprised of 71 participants. SD lasted ca. 24 hours, from the morning hours of the SD day to the morning hours of the following day. Physical activity (PA) was controlled using actigraphy (actigraph GENEActive Original, ActivInsights Ltd.); an actigraph was provided to each participant. Participants filled out a questionnaire assessing depression symptoms-Beck Depression Inventory (BDI) as well as took the reaction speed test (Response Time Test Apparatus, AT Smart Systems, Poland); both procedures were performed in the evening of the SD day and on the following morning. Depending on the amount of time spent in a sedentary state (gravity-subtracted sum of vector magnitudes<386, DOI 10.1111/sms.13488), participants were divided into two groups: inactive (≥70% of SD duration spent sedentary, n= 43) or active (n= 28).

Results: There were no significant differences between the active and the inactive participants regarding pre/post SD BDI score, reaction speed, and demographic data (e.g., age, sex, BMI; all $p>0.05$). BDI score was significantly lower in the inactive participants following SD in comparison with their baseline parameters (5, IQR 1-12 vs. 3, IQR 0-12, $p=0.024$) than the active group (3, IQR 1-6 vs. 3, IQR 0-7, $p=0.408$). Reaction time after SD was impaired in both active (0.216, IQR 0.206-0.226 vs. 0.231, IQR 0.222-0.46, $p<0.001$) and inactive group (0.224, IQR 0.216-0.235 vs. 0.238, IQR 0.220-0.251, $p<0.001$). However, the difference between pre/post SD response time was slightly higher in the active individuals (0.015, IQR 0.011-0.028 vs. 0.012, IQR 0.003-0.022, $p=0.047$).

Conclusions: It appears that sedentary behavior during SD could improve mood and less severely comprise reaction time than a higher activity level. Consequently, PA might be an important contributor to clinical outcomes observed in individuals afflicted with affective disorders subjected to SD. New SD protocols should acknowledge PA as a modulator of SD effects.

The Burden of War: Assessing the Impact of the Ongoing Russo-Ukrainian War on the Mental Health of Medical Doctor Students at the Medical University of Łódź

Phillip Kiełbowicz

Presenting author: Phillip Kiełbowicz

Tutors: Dr. Maria Sawościan, MD, Prof. Małgorzata Lelonek, MD, PhD

Co-authors: York-Ferdinand Kosegarten

Affiliation: Medical University of Lodz

Introduction: The Russo-Ukrainian war is an ongoing conflict that has resulted in severe humanitarian and socio-economic consequences around the world. As a result of the war, Poland faced an enormous influx of Ukrainian refugees into its country which led to a rapid influx of patients into the Polish health system.

Aim of the Study: The aim of this study was to determine whether the ongoing Russo-Ukrainian war had any effect on the mental health status of the medical doctor (MD) students at the Medical University of Łódź.

Materials and Methods: The survey was conducted from July 2022 until January 2023 among a sample of 154 MD students (86 females and 68 males, 71 [46,1%] were born in Poland, 46 (53,49% vs 40 (46,51%); p=0,03870) of whom were women) from the university's Polish, military, and English divisions. The students completed the Patient Health Questionnaire-9 (PHQ-9), Insomnia Severity Index (ISI), and the created Russo-Ukrainian War Impact Assessment (RUWIA). The results from these questionnaires were analyzed using the program Statistica 13.1PL (StatSoft, Tulsa, USA). All data was collected and processed in concordance and approval from the Bioethics Committee (approval number RNN/125/22/KE) and the Dean's Office of the Medical University of Łódź.

Results: With the 2-week questionnaires, 18.8% of students reported experiencing severe or moderate depression and 26% reported experiencing severe or moderate insomnia. With the 1-year questionnaires, 13.6% reported experiencing severe or moderate depression, and 16.9% reported experiencing severe or moderate insomnia. There were no significant differences between the students regarding the division. Significant differences were observed between students with and without insomnia in the 2-week timeframe in depression in the 2-week timeframe (13 (IQR: 10-18,5 vs 5 (IQR: 2-10); p<0.00001), 2-week RUWIA (7 (IQR: 4-8,5) vs 5 (IQR: 2-8); p=0.035425), depression in the 1-year timeframe (9 (IQR: 5-13) vs 4,50 (IQR: 2-9); p=0.002327), and insomnia in the 1-year timeframe (13,5 (IQR: 4-17,50) vs 5,5 (IQR: 1-9); p=0.000068).

Conclusions: The ongoing Russo-Ukrainian war has had a direct effect on the mental health of MD students at the Medical University of Łódź. Students reported a higher incidence of depression and insomnia. Insomnia was directly correlated with depression, and insomnia was influenced by the impact of the Russo-Ukrainian War. These serious findings require attention and addressing. Further assessment of mental health of medical students and medical staff should be conducted in the goal of improving healthcare in Poland.

Involvement of BDNF and proBDNF signaling pathway on insomnia and depression symptoms in obstructive sleep apnea patients

Szymon Turkiewicz

Presenting author: Szymon Turkiewicz

Tutors: Agata Gabryelska, MD, PhD; Marcin Sochal, MD, PhD

Co-authors: Marta Ditmer, Julia Jaromirska, Filip Grzybowski

Affiliation: Medical University of Lodz

Introduction: Obstructive sleep apnea (OSA) is a disorder that, apart from somatic sequelae, increases the risk of developing psychiatric conditions. Brain-derived neurotrophic factor (BDNF) signaling pathway is involved in the pathophysiology of depression and insomnia.

Aim of the study: The study aimed to investigate differences in concentrations of BDNF and proBDNF in patients with OSA and healthy individuals, to evaluate diurnal changes of these proteins, and to assess the correlations with psychiatric symptoms.

Materials and methods: Sixty individuals following polysomnography (PSG) were divided into two groups based on the apnea-hypopnea index (AHI): OSA patients (AHI $\geq$ 30; n = 30) and control group (AHI < 5; n = 30). Participants filled out questionnaires: Beck Depression Inventory (BDI), Athens Insomnia Scale (AIS), and Pittsburgh Sleep Quality Index (PSQI). Peripheral blood was collected before and after PSG. Protein concentrations were measured using ELISA. OSA group was divided into subgroups: AIS (−)/AIS (+) (AIS > 5), PSQI (−)/PSQI (+) (PSQI > 5), and BDI (−)/BDI (+) (BDI > 19).

Results: No differences in BDNF and proBDNF protein levels were observed between OSA and the control groups. However, BDNF and proBDNF evening protein concentrations were higher in the AIS (+) and PSQI (+) groups ($p < 0.001$ for all). The BDI (+) group was characterized by lower morning levels of both proteins ($p = 0.047$ and $p = 0.003$, respectively).

Conclusions: BDNF signaling pathway might be involved in the pathophysiology of depression and insomnia in patients with OSA. BDNF and proBDNF protein levels might be useful in defining OSA phenotypes.

RADIOLOGY AND NUCLEAR MEDICINE

11th of May 2023

Coordinators:

Marta Ditmer

Szymon Turkiewicz

Jury:

Marcin Elgal MD, PhD

Marcin Majos MD, PhD

Nina Błasiak-Kołacińska MD, PhD

Paweł Cichocki MD, PhD

Usefulness of contrast-enhanced ultrasound in differentiation between hepatocellular carcinoma and bening liver tumors

Adam Dobek

Presenting author: Adam Dobek

Tutors: Prof. Ludomir Stefańczyk

Co-authors:Wojciech Ciesielski MD, Oliwia Grząsiak MD, Mateusz Kobierecki MD

Affiliation: Department of Radiology and Department of General Surgery and Transplantology, Medical University of Łódź

Introduction: Hepatocellular carcinoma (HCC) is the most common malignant primary tumor of the liver. HCC develops usually based on cirrhosis, Hepatitis B/C or on account of hepatocellular adenoma (HCA) progression into HCC. Thus, differentiation between malignant and benign liver lesions is required. Expect HCA focal nodular hyperplasia (FNH) due to similar pattern of enhancement is important. Both tumors in most cases require only observation, however both are demonstrating potential to growth. In the case of FNH it can cause only compression on surrounding tissues, whereas HCA can succumb divulsion, hemorrhage or as mentioned above progression into HCC. Diagnosis of these tumors should be provided using Magnetic resonance imaging (MRI) or Computed tomography (CT). In this aspect Contrast-enhanced ultrasound (CEUS) is out of recommendation and for this moment can be inefficient because of possibility to overlook some changes apart from main lesion, however it can be fantastic way to monitor evolution of tumors.

Aim of the study: Aim of study is comparison of tumors perfusion in CEUS. We wanted to show that CEUS can be useful in monitoring of focal liver lesions as well as MRI/CT simultaneously with lower cost of examination, better availability and safety. Furthermore, in our opinion it can be useful in indicating the best location for biopsy.

Materials and methods: Retrospective study was performed in Department of Radiology of Medical University of Łódź. The study included 10 HCA, 10 FNH and 28 HCC confirmed by MRI/CT in standard abdominal protocol for confirmation of focal liver lesions. In the next step CEUS was performed according to guidelines for CEUS in liver – 2020 update. Examination included standard grey scale US examination and color-doppler, in last step of examination CEUS was performed with 2,4ml contrast agent (SonoVue) injection. Four phases of acquisition were noticed: arterial (10-45 seconds), portal venous phase (45 – 120), late venous phase (120-640). Enhancement of tumor was compared to liver parenchyma.

Results: Both HCA and FNH present wash-in and lack of wash-out effect, enhancement of them is homogenous. HCC present wash-in and wash-out effect, enhancement of it is inhomogeneous. In HCA and FNH group after 20-30s enhancement of the lesion was similar to the liver parenchyma. In HCC group enhancement was slightly weaker compared to liver parenchyma and benign lesions

Conclusions: Liver tumors can be classified as benign when they are homogenous in arterial phase and don’t present wash-out effect. Malignant hepatic lesions like HCC in arterial phase presents inhomogeneous enhancement pattern due to presence of bleeding or necrosis. In venous phases wash-out is observed. These features can be observed in CEUS as well as in CT or MR. According to it we suggest that CEUS can be used in selecting patients to CT/MR examination and providing optimal place of biopsy according to dogging areas of necrosis or bleeding.

One examination - many answers - CT significance in polytrauma patients

Katarzyna Drelich

Presenting author: Katarzyna Drelich

Tutors: Agnieszka Brodzisz MD, PhD, Magdalena Woźniak MD, PhD

Co-authors: -

Affiliation: Students' Scientific Society at the Department of Pediatric Radiology Medical University of Lublin, Poland

Introduction: A multi-organ injury (polytrauma) causes damage to at least two areas of the body that each requires specialized treatment and can be life-threatening. The most important diagnostic imaging is computed tomography (CT) examination in polytrauma protocol.

Aim of study: The purpose of the study was to evaluate brain, abdominal, and pelvic lesions in pediatric patients referred for examination in polytrauma protocol.

Materials and methods: A retrospective analysis involved 67 pediatric patients who were referred for CT examination in polytrauma protocol, with contrast administration. Post-traumatic evaluation within abdominal cavity and pelvis included 6 groups: I – organ rupture, II – presence of fluid/blood, III – presence of hematoma, IV - fractures, V - edematous changes, VI - bleeding or ischemia. Preliminary analysis identified 29 patients (53.3%) with post-traumatic craniocerebral changes, excluding 38 patients without head injury.

Results: Post-traumatic lesions of the abdomen and pelvis occurred in 32 patients and usually involved several changes. In I group 18 patients revealed rupture of liver, right kidney and spleen. Group II included fluid/blood around liver, right kidney, right adrenal gland, spleen, pelvis, right iliac fossa or interloped in 19 patients. Group III presented 10 hematomas of liver, right kidney, adrenal glands, left gluteal muscle, within the mesentery, retroperitoneally or in the region of the left iliac ala. IV group included 16 fractures of pubic, sciatic, femur or ilium bones. 3 patients had edematous changes in the mesentery of the small intestine (group V) and 3 patients had splenic ischemia/ congestion/ bleeding into the adrenal glands (group VI). Imaging findings within brain were divided into 4 main groups: 1. cerebral oedema (n=16), 2. subgaleal hematoma (n=16), 3. intracranial hemorrage (n=9), 4. skull fracture (n=12). Cerebral oedema most often accompanied a subgaleal haematoma(n=6) and bone fractures (n=6). The subgaleal hematoma was usually located in the parietal area (n=9). Intracranial hemorrhage occurred only in the form of intracerebral haemorrhages. Fractures affected neurocranium (n=8) and facial bones (n=4).

Conclusions: Traumatic lesions of both the brain and the abdomen and pelvis occur in the course of multi-organ trauma and CT examination in polytrauma protocol is the method of choice allowing for fast and full body scan.

Lower limb edema - a simple symptom, many causes

Monika Zbroja

Presenting author: Monika Zbroja

Tutors: MD Maryla Kuczyńska, MD, PhD Małgorzata Drelich, MD, Phd Magdalena Woźniak

Co-authors: -

Affiliation: Students' Scientific Society at the Department of Pediatric Radiology, Medical University in Lublin; Department of Interventional Radiology and Neuroradiology, Medical University in Lublin, Department of Clinical Physiotherapy of the Chair and Department of Rehabilitation and Orthopedics, Medical University in Lublin, Department of Pediatric Radiology, Medical University in Lublin

Introduction: Lower limb edema is swelling caused by an increase in interstitial fluid that exceeds the capacity of physiologic lymphatic drainage. The reasons for the edema may be various diseases. Ultrasound examination is an initial imaging test when when further details are required to make therapeutic decisions.

Aim of the study: The importance of ultrasound examination in the diagnostics of lower limb edema.

Materials and Methods: A group of 102 patients, aged 8-80 years, with lower limb edema and pain were enrolled in the study. All patients underwent lower limb US examination using B-mode, Color Doppler and spectral options. Patients with suspected neoplasm process on US examination were referred for biopsy.

Results: In the US examination in the study group the diagnosis was as follows:

- in 15 patients Baker's cyst
- 8 patients with ruptured and diffuse intramuscular Baker's cyst
- deep vein thrombosis in 17 patients (including 2 pediatric patients)
-14 patients with intramuscular venous thrombosis
- in 3 patients Achilles tendonitis
-10 patients with shin muscle rupture/tear (including 2 pediatric patients)
- popliteal artery aneurysm in 3 patients
- 9 patients with massive lymphoedema in the course of erysipelas accompanied by reddening of the skin
- in 5 patients neoplasm lesions
- allergic edema in 3 patients (all pediatric patients after insect bites)
- 8 patients with reactive lymphadenopathy (2 pediatric patients)
- enlarged lymph nodes suspecting neoplasm in 3 patients (1 pediatric patient)
- in 4 patients hematomas.

In a group of 8 patients with neoplasm process suspected on US examination, histopathological examination confirmed neoplasm process in 7 patients, in the remaining 1 patient it revealed hematoma.

Conclusions: US examination is the method of choice in differentiating the cause of lower limb edema. US image highly correlates (87.5%) with histopathology in the diagnosis of neoplastic lesions.

The use of ultrasonography in the diagnosis of Burkitt lymphoma in children

Weronika Mielnik

Presenting author: Weronika Mielnik

Tutors: Agnieszka Brodzisz, Magdalena Woźniak

Co-authors: Monika Zbroja, Katarzyna Drelich, Olga Pustelniak, Ilona Kozioł, Magdalena Leśniewska, Julia Budzyńska

Affiliation: Students' Scientific Society at the Department of Pediatric Radiology, Medical University of Lublin; Department of Pediatric Radiology, Medical University of Lublin

Introduction: Burkitt's lymphoma is the most malignant tumor of the lymphatic system, derived from mature B lymphocytes. It is associated with EBV infection. In children, it is most often located in the digestive tract. This tumor is frequently diagnosed incidentally in patients who have ""acute abdominal"" symptoms caused by intestinal obstruction due to expansion by tumor masses in the intestines.

Aim of the study: The aim of the study was to assess the use of ultrasound in the diagnosis of Burkitt's lymphoma.

Material and methods: The study involved 18 children (10 girls and 8 boys) aged over 5 years (mean age was 8.5 years). Patients reported severe abdominal pain mainly located in the right iliac fossa. In all, ultrasound examination of the abdomen and gastrointestinal tract was performed using Siemens apparatus with a 3.5-5 MHz convex probe and L4 - 7.5 MHz linear probe.

Results: In all children ultrasound examination showed intussusception of the ileocecal region. All patients had low-echogenic, significantly thickened intestinal wall; in case of 7 children with enlarged intestinal lumen and in 11 with the narrow lumen. In the colour Doppler option, moderate vascular flow signals were visible in all patients. Additionally, surrounding lymph nodes were enlarged. In 9 patients fluid between intestinal loops was presented. Due to the thickening of the wall of the affected intestine, Burkitt's lymphoma was suspected. Laboratory tests, bone marrow and MR / CT scans evaluation of the abdominal cavity and pelvis confirmed the initial US diagnosis.

Conclusions: Ultrasound examination allows for fast and accurate diagnosis of patients with symptoms of ""acute abdomen". It is also a useful and helpful tool in diagnosing Burkitt's lymphoma.

CASE STUDIES: INTERNAL MEDICINE
I SESSION

13th of May 2023

Coordinators:

Emilian Budny

Julita Tokarek

Jury:

Paulina Grzelak-Pabiś, MD, PhD

Melania Mikołajczyk-Solińska, MD, PhD

Michał Niedźwiedź, MD

Filip Pawliczak, MD

Karolina Supeł, MD, PhD

FMD as a cause of drug-resistant hypertension in young patients – case report

Olga Pustelniak

Presenting author: Olga Pustelniak

Tutors: Maryla Kuczyńska MD; Michał Sojka MD, PhD

Co-authors: -

Affiliations: Medical University of Lublin

Introduction: Fibromuscular dysplasia (FMD) is a rare nonatherosclerotic and noninflammatory vascular disease that can lead to stenosis, occlusion, dissection or aneurysmal dilatation of the affected arteries. It mostly involves the renal, carotid, and visceral vessels. FMD is classified into five categories according to the vessel wall layer affected: intima (5%) - intimal fibroplasia, media: (90-95%) - medial dysplasia, perimedial (subadventitial) fibroplasia, medial hyperplasia and adventitia (rare) - adventitial fibroplasia. Doppler US is the first-line diagnostic modality, while CT angiography is still considered the “gold standard”.

Case report: This case presents a female patient, aged 24, who was diagnosed with high blood pressure values unresponsive to pharmacotherapy. Imaging diagnostics revealed string of beads morphology of the middle and distal renal arterial segments, consistent with FMD. The patient was qualified for endovascular treatment - successful balloon angioplasty was performed resulting in short-term normalization of the BP value, however clinical complaints reappeared. A CT angiography revealed bilateral short-segment stenosis of renal arteries which prompted the decision about reintervention. The symptoms temporarily disappeared, however after a few months, the problem appeared again. The patient underwent 2 follow-up Doppler ultrasound examinations: first 4 months after the procedure and second 6 months afterwards. In both examinations the image was pathologic with numerous aliasing areas in color Doppler and accelerations of blood flow up to 200 cm/s, however no local areas of critical stenosis were identified, which was indirectly indicated by normal intra-renal systolic acceleration time.

Conclusions: Depending on the histological form, FMD responds differently to endovascular treatment; with a string of beads lesions the results are worse than with ""focal stenosis"". The method of choice in the treatment of FMD is balloon angioplasty, whereas stenting is not applicable in this case. In patients with FMD, regular controlling of blood pressure and imaging examinations results are essential to monitor the course of the disease in the renal vessels and to identify possible restenosis.

A case report of persistent psychiatric and neurological symptoms after COVID-19 infection and therapeutic strategy

Agnese Ričika

Presenting author: Agnese Ričika

Tutors: Vivita Skujiņa, MD

Co-authors: -

Affiliations: Rīga Stradiņš University

Introduction: Post Covid-19 condition also known as long Covid can affect anyone exposed to Covid-19 infection, regardless of age, severity, vaccination status. World Health Organization defines post Covid-19 condition as the continuation or development of new symptoms 3 months after the initial infection and these symptoms are lasting for at least 2 months with no other explanation. Approximately 10–20% patients infected by SARS-CoV-2 may develop symptoms of long Covid. There are risk factors that are associated with developing long Covid-19: female gender, underlying health conditions but some of the risk factors are controversial.

Case report: A 53 year old woman received her first dose of Pfizer vaccine in November 2021 and the second dose in December. In February 2022 patient was diagnosed with SARS-CoV-2 infection. After a month patient had continuous symptoms: malaise, asthenia, difficulty concentrating, frequent headaches in the morning, persistent cough, difficulty falling asleep and disturbed sleep at night, sweating and hot flashes, panic attacks leading to crying. Patient experienced recurrence of cervical radiculopathy (C5-C7) and tingling sensation in both palms. Patient turned to the family doctor for help. Due to the many symptoms woman was unable to work. She received multidisciplinary care from health care specialists: family doctor, neurologists, physical medicine and rehabilitation physicians, physiotherapists, psychiatrists. 53 year old patient received prescribed antipsychotics and antidepressants to relieve her symptoms. For almost a month in summer 2022 patient received inpatient care that included support from psychologist, physiotherapy, occupational therapy, drama therapy, art therapy, dance and movement therapy. More than 10 months after initial symptoms of SARS-CoV-2 infection in December 2022 patient was able to return back to the work.

Conclusions: In total, more than 200 different symptoms have been reported that are characteristic of a patient with a long Covid, which can affect daily activities. Treating symptoms of long Covid involves many healthcare professionals, it's a burden of health care system. To avoid post Covid-19 condition, preventive measures to avoid primary disease are recommended - vaccination and revaccination, hand hygiene, use of face masks and good indoor ventilation.

From infection to irreversible brain damage – case of neurosyphilis in 31-year old patient

Klaudia Lipińska

Presenting author: Klaudia Lipińska

Tutors: Prof. Aleksandra Lesiak, MD, PhD; Małgorzata Skibińska, MD, PhD

Co-authors: -

Affiliations: Medical University of Lodz

Introduction: Syphilis is a sexually transmitted disease caused by bacteria Treponema pallidum. The stages of syphilis are categorized as primary, secondary, latent, and tertiary. Treatment with antibiotics is highly effective and leads to complete remission. However, untreated syphilis causes severe complications which involve various systems and organs in the body. Neurosyphilis is a term referring to the infection of central nervous system (CNS) in patient with syphilis. It can appear at any stage of disease, but it is the most likely to occur in the tertiary syphilis. Neurological symptoms of neurosyphilis vary from the most common such as meningitis to the most severe like spinal atrophy.

Case report: A 31-year old male was admitted to the hospital with a suspicion of syphilis. Patient presented psychiatric and neurological symptoms including hallucinations, dysarthria and brachybasic gait that were progressing slowly over the last 4 years and got significantly worse over the last year. At the admission communication with patient was limited. Patient responded only to certain sounds by turning his head and made inarticulate noises. In the past, patient remained under care of the psychiatrist and neurologist but proposed treatment with sulpiride, olanzapine and quetiapine was not effective. During hospitalization, blood tests revealed high levels of nontreponemal Rapid Plasma Reagin test (RPR) - 1/32, which was later confirmed by the treponemal test – Treponema Pallidum Hemagglutination Assay (TPHA) 1/10240. Lumbar puncture was performed and followed by an examination of cerebrospinal fluid (CSF) in which high level of protein - 83.0 mg/dl (norm <45mg/dl), pleocytosis - 37 in 1µl (norm 0-5 in 1µl) and positive RPR and TPHA tests were observed. Moreover, MRI scan of the head revealed multiple degenerative areas and extensive leukoaraiosis that correlated with patient's clinical state. Due to laboratory results and clinical picture neurosyphilis was diagnosed. Treatment with crystalline and benzathine penicillin was conducted. The patient was discharged from the hospital but remained under care of the outpatient clinic. During ambulatory visits control examinations of blood serum were performed and revealed that levels of RPR slowly decreased and reached stable level of 1/8. After that patient remained in the stable state of the syphilis for more than a year. Unfortunately, improvement in neurological symptoms was only observed by slight change in gait.

Conclusions: Neurosyphilis is a very severe type of Treponema pallidum infection. Delay in diagnosis may result in irreversible brain damage. The use of antibiotics at this point may prevent greater damage but complete resolution of neurological damage might not be possible.

Life-threatening event in a patient with hereditary haemorrhagic telangiectasia (HHT) - a case report

Marlena Gajczak

Presenting author: Marlena Gajczak

Tutors: Melania Mikołajczyk-Solińska, MD, PhD

Co-authors: Mateusz Zdaniewicz , Bartłomiej Czyżak, Andrzej Węgiel

Affiliations: Medical University of Lodz

Introduction: Hereditary haemorrhagic telangiectasia (HHT), otherwise known as Rendu-Osler-Weber syndrome, is an autosomal dominant pathology induced by mutations in genes associated with transforming growth factor-ß (TGF-ß) signalling pathway such as endoglin and ALK1. This process leads to vascular dysplasia and malformations that vary from mild telangiectases in the skin or mucosa to arteriovenous malformations (AVM) of viscera.

Case report: 67-years-old female patient with diagnosed HHT and the history of angiodysplasia of the larynx, arteriovenous fistula of the left lung and with condition after multiple stomach, duodenum, small intestine, and caecum coagulations (APC) was admitted to the department of internal medicine. The cause leading to hospitalization was progressive weakness, deterioration of exercise tolerance, dizziness, palpitations, and fainting. Blood laboratory results indicated life-threatening normocytic anemia with iron deficiency (HGB 4,9 g/dl). The image of the CT of the chest was within the norm, however the CT image of the abdominal cavity raised the suspicion of an arteriovenous fistula of the hepatic hilum, not confirmed with Doppler ultrasound imaging. During hospitalization, endoscopic examinations of the gastrointestinal tract were performed with coagulation of bleeding angiodysplasias of stomach and duodenum. Colonoscopy revealed non-bleeding rectal angiodysplasias. The transfusion of four units of packed red blood cells and 1500 mg of iron was administered, resulting in improvement of the patient's condition and increasement of blood morphology parameters (HGB 10,4 g/dl). Standardized treatment with tranexamic acid and etamsylate was maintained.

Conclusion: Although HHT is a genetic disease, a diagnosis is based on clinical criteria such as proven visceral AVM, multiple telangiectasias or recurrent epistaxis. There has been a reported delay of up to 3 decades between the onset of the disease and confirmation of the diagnosis due to its rarity and heterogeneity of clinical manifestations overlapping with other entities. The standard treatment of HHT consists of staunching bleeding with various invasive and pharmacological techniques. Thus, frequent monitoring of patients is necessary to avoid life-threatening symptoms due to prolonged asymptomatic bleeding.

Could I be allergic to cannabis? A case report of a patient with allergic cross-reactivity and atopic dermatitis

Jakub Wąsik

Presenting author: Jakub Wąsik

Tutors: Marcin Kurowski, MD, PhD, prof. UMED

Co-authors: -

Affiliations: Medical University of Łódź

Introduction: Cross-reaction occurs when an allergen other than the one that caused sensitization causes an allergic reaction. Such allergens include those of the PR-10 family, represented by the major birch allergen (Bet v1). There are many allergens with a similar structure to Bet v1, which makes cross-allergy to food and pollen possible. As a result, a person who is allergic to birch pollen may develop anaphylaxis after eating, for example, an apple, carrot or peanut. While these PR-10 proteins are thermolabile, another group of cross-reacting plant allergens, lipid transport proteins (LTPs), are resistant to heat treatment and digestion in the gastrointestinal tract. Food allergies often coexist with atopic diseases such as asthma, allergic rhinitis or atopic dermatitis.

Case report: A 19-year-old female patient treated for atopic dermatitis (AD) since she was 1 year old. Recurring eczematous lesions of variable severity are located mainly on the face, elbow and knee joints, and trunk (BSA 13%, EASI 9.7). In addition, symptoms of seasonal pollen allergy in the form of rhinitis symptoms are present from early childhood, intensifying from February to May. The patient underwent immunotherapy with birch pollen allergens, which also alleviated the symptoms of AD. The concentration of specific IgE for allergen components from the group of PR-10 proteins present in such allergen sources as birch, hazel, beech, peanut and hazelnut, soybean, strawberry, apple, celery and carrot was found in the serum. Moreover, sensitization to allergen components from the Ole e 1 family (plant pollen glycoproteins), present in ash and olive pollen, was found. The presence of IgE specific for a few LTP family proteins present in kiwi fruit, cannabis, peanuts and grapes has also been demonstrated. Total IgE concentration was 490 kU/L. No significant deviations from the norm were found in additional laboratory tests. Due to the lack of satisfactory results of AD therapy, it was decided to start cyclosporine.

Conclusions: The above case report indicates the possibility of cross-sensitization between seemingly unrelated allergen sources. The presence of specific IgE for allergens of plants from the olive family is interesting because the only representative of this family in Poland is the common ash. Sensitization to European olive in the patient is probably the result of cross-reactivity with ash pollen. The cross-reactions also concern LTP proteins, including - interesting ones - cannabis. Although there are few descriptions of cannabis allergy in the literature, products based on these plants, such as CBD oils, are becoming more and more popular. The defect of the epidermal barrier as a result of AD is also important, which facilitates the penetration of allergens through the skin and probably underlies the multivalent sensitization observed in the patient. The presented case report indicates the significant role of molecular diagnostics in allergology.

CASE STUDIES: INTERNAL MEDICINE
II SESSION

13th of May 2023

Coordinators:

Agata Kaczmarzyk

Jonatan Rataj

Jury:

Elżbieta Skowrońska-Jóźwiak, MD, PhD, Assoc. Prof.

Jacek Kasznicki, MD, PhD, Assoc. Prof.

Marta Jagodzińska, MD, PhD

Challenging to diagnose, simple to treat: a case of Remitting Symmetrical Seronegative Synovitis with Pitting Edema syndrome

Aleksandra Świdzyńska

Presenting author: Aleksandra Świdzyńska

Tutors: Olga Brzezińska MD

Co-authors: Julia Kacperczyk

Affiliations: Medical University of Lódź

Introduction: Remitting symmetrical seronegative synovitis with pitting edema (RS3PE) syndrome is a rare rheumatic disease with a sudden onset and unknown pathophysiology. It affects mostly the elderly Caucasian men. The condition is characterized by symmetrical polyarthritis with extensor or flexor tendon synovitis in fingers and swelling in the dorsum of hands and feet. As the Rheumatic Factor (RF) is low or absent, and joint destruction in the imaging studies does not occur, the disease may be easily misdiagnosed. The disease can coexist with cancer or other rheumatological conditions.

Case description: 80-years-old female was admitted to the Rheumatology Department, because of the pain, oedema and functional limitation of both hands. The patient was primarily inadequately treated in the Orthopedic Department, where the tenosynovitis of the left thumb was diagnosed and the plaster cast was put on. On examination, there was painful oedema of the dorsum of both hands, pain in the shoulder joints as well as bilateral oedema of metacarpophalangeal (MCP) joints II-V. Blood analysis revealed CRP 160.9 mg/l [<5mg/l], ESR=109mm/h [<30 mm/h], anemia Hg 9.7 g/dL [11.5-15.5 g/dl] and slightly elevated CK. Radiographs of hands and feet were taken, revealing joint space narrowing with osteophytes in the proximal and distal interphalangeal joints in both hands and feet and sparse geodes in carpal and metatarsal bones, typical for her age. Inflammatory changes were not found. Due to the overall clinical presentation, a diagnosis of RS3PE was made. As the rates of malignancy occurrence in the disease were acknowledged to be higher than in the general population, the patient underwent intense screening. It included medical imaging such as CT of thorax, abdomen, pelvis minor, USG of breast, thyroid and gastrointestinal tract, as well as endoscopy of colon and upper gastrointestinal tract. On the grounds of the literature review data, the oral prednisone (20mg) therapy was started. It led to significant clinical improvement, and confirmed the efficacy of low dose corticosteroid therapy in RS3PE patients. Other documented treatment options were methotrexate, hydroxychloroquine or colchicine.

Conclusion/Discussion: RS3PE is a constellation of manifestations that can occur in multiple conditions. As long as there is no definite diagnostic test, ruling out other disorders is requisite. Whereas it could be also inducted as a side effect of biological and checkpoint blockers treatment, as those therapies become more commonly used, the incidence of RS3PE syndrome may possibly increase. The RS3PE may be a sign of paraneoplastic syndrome, hence it’s crucial to perform a screening for neoplasms. The most common are solid organ tumors such as genitourinary and gastrointestinal, lung and breast cancer, but hematological malignancies have also been reported.

Celiac trunk compression syndrome (Dunbar's syndrome) as a rare cause of chronic abdominal pain

Mateusz Zdaniewicz

Presenting author: Mateusz Zdaniewicz

Tutors: dr n. med. Melania Mikołajczyk-Solińska

Co-authors: Bartłomiej Czyżak, Andrzej Węgiel, Marlena Gajczak

Affiliations: Medical University of Lódź

Introduction: The abdominal pain is a non-specific symptom of many diseases concerning organs located in abdominal cavity and beyond it. The list of chronic abdominal pain causes is very long, ranging from benign functional disorders to serious diagnosis such as cancers. Abdominal pain always obliges the doctor to take a detailed patient's past medical history and implement a comprehensive diagnostic. This symptom can be the first sign of severe gastrointestinal pathology which should be cured immediately.

Case report: 46 years old patient without reported chronic diseases was admitted to the department of internal diseases due to left epigastric cramping pain, especially after eating, for last year. He reported the weight loss of 5 kg. The patient denied any other gastrointestinal symptoms. Laboratory tests and abdominal ultrasound examination were without any abnormalities. Abdominal CT showed a circular thickening of the wall of the left half of the transverse colon and small cysts in the liver. There was performed the colonoscopy and showed the colon diverticulosis. Gastroscopy examination showed the erosive gastritis and duodenitis. The patient was prescribed with proton-pump inhibitor and special diet. Improvement was observed. The patient was discharged home. After the hospitalization epigastric pain recurred and gradually was getting worse. Patient was admitted to the hospital again and there was performed the Angio-CT of abdominal vessels. There was shown the 75% stenosis of the celiac trunk proximal segment. This condition was due to compression by the median phrenic ligament- Dunbar syndrome. Patient was referred to the vascular surgery department where was conducted the surgery of the celiac trunk decompression. After the week of recovery patient was discharged home in a good general condition.

Conclusion: Dunbar Syndrome is the rare cause of chronic abdominal pain. The diagnosis can be made only after excluding other possible abdominal pain reasons. Vascular surgery is the main treatment in Dunbar Syndrome. The diagnosis of abdomen pain should be made for each patient because it is often possible to implement causal treatment and relieve the patient of the discomfort.

Calciphylaxis - case report

Marta Rząsa

Presenting author: Marta Rząsa

Tutors: Prof. Ilona Kurnatowska MD, PhD; Monika Górska MD

Co-authors: Filip Wróbel

Affiliations: Medical University of Łódź

Introduction: Calciphylaxis is a serious and rare complication of hemodialysis (HD), caused by calcium and phosphate metabolism disorders. Calcium deposits are located mainly in small and medium vessels of adipose and subcutaneous tissue. Arteriolopathy results in blood flow reduction, microthrombi creation and vascular occlusion that are promoting ischemia. This leads to formation of painful, necrotic skin lesions, which appear most often on legs and abdomen. Calciphylaxis has poor prognosis, with high mortality mainly due to suprainfection (up to 80% in 12 months). Unfortunately, there are no specific diagnostic criteria such as biomarkers or dedicated imaging procedures nor treatment targets and guidelines.

Case report: A 49-year-old female with end-stage kidney disease (ESKD) HD for 9 year was admitted to Emergency Department. On admission the patient complained of burning pain located on both legs aggravating after haemodialysis. Physical examination revealed subcutaneous nodules, livedo reticularis on both lower extremities and muscle weakness. Comorbid conditions included recently diagnosed erythema nodosum (treated with oral glucocorticoids) and tertiary hyperparathyroidism. According to the patient's previous diagnosis of erythema nodosum i.v. glucocorticoids were introduced. Instead of improvement, new necrotic skin lesions appeared, and muscle weakness exacerbated. Pain intensified causing insomnia and difficulty in withstanding HD, transdermal fentanyl was implemented. Based on symptoms, skin biopsy, chest X-ray and immunological tests results dermatomyositis and sarcoidosis were excluded during differential diagnosis. High resolution tomography (HRCT) examination revealed diffuse alveolar haemorrhage, which combined with skin lesions indicated vasculitis. Treatment with methylprednisolone, cyclophosphamide and rituximab was implemented, however no improvement was observed and the patient deteriorated. According to case reports of pulmonary manifestation calciphylaxis with pulmonary involvement was diagnosed. During intensified HD therapy sodium thiosulfate was administered. Patient was discharged with recommendations to take vitamin K2, cinacalcet, sevelamer and start hyperbaric chamber therapy. Currently after applied treatment, slight wound’s healing process was observed.

Conclusion: Calciphylaxis must be considered in all patients with painful skin lesions, especially those diagnosed with chronic kidney disease, end-stage kidney disease and undergoing haemodialysis.

Hydrothorax – what can baffle a physician ?

Bartłomiej Czyżak

Presenting author: Bartłomiej Czyżak

Tutors: Melania Mikołajczyk-Solińska, PhD

Co-authors: Andrzej Węgiel, Mateusz Zdaniewicz. Marlena Gajczak

Affiliations: Medical University of Łódź

Introduction: Hydrothorax can have variable nature and etiology, therefore to determine it, physician should order thoracocentesis and general test of fluid except from chest x-ray or USG. Lymphorrhoea is type of hydrothorax where lymph collects in pleural cavity, because of outflow from damaged major lymphatic vessels.

Case report: 57 years old patient was admitted to internal medicine ward because of nonproductive cough, suffocation, fever, chest and epigastric pain. She was also diagnosed with asthma, diabetes mellitus type 2, systemic hypertension, nodular goiter and urolithiasis. Patient also had traffic accident 1 month before hospitalization. Laboratory tests showed : increased inflammatory factors, normocytic aenemia and high activity of hepatic enzymes. Radiologist describe opacification of middle and inferior lobe of right lung – suspicion of hydrothorax. Ultrasound examination of abdomen showed echogenic, inhomogeneous fluid in peritoneal cavity and slightly enlarged liver. CT confirmed large amount of fluid in serous cavities, otherwise without any crucial pathologies. Thoracocentesis was performed, obtaining 1800 ml of milky white fluid. Laboratory diagnostic was performed. General test – lymph exudate, bacterial culture – negative, tuberculosis test- negative, cytology – without neoplasm cells. Lymphoscintigraphy did not show the localization of lymph outflow. Biopsy of bone marrow ruled out lymphoma. Drainage of pleural cavity was performed and total parenteral nutrition was introduced. Patient was transferred to the thoracic surgery department. Before surgery she was ordered to drink cream with methylene blue. During thoracotomy surgeon made visible place of blue lymph outflow. Lesion was stitched. After one week of recuperation the patient was discharged in general good condition

Conclusions: Lymphorrhoea is rare but threatening diagnosis. It obligates physician to obtain patient's history of past injuries, surgeries, neoplasms and perform adequate diagnostics. Determination of etiology is crucial to perform right treatment. In case of this patient the surgery was necessary.

Rheumatological paraneoplastic syndromes - a study based on the description of three cases

Maciej Dubaj

Presenting author: Maciej Dubaj

Tutors: Dorota Suszek, MD, PhD

Co-authors: Aleksandra Dembowska, Karol Bigosiński

Affiliations: Medical University of Lublin

Background: Paraneoplastic syndrome (PE) is a group of symptoms accompanying cancer that are not the result of cancer tumor infiltration or metastasis. The causes of PE are autoimmune reactions and the action of various molecules (including hormones, proteins, enzymes) produced by the tumor. Paraneoplastic disorders are mainly endocrine, neurological, dermatological or rheumatological. Three descriptions of patients with PE in the course of inflammatory diseases of the musculoskeletal system are presented.

Case reports: The patient was diagnosed with dermatomyositis. Symptoms of the disease occurred at the age of 48: muscle weakness in the upper and lower extremities, swallowing disorders, arthritis, erythema around the eyelids, Gottron's sign, shaw sign, high creatine kinase values. Immunosuppressive drugs were administered for treatment, and no remission of the autoimmune disease was achieved. One year after the diagnosis of systemic disease, increasing CA125 values were observed. Imaging and histopathological results confirmed the diagnosis of ovarian cancer with metastasis to lymph nodes and peritoneum. The patient did not consent to chemotherapy. The patient diagnosed with systemic scleroderma - generalized form. Symptoms of the disease occurred at the age of 32: Raynaud's sign, progressive hardening of the skin, ulceration of the fingers, swallowing disorders, exertional dyspnea, Scl70 present. After 2 years of systemic disease, small-cell lung cancer with liver and bone metastases was diagnosed. The 72-year-old patient was diagnosed with polymyalgia rheumatica. Two years before her diagnosis, she noticed an enlarging tumor of the subcutaneous tissue of her left thigh. On histopathological examination, malignant melanoma was diagnosed. Imaging studies showed bone and adrenal metastases. Treatment included immunotherapy and chemotherapy.

Conclusions: Cancer can take on the masks of many other diseases. The atypical course of rheumatic disease, the presence of general symptoms, and resistance to conventional treatment require special oncological vigilance.

Magnetic resonance in diagnosis of a Cowden syndrome

Karol Stępniak

Presenting author: Karol Stępniak

Tutors: Anna Drelich-Zbroja, Maryla Kuczyńska

Co-authors: -

Affiliations: Medical University of Lublin

Introduction: Cowden syndrome is a condition that causes presence of multiple benign soft tissue overgrowths – hamartomas and increased risk of breast, thyroid, endometrium and other neoplasms. It is also associated with presence of various skin changes such as trichilemmomas, papillomatous papules and hamartomatous polyps of an intestine. Cowden syndrome is a genetic condition, usually caused by mutation of the PTEN gene. The pattern of an inheritance is autosomal dominant. Magnetic resonance (MR), beside clinical examination, is an important part of diagnostic process of Cowden syndrome.

Case report: Female patient at age 34, after a breast cancer operation. Skin and mucosal lesions were present. MR of the brain was being performed once a year, during 2011-2020 period. In the left cerebellar hemisphere the lesion about dimensions 35 x 20 x 25 mm was observed. It constricted the 4th ventricle, but the ventricular system was symmetrical, unexpanded and not displaced. It presented increased intensities in T2-weighted images and decreased intensities in T1- weighted images and FLAIR sequence as well as the restricted diffusion in DWI images. In the spectroscopy, decreases in concentrations of N-acetylaspartate (NAA), choline (Cho) and creatine (Cr) were found in a region of the lesion. Based on the above information, the lesion was recognized as the hamartoma.

Conclusions: MR imaging is a powerful tool for Cowden syndrome diagnosis and monitoring. In this case study, it allowed to detect the hamartoma and define its location, dimensions, character. Likewise adjacent cerebral structures were assessed. Moreover, with the use of advanced MR techniques such as DWI and spectroscopy important pieces of information were acquired. This case proves the high utility of MR imaging in the diagnosis of Cowden syndrome.

Doctor, I don’t eat because it hurts - typical symptoms of abdominal angina

Gabriela Zakrzewska

Presenting author: Gabriela Zakrzewska

Tutors: Maryla Kuczyńska , Anna Drelich-Zbroja

Co-authors: Agata Zarajczyk, Maria Materek

Affiliations: Medical University of Lublin

Introduction: Visceral atherosclerosis occurs very often, even in 6-10% of population. Despite frequent atherosclerotic lesions in the aorta and its branches, debilitating symptoms of abdominal angina are very rarely observed, mostly in patients with occlusion of at least two visceral organs. In other cases, a rich collateral circulation allows homeostasis to be maintained.

Case report: 50-year-old female patient was admitted to the ER due to severe abdominal pain. Postprandial exacerbation of symptoms resulted in limited food intake. Urgent abdominal CT was performed in native phase, which indicated severe atherosclerotic lesions at the origin of both celiac trunk and superior mesenteric artery, raising the suspicion of a complete occlusion. Findings were further confirmed with DSA, which depicted retrograde contrast inflow to hepatic artery, splenic artery and distal via collateral circulation. Successful Balloon angioplasty of the proximal SMA followed by stent implantation was performed. After initial clinical improvement, patient started to observe relapse of the postprandial symptoms just 4 months following the intervention. Doppler US evaluation of the celiac arteries indicated progressive restenosis of the SMA. 3 years following the initial treatment, when patient started to experience the magnitude of symptoms comparable to the first admission, the residual lumen of the stent was equal to 2.5 mm and hemodynamic parameters psv 4.8ms and edv 2.2 m/s indicated severe in-stent restenosis. Post-stenotic blood flow with tardus-parvus wave was observed in distal SMA, HA and splenic artery. Marked post stenotic dilatation of SMA to 10 mm was visible as well. The patient was qualified for endovascular treatment of the in-stent restenosis

Conclusions: Abdominal angina has variety of symptoms.A debilitated patient on ER, who reports postprandial abdominal pain should always be diagnosed for this disease.Although CT angiography is the method of choice to assess the patency of visceral vessels, Doppler ultrasound provides valuable information on hemodynamic conditions and collateral circulation capacity, especially in the case of massively released atherosclerotic lesions, which may make it difficult to unequivocally assess the tissue. Currently, endovascular treatment is the method of choice in the angina and its recurrences.

Satisfactory response to the treatment with Janus kinase inhibitors in a patient with ankylosing spondylitis complicated by amyloidosis

Agnieszka Mikosińska

Presenting author: Agnieszka Mikosińska

Tutors: Prof. Joanna Makowska, Prof. Ilona Kurnatowska

Co-authors: Mateusz Litwin, Alicja Staszek, Bartosz Stępień

Affiliations: Medical University of Łódź

Introduction: Ankylosing spondylitis (AS) is a chronic, usually progressive inflammatory disease with an unknown etiology that affects sacroiliac and spinal joints, fibrous rings, and the ligaments of the vertebral column causing their gradual stiffening. One of the possible complications in the course of the disease is renal manifestation such as renal amyloidosis. Kidney failure in secondary systemic amyloidosis is caused by extracellular accumulation of the non-immunoglobulin protein - AA protein. The AA protein is an acute-phase protein produced by the hepatocytes under inflammatory conditions. Chronic inflammatory diseases such as AS may result in producing large amounts of the AA protein, which tends to make deposits in the extracellular matrix, disturbing the normal architecture and function of the tissues. The AA amyloidosis treatment is based on defining a treating target such as remission and applying tight control to the underlying disease. Non-steroidal anti-inflammatory drugs and the biologicals, like TNF and IL-17 inhibitors have found application in treating AS. Recently novel agents - Janus kinase inhibitors have also become approved for the treatment of AS.

Case report: A 70-year-old man suffering from ankylosing spondylitis for 40 years was admitted to the Department of Rheumatology in September 2021 in order to adjust treatment. On admission he reported significant deterioration of mobility and arthralgia. The patient was directed from the Nephrology Department where he was hospitalized due to the symptoms of nephrotic syndrome and diagnosed as secondary amyloidosis. Because of the high activity of the AS he was qualified for the treatment with upadacitinib. However, the persistent amyloidosis led to the progression of kidney failure, which resulted in dialysis introduction in the following month. During the follow-up after five months of therapy with satisfactory compliance, it turned out that the complete resolution of pain occurred. Moreover, there was an improvement in blood tests and the inflammatory parameters decreased. The patient was seen for the last time in February 2023 in good general condition with the maintained remission. He was qualified for the kidney transplant.

Conclusions: Although the effectiveness of the treatment of amyloidosis associated with other diseases such as rheumatoid arthritis or autoinflammatory diseases is already discussed, there are few reports about treating amyloidosis coexisting with AS. The aim of this study is to report a satisfactory response to the treatment with Janus kinase inhibitors applied to the patient with AS and secondary amyloidosis. This is what clinicians should certainly keep in mind seeing similar cases.

From Infectious department to rheumatology with hematological episode – Still disease with double macrophage activation syndrome – the case report

Aleksandra Adamczyk

Presenting author: Aleksandra Adamczyk

Tutors: Olga Brzezińska, MD

Co-authors: -

Affiliations: Medical University of Łódź

Introduction: Adult-onset Still disease is a rare autoinflammatory, systemic disease, which is diagnosed in 1 to 10 people in a million per year. It mainly affects young adults between 16 to 35 years old. Main manifestations include high fever, joint pain and distinctive salmon-coloured rash. Additionally muscle pain, sore throat, enlarged lymph nodes, hepatosplenomegaly can be observed. Due to uncharacteristic symptoms the disease is considered as a diagnosis of exclusion and the treatment modalities are mainly based on relieving them by using anti-inflammatory medications. In severe cases steroids, methotrexate and biological drugs should be used.

Case report: A 24-year-old female was admitted to the hospital to the internal department due to high fever, myalgia and general weakness. Earlier, because of the fever and high inflammatory markers, the patient was treated as an outpatient with antibiotic without any response. During hospitalization, basic laboratory tests showed numerous deviations such as leukocytosis or thrombocythemia, CRP, CK and CK-MB levels were markedly elevated. Tests for rheumatoid factor and antinuclear antibodies were negative. The patient was discharged from the hospital with the steroid treatment, but symptoms have not relieved. After four days she was readmitted to the hospital. In laboratory research the CRP level (315 mg/l) and ferritin level (20474 ng/ml) were noted. Additional symptoms such as macular rash, hepatosplenomegaly and lymph node enlargement in the neck appeared. Treatment with corticosteroids and antihistamines did not bring any improvement. Because of a constant drop in laboratory tests and rapid increase in ferritin level (31608 ng/ml), with the suspicion of hemophagocytic syndrome, the patient was transferred to the hematology department, where IVIG (intravenous immunoglobulins) and cyclosporine were given. After initial treatment the patient was moved to the rheumatology department where Still disease was diagnosed. Because of the severe course and complication of the disease, intensive treatment was implemented. First of all cyclosporine and the high dose of prednisone was started. Next because of disease exacerbation with recurrence of MAS the anti-interleukin 6 therapy (tocilizumab) was started. Now, in 4,5 years follow-up the patient is in long term remission of the disease.

Conclusion: To sum up, uncharacteristic symptoms of Still disease impede quick and proper diagnosis.The delay in the diagnosis is conducive to severe complications to the disease and the need for significant escalation of treatment. In case of symptoms like unresponsive to treatment high fever, muscle-joint pain or rash, it is worth taking into consideration autoimmune diseases in differential diagnosis. What is important, the use of modern treatment with biological drugs can give the possibility of remission of a chronic disease.

STEC-HUS or aHUS? Difficult differential diagnosis

Katarzyna Banasiak

Presenting author: Katarzyna Banasiak

Tutors: prof. Ilona Kurnatowska, Monika Górska MD, Maja Nowicka MD

Co-authors: Joanna Duda, Kacper Kościelny

Affiliations: Medical University of Łódź

Introduction: Hemolytic-uremic syndrome (HUS) is a form of thrombotic microangiopathy that can be divided into two main subtypes, i.e. typical and atypical. Typical HUS is caused by bacteria producing verotoxin such as Escherichia coli and Shigella dysenteriae (Shiga-Toxin-associated Hemolytic Uremic Syndrome – STEC-HUS). Atypical HUS (aHUS) is caused by a genetic defect of the alternative pathway of the complement system leading to its uncontrolled activation. The three main findings of HUS are hemolytic anemia, thrombocytopenia and acute kidney injury.

Case report: A 29 year-old woman was admitted to the hospital with diffuse, intense abdominal pain and bloody diarrhea. The onset of symptoms was time-related to a consumption of raw fish and fruits during holidays in Turkey. In the surgical ward, based on an abdominal CT scan, the initial diagnosis of colitis ulcerosa or infectious colitis was established and treatment with mesalazine and meropenem was started. However, in the next few days the patient developed acute kidney injury accompanied by mild hemolytic anemia and low platelet count (Hgb 9 g/dl, LDH 1700 U/L, PLT 40 000/µl). The patient required temporary hemodialysis therapy and transfusion of six units of fresh frozen plasma. As the typical set of symptoms raised a suspicion of a hemolytic uremic syndrome the patient was transferred to the department of nephrology. On admission, the patient was in a stable condition presenting weakness, dyspnea and intensive diarrhea. Serological tests excluded systemic autoimmune diseases. Fecal Shiga toxin test was negative, but given ongoing antibiotic therapy, the result was interpreted with caution. Genetic test revealed no pathogenic or likely pathogenic variants in the studied complement genes, which excluded genetic cause of HUS. Since the complement factors 3 and 4 were elevated and ADAMST13 was near reference range Thrombotic Thrombocytopenic Purpura (TTP) was also excluded. The patient was discharged home asymptomatic, without the need for renal replacement therapy, with a normal platelet count and with no signs of hemolysis.

Conclusions: Hemolytic uremic syndrome is one of the rarest causes of acute kidney injury. The differential diagnosis of STEC – HUS and aHUS is particularly difficult because of similar symptoms. Only a genetic analysis can reveal pathogenic mutations typical for aHUS and may confirm its diagnosis. In this particular case, the additional problem was a negative Shiga – toxin test.

Treatment difficulties in advanced anti-glomerular basement membrane nephritis – a case report

Klaudia Zielonka

Presenting author: Klaudia Zielonka

Tutors: lek. Małgorzata Twardowska-Kawalec

Co-authors: -

Affiliations: Medical University of Warsaw

Introduction: Anti-glomerular basement membrane (anti-GBM) disease is a vasculitis caused by pathogenic anti-GMB antibodies resulting in rapid and progressive kidney failure and/or pulmonary haemorrhage. The KDIGO guidelines recommend the administration of immunosuppressive treatment (IT) aimed to inhibit the production of pathogenic antibodies only in patients with good renal prognosis. Due to an extremely poor prognosis in dialyzed patients, IT is not indicated. Kidney Transplant (KT) is a potent renal replacement therapy (RRT) method that may be performed in fit patients. The following case describes a treatment dilemma in a patient with a very advanced anti-GBM disease who was given IT to prepare for KT despite no chance of renal recovery.

Case description: A 35-year-old man was admitted to the nephrology department for a kidney biopsy due to acute kidney injury of unknown etiology. A month prior to hospitalization, he was commenced with hemodialysis treatment due to the sudden progressive deterioration of kidney function. Laboratory tests were repeated on admission which revealed anemia, substantially elevated parameters of renal failure, and features of nephrotic syndrome. The performed tests for ANA and ANCA antibodies as well as tests for the presence of HIV and hepatitis viruses were negative. Renal Doppler ultrasonography of the renal arteries was inconclusive. Additional tests showed the presence of anti-GBM antibodies. Renal biopsy showed active necrotizing glomerulonephritis involving 9 out of 14 sclerotic glomeruli. This allowed for the diagnosis of anti-GBM disease. Despite the lack of chance of further renal recovery, intensive IT consisting of methylprednisolone and cyclophosphamide was planned, aimed at getting rid of pathogenic anti-GBM antibodies, as a way to optimize preparation for KT. The patient was presented with possible adverse events along with IT outcomes. Informed consent was obtained. In the following months, 3 pulses of methylprednisolone and an infusion of cyclophosphamide were administered. Due to the lack of significant reduction of anti-GBM antibodies plasmaphereses were performed. Finally, IT was completed and further hospitalization was planned to assess response to treatment.

Conclusions: This case highlights treatment difficulties comprising the administration of intensive IT in a young patient with very advanced anti-GBM disease. Despite the lack of indications for IT in current guidelines in the case of hemodialysis patients, due to the rarity of the anti-GBM disease, therapeutic decisions should be individualised based on clinical aspects. In such cases, it seems crucial to focus on the individual needs and expectations of the patient.

CASE STUDIES: ONCOLOGY

13th of May 2023

Coordinators:

Resal Ismail

Ayaana Ibshaan

Karolina Oleksiewicz

Olga Racińska

Jury:

Prof. Agnieszka Kołacińska

Agata Dutkowska, MD, PhD

Rafał Czyżykowski, MD, PhD

Stereotactic radiotherapy in the management of recurring central nervous system metastases: a case report

Anna Kozub

Presenting author: Anna Kozub

Tutors: Marcin Miszczyk, MD, PhD

Co-authors: Aleksandra Nasiek, Agata Suleja

Affiliations: Medical University of Silesia in Katowice

Introduction: Colorectal cancer, defined as a malignant tumour located in any part of the large intestine, is the third most common cancer diagnosis in the world. Metastases, most commonly found in the liver, lungs, and abdominal or peritoneal lymph nodes, are present on diagnosis in approximately 20% of the patients, and up to 40-60% will develop distant failure over the course of the disease.

Case report: In this case report, we describe a 64-year-old patient who developed recurring central nervous system metastases and underwent multiple stereotactic radiotherapy (SRT) courses to the brain over eight years. The initial diagnosis was made one month before the resection of the primary tumour. The first symptoms included dizziness, memory loss and concentration problems. A total of four central nervous system metastases were found: one in the left parietooccipital area, one close to the triangle of the right lateral ventricle, and two lesions in the semioval centre in the rear part of the corpus of the right lateral ventricle, each treated with SRT. The patient continued to develop new limited central nervous system lesions over the course of eight years, each time treated with repeated courses of SRT. The mental state and performance status of the patient remained excellent for the majority of the follow-up. The exacerbation of orientation loss, mental confusion, vertigo and lack of independence were reported only shortly before death.

Conclusions: In contrary to whole-brain irradiation, SRT conveys a higher risk of distant failure, but better local control and a lower risk of cognitive impairment. SRT has been shown to be feasible and efficient even for up to ten brain metastases. In this case report we prove that in selected cases SRT can be efficient in the management of recurring CNS metastases, possibly allowing for a better cognitive function compared to whole-brain irradiation.

The case of a patient with Lymphomatoid Papulosis and thrombocytopenia

Karolina Śliwa

Presenting author: Karol Śliwa

Tutors: Dawid Sigorski MD, PhD

Co-authors: Wiktor Kaczmarek

Affiliations: Collegium Medicum University of Warmia and Mazury in Olsztyn

Introduction: Primary cutaneous lymphomas (CLs) are a very heterogeneous group of lymphoproliferative neoplasms that originate within the skin. At the time of diagnosis, lymphatic proliferation is only present in its origin site, without involvement of lymph nodes, bone marrow or viscera. The diagnosis and management of CLs are both very complex and most commonly involve many different specialities. That includes hematology, dermatology, oncology, surgical oncology and radiology. One of the CLs is Lymphomatoid Papulosis (LyP), which is a bening, lymphoma-like (CD-30+), chronic and relapsing skin condition. LyP is usually clinically benign, but because of its histopathologic malignant character, it's necessary to differentiate this condition from potential CD30+ malignancies. In general, when it comes to that entity, a strategy "wait and watch" is used. However, in up to 40% of patients newly diagnosed with CLs, other neoplasms can be explored. These are mainly malignant lymphoproliferative diseases such as: pcALCL, Hodgkin lymphoma and other types of lymphomas. Because of that, it's essential to carefully examine the patient in the search of potential malignancies.

Case report: A 69-year-old man has been presented to the GP with a suspicious change on the nose, that was a bump forming an ulcer. The change was excised in August 2022 and the histopathological examination could not exclude a neoplastic process as the resection margins were ""doubtful"". Given the patient's clinical picture, it was decided to expand the diagnostic process. The patient was then referred to the Hematology Clinic. CT scans of the chest, abdomen and pelvis were performed, without finding unequivocal metastatic changes. In a repeated histological examination conducted in March 2023, the entire change was inconclusive and lymphomatoid papulosis cannot have been ruled out. Taking into consideration the patient's clinical characteristics, LyP was then diagnosed. During the extended examinations, the patient was diagnosed with thrombocytopenia characterized by the high MPV level. Further tests to assess potential reasons for that condition need to be performed. An oncologic as well as a dermatologic consultations are now being planned.

Conclusions: Not all the patients with CLs need careful hematologic surveillance and it's certainly reasonable with reference to the individuals having risk factors which may include the following categories: age, sex, LyP histopathologic subtype and molecular as well as genetic findings. Our described patient needs extensive follow-up. It needs to be remembered that a person living with CLs has a higher risk of developing lymphoproliferative malignancies. There is a need to further investigate potential links between the LyP and the other hematologic entities as they may have the same monoclonal origin. This can open a new pathway in which we can organize the proper follow-up and minimize the patient's total risk of developing possibly secondary neoplasms.

Extreme acute radiation-induced toxicity in a patient with polymorphous low-grade adenocarcinoma of the nasopharynx and rare variants in DNA repair genes

Kasper Kuna

Presenting author: Kasper Kuna

Tutors: Bartłomiej Tomasik, Zuzanna Nowicka, Wojciech Fendler

Co-authors: -

Affiliations: Medical University of Lodz

Introduction: Radiation-induced skin reactions (RISR) occur in most patients undergoing radiotherapy (RT), however, they are especially frequent (up to 95%) during treatment for head and neck cancers (HNC). Genetic causes, among other factors, may impact RISR severity. We present a case of a patient treated with RT for locally advanced polymorphous low-grade adenocarcinoma (PLGA) of the nasopharynx, a malignancy with fewer than 10 cases reported at this site to date, with a set of variants in DNA repair genes who developed an extremely acute RISR.

Case report: A 73-year-old woman presented in March 2019 with non-homogenous infiltration on the upper right side of her nasopharynx. Histopathological analysis revealed a mass of monomorphic cells with monotonous pale nuclei. Taking into account clinical presentation and the results of imaging studies, a diagnosis of T4N0M0 PLGA was established. The patient presented also with congenital malformations in the connective tissue of the right arm. Intensity-modulated RT was started to a planned total dose of 70 Gy in 35 fractions with concurrent weekly cisplatin at a dose of 40 mg/m2. Treatment was stopped after 22 fractions due to severe dermatitis quickly progressing to hemorrhagic dermatitis within and outside the radiation field, with concurrent conjunctivitis and mucositis. Despite intensive local and systemic anti-inflammatory treatment, the patient died 40 days after RT initiation. Soon after the onset of RISR written informed consent was obtained and germline DNA from whole blood was used for whole-genome sequencing. Several potentially pathogenic variants in genes from pathways related to DNA damage repair were identified, including missense variants rs25487 in XRCC1, rs861539 in XRCC3, and rs735482 in ERCC1.

Conclusion: In the presented patient, the localization and size of the tumor mandated the use of RT instead of surgery, which is the recommended treatment for PLGA, which unfortunately led to clinical manifestation of the extreme radiosensitivity phenotype. The candidate mutation with the strongest evidence available for its radiosensitizing impact was rs25487 in the DNA repair gene XRCC1, encoding a protein, vital for the efficient repair of DNA breaks due to ionizing radiation. A missense variant in a gene of the same pathway, XRCC3, was also identified. XRCC3 encodes a member of the RecA/Rad51-related protein family, which is involved in homologous recombination to maintain chromosome stability and repair of DNA damage. Another missense variant was identified in the ERRC1 gene that is involved in DNA damage repair via nucleotide excision repair. We hypothesize that the combination of pathogenic variants in DNA repair pathway genes likely contributed to the extreme severity of the ultimately fatal course of RISR. Identifying genetic variants known to predispose to RT-related toxicity has the potential to improve safeguarding against complications.

Autoimmune hemolytic anemia without positive screening laboratory markers of hemolysis

Klaudia Zielonka

Presenting author: Klaudia Zielonka

Tutors: Joanna Drozd-Sokołowska, MD, PhD

Co-authors: -

Affiliations: Medical University of Warsaw, Warsaw, Poland

Introduction: Autoimmune hemolytic anemia is a common complication of chronic lymphocytic leukaemia (CLL), associated with the production of warm or/and cold autoantibodies directed against red blood cells' (RBCs) surface antigens resulting in a potentially life-threatening hemolysis. Diagnosis is based on a positive direct antiglobulin test (DAT) along with the presence of hemolytic markers. Venetoclax, a BCL-2 inhibitor, has revolutionized the treatment of untreated and relapsed/refractory (R/R) CLL. There is a paucity of data in the literature, regarding the character of AIHA complicating the CLL treatment with venetoclax. Herein, we present a case of a patient with an unusual course of life-threatening mixed AIHA secondary to venetoclax treatment with laboratory tests not indicative of hemolysis.

Case report: A 61-year-old woman with R/R CLL diagnosed before 10 years, Rai stage 2 was admitted to the hematology department because of a very abrupt decrease in the hemoglobin concentration (Hb) (approximately 4g/dL within two weeks). Two months earlier therapy with venetoclax and rituximab, alike in MURANO trial was commenced. The patient presented with significant signs of anemia, but denied any signs of bleeding. Laboratory tests were not typical for hemolysis. A repeated blood test showed a continuous decline in Hb concentration, while reticulocyte count, and indirect bilirubin concentration remained within the normal range. Urine examination with normal urobilinogen was also negative for hemolysis. Slightly increased LDH activity (378 U/L; ULN 225 U/L) disproportional to the magnitude of hemolysis was considered secondary to CLL and its treatment. The diagnosis of mixed AIHA was made based on the positive DAT with the presence of IgG and IgM autoantibodies. Due to the potential association, venetoclax was withdrawn. Treatment with prednisone was initiated. On the 2nd day of therapy, a substantial decrease in Hb to 5.5 g/dL with decreased haptoglobin concentration indicative of hemolysis was noted. Two doses of high-dose methylprednisolone, and 4 doses of rituximab (375 mg/m2) administered weekly were given, along with three plasmaphereses. Phenotypically matched RBCs were transfused. The therapy resulted in a gradual and stable increase of Hb to 12 g/dL, however with recurrence of hemolysis after the onset of infectious complications. Finally, the remission of AIHA was obtained, steroids were tapered off, and venetoclax was administered.

Concusions: The reported case highlights the difficulties in diagnosing AIHA in patients without typical laboratory abnormalities. A comprehensive hemolysis work-up comprising haptoglobin concentration and DAT is essential in case of rapid decline in Hb concentration in patients with a high propensity to develop AIHA such as CLL. Further studies are crucial to elucidate the pathogenesis of the atypical course of AIHA in patients with CLL on venetoclax.

Rare localization of metastatic testicular lymphoma

Maria Materek

Presenting author: Maria Materek

Tutors: Maryla Kuczyńska

Co-authors: Agata Zarajczyk, Gabriela Zakrzewska

Affiliations: Medical University of Lublin

Introduction: Testicular lymphoma represents up to 2% of lymphomas located outside the lymphatic system. It is the most common testicular tumour occurring bilaterally. In a group of patients diagnosed with a testicular tumour, 10% of them are diagnosed with malignant lymphoma and 2% with non-Hodgkin's lymphoma. This neoplasm most commonly occurs between the ages of 50 and 80.

Case report: 60 – year old patient, diagnosed with testicular lymphoma two years prior to admission, reported to the ER with increasing headaches and disturbed consciousness. Head MRI was ordered, which revealed an area (27 x 17 x 9 mm) of spotty contrast enhancement nearby the trigone of left lateral ventricle (LV), surrounded by excessive vasogenic oedema encompassing the temporal, parietal and occipital regions. Another, 5-mm focus of pathologic contrast enhancement was visible in the proximity of anterior horn of the left LV. Both lesions caused mass effect with compression of the left lateral ventricle and slight midline shift (3 mm). Follow-up study after 1 month showed considerable regression of the described lesions. Subsequent examination after 1 year depicted only small malacic region within the right thalamus. Two years afterwards, multiple, irregular, hyperintense foci were visible on T2-weighted and FLAIR images bilaterally in the cortical/subcortical area of the insular lobes, showing pathologic contrast enhancement and surrounded by extensive oedema. Moreover, signs of widespread encephalitis were visible.

Conclusions: Metastases of testicular lymphoma are most often diagnosed in the retroperitoneal lymph nodes. Secondary tumours in atypical locations may give non-specific symptoms. MR imaging enables accurate assessment of the metastatic lesions, so that appropriate treatment can be implemented and the patient's condition can be improved.

Rare case of presumably primary heart tumor with malignant character in diagnostic imaging

Michał Jeziorski

Presenting authors: Michał Jeziorski

Tutors: Robert Morawiec MD, PhD

Co-authors: -

Affiliation: Cardiology Students Club, Medical University of Lodz

Introduction: Primary tumors of heart are very rare (less than 3:10 000 autopsies), but they are mostly benign (75%). The most common type ismyxoma, typically occuring in left atrium (75-90%). Approximately one hundred times more often are secondary neoplasms (metastases), especially from lung cancer (30-40%), breast cancer (11%), lymphoma and leukemia (10%), mesothelioma (9%), esophageal cancer (6%), melanoma, gastric, pancreas and kidney cancer (3% each). Only 5% of cardiac metastases are located intracardiac, which is related to direct infiltration and cell migration throughlarge veins.

Case report: 72-year-old male with history of pericarditis was admitted toCardiology Clinic with pathologicalmass in right atrium described by ambulatory echocardiographic examination.Transthoracic and transesophageal echocardiographyconfirmed presence of massive tumor (35x55mm) located mostly in right atrium wall and parabasal part of right ventricle. Additionaly,theexamination found low amount ofliquid in pericardium (11mm)and showed right the coronary artery passing through the neoplasm. However any key hemodynamic disturbances wereexcluded.Heart MRIconfirmedanenormous sizeof tumor (75x67x69mm)within superolateral part of the right atrium and free wall of the right ventricle. Developmentexceeded heart borders and included pericardium (infiltration thickness about 20mm). Neoplasia also incorporated half of ascending aorta perimeter and applied pressure on the superior vena cava.Additionaly, MRI showed previously non-described massabout the size of 20mm within the lateral chest wall on the right side. Abdominal USGrevealed two more masses –first in right kidney (52x25x16mm) and second on the cortico-medullary border of the left kidney (22x22x22mm).The patient was disqualified from surgical treatement and was reffered to further diagnostic, including biopsy.

Conclusions: Right atrium tumor exceeding from inferior vena cava is in most cases a symptom of renal, suprarenal, hepatic or reproductive organ metastases.However, incomparably bigsize of the mass strongly suggest primary malignant sarcoma of heart, which is super rare (~0,003% of autopsies) –but a diagnosislike that still requireshistopathological confirmationand further imaging investigations.Anticoagulant therapy may be a good choice, since tumors of the right heart may cause blood clots and pulmonary embolism. However, in the eventof malignant primary or secondary heart cancers,theprognosis is very bad –typically, the patient lives less than one year from diagnosis.

Primary CNS lymphoma – difficulties in the establishment of proper diagnosis

Natalia Czerwik

Presenting author: Natalia Czerwik

Tutors: prof. dr hab. n. med. Wiesław Jędrzejczak

Co-authors: -

Affiliations: Medical University of Warsaw

Introduction: Diffuse large B-cell lymphoma of the central nervous system (CNS-DLBCL) is an aggressive lymphoma that occurs most commonly in the cerebral hemispheres, the cranial nerves, the spinal cord, meninges and ocular. DLBCL comprises about 3% of all brain tumors and less than 1% of all non-Hodgkin's lymphomas.

Case presentation: In July 2022, a 58-year-old man presented to the doctor with headaches, imbalance and a binaural decrease in visual acuity. An MRI scan performed showed irregularly shaped hypotensive foci in the right cerebral hemisphere in the parietal lobe (size 22x14mm) and the corpus callosum (size 51x21) with hyperintense bands in the T1 sequence. White matter swelling was evident around the lesion. The lesions were suggestive of lymphoma and there was another lesion in location more accessible for biopsy. A navigated brain biopsy was performed to confirm the diagnosis. On phenotypic examination, a small fraction of monoclonal B lymphocytes was present. However, there was no enough material to differentiate and characterize neoplastic cells. In the next effort to complete the diagnosis, a lumbar puncture was conducted. No lymphoma infiltration was found in the CNS fluid. Also, ophthalmologist consultant was not sure whether the lesions seen in the eye were related to the CNS tumor. The patient still did not consent to the second biopsy. The MRI scan was repeated. There was a progression of edematous lesions located in the white matter of the frontal-parietal borderline of the left hemisphere. The change in the size of the tumor masses located in the pairietal lobe was significant - the previous dimensions of these lesions were approximately 22x14mm and on the next scan they were 42x29mm. Greater lesion in the corpus callosum without size difference. Then patient finally consent to the second biopsy which was performed in January 2023. Histopathological examination showed a B-lymphocyte infiltrate with a phenotype of CD20+, CD5-, BCL2-, c-MYC+, CD10-, MUM1+, BCL6+, cyclinD1-, EBER-ISH, CD30-, GFAP-, Ki-67(+++). A diagnosis of primary DLBCL of the CNS was made. The patient was qualified by the R-MIV protocol with planned consolidation of HDChT with autoHCT. The first round of chemotherapy was delivered with good tolerance.

Conclusions: The differential diagnosis of CNS–DLBCL and other brain tumours can be difficult and inconclusive. Thorough repeated examinations and the development of diagnostic techniques are needed to reduce the time required to make an appropriate diagnosis and implement proper treatment.

A case of desmoplastic malignant mesothelioma with heterogenous clinical presentation

Paulina Prychożdenko

Presenting author: Paulina Prychożdenko

Tutors: Rafał Czyżykowski , Marcin Braun , Hanna Romańska

Co-authors: Anna Zakrzewska , Aleksandra Zielińska

Affiliations: Medical University of Lodz

Introduction: Desmoplastic malignant mesothelioma (DMM) is a rare and aggressive subtype of sarcomatoid mesothelioma, constituting 5-10% of malignant mesothelioma cases. Most cases affect people aged 75 and over, and male-to-female ratio is around 2:1. Asbestos exposure is being reported in 14% of cases. DMM most commonly localizes in pleura, but peritoneal cases have also been reported. Characteristic histopathological features of DMM are: collagenized tissue (>50%) separated by malignant sarcomatoid cells arranged in storiform pattern, brand infarct-like necrosis and invasion of the adipose or muscular tissue. These characteristics are recognized as morphological traits vouching for this deadly malignancy. The survival rate of DMM for patients who undergo treatment ranges only from 1 to 12 months. We describe here a rare case of peritoneal desmoplastic mesothelioma with equivocal pathologic features.

Case report: In 2021, a 71-years-old woman was admitted to the hospital with abdominal pain. FDG PET-CT examination revealed a highly metabolically active solid mass (68x50x78mm) localized in the right umbilical region, adhering to the ascending colon. The patient underwent a radical excision of the tumour. In histopathological analysis, the tumour was composed of pleomorphic epithelioid and spindle-shaped cells. In immunohistochemistry, the cells were positive for: AE1/AE3, Calretinin, Cytokeratin 7, Ki-67, Cytokeratin 5/6 and negative for: CD31, CD56, CD68, Chromogranin, HHV-8, HMB-45, Melan-A, PAX-8, RCC, S100, Synaptophysin, WT1, ER, p53, whilst D2-40, SMA, CD10, GATA3 were equivocal. The diagnosis of a well differentiated mesothelioma, biphasic type was proposed. No further treatment was administered. One year later, the patient was diagnosed with recurrent tumour. Ultrasonography revealed neoplastic infiltration in the liver, multiple nodules in the peritoneum and peritoneal thickening up to 30mm. The histopathology revealed only hypercellular fibrous growth without epithelioid cells. The appearance was consistent with an adenomatoid tumour; however the size and multifocal presentation were indicative of the recurrence of diffuse malignant mesothelioma, biphasic type. The patient was given palliative chemotherapy (cisplatin->carboplatin+pemetrexed). However, after two cycles the patient suffered intestinal obstruction and underwent laparotomy, during which microjejunostomy was created. The patient was discharged from the hospital in March 2023.

Conclusion: The presented case emphasizes the difficulty in distinguishing various types of peritoneal tumours. It not only demonstrates the unpredictability of mesothelioma, but also outlines its heterogeneous presentation that may impede the precise diagnosis. Furthermore it is also vital to correlate clinical and pathological presentation, which may vary, just like in our case.

A case report of adrenocortical carcinoma that was incorrectly identified as metastatic bladder cancer

Paweł Szajewski

Presenting author: Paweł Szajewski

Tutors: Agnieszka Żyłka MD, PhD

Co-authors: Paulina Kalman

Affiliations: Medical University of Warsaw

Introduction: Adrenocortical carcinoma (ACC) is an aggressive cancer originating in the cortex of the adrenal gland. It is a rare tumor, with incidence of one to two per million population annually and most cases are hormone-secreting. Surgical removing of the tumors is the most promising treatment option, but many of them are non-operative. However, new treatments continue to improve survival rates for people with ACC.

Case report: The case presents a 74-year-old patient with a significant oncological background. In 2020 he underwent a Transurethral Resection of Bladder Tumor (TURBT) because of the urothelial carcinoma. It was followed by a neoadjuvant pembrolizumab therapy as a matter of clinical trial. Few months later surgeons performed a radical cystoprostatectomy with urine diversion. During follow-up a lesion in the left adrenal gland was detected and thought to be metastatic but lymph nodes weren't suspected of meta. In an abdominal cavity magnetic resonance imaging (MRI), the lesion's size continued to grow in relation to its size prior to the previous scan, showing signs of a restricted diffusion and heterogeneous contrast enhancement. A fluorodeoxyglucose positron emission tomography-computed tomography (FDG PET/CT) confirmed the tumor's metabolic activity and detected a lesion in the right adrenal gland with a low FDG uptake. A left-sided adrenalectomy was performed but histopathological examination revealed the presence of adrenocortical carcinoma (ACC). The laboratory studies of hormones levels were carried out but results were within normal range. The right adrenal gland tumor wasn't suspected of a malignant neoplasm four months after the last imaging test and the patient was qualified for adjuvant mitotane treatment of ACC. Patient ceased taking pembrolizumab through a treatment and quickly after that he stopped taking mitotane due to side effects. During a follow-up, a lesion in the right adrenal gland changed its morphology in MRI and was suspected of pheochromocytoma, which was declined after hormone studies. The patient was qualified for a right sided adrenalectomy.

Conclusions: Initially, a tumor in the left adrenal gland was thought to be metastatic and may delayed the diagnosis. Regional lymph nodes were also ignored but according to the guidelines local regional lymphadenectomy seems to lead to a favorable oncological outcome. Moreover, pembrolizumab in this case may influence the ACC because it is also considered to be a third-line treatment in this cancer.

CASE STUDIES: PEDIATRICS

13th of May 2023

Coordinators:

Adrianna Załęska

Julia Stokowiec

Zofia Lewandowska

Martyna Grzywacz

Jury:

Anna Hogendorf, MD, PhD

Prof. Marcin Tkaczyk

Aleksandra Gawłowska-Marciniak, MD, PhD

Joanna Smyczyńska, MD, PhD

Prof. Magdalena Józefowicz-Korczyńska

Beata Mianowska, MD, PhD, Assoc. Prof.

Is this a challenge for a laboratory diagnostician or a physician? - Case report of a patient with congenital acute lymphoblastic leukemia

Emilia Nowicka

Presenting author: Emilia Nowicka

Tutors: Monika Lejman, MD, PHD

Co-authors: Angelika Mastalerczyk, Kinga Panuciak

Affiliations: University of Lublin

Introduction: Acute leukemias are the most common cancers in the pediatric population. Among them, acute lymphoblastic leukemia (ALL) is the most common and accounts for more than 80% of all cases. So far, it has been shown that this disease can be divided into more than 30 subtypes classified on the basis of genetic analysis. The most common subtypes are hyperdiploidy, ETV6::RUNX1 fusion or ALL with the presence of the Philadelphia chromosome (Ph+). The profile of the occurring genetic mutations significantly affects the prediction of cure and patient survival.

Case report: The aim of the study is to present a case of a patient with congenital acute lymphoblastic leukemia (pro-B ALL) in whom the KMT2A::AFF4 gene fusion was identified. The material for genetic studies was bone marrow taken from a 1-month-old girl with a leukocytosis of 54000/µl (blasts 90%). The research was carried out using the FISH technique with molecular probes BCR/ABL1, ETV6/RUNX1, KMT2A, TCF3 and microarray testing Cytoscan HD. Direct Sanger cDNA sequencing was performed using primers designed in the KMT2A and AFF4 genes.

Conclusion: The obtained research results revealed a complex female karyotype: 46,XX,ins(11;5)(q23;q31q3?3)[22]/46,XX[1].ishins(11;5)(q23;31q3?3)(wcp11+,wcp5+;wcp11+)[13]. BCR::ABL1, TCF3, and ETV6::RUNX1 rearrangement was not detected by the FISH method. Point mutations and gene fusions were not detected in the following genes: JAK2, CRLF2, IL7R, EPOR, ABL1, ABL2, PDGFRB, CSF1R and structural changes were not detected in the microarrays. The analyzed RNA sample derived from leukemic cells showed an in-frame gene fusion, including the 5' fragment of exon 8 of the KMT2A gene and the 3' fragment of exon 6 of the AFF4 gene. This was then confirmed by direct cDNA sequencing. The obtained result is quite non-standard and due to the very small number of references in the literature, undoubtedly requires further analysis. The KMT2A::AFF1 t(4;11)(q21;q23) mutation is much more common. Both KMT2A::AFF1 and KMT2A::AFF4 rearrangements have a poor patient prognosis.

Performance of the MiniMed 780G system in a child with type 1 diabetes during bone marrow transplant procedure

Ewa Klejman

Presenting author: Ewa Klejman

Tutors: prof. Agnieszka Butwicka, MD, PhD; Arkadiusz Michalak, MD

Co-authors: Jędrzej Chrzanowski; Julia Wykrota

Affiliations: Medical University of Lodz

Introduction: Maintenance of glycemic control in patients with type 1 diabetes (T1D) and coexisting oncological disorders is challenging. Due to side effects of chemotherapy (primarily vomiting), and the transient need for partial or total parenteral nutrition, those children often need temporary transition to intravenous insulin therapy. However, advanced hybrid closed-loop systems, such as the MiniMed 780G, might help maintain safe glucose levels with subcutaneous insulin infusion. The aim of this case study was to describe and assess the blood glucose control of a child with T1D and nephroblastoma using the MiniMed 780G system during chemotherapy and bone marrow transplantation (BMT).

Case report: A 7-year-old boy with a recent (4 months) diagnosis of T1D was diagnosed with recurrent nephroblastoma (primary grade IV tumor 6 months before T1D) and subjected to intensive chemotherapy (Protocol Umbrella) followed by a BMT. Two months before BMT (during the relapse), the patient started to use the MiniMed 780G system. The patient used the automatic mode for most of the time during nephroblastoma treatment, except for 30-minute suspensions during post-BMT irradiation. The data from continuous glucose monitoring were analyzed in relation to therapy phases, with a focus on time in, below, and above range (TIR, TBR, TAR) as well as coefficient of variation (CV). During post-procedure period the boy presented mucositis which necessitated parenteral nutrition. Despite those challenges, throughout the observation period of 5 months, there were no episodes of severe hypoglycemia or diabetic ketoacidosis. The time spent in clinically significant hypoglycemia (TBR <54mg/dl) and extreme hyperglycemia (TAR >250mg/dl) was 0%, furthermore, glucose variability (CV) was low and stable. Although TIR decreased notably in the peri-BMT period, it remained acceptable.

Conclusions: The study findings are consistent with previous reports on the use of hybrid closed-loop systems in pediatric patients with T1D. Given the challenges of glycemic control in patients with T1D and oncological disorders, the use of advanced closed-loop systems might offer a viable option for maintaining safe glucose levels during treatment.

Recurrent otitis media as a contributor to the diagnosis of Turner syndrome - the importance of a comprehensive approach to the patient

Joanna Rapiejko

Presenting author: Anna Rapiejko

Tutors: Monika Grymowicz MD, PhD

Co-authors: Joanna Rapiejko

Affiliations: Medical University of Warsaw

Introduction: Turner syndrome (TS) is a genetic disorder occurring in female patients, caused by the complete or partial absence of one of the X chromosomes. Patients with TS may present with short stature, gonadal dysgenesis, typical dysmorphic features that include a webbed neck, a low hairline at the back of the neck, widely spaced eyes, low-set ears, a broad chest and widely spaced nipples. These key features may be subtle, so not all affected individuals are diagnosed prenatally, at birth or at a very early age. In addition to the typical symptoms, Turner syndrome is associated with many other health problems.

Case report: A 17-year-old female patient with Turner syndrome is currently under the constant care of the Gynaecological Endocrinology Outpatient Clinic of the Clinical Hospital Anna Mazowiecka in Warsaw, undergoing hormone replacement therapy since the age of 16. She is menstruating regularly and is in good general condition. The typical dysmorphic features are very subtle. No heart or kidney defects have been diagnosed. The patient has been treated with growth hormone from age 6 to 16, current height is 156 cm. Scoliosis under the care of a physical therapist. The diagnosis of the syndrome was not made until the age of 4, when a karyotype, performed on the order of a paediatric endocrinologist in a fairly low-grade girl, confirmed the diagnosis of Turner syndrome (mosaic type). The child was referred for the above consultation by ENT specialists due to recurrent otitis media. The patient, previously considered a healthy child, began suffering from recurrent otitis media with effusion from the age of 2. She underwent numerous ear drains and a tonsillectomy, and required long-term ENT care.

Conclusion: Specialists, aware that girls with recurrent otitis media and relatively short stature may have an underlying diagnosis of Turner syndrome, can contribute to an earlier diagnosis of the condition. A comprehensive approach to the patient provides such opportunities. Early diagnosis of TS is important because affected individuals can suffer from a range of health problems and require early multidisciplinary care.

Tinea profunda in a 8-years-old female

Julia Borodacz

Presenting author: Julia Borodacz

Tutors: Prof. Aleksandra Lesiak, MD, PhD, Małgorzata Skibińska, MD, PhD

Co-authors: Katarzyna Tłustochowicz

Affiliations: student of the medical university in Łódź

Introduction: Tinea trichophytica profunda is a type of tinea capitis, caused by a zoophilic dermatophytes. The disease is characterized by the appearance of lesions on the scalp filled with pus and local alopecia. Local lymphadenopathy and allergic reactions on the scalp, neck and torso may occur as well. Treatment of that condition consists of antifungal medicines (terbinafine, fluconazole, itraconazole).

Case report: An eight-year-old female with a suspicion of bacterial skin infection was admitted to the dermatological department from paediatric unit due to an ineffectiveness of the treatment with antibiotics. The patient presented lesions on the scalp, cervical lymphadenopathy and two, large and sensitive to the palpation nodules filled with pus on the frontal area of the head in clinical examination. Initially, the patient underwent antifungal therapy (terbinafine, fluconazole) and surgical incision to extract the pus. At the next visit, due to insufficient clinical response, fluconazole treatment was replaced with itraconazole. The double therapy (terbinafine 125 mg and itraconazole 200 mg) was continued for five months with a good clinical response. After a visible improvement of the patient's condition, terbinafine was discontinued, leaving itraconazole for another month of therapy until an episode of urticaria happened. Due to this fact and a significant clinical improvement, the decision of discontinuation of the therapy with itraconazole was made.

Conclusion: The fungal skin infection should be considered as a potential diagnosis, especially if treatment with antibiotics is ineffective. Tinea trichophytica profunda is a condition that needs long term therapy. Beside of antifungal medicines, extraction of the pus and hygiene of the skin of the scalp play a crucial role in effective treatment of the condition and improve the quality of patient’s life.

Atypical presentation of mastocytosis in an infant

Julia Kolodziejska

Presenting author: Julia Kołodziejska

Tutors: Prof. Aleksandra Lesiak, MD, PhD ; Małgorzata Skibińska, MD, PhD

Co-authors: Julia Kołodziejska, Natalia Bień

Affiliations: Medical University of Lodz

Introduction: Mastocytosis is a heterogeneous group of disorders characterized by the accumulation of clonal mast cells in organs such as the skin and bone marrow. There are two main types of mastocytosis: cutaneous and systemic. The systemic form occurs predominantly in adults and infiltrates the extracutaneous tissues, while the cutaneous mastocytosis is confined to the skin and is most common in children. Cutaneous mastocytosis can be divided into: mastocytoma, maculopapular CM (a monomorphic and polymorphic variant) and diffuse CM.

Case report: A 9-month-old girl was admitted to the dermatological department with diffuse erythematous lesions with blisters and erosions. The first lesions appeared on the trunk 4 months before the admission with complete spontaneous remission after 2.5 months. 1 month before hospitalization at the dermatology ward the skin signs reoccurred. Before the admission the patient was treated with oral antibiotics and topical treatment with no signs of improvement. On clinical examination diffuse erythematous and edematous lesions were observed, as well as blisters and oval erosions partially covered with crust. They were mainly located on the trunk, back and scalp. An axillary lymphadenopathy was noticed. The infant had an increased level of tryptase [40,8μg/l (1-11μg/l)] and AST [36U/l (0-32 U/l)]. The skin biopsy revealed acanthotic epidermis with hyperkeratosis, subepidermal blister, and dense cell infiltration with immunotype CD117+ in the dermis, which suggested the diagnosis of skin mastocytosis. Oral antihistaminics were administrated to ease the symptoms such as itchiness. To exclude possible systemic involvement the patient was hospitalized at the hematology department. The USG of abdomen and chest X-ray were performed there with no abnormalities reported. The patient's parents were informed about the need to be under regular control of interdisciplinary paediatric team to monitor the evolution of the disease and possible systemic involvement. Epinephrine auto-injector was prescribed, and the parents were instructed on how to use it in case of anaphylactic reaction in their child.

Conclusions: The differential diagnosis of cutaneous mastocytosis requires the exclusion of organ involvement. For this reason, the importance of interdisciplinary cooperation between dermatologists, hematologists and paediatricians should be emphasized. This case report presents an atypical morphology of cutaneous mastocytosis in an infant, with the occurrence of blisters, diffused erythematous lesions and erosions. In cases of atypical clinical presentation, the skin biopsy can become crucial to make an accurate diagnosis.

When side effects impede the path to recovery: difficulties in treatment of colitis ulcerosa (UC) in adolescent patient

Julia Kret

Presenting author: Julia Kret

Tutors: Agnieszka Borys-Iwanicka, MD, PhD

Co-authors: Maria Kubicka, Lilianna Zielińska

Affiliations: Uniwersytet Medyczny im. Piastów Śląskich we Wrocławiu (Medical University of Wroclaw)

Introduction: Ulcerative colitis (UC) is a chronic inflammatory disease of an unknown etiology. It is a diffuse, non-specific inflammation of the mucous membrane of the rectum or of the rectum and the colon, which, in severe cases, leads to ulcer formation. Initial symptoms include diarrhea, usually bloody, and abdominal pain. Extraintestinal manifestations such as fever or arthritis may appear. The disease usually presents as acute relapses separated by remissions, and the causes of the relapses remain unknown. Mental stress, changes in diet, the use of non-steroidal anti-inflammatory drugs, food-borne infections and infections of other organs are thought to play a major role in causing relapses. Both the onset of the disease and the course of subsequent exacerbations can be characterized by a variation in the severity of the symptoms.

Case report: This case report presents difficulties in treatment of colitis ulcerosa in adolescent patient, who was first diagnosed at the age of 15 years old. First symptoms, that included bloody diarrhea and abdominal pain, occurred years earlier, and were misdiagnosed and treated as hemorrhoids. Teen patient have kept secret from the parents long lasting symptoms of bleeding from gastrointestinal tract, causing delayed diagnosis and implementation of an adequate treatment. In a course of long and difficult hospitalization patient suffered from gastric and duodenal ulcers, several Clostridium difficile and SARS-CoV2 infections. Patient developed severe psoriasis after treatment with infliximab and required continuous steroid therapy. The progression of the disease and the lack of effective treatment led to the decision to perform a colectomy. Because of her condition patient had to be homeschooled and lost contact with her peers. The girl was diagnosed with a moderate depressive episode and bipolar affective disorder. Both patient and parents without success were looking into starting psychotherapy.

Conclusion: The course of the disease may differ from patient to patient. In some cases it may even lead to colectomy. Patients should receive multi-specialty care including gastroenterologists, nutritionists, psychologists and psychiatrists if necessary. The timing of colitis ulcerosa diagnosis can affect the effectiveness of treatment. Pharmacotherapy based on immunosuppressive drugs is associated with numerous side effects. Regular contact between the patient and their doctor is therefore recommended.

Pediatric Inflammatory Multisystem Syndrome (PIMS) or severe sepsis? – A difficult diagnosis in an eight-year-old girl with a serious condition

Marc Moquade

Presenting author: Marc Moquade

Tutors: Jolanta Sołtysiak, M.D., Ph.D

Co-authors: -

Affiliations: Poznań University of Medical Sciences

Introduction: Pediatric Inflammatory Multisystem Syndrome (PIMS) is a rare and recently described condition that develops around a month after a child is infected with COVID-19 and that has attracted the attention of pediatricians. It presents as multi-organ dysfunction and could be very similar to sepsis, just as in the case discussed here.

Case presentation: The patient is an eight-year-old girl who presented to the family doctor's office with fever and pain in the lower limbs that prevented her from walking. Later she was admitted to the hospital in a medium to severe state: she was lethargic with cracked lips, raspberry tong, hyperesthesia on examination and with tender bright red nodular lesions on her limbs along with small petechiae on her legs and peeling skin on her toes. Hence, she was exhibiting most of the clinical features of PIMS. She also had abdominal pain and some edema of the eyelids. Blood tests showed high inflammatory parameters, features of acute kidney injury, anemia, lymphopenia, thrombocytopenia and hyponatremia. She was also negative for influenza A and COVID-19 but positive for influenza B. A throat swab and blood cultures were also taken. Moreover, further blood tests revealed an increase in D-dimmer, fibrinogen, LDH, NT-proBNP and troponin I levels. PIMS was then suspected, and gamma globulins were given with little improvement in the patient's condition. Furthermore, two antibiotics were also given concurrently. However, bacterial cultures were positive for streptococcus and treatment with penicillin was implemented. Eventually, the diagnosis was severe sepsis with multi-organ dysfunction.

Conclusion: PIMS and sepsis could share similar presentations and are both life threatening. In this case, a blood culture revealed sepsis in a child exhibiting manifestations of PIMS. Henceforth, whenever PIMS is suspected, blood culture should be evaluated to rule out sepsis.

Staphylococcus Aureus sepsis and Haemophilius influenzae superinfection in a three week old infant after contracting RSV

Marc Moquade

Presenting author: Marc Moquade

Tutors: Katarzyna Wróblewska-Seniuk, M.D., Ph.D

Co-authors: -

Affiliations: Poznań University of Medical Sciences

Introduction: Respiratory Syncytial Virus (RSV) is the most common cause of respiratory tract infections in infants and newborns. The treatment is mainly symptomatic, but many of these patients require respiratory support. In the presented case, this viral infection took a complicated turn leading to a Staphylococcus aureus superinfection and sepsis. Later Haemophilus influenzae was also detected in the respiratory tract secretions of the infant. These superinfections complicated the course of her treatment, leading to nearly two weeks of intubation.

Case Report: The patient was born healthy and full-term at 40 weeks of gestation. Three weeks later, she contracted an upper respiratory tract infection, quickly deteriorated and needed hospitalization. She presented with wheezing, rales and excessive amount of mucus secretion in her upper respiratory tract and needed non-invasive ventilation. Few days later she manifested excessive breathing effort, high oxygen demand and respiratory acidosis with significant CO2 retention, hence she was intubated and mechanical ventilation was started. Moreover, CRP and PCT levels were elevated, and cultures of the blood and respiratory secretion were positive for staphylococcus aureus. A massive upper lobe atelectasis was also seen on X-Ray. What was puzzling in this case is that there was no intravenous access that could have caused the Staphylococcus aureus sepsis, which lead us to believe that the source of this pathogen must have been her upper respiratory airways that were strikingly congested with thick mucus on admission. Antibiotics (Vancomycin and Meropenem) were administered. Additionally, Haemophilius influenza was detected in her respiratory secretions hence prolonging the treatment with Meropenem.

Conclusion: Staphylococcus aureus sepsis is an uncommon complication after RSV infection in newborns and, much less, with concomitant infection with Haemophilus influenzae. These complications led to more than two weeks of intubation which might also increase the risk of pulmonary fibrosis and further complications to an otherwise manageable respiratory tract infection.

A skin disorder or a psychological problem? – a case report of a girl suspected of dermatitis artefacta

Natalia Bień

Presenting author: Natalia Bień

Tutors: Prof. Aleksandra Lesiak MD, PhD; Małgorzata Skibińska MD, PhD

Co-authors: -

Affiliations: Medical University of Lodz

Introduction: Dermatitis artefacta is a psychocutaneous disorder in which the patient self-inflicts the lesions in the skin to fulfill an unconscious psychological need or attract attention. The diagnosis and treatment of this disease might be very challenging because of variable clinical presentations and common patient's denial.

Case report: 10-year-old girl was admitted to the dermatological department with suspicion of connective tissue disease. Recurring diffuse, pink macules appearing after upper respiratory tract infections leaving pink smudges on the clothes have been reported since more than half of the year before admission. Skin changes were followed by stomachache, apathy and itchiness. Moreover, patient has had a history of atopic dermatitis, as well as was born as one of triplets. She was previously consulted by dermatologists and allergologists, as well as hospitalized in the rheumatology department where extensive tests were performed and diagnosis of possible connective tissue disease was suggested. Before the admission to the dermatological department, she was treated with antihistaminic, emollients and topical corticosteroids. During clinical examination irregular pink macules located on the face, trunk, hands, back of the legs and in popliteal and elbow fossa were observed. Moreover, erythematous and scaling lesions in both popliteal and elbow fossae, neck folds and on the eyelids were noticed. After washing the lesions with a wet pad, it was observed to turn pink, so a bath of the whole body was administrated with considerable improvement of the skin condition. Additionally, Wood's lamp examination, nebulization test with 0.9% hydrochloride and skin swabs were performed with no deviations in the results. Psychological consultation was administrated because of suspected self-inflicted dermatosis. Topical therapy with corticosteroids, calcineurin inhibitors and emollient was used for atopic dermatitis lesions. Due to suspicion of pseudochromhidrosis empirical oral treatment with erythromycin was added. Unfortunately, the patient was discharged on mother's request before the end of diagnostic process. Next hospitalization was planned in two weeks, but the patient and her mother didn't appear and didn't answer calls. Accidentally, it was reported that the girl and her mother went to the different dermatologist where a piece of coloured crêpe paper was found in the children's rectum.

Conclusion: Self-inflicted skin lesions are the most probable diagnosis in our patient. A proper diagnosis and therapy might be a challenge and often demands interdisciplinary cooperation of dermatologist, paediatrician, psychiatrist and psychologist. Atypical clinical presentation which often doesn't match well-known disorders and no deviations in additional tests should always be alarming and might suggest self-induced background. It is also crucial to exclude other possible causes of symptoms during diagnostic process.

Vestibular paroxysm - a rare cause of peripheral vertigo. Clinical case report

Nikodem Pietrzak

Presenting author: Nikodem Pietrzak

Tutors: Oskar Rosiak, MD, PhD, Prof. Wiesław Konopka, MD, PhD

Co-authors: Katarzyna Jankowska

Affiliations: Students Scientific Circle of the Department of Otolaryngology, Polish Mother Memorial Hospital Reaserch Institute in Łódź, Poland

Introduction: Vestibular paroxysm is a rare disorder of the organ of balance, which manifests itself as recurrent and paroxysmal vertigo of a spinning nature, the etiology of which is linked to compression of a blood vessel on the vestibulocochlear nerve. The exact mechanism for triggering the symptoms is not fully understood. The condition occurs without gender predilection.

Case presentation: Two clinical cases of patients with vestibular paroxysm treated at the Department of Otolaryngology of the Polish Mother's Memorial Health Center in Lodz in 2022-23 are described. The patients were diagnosed with sudden, paroxysmal, brief dizziness of a vortex-like nature not triggered by a change in body position. Both patients were diagnosed with otolaryngology, otoneurology, audiology, and Romberg and Unterberger tests were performed three times. The patients' previous radiological diagnosis was also considered. In both cases, there were no abnormalities in the tests performed and no organic causes of the dizziness were found. The Bárány Society's Diagnostic Criteria for the Diagnosis of Vestibular Paroxysm were applied, thus both patients were diagnosed with probable vestibular paroxysm. Pharmacological treatment was administered. In follow-up examinations after one month, both patients' dizziness symptoms completely resolved. The patients' diagnosis was changed to vestibular paroxysm. The patients remain under the observation of the Clinic.

Conclusion: Imaging studies provide significant value during the diagnosis of vascular-neural conflict, but the diagnosis of vestibular paroxysm is based on clinical symptoms according to the division proposed in 2016 by the Barany Society. Drug therapy is indicated; response to therapy is one of the criteria for diagnosing the condition.

Late identification of conditions incompatible with life in a neonate: holoprosencephaly and other significant cephalic abnormalities

Shelbie Embrey

Presenting author: Shelbie Embrey

Tutors: Katarzyna Wróblewska-Seniuk, M.D., Ph.D.

Co-authors: -

Affiliations: Poznan University of Medical Sciences

Introduction: Holoprosencephaly (HPE) is a congenital condition where the brain fails to divide into separate lobes presenting in 0.4% of embryos, with less than 3% of these cases surviving to term. Even more rare is the incidence of HPE without chromosomal abnormalities or predisposing maternal factors.

Case Report: The neonate was born at 36+6 weeks of gestation with a birth weight of 2525g. Maternal history was negative for diabetes, alcohol, smoking, and teratogenic drugs during pregnancy, whilst paternal history noted only diabetes. This was the second pregnancy: the first child was delivered in 2016 with a normal birth weight and no congenital illnesses. There was suspicion of a central nervous system anomaly, but a definitive diagnosis was not given. Array Comparative Genomic Hybridization (aCGH) screening of chromosome pairs 1-22 was performed in-utero with normal findings. The patient was delivered C-section because of the suspected CNS anomaly and because the mother had previous CS. On physical examination, facial anomalies consistent with HPE were identified, including hypotelorism and a single nostril trumpet nose. Cranial ultrasound revealed microcephaly, microencephaly, pachygyria, and the most severe form of HPE - alobar holoprosencephaly: complete lack of forebrain division, absence of corpus callosum and third ventricle, a fusion of the thalamus, and a single common dorsal ventricle. The shift from intensive care to comfort care was initiated as alobar HPE is a lethal condition, and the patient was transferred to palliative care. The parents have been referred to the genetic outpatient clinic for further testing. Smith-Lemli-Opitz syndrome should also be excluded.

Conclusion: Current prenatal screening methods failed to identify the patient's lethal abnormalities. For parents expecting a relatively healthy newborn, this extra preparation time afforded from screening is paramount to the immediacy of initiating comfort care so the family can accept the prognosis and the patient can pass away calmly.

CASE STUDIES: SURGERY
I SESSION

13th of May 2023

Coordinators:

Justyna Jankowska

Aleksandra Woźniak

Jury:

Marta Fijałkowska, MD, PhD

Jakub Włodarczyk, MD, PhD

Joanna Lipińska, MD, PhD

Case report: meckel' s diverticulum atypical presentation in a thirteen-year-old boy

Ieva Evelīna Štolcere

Presenting author: Ieva Evelīna Štolcere

Tutors: Jānis Karlsons, MD

Co-authors: -

Affiliations: Riga Stradiņš University

Introduction: Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal tract. It is caused by an incomplete obliteration of the omphalomesenteric duct. It is seen in around 2% of general population and mostly is asymptomatic and only around 2% of patients will develop symptoms. Up to 50% of symptomatic patients are under 10 years of age, mostly first 2 years of life. Symptomatic Meckel's diverticulum usually presents with gastrointestinal bleeding, abdominal pain, fever, and vomiting.

Case description: A thirteen-year-old boy was admitted to the hospital with acute abdominal pain, nausea, and vomiting. An abdominal X-ray initially showed constipation. Patient received symptomatic treatment which did not ease the symptoms. The next day the patient's condition had not gotten any better and he still suffered from pain giving it a score between 7 and 10 even though narcotic analgesia was prescribed. Repeated X-ray was performed, suggesting ileus. Considering radiological findings and the patient's condition diagnostic laparoscopy was performed. During laparoscopy small intestine conglomerate was discovered which was cyanotic and could not be resolved. Procedure was continued by targeted laparotomy in which conglomerate was visualised. Trying to separate conglomerate adhesion from mesenterium to bowel loop Meckel's diverticulum 3x5 cm was noticed. The adhesions were resected and Meckel's diverticulectomy was performed. Later in histology it showed normal small intestine tissue with all the according layers.

Conclusions: Mechanical ileus with severe abdominal pain is a rare case of presenting symptoms for Meckel's diverticulum but it should be taken in count as a differential diagnosis. In most cases patients with ectopic tissue are symptomatic but symptoms can be also present in patients with normal intestine tissue. It is essential to evaluate the patient frequently in order not to miss a life-threatening situation.

Large trichilemmal cyst in 47-year woman. A case study

Joanna Kempa

Presenting author: Joanna Kempa

Tutors: Piotr Koza

Co-authors: Julia Dębczak

Affiliations: Medical University of Lodz

Introduction: A trichilemmal cyst is a form of cyst, mostly located on the scalp, form from a hair follicle. It is usually smooth, ang good mobilized, sometimes multiplying tumor. Trichillemmal cyst is ussually benign, mostly grow slowly, and does not give any other symptoms. Some cysts can be proliferating, and ussually are filled by cytokreatin. They don't have inner roots. Population frequency is about 10%.

Case report: A 47-year-old woman, without oncological history, was admitted to planned surgery, by the reason of large trichilemmal cyst, described as 83x66x93 mm tumor located on lower part of the potylical side of the head. The tumor was grown for about dozen years, with no other symptoms. An MRI was done, and tumor was described as "hyperintensive, centrally located, with no bone harm". Patient was primary diagnosed as a suspicion of a lipoma, without primary biopsy. A planned surgery in general anasthesia was done. Patient was described next day in good condition. Skin sutures were removed 13 days later. Histopathology wad described as a benign trichilemmal cyst, without any other lesions.

Discussion/conclusion: A local case was compared with other described cases in previous 12 years. The data informed about rare malignant cases of squamous cell carcinoma, basal cell carcinoma, keratoacanthoma. The methods of diagnostics like MRI and CT were typical, and tumors were mostly described as hyperintensive in T2 -weighted images, beningn in histopatology. However preoperative imaging is describing controversial.

Unusual size, appearance, and clinical picture of a rare tumor. Giant pheochromocytoma of the adrenal medulla

Zuzanna Niedbał

Presenting author: Zuzanna Niedbał

Tutors: Tomasz Sachańbiński PhD MD

Co-authors: Sonia Dziugieł

Affiliations: University of Opole

Introduction: Pheochromocytoma is a tumor developing from chromaffin cells located in the adrenal medulla. The estimated annual incidence of pheochromocytoma is 0.4 to 9.5 per million. It is usually a small tumor confined to the adrenal gland, with an average weight of 100 g. Most tumors are hormonally active, producing catecholamines, but about 30% are asymptomatic. The main clinical symptom of pheochromocytoma is blood pressure spikes. This case aims to show how important it is to be vigilant even in an unusual case and how dangerous the consequences of delaying a visit to the hospital can be.

Case presentation: A 63-year-old woman was referred to the oncological surgery ward because of a massive tumor extending from the right costal arch to the right iliac plate, in diameter approx. 25 cm. The patient did not report any typical symptoms, but she reported losing 8kg of body weight in the last six months. The patient has been qualified for diagnostic laparotomy due to an enormous abdominal tumor of unclear origin. Histopathological examination showed the presence of a cyst in a 9-kilogram tumor. Typically, Pheochromocytoma is a solid tumor, and a cystic component is rare. The patient was discharged in good condition on the sixth postoperative day.

Conclusions: To date, a total of 20 cases of giant pheochromocytoma ≥20 cm were documented since the tumor was first described in 1886. This case concerns a rare adrenal tumor without signs of hormonal activity, which resulted in its above-average size and late diagnosis. Perhaps the COVID-19 pandemic and difficulties encountered by patients were the reasons for late reporting to the hospital. Due to the potential malignancy of the tumor, the patient is already under regular follow-up in the surgical oncology clinic to detect possible metastases.

Acute severe mitral regurgitation following chordae tendinae rupture due to blunt force chest trauma

Luiza Nawrot

Presenting author: Luiza Nawrot

Tutors: Janusz Konstanty-Kalandyk, MD, PhD

Co-authors: Vladyslv Kyslyi, Kinga Glądys, Duszan Leja

Affiliations: Jagiellonian University Collegium Medicum

Introduction: Chordae tendineae rupture is a rare complication of blunt chest trauma and may present as a set of symptoms referred to as mitral valve prolapse syndrome (MVP), which manifests primarily by mitral regurgitation (MR) posing a severe threat to the patient's life. Acute MR following trauma can quickly lead to pulmonary edema and cardiogenic shock due to lower compliance of the LA, regurgitation, and compromised forward blood flow. For this reason, vigilance, swift hemodynamic stabilization, and appropriate corrective surgery are crucial.

Case report: An unconscious 62-year-old patient in a life-threatening condition after blunt chest trauma was admitted to the district hospital, where a CT scan visualized 2,0-2,5 cm of excess fluid in the pericardial sac, confirmed in ECHO. Pericardiocentesis was performed, draining 700 ml of blood. CT scan also showed a persistent left superior vena cava. The patient was transported to the Department of Heart, Vascular Surgery and Transplantology, where the tamponade was decompressed again, obtaining 100 ml of hemolyzed blood and clots. Intraoperative TEE confirmed decompression of cardiac tamponade and showed significant MR, PISA 7mm, EROA 0.3 cm2, Vreg 50ml. After decompression, the patient regained consciousness, spontaneous breathing, BP 120/60 mmHg, and HR 70/min. The postoperative echo examination revealed an EF of approx. 60% and severe MR due to chordae tendineous rupture, most likely following trauma. Additional findings included posterior MV leaflet prolapse with severe eccentric regurgitation directed under the anterior leaflet, gradient of 5.3/1.5 mmHg, Vmax of 1.1 m/s, as well as enlarged 5.3x5.5 cm LV. The patient was presented to Hearteam and qualified for observation and re-diagnosis in 3 months, after which he was discharged home in good general condition.

Conclusion: MR is the presence of a retrograde flow from the left ventricle to the left atrium as a result of the dysfunction of the valvular apparatus. In this case, the regurgitation was caused by excessive mobility of the valve leaflets due to chordal rupture caused by blunt force trauma to the chest. MR in this mechanism can be missed and become a serious life threat in the future therefore should always be considered in cases of chest trauma and treated accordingly.

Mucocele shown in acute appendicitis by 44-year-old male. A case study

Julia Dębczak

Presenting author: Julia Dębczak

Tutors: Piotr Koza

Co-authors: Joanna Kempa

Affiliations: Medical University of Łódź

Introduction: Annatomically appendix is located at the base of cecal part of the colon, in right lower abdomen, intraperitoneally. According to rest of the large bowel, has more lymphatic tissues. Acute appendicitis is the most common surgical acute case and the indication to laparotomy. Mostly, appendicitis is caused by obstructed appendix with fecal stone, inflammation of lymphatic tissue, neoplasmatic process, food or parasites. Symptoms of acute appendicatis can be also caused by boating, mucin-filled appendix – mucocele.

Case report: 44-year-old male was admitted to the hospital, accordind to two day long lower abdominal pain, during the duty. Blood test shown: leucocytosis up to 15.02 x10 3/ul, neutrophilia 11.09 x10 3/ul, monocyte rising 1.95 x10 3/ul. CRP elevated to 35.86 mg/l. CT-scan of the abdomen shown fluid area 105 x 40mm in right lower abdomen. Patient has been qualified to acute duty laparotomy. Large (18cm long, 5 cm wide), tight appendix was removed, with peritonal drainage. There was no other compications after surgery. Patient was successuly described and sended home after 3 days. Bacteriology results was negative. Histopatology shown mucocele with large inflamation in local tissues.

Discussion/conclusion: According to described in latest case reports (in years 2014-2022) mucocele is mostly benign. Frequency is 0,2-0,3%. Rare malignant cases are decribed as: retential cyst, mucosal neoplasma, mucosla adenoma and adenocarcinoma. Accidentallly mucocele can be find during hemicolectomy, in case of large bowel cancer. There is no elevation in CEA or C19-9 level, only elevated CRP can be shown. Usually prognosis of mucocele is good – up to 100% during 5-year obserwation.

Multiple subdural empyemas as a rare complication of recurring sinusitis – case report

Alicja Witkowska

Presenting author: Alicja Witkowska

Tutors: Professor Maciej Radek, MD, PhD ; Maciej Błaszczyk, MD

Co-authors: Weronika Lusa

Affiliations: Medical University of Lodz

Introduction: Subdural empyema (SDE) is an uncommon purulent intracranial infection of bacterial etiology located in proximity to the brain, between the dura and the arachnoid mater. Oftentimes, it's a result of Streptococcus and Staphylococcus species' superinfection. It may develop as a complication regarding sinusitis, infected cranial procedures or dental complications and manifests clinically with unspecific neurological symptoms. To the best of our knowledge, the literature lacks distinct case reports covering the topic of recurrent multiple subdural empyemas.

Case report: A 28-year-old male was admitted to the Department of Neurosurgery, Spine and Peripheral Nerves Surgery, because of respiratory failure and worsening of the neurological condition. The patient had a history of recurring sinusitis. The two-phase computed tomography (CT) of the head revealed a lenticular hypodense lesion located in the prefrontal area (25x30x10mm) as well as the hypodense semilunar area described as a chronic subdural hematoma located over the right hemisphere (9mm). The patient was urgently referred to surgery. Intraoperatively, after craniotomy and durotomy, the purulent content was revealed, and the subdural empyema was evacuated. Furthermore, brain tissue exhibited indications of encephalitis. Therefore, antibiotic therapy was implemented regarding practice guidelines for the management of neuro infections. Two weeks later the patient underwent an operation performed by laryngologists. By means of endoscopy, hypertrophic lesions of the right side of the ethmoid bone were removed. Additionally, the maxillary sinus duct was drained from mucopurulent discharge and enwidened. After the procedure, the deterioration of the patient's general and neurological (by means of paralysis of the left limbs) status was observed. In the CT scan repeated hypodense oedema in the frontoparietal as well as new hypodense lesions appeared alongside tentorium cerebelli (13mm) were shown. Another neurosurgical operation was performed, and the pus was drained by means of multiple navigated craniotomies as well as the operative area was irrigated with metronidazole. The patient's condition improved, and he was discharged home after another six weeks of antibiotic therapy in good general condition with slight atony of the left limbs.

Conclusion: SDE poses a life-threatening condition. Early differential diagnosis and quickly instigated treatment is of crucial importance to preserving from death or lifelong neurological complications.

The stent graft occlusion repair – 70 year old patient.

Łukasz Świątek

Presenting author: Łukasz Świątek

Tutors: Hubert Stępak MD, PhD

Co-authors: Hubert Stępak MD, PhD

Affiliations: Student's Scientific Section of Vascular Surgery Poznan University of Medical Sciences

Introduction: Abdominal aortic aneurysm rupture (rAAA) in 10th cause of death in western countries.There are two methods of elective repair for preventing the rupture: open surgical repair (OSR) and endovascular repair (EVAR). EVAR dramatically changed the management AAA and becomes leading method in many cases. EVAR is associated with lower perioperative mortality, lower blood loss, less pain or shorter recovery time. One of the important disadvantages of endovascular repair is a relatively high risk of reinterventions. The 19% of the patients need secondary intervention after EVAR and 5.9% of all treated patients experience a limb graft occlusion. Nevertheless most of the complications are mild and do not need complex treatment.

Case Report: Patient was admitted to the hospital due to the symptoms of bilateral lower limb ischemia caused by aortic graft occlusion including main body and both limbs of the graft. Complex OSR was performed with aorto-bifemoral bypass graft attached to the main body of the stent graft. Stent graft was not fully removed due to the high risk of embolization of renal arteries and destruction of the aortic wall. Last endovascular intervention took place 1.5 years earlier due to the occlusion of right limb branch of stent graft. Since the first EVAR patient is on the dual antiplatelet therapy.

Conclusion: Although most of the patients with complications of EVAR may be treated with endovascular interventions some patients with complex lesions still need open surgical treatment. The decision if patient should be treated with open or endovascular repair is still under discussion. As a risk of 30-day mortality is high in OSR it is recommended for the patient with a reasonable prospects for long life, because of low risk of reinterventions. For those with lower life expectancy the EVAR is the option with lower peri-operative mortality but it gives higher chance for reinterventions.

Anterior corporectomy – a one year history of a neglected thoracic spine fracture

Andrzej Węgiel

Presenting author: Andrezj Węgiel

Tutors: Prof. Maciej Radek MD, PhD; Ryszard Twarkowski MD

Co-authors: Aleksandra Łakoma

Affiliations: Medical University of Łódź

Introduction: Corporectomy is a procedure of relieving the excessive pressure on the spinal cord and nerves by removing the vertebral body and the adjacent disc. The compression is typically a result of the degenerative changes in spine or its fractures. Usually, these surgeries are performed shortly after the occurrence of the vertebral body fractures however, in this case it took place a year after the car accident and primary laminectomy.

Case report: A 34-year female patient was admitted to the hospital intensive care unit as a result of injuries suffered in a car accident. She presented paresis of the lower extremities, mainly on the right side of the body. After the initial trauma management, she was diagnosed with an unstable thoracic spine fracture with accompanying rupture of the vertebral disc. For that reason, the patient was qualified for laminectomy of the Th7-Th8 vertebrae. After the successful surgery she was discharged home with a recommendation of rehabilitation. However, this was not the end of the therapeutic process. A year after the accident the same patient was admitted to the neurosurgical clinic with the aggravation of the neurological symptoms. She was able to move only using a wheelchair and presented a bilateral Babinski sign with accompanying significant paresis of the lower extremities, substantially aggravated on the right side. Based on MRI the new onset of symptoms was initiated by a progression of compressive fracture of the Th7 vertebral body and secondary kyphosis which led to an extensive pressure on the spinal cord. For that reason, a reoperation was required. The applied procedure was corporectomy of Th7-Th8 which was performed in side position with transthoracic access and with aid of a thoracic surgeon. The decompression of the spinal cord was obtained thanks to removal of the vertebral bodies. The tissue loss was replenished with an autogenous bone graft placed in an expandable cage which was stabilized with screws and rod. Afterwards, the patient's position was changed to prone and the posterior transpedicular Th5-6 and Th9-10 stabilization was performed. The procedure was intraoperatively controlled with a 3D O-Arm examination that confirmed the correct implants positioning. The surgery ended without any complications. The administered physical therapy allowed the patient to walk a month after the procedure with an assist of a walking frame.

Conclusion: Not all surgical procedures are the final ones even when the initial outcome suggests a therapeutic success. The restoration of the neurological functions is possible even after prolonged duration of the symptoms as not all the damage to the neural structures is necessarily permanent. It is important to highlight the role of the experienced multi-specialized personnel since the spinal cord decompression and further spine stabilization was only possible due to a mutual effort of the neurosurgeons and the thoracic surgeons.

An unusual case of sudden hearing loss due to bilateral endolymphatic sac tumor in von Hippel Lindau patient

Nikodem Pietrzak

Presenting author: Nikodem Pietrzak

Tutors: Oskar Rosiak MD PhD, Prof. Wiesław Konopka MD PhD

Co-authors: Katarzyna Jankowska

Affiliations: Polish Mother Memorial Hospital Reaserch Institute in Łódź

Introduction: Endolymphatic sac tumor (ELST) is a rare, slow-growing tumor that is locally aggressive but has a low risk of metastasis. Late onset of symptoms and difficulties in obtaining a biopsy often lead to misdiagnosis. ELST is more common in von Hippel-Lindau (VHL) disease, a condition caused by mutations in the VHL gene located on the short arm of chromosome 3. In sporadic cases, somatic alterations of both alleles of the tumor suppressor gene can lead to tumorigenesis. Common early symptoms of ELST include tinnitus, vertigo, disequilibrium, and sensorineural hearing loss, while late-onset symptoms may cause severe impairments to the vestibulocochlear and facial cranial nerves. Diagnosis is typically made through radiology. Early surgery on small ELST is recommended for VHL patients, who can be screened regularly for prompt diagnosis and a good prognosis. Cochlear implantation may be necessary for some patients.

Case report: A 16-year-old male was diagnosed at the Department of Otolaryngology, Polish Mother Memorial Research Institute in Łódź in 2022/23 due to unilateral, sudden sensorineural hearing loss in the right ear. He suffered from complete deafness to right ear over night without any preceding symptoms, followed by strong vertigo spells which reduced in frequency and strength over subsequent months. He was referred to the Clinic for further diagnosis. An otoneurological logical examination revealed complete sensorineural deafness in the right ear and unilateral peripheral vestibular loss on the right side confirmed in videonystagmography. An MRI of the cerebello-pontine angle revealed bilateral masses of the petrous bone apex and enchanted signal in the right vestibule and cochlea with suspected bleeding to the inner ear structures. A CT of the temporal bone revealed bony erosion of the area adjacent to the endolymphatic sac and vestibular aqueduct. Patient was referred for ophthalmologic and neurological evaluation, multiple haemangiomas were found in the retina. Patient was referred for surgery to Department of Otolaryngology, Medical University of Lublin. A right-sided tumor removal through trans-mastoid approach was performed with simultaneous cochlear implantation of a CI 632 electrode. Histopatological examination confirmed ELST, and genetic testing confirmed VHL disease. Implant activation was uneventful, the patient is undergoing rehabilitation for hearing in CI and is scheduled for left-sided surgery and tumor removal.

Discussion: Screening for ELTS can be routinely performed in VHL patients, where the disease is more aggressive and often bilateral. Early surgery for small tumors is recommended to achieve low morbidity and reduce the risk of potential permanent hearing loss in patients.

The utility of magnetic resonance in the assessment of renal cancer invasion

Karol Stępniak

Presenting author: Karol Stępniak

Tutors: Anna Drelich-Zbroja, Maryla Kuczyńska

Co-authors: -

Affiliations: Medical University of Lublin

Introduction: Renal cell carcinoma is in the 10 most frequent cancers, both in men and women, and accounts for 5% and 3% of all malignancies, respectively. One of tumor characteristics is its ability for intravascular invasion into renal veins, inferior vena cava or as far as left atrium of the heart. Venous tumor thrombus can be found in up to 25% of patients and it is a potentially lethal complication.

Case report: Male patient at age 66 diagnosed with renal cancer. MR follow-up showed tumor in left kidney with advanced intravascular invasion and metastases to other organs. Main trunk of renal vein and its segmental veins were broadened, up to 2,5 cm. In veins lumen, cell infiltration was present, probably due to tumor thrombus. Also widening of left trunk of renal artery and its intrarenal branches was observed. Metastatic foci were present in the left iliac muscle, the tail of pancreas, the spleen hilum and bilaterally in adrenal glands. Other abdominal organs were without deviations.

Conclusion: Such cases of advanced renal tumors with venous thrombus are often surgical dilemmas for urologists. In past decades, management shifted from an open approach to minimal invasive surgeries with the addition of adjuvant therapies. MR can be useful during preoperative assessment and choosing the best treatment method. MR imaging is a powerful tool for renal carcinoma diagnosis and monitoring. In this case study, it allowed to precisely characterize the tumor, show intravascular invasion and metastases in abdomen organs. Moreover, studies suggest that MR imagining results are an important factor determining choice of therapy or refining preoperative planning. This case proves the high utility of MR imaging in the process of treatment of renal kidney patients.

CASE STUDIES: SURGERY
II SESSION

13th of May 2023

Coordinators:

Elias Murr

Tasmia Fayyaz

Jury:

Tomasz Konecki MD, PhD

Michał Kusiński MD, PhD

Marcin Włodarczyk MD, PhD, Assoc. Prof.

Acute rupture of the ascending aorta in the distant period after TAVI valve implantation

Michał Kostro

Presenting author: Michał Kostro

Tutors: Tomasz Hrapkowicz MD, PhD, DSc; Grzegorz Hirnle MD, PhD

Co-authors: Dominik Tenczyński, Hanna Kubik

Affiliations: Student Scientific Society at the Chair and Clinical Department of Cardiac, Vascular and Endovascular Surgery and Transplantology, Silesian Medical University in Katowice, Silesian Centre for Heart Diseases in Zabrze, Poland

Introduction: Transcatheter aortic valve implantation (TAVI) is used in patients who are not candidate for surgical intervention due to severe comorbidities and high operative risk. Despite many advantages early and late complications are possible. We discuss a case of the ascending aorta rupturing long after TAVI valve implantation.

Case report: 81-year-old male with severe aortic stenosis was disqualified from the surgical aortic valve replacement due to high operative risk and comorbidities, including tricuspid valve regurgitation, congestive heart failure, hypertension, and diffused atherosclerosis. During TAVI procedure biological valve was implanted via the femoral artery. Postoperative period was without complications and patient was discharged home. Six months later patient was admitted to hospital due to ascending aortic aneurysm rupture and transferred immediately to operating room for salvage operation. In CT the site of rupture was identify directly in the upper border of TAVI valve. In extracorporeal circulation aneurysm excision of ascending aorta with implantation of vascular graft was performed. The TAVI valve function was appropriate, and the valve wasn't removed. Once the patient was stabilised, he was admitted to the cardiac surgery ward, where he developed a sternotomy wound infection. After targeted antibiotic therapy and vacuum-assisted closure of a wound (VAC) the patient returned to the Intensive Care Unit. In the further postoperative process, problems with the respiratory and urinary systems appeared. After obtaining negative results of swabs from the sternal wound, refixation of the sternum was performed. After the procedure, the patient's general condition deteriorated, the patient had circulatory and respiratory failure with symptoms of multiple organ failure. Due to the severity of his general condition and a moderate response to diuretics, dialyses were initiated. Despite the administrated treatment, stabilization of the patient's condition wasn't achieved. As a result of multiple organ failure, irreversible shock and cardiac arrest occurred leading to patient death.

Conclusion: TAVI is a safe method of treating aortic stenosis, recommended especially in patients disqualified from open heart surgery. A very rare but possible complication of the TAVI procedure is rupture of the ascending aorta usually during the procedure however can also occur in the late period.

Retrieval of Left Atrial Appendage Occluder embolized into the aortic arch

Michał Janas

Presenting author: Michał Janas

Tutors: Hubert Stępak MD, PhD

Co-authors: -

Affiliations: Angiology and Phlebology Poznan University of Medical Sciences

Introduction: Stroke prevention is an important part of atrial fibrillation therapy. Left Atrial Appendage Occlusion (LAAO) device implantation serves as an alternative method for patients with contraindications for anticoagulants. One of the complications of this procedure is device embolization, which occurs in 2% of cases. Embolizations of LAAO devices occur most commonly in the descending aorta, left atrium and left ventricle. Aortic arch is a rare site of LAAO device embolization, constituting only 6% of all cases.

Case report: A 66-year-old male with a history of hypertension, type 2 diabetes, hyperlipidemia and coronary artery disease was diagnosed with atrial fibrillation after suffering a stroke. A primary treatment with anticoagulants had to be discontinued after 7 months, due to episodes of gastrointestinal bleeding leading to anemia. The patient was qualified for an implantation of Amplatzer Amulet Left Atrial Appendage Closure Device, as an alternative secondary stroke prevention method. 3 months after the LAAO device implantation a routine follow-up was performed involving transesophageal echocardiography, which visualized no presence of the LAAO device in the atrial appendage. The computer tomography revealed an embolization of the device into the aortic arch at the origin of the brachiocephalic trunk, which required an emergent operation. The device was repositioned percutaneously to the distal abdominal aorta using a vascular snare via femoral artery and retrieved with open surgery due to the morphology of the aorta and iliac arteries.

Conclusion: This patient presents a rare complication of the LAAO implantation treated with a hybrid method. Our patient is a good example of a candidate for LAAO implantation. However, this preventive method is also associated with complications, one of which is device embolization, which might be asymptomatic, thus frequent follow-up visits involving echocardiography are necessary. Our case is particularly noteworthy due to the rare localization of the embolized device. In spite of the low incidence of these cases, surgeons need to be aware of this complication and familiarize themselves with retrieval techniques. Although a percutaneous technique allows retrieval of the embolized device through the catheter, there are some limitations which make the operation more complex.

“DISHphagia” – a case report of an unusual cause of dysphagia in a patient with diffuse idiopathic skeletal hyperostosis (DISH)

Ignacy Hatala

Presenting author: Ignacy Hatala

Tutors: Professor Maciej Radek, MD, PhD; Olaf Pierzak, MD, PhD

Co-authors: -

Affiliations: Medical University of Łódź

Introduction: Diffuse idiopathic skeletal hyperostosis (DISH) is a non-inflammatory, chronic, and systemic disorder characterized by the ossification of entheses, mainly affecting the spine. DISH is manifested by chronic pain, limitation of spinal mobility and rarely dysphagia. Depending on the count of bony bridges formed between the vertebral bodies, various definitions of DISH could be distinguished. The prevalence of DISH in the general population increases with age, ranging from 30% to 50%. However, the actual prevalence may be underestimated due to variable definitions, asymptomatic courses and similarities to spondylarthritis and osteoarthritis.

Case Report: A 66-year-old male presented was admitted to the Department of Neurosurgery with a nine-year history of dysphagia and neck stiffness, which worsened over the past two years. The patient reported no history of trauma or relevant medical conditions. CT and MRI scans revealed diffuse calcification of the anterior spinal ligament consistent with a diagnosis of DISH. The patient underwent surgical removal of the osteophytes at the C4-C5-C6 levels via an anterior approach without discectomy nor vertebral fixation. Postoperatively, the patient showed no neurological deficits, with only mild intermittent swallowing difficulties that considerably improved. The patient was discharged from the hospital in good general condition.

Conclusions: Due to non-characteristic clinical manifestation, DISH is a challenging condition that could significantly lower the quality of life. In this case, the importance of considering DISH in the differential diagnosis of dysphagia and back pain has been highlighted, particularly in elderly patients with risk factors for the disease.

Surgery for acute post-infarction ventricular septal defect after prior stabilization with ECMO support

Michał Sikorski

Presenting author: Michał Sikorski

Tutors: Tomasz Hrapkowicz MD, PhD, DSc

Co-authors: Rafał Tichy, Hanna Kubik

Affiliations: Silesian Medical University in Katowice

Introduction: Post-infarction VSD is a life-threatening condition and requires surgical closure. Due to the extremally high risk of the operation, stabilization of the patients for at least two weeks to obtain fibrosis of necrotic tissues may reduce the mortality. In some patients, circulatory decompensation may progress despite the support of aortic balloon counterpulsation (IABP). A possible solution is the implantation of ECMO support. Therefore, we would like to present a case report of a patient with a post-infarction ventricular septal defect (VSD) that was surgically closed after temporary ECMO support.

Case report: A 60-year-old, previously untreated patient was admitted with symptoms of heart attack. ST-elevation myocardial infarction (STEMI) of the inferior wall was confirmed. Coronarography was performed and showed 80-90% stenosis of the circumflex artery (Cx) and the right coronary artery (RCA) occlusion. Percutaneous coronary intervention (PCI) of RCA was performed. Eptifibatide infusion and thrombectomy were used to achieve vascular flow. An everolimus-eluting stent was implanted. Subsequently, the patient's condition deteriorated significantly with features of cardiogenic shock. Norepinephrine and dobutamine infusions were administrated and acid-base and water-electrolyte disturbances were balanced. Ultrasonography revealed a VSD of approximately 2 cm in size, with a large left-to-right leak and a gradient of 47 mmHg. An intra-aortic balloon pump (IABP) was implanted, but cardiovascular decompensation progressed. The patient was qualified for cardiac surgery salvage intervention. Due to the great risk of early closer of VSD, it was decided to temporarily ECMO support. A second operation was performed to close the VSD defect and disconnect ECMO after two weeks. Due to the difficult conditions and the very thin Cx branch, in view of its non-critical stenosis, bypass grafting was abandoned for the purpose of subsequent PCI. After the procedure, the patient was hemodynamically stable, extubated, however required renal replacement therapy. In the following days, treatment was continued and the patient was transferred to another ward for further medical care and rehabilitation.

Conclusion: ECMO is an invaluable procedure constituting the bridge to recovery or treatment in patients in poor hemodynamic condition after a surgical complication but also as a method of stabilizing patients before high-risk surgery, which allows to reduce mortality.

Bertolotti syndrome and degenerative spine disease – case report

Karolina Sujka

Presenting author: Karolina Sujka

Tutors: Maciej Radek, Jakub Jankowski

Co-authors: Weronika Lusa

Affiliations: Medical University of Łódź

Introduction: Bertolotti Syndrome (BS) is a disorder characterized by low back pain in patients with the presence of lumbosacral transitional vertebrae (LSTV). Radiological features of BS include e.g. enlargement of the L5 transverse process/processes and the presence of pseudoarticulation or fusion between the L5 and the sacrum. The Castellvi classification is used to assess the variants of the LSTV based on radiological examinations such as X-ray, computed tomography or magnetic resonance imaging (MRI). Due to the biomechanics of LSTV, a higher risk of discopathy (mainly at the L4/L5 level) has been confirmed in patients with BS in comparison with the general population. Management of BS is focused on the analgesic effect and involves conservative and interventional methods (e.g. injections with local anaesthetics and corticosteroids or thermolesions) as well as surgical interventions (especially in patients with diagnosed discopathy).

Case report: 38-year-old male was admitted to the Department of Neurosurgery with symptoms of recurrent right-sided sciatica, exacerbating for the last 5 months. The patient was unsuccessfully treated with conservative analgesic methods. In the MRI, a discopathy at the L4/L5 level has been shown. Furthermore, in the X-ray examination of the spine, LSTV (type IIa according to the Castellvi classification) has been revealed. Additionally, functional X-ray examination did not show any spinal instability in the lumbosacral region. The right-sided transforaminal epidural steroid and local anaesthetic injection at the L4/L5 level has been performed but after the duration of anaesthetics action, the patient reported a recurrence of pain. Afterwards, due to diagnosed discopathy, the patient was referred for a right-sided L4/L5 microdiscectomy. Two days after the surgery, the patient reported severe pain in the lumbosacral region, dominating on the right side and not responding to the pharmacological treatment. Therefore, an ultrasound-guided right sacroiliac joint injection has been performed. The patient was discharged from the hospital with an improvement in pain complaints five days after the surgery.

Conclusions: The BS constitutes a possible cause of the ineffectiveness of the surgical treatment of degenerative spine disease. Moreover, chronic and unresponsive to treatment low back pain in BS affects the patients' quality of life. In the current literature, there are no guidelines for therapeutic management in patients with diagnosed BS.