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JAGIELLONIAN UNIVERSITY MEDICAL COLLEGE IN KRAKOW

APRIL 22ND - 24TH 2021

ABSTRACT BOOK

INVITATION

Dear colleagues,

On behalf of the Scientific Advisors of the Scientific Society of Medical Students of the Jagiellonian University Medical College in Krakow, we cordially invite all medical students to the annual International Scientific Conference organized by Students Scientific Society on April 22nd – 24th, 2021. We are glad and honored that the heart of this conference is the historic place of Polish Kings, the city of Krakow with one of the oldest universities in Europe - Jagiellonian University. This year, we are all fully aware that the COVID-19 pandemic has affected many aspects of our lives. An epidemiological recommendation to maintain social distancing shifted our conference from personal interaction to a virtual meeting. We are convinced that despite the loss of direct networking, this year virtual Students Conference will bring new challenges and benefits for participants. We appreciate that despite these obstacles, all students attending this virtual conference understand the reasons why they want to attend this conference, which most likely has to do with presenting and learning about basic and clinical research, developing skills and virtually networking with others. Therefore, the scientific sessions at the meeting are devoted to the present the diverse and evolving modalities in diagnostics, methodologies, and technologies in experimental and clinical medicine.

We expect your presentations at the conference to be competitive and to focus attention on the latest achievements in the field of medicine, prompting participants to discuss. At the outset, we would like to thank the Organizing Committee of Medical Students as the main organizers and local host of this important event. We are convinced that their dedicated and humbly appreciated work, such as the long-term organization of these annual Conferences, and their willingness to organize it this year in virtual format this year will contribute to the overall success of this conference, as it has so far happened before.

We look forward to a fruitful meeting with young medical scientists who will share new and exciting results in medicine and biomedical fields, presented at the current virtual International Conference of Medical Sciences Students.

Krakow, April 21st, 2021

Prof. Tomasz Brzozowski

Scientific advisors of the Medical Students' Scientific Society
of the Jagiellonian University Medical College

Prof. Tomasz Guzik

Scientific advisors of the Medical Students' Scientific Society
of the Jagiellonian University Medical College

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WORKSHOPS

Systematic Review: A process HoEBM

Tutor: Piotr Spychalski MD, PhD

Systematic reviews are at the top of the EBM pyramid. It is an essential skill to know how to interpret their findings, but it might also help to understand how to perform such reviews.

In this workshop, Dr n. med. Piotr Spychalski from the House of EBM provides an overview of systematic reviews and what goes into conducting and discusses tools you'll need to do them effectively.

AMBOSS Workshop AMBOSS

Tutor: Tanner Schrank MD

We have partnered with AMBOSS, the online medical learning platform that is widely used by medical students internationally. All IMSC participants will get free and unlimited access to the platform for 10 days!

In addition, IMSC participants will get the chance to attend a free workshop hosted by AMBOSS physicians. Attend this platform walkthrough to take full advantage of your free access and find out how to improve your medical education!

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All of participants of workshop will receive free AMBOSS trials and best ones that participate in workshop quiz may receive free AMBOSS accesses for 3-months!

Overview of Novel Technologies in Diabetes Care and Management

Tutor: prof. dr hab. n. med. Barbara Głowińska-Olszewska, Klinika Pediatrii, Endokrynologii, Diabetologii z Pododdziałem Kardiologii, Uniwersytet Medyczny w Białymstoku

Prof. Głowińska-Olszewska is Editor-in-Chief of Pediatric Endocrinology Diabetes and Metabolism Journal and works in Bialystok. Her scientific work focuses on diabetes with special consideration of children diabetes.

This workshop will keep you up-to-date with all latest research regarding one of the most common diseases in human population.

Surgical Suturing

Tutor: Izabela Karpińska, VI year medical student, President of SSG of Surgical Skills by the Department of Medical Didactics JUMC

Surgical skills are essential to any medical student and future doctor. It's necessary to be able to make a small suture if needed. Izabela is going to take you through most essential suturing skills and suture techniques.

Conservative Indirect posterior restorations for both vital and not-vital teeth

Tutor: Prof. Francesco M. Mangani MD,DDS. Professor at the Faculty of Medicine and Surgery, School of Dentistry Tor Vergata University, Rome

Surgical skills are essential to any medical student and future doctor. It's necessary to be able to make a small suture if needed. Izabela is going to take you through most essential suturing skills and suture techniques.

Mexico Facing SARS-CoV-2

Tutors: Fernanda Corona Rosas, Karla Rubí Rodriguez Fracisco, Ghallia Ghimel Valverde Jaimes, Violeta Odett Parra Garcia and Fernanda Rabadán Granados

From our friendly team from Mexico!

Their team consists of 5 members that studied at Universidad Nacional Autónoma de México (UNAM), now they're studying their last year of medical school at Hospital General de México conducting research about how certain scores can be used as predictors of mortality in patients with SARS COV2 and those susceptible to have mechanical ventilation and used of vasopressors.

Get to know more about pandemic in other countries with our workshop!

Guided imagery - is it hypnosis? - IMSC Workshop

Tutors: Maria Naruszewicz, Ewa Moreń under supervision of Michał Mielimąka MD, PhD

What if you could take control of your imagination? This is more than just reverie or daydreaming. Check out where your imagination will lead you with our creative guidance. Every association of thoughts has a meaning and can help to understand oneself better. During our session, it is recommended to prepare a comfortable place and position to appreciate the experience fully.

Esthetic class IV restoration Teresa Szupiany

Tutor: dr Teresa Szupiany-Janeczek PhD

WANTED: CATEHOLAMINES - Tumor diagnostics workshop

Tutor: Jolanta Bugajska PhD

Several tumors of the sympathoadrenal system, e.g. of pheochromocytoma and neuroblastoma are responsible for an elevated biosynthesis of the catecholamines epinephrine, norepinephrine and dopamine. For the determination of catecholamines and metabolites high performance liquid chromatography (HPLC) is considered as reference method. With this workshop you will see how to prepare material for previously described test and how to run HPLC.

COVID-19 Trauma Team Workshop

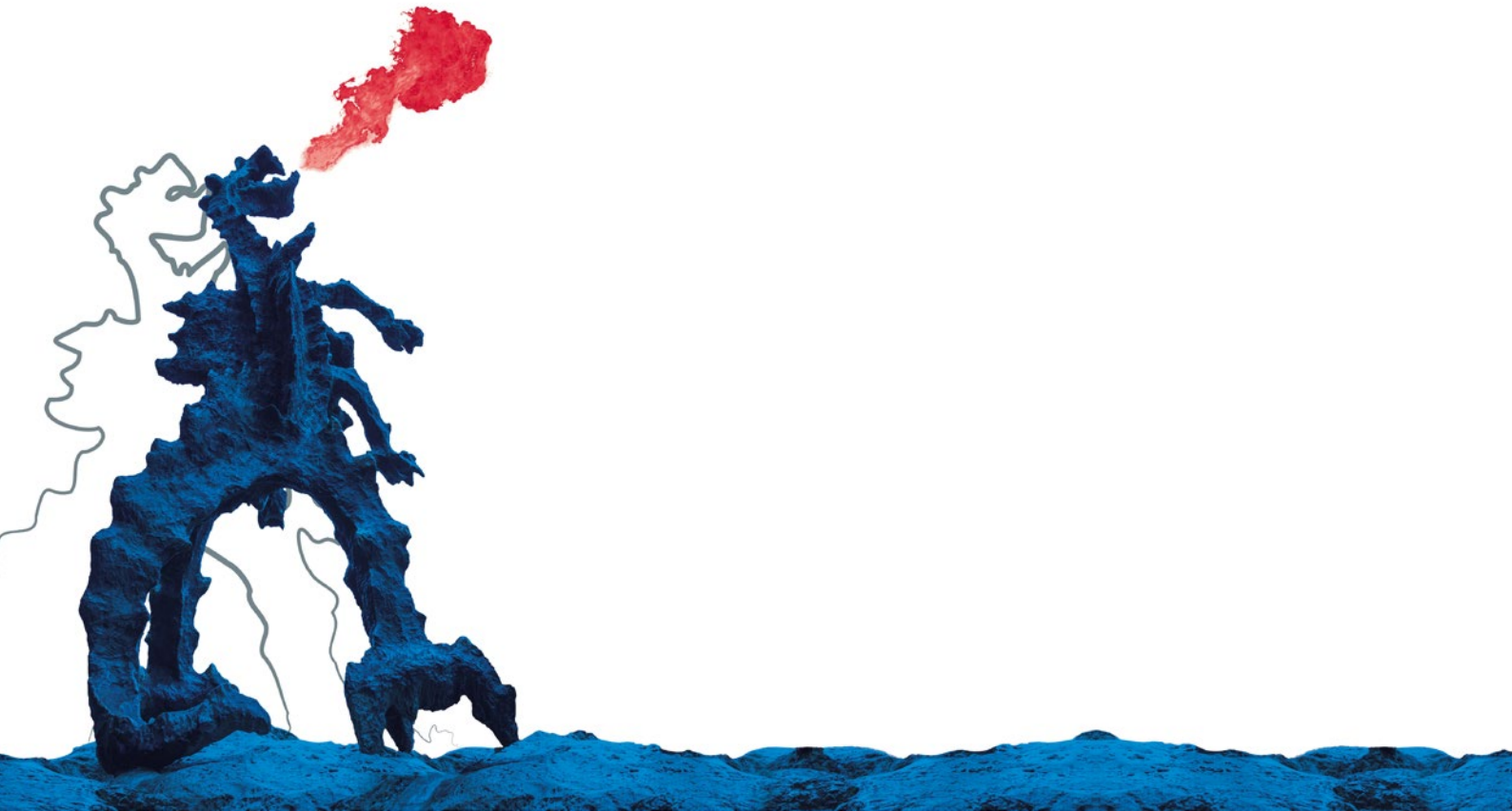
Tutor: Tomasz Sanak PhD with Team

BLOOD SEROLOGY WORKSHOP

Tutor: Joanna Tisończyk PhD

Blood typing is a very important test in transfusiology laboratory – it need to be done in order to be sure that patient who needs transfusion will receive the right blood units and the whole procedure will be safe. There are many blood group systems but the standard procedure involves blood grouping according to the ABO blood typing system.

Contents



Surgery

Jury:

Prof. Marek Sierżęga, MD, PhD
Prof. Antoni Szczepanik, MD, PhD
Prof. Piotr Wałęga, MD, PhD
Jerzy Skuciński, MD, PhD
Radosław Pach, MD, PhD
prof. Piotr Major, MD, PhD
Michał Romaniszyn, MD, PhD
Prof. Piotr Richter MD, PhD

Coordinators:

Jerzy Krzeszowiak, Gabriela Kanclerz

List of papers

Age differences in bariatric surgery results

Jan Maciej Kapała
University of Warmia and Mazury in Olsztyn

Tomasz Maroszczuk
University of Warmia and Mazury in Olsztyn

Trustee: Natalia Dowgiałło-Wnukiewicz MD, PhD

Introduction: Bariatric surgery is an effective method of treatment of obesity and its comorbidities. The patient's age seems to be a factor which classifies a patient for bariatric treatment and predicts the procedure's effectiveness.
Aim of the study: The purpose of study is to evaluate the outcomes of bariatric surgery with emphasis on differences between specific age groups of patients.
Material and methods: A total of 392 patients underwent sleeve gastrectomy in the Department of General, Minimally Invasive and Elderly Surgery in Olsztyn in 2013–2018 according to standard technique. Patients were surveyed during personal or telephone consultations. The research examined changes in patients' body weight 2 years after the surgery. Patients were assigned to 5 age groups, the limit of each was determined at 10-year intervals. The last group is an exception as it includes all persons over 60 years of age. Body mass index (BMI) and the percentage of excess body mass index loss (%EBMIL) were used to determine the results of obesity treatment.
Results: The follow up rate was 62,24%. The average initial BMI of 244 examined patients was equal to 43,84 kg/m^2 (σ=6,07 kg/m^2). A significant decrease of BMI to an average of 29,75 kg/m^2 (σ=5,53 kg/m^2) was noted in all age groups 2 years after the beginning of bariatric treatment. The BMI index determined for each group increased with the average age of patients. The%EBMIL determined for each group decreased with the average age of patients.
Conclusions: Bariatric surgeries are a good method of obesity treatment. The expected result of bariatric treatment decreases with the patient's age in a short follow-up period.
Key words: bariatrics, sleeve gastrectomy, age, BMI, %EBMIL

Prognostic role of preoperative serum glucose levels in patients undergoing radical prostatectomy for clinically localized prostate cancer

Elza Dzērve
University of Latvia, Faculty of Medicine, Riga, Latvia

Gunda Skudriņa
University of Latvia, Faculty of Medicine, Riga, Latvia

Trustee: Andris Ābele MD

Introduction: The prognostic role of preoperative serum glucose level in patients undergoing radical prostatectomy (RP) for clinically localized prostate cancer (PCa) is unclear.
Aim of the study: The aim of the study was to investigate if elevated serum glucose level predispose patients to higher risk of intraoperative bleeding and thus reduction of haemoglobin (Hb) levels after the surgery.
Material and methods: We retrospectively analyzed data from patients who underwent radical prostatectomy at our institution between January 2016 and December 2020. Preoperative and postoperative Hb levels as well as preoperative glucose levels were recorded. All patients were analyzed in two groups: (1) normal glucose levels (3.30–5.89mmol/L) and (2) glucose levels >5.9 mmol/L. Spearman rho correlation analysis was used to test the association between glucose levels and percentage reduction of Hb. A p-value of <0.05 was considered significant.
Results: Our study consisted of 114 men with median age M=65,9; SD=7,18 years. In the first group mean preoperative glucose level was M=5.21; SD=0,47 mmol/L and mean percentages Hb level reduction was M=18; SD=10%. In the second group mean preoperative glucose level was M=6.85; SD=1.20 mmol/L and mean percentage Hb level reduction was M=22; SD=10%. There were no statistical significance found between elevated glucose levels and reduction of Hb levels postoperative using Spearman rho correlation analysis in the first group (p=0.91) and in the second group (p=0.70).
Conclusions: Our study data suggests that elevated glucose levels does not increase intraoperative bleeding riks and thus reduction of Hb levels after RP for clinically localized PCa.
Key words: radical prostatectomy, prostate cancer, serum glucose, haemoglobin

Comparison of length of hospital stay between open retropubic radical prostatectomy and laparoscopic prostatectomy

Elza Dzērve
University of Latvia, Faculty of Medicine, Riga, Latvia

Trustee: Andris Ābele MD

Introduction: Minimally invasive procedures has been shown to decrease the length of stay and postoperative morbidity for numerous surgical procedures. We compared diferences in hospital stay between patients who underwent open retropubic radical prostatectomy and laparoscopic prostatectomy.
Aim of the study: The aim of this study was to evaluate if reduction of haemoglobin (Hb) levels extend hospital stay length in men after radical prostatectomy (RP) for clinically localized prostate cancer (PCa).
Material and methods: Between January 2016 and December 2020, 712 radical prostatectomies were performed at our hospital. We retrospectively analyzed length of stay as well as preoperative and postoperative Hb levels were recorded. All patients were analyzed in two groups: (1) Laparoscopic radical prostatectomy and (2) Open retropubic radical prostatectomy. Spearman rho correlation analysis was used to test the association between percentage reduction of Hb and length of hospital stay. A p-value of <0.05 was considered significant.

Results: Out of 712 men undergoing RP, postoperative Hb levels were measured in 114 men which further we included in our study. In the first group there were 39 men; the mean length of stay was M=6,69; SD=4.7 days and mean reduction of Hb was M=20; SD=12%. In the second group there were 75 men; the mean length of stay was M=8,16; SD=5.4 days and mean reduction of Hb was M=20; SD=9%. We found statistical significance between percentage reduction of Hb and length of hospital stay in group 1 (p=0,009), but no statistical significance in group 2 (p=0,5).
Conclusions: According to our study data hospital stay length in laparoscopic RP was shorten than open retropubic RP. Hb reduction extend hospital day length in men who underwent laparoscopic RP but it had no effect on men who underwent open retropubic RP. It shows percentage Hb loss in both laparoscopic and open retropubic RP were the same
Key words: radical prostatectomy, prostate cancer, haemoglobin, hospital stay length

Analysis of the factors influencing mortality and graft outcomes for kidney transplant patients with autosomal dominant polycystic kidney disease

Solomon Nelson-Ashley
Guy's, King's and St Thomas' School of Medical Education, King's College London

Trustee: Rhana Zakri MD

Introduction: This was a single centre study of 348 patients with autosomal polycystic kidney disease (ADPKD) who underwent at least one kidney transplant.
Aim of the study: Some patients underwent native nephrectomies, this can occur before, at the time of or after their transplant. There is no consensus in the literature regarding the best time for this operation, this study aims to investigate this and the outcomes of kidney transplant in ADPKD patients.
Material and methods: ADPKD patients who underwent a kidney transplant at Guy's and St Thomas' NHS Foundation Trust between 01/01/2000 to 14/11/2019 were included in the study. Clinical data was collected from electronic patient records. Data collected regarding native nephrectomies included patient demographics, histological findings, indication, operative technique and timing.
Results: The average age at transplant was 52 years (SD=12 n=348), 53.5% (n=344) of patients were male and 73.4% (n=342) identified as White-British. 4% (n=328) of patients received multiple transplants and 45.35% of transplants came from living donors. 23.2% (n=323) received at least one nephrectomy, nephrectomy was performed open in 13 cases, laparoscopically in 3 and hand assisted laparoscopically in 23. 38.67% (n=75) of nephrectomies were carried out prior to the patient's most recent transplant, 4% simultaneously and 49.33% post-transplant.
Conclusions: Most variables recorded did not have significant impacts on graft or patient survival. Nephrectomy did not significantly affect graft or patient survival. However, the long-term patient and graft survival rates of patients who underwent nephrectomy were greater than those who did not, this was not found to be significant.
Key words: Autosomal Dominant Polycystic Kidney Disease, Transplant Surgery, Renal Disease

Inguinal hernia transabdominal preperitoneal repair using Senhance robotic platform: first multicenter report from the TRUST registry

Artiomas Sirvys
Vilnius University, Faculty of Medicine, M. K. Ciurlionio str. 21, LT-03 101, Vilnius, Lithuania.

Trustees:
Narimantas Evaldas Samalavicius Professor, MD, PhD
Audrius Dulskas Associate Professor, MD, PhD

Introduction: Inguinal hernia repair is one of the most common surgical procedures worldwide, and over the last couple of decades minimally invasive techniques are being widely introduced in clinical practice. Minimally invasive transabdominal preperitoneal approach appears to have a reduced rate of complications, although it is more technically challenging compared to other methods. Presumably, robotic platform can ease work of a surgeon. So far, there was a lack of broad robotic inguinal hernia repair studies, thus the major strength of our study is the data form a largest, few centers from different countries covering registry.
Aim of the study: The purpose of this study was to provide feasibility and safety results of robotic inguinal hernia transabdominal preperitoneal (TAPP) repair.
Material and methods: Study includes 271 cases of robotic inguinal hernia TAPP repair using Senhance robotic platform from four different centers between March 2017 and March 2020. Key data points were intraoperative and postoperative complication rate, operative time, length of hospital stay, postoperative pain score and recovery time that were inserted in the TRUST registry.
Results: Study covers 203 cases of unilateral and 68 cases of bilateral inguinal hernia repairs. Mean operative time was 74±35 minutes (range 32-265 min.), while average docking and console time were 7±3 minutes (range 1–90 min.) and 48±28 minutes (range 11-225 min.) respectively. Postoperative complications occurred in five (1.85%) cases; intraoperative complication rate was five (1.85%). Average subjective patient-related pain score after the procedure was 3±1.9 (range 1–9), length of hospital stay was 39±28 hours (range 4–288 hours), and recovery time was 9.65±8 days (range 1–36 days).
Conclusions: Robotic inguinal hernia TAPP repair shows inspiring results. It is safe and feasible procedure. However, cost analysis should be performed in future to show the superiority over other techniques.
Key words: Robotic, inguinal hernia, TAPP, Senhance robotic platform

Is anastomotic leak following right hemicolectomy worse prognostic factor – a case matched analysis

Artiomas Sirvys
Vilnius University, Faculty of Medicine, M. K. Ciurlionio str. 21, LT-03 101, Vilnius, Lithuania.

Trustee: Audrius Dulskas Associate Professor, MD, PhD

Introduction: Colorectal cancer hits the top 3 of the most common types of cancer in the world. Anastomotic leak always was considered as devastating complication in colorectal surgery. Majority of studies deals with correlation of various factors on anastomotic leak, although there is no evidence of anastomotic leak impact on survival in case-matched method.
Aim of the study: The purpose of this study was to assess anastomotic leak (AL) effect on oncologic outcomes using case-matched analysis.
Material and methods: A retrospective analysis of patients treated at two major university hospitals was performed. 488 patients undergoing right hemicolectomy for cancer between 2014 and 2018 were included. Mean variables of the study were risk factors of anastomotic leak, overall survival and disease-free survival. Propensity score matching was performed by patient's age, comorbidities, pathological TNM and type of the procedure. Oncologic outcomes were analyzed before and after the matching.
Results: AL rate was 4.71%. Before case matching, mean overall survival (OS) in non-AL group was 60.7 (57.8–63.6 95% CI) months compared in AL group 30.4 (18.2–42.7 95% CI) months ($p<0.001$). Similar results were found assessing disease free survival (DFS): for non-AL group it was 58.7 (55.7–61.7 95% CI) months, for AL group – 29.6 (17.2–42.1 95% CI) months ($p<0.001$). After case matching, no statistically significant difference was found: mean OS in non-AL group was 48.4 (39–57.8 95% CI) months compared to 30.4 (18.2–42.7 95% CI) months in AL group, $p=0.082$; DFS in non-AL group was 46.9 (37.6–56.4 95% CI) months compared to 29.6 (17.2–42.1 95% CI) months in AL group, $p=0.11$.
Conclusions: Based on our results, anastomotic leak was not a marker of worse oncological outcome in patients undergoing right hemicolectomy for cancer, this finding is truly unique. Still, further randomized controlled trials should be performed on that topic to provide stronger evidence.
Key words: anastomotic leak, right hemicolectomy, propensity score matching, risk factor, overall survival

FLACS vs Conventional Phacoemulsification in hands of inexperience surgeon

Jurijs Kosnarevics
Univercity of Latvia faculty of medicine

Trustee: Igors Solomatins Professor, MD, PhD

Introduction: Femtosecond laser assisted cataract surgery (FLACS) is a present, relatively new cataract surgery method. In this work we compare the classical widespread cataract surgery method using phacoemulsification method and FLACS in young ophtalmic surgeon work.
Aim of the study: To compare benefits and limitations that is offered by femto laser platforms, in terms of phaco energy, phaco time, total U/S time, torsional time and effective phaco time, when using in complex with phacoemulsification system in the hands of inexperienced surgeon.
Material and methods: 50 eyes were treated using FLAC surgery. 50 eyes were treated using traditional manual phacoemulsification procedure.
- Mean patient age: 65 years.
- Age range: 26–83 years.
- Cataract gradation: 2–4 based on Pentacam nuclear grading system

Results: Mean endothelial cell loss was 133,8 cell/mm2 in the FLACS group ($p=0,001$). Mean endothelial cell loss in the phaco group, 277,7 cell/mm2 One posterior capsule rapture (in both groups). 100% cases had a complete capsulotomy in FLACS group. No "bridges" during femtocapsulorhexis. Statistically significant difference ($p<0,05$) was found in U/S total time, Phaco time and torsional time. Much higher U/S parameters are used during CPC. Statistically significant difference ($p<0,05$) was found in average Phaco Power and average Torsion amplitude. The movement of the phaco tip is significantly reduced in FLAC. Statistically significant difference ($p<0,03$) was found in mean EPT. >50% reduction of EPT in FLACS method.
Conclusions: FLACS surgery is safer in hands of inexperienced surgeon Results in lowering effective phacoemulsification time. In lowering U/S total time, Phaco time and torsional time. The movement of the phaco tip during FLACS is significantly reduced Precise capsulorhexis make FLACS suitable for premium IOL use. FLACS results in greater procedure efficiency. FLACS results in decreased post-op complications.
Key words: phacoemulsification, FLACS, cataract surgery, intra ocular lens

Preoperative assessment of plasma markers of nutritional status using insulin-like growth factor (IGF-1) and retinol-binding protein (RBP) indicators, and the risk of postoperative complications in the group of patients undergoing laparoscopic surgery due to colorectal cancer – pilot study

Grzegorz Torbicz
JU MC, Students' Scientific Group at 2nd Department of General Surgery

Piotr Tylec
JU MC, Students' Scientific Group at 2nd Department of General Surgery

Alicja Dudek
JU MC, Students' Scientific Group at 2nd Department of General Surgery

Trustees:
Magdalena Pisarska-Adamczyk MD, PhD
Mateusz Wierdak MD, PhD
Danuta Fedak MD, PhD

Introduction: Colorectal cancer is the second most common cancer in the world. In cancer, it is important to assess the nutritional status and select a group of malnourished patients, as malnutrition is a risk factor for postoperative complications.
Aim of the study: The aim of the study was to assess the nutritional status with the use of plasma markers of malnutrition such as IGF-1 and RBP, and the impact on postoperative parameters in the group of patients undergoing laparoscopic colorectal surgery.
Material and methods: Prospective study enrolled patients qualified to laparoscopic colorectal cancer surgery. Patients underwent clinical and biochemical evaluation one day before surgery. The IGF-1 and the RBP determinations were made by ELISA method. Postoperative parameters were: complications, mobilization on the first postoperative day (POD1), toleration diet on POD1, length of hospital stay (LOS). Study was supported by Grant of Students' Scientific Society of JUMC and approved by the Bioethics Committee.
Results: The study group consisted of 35 patients. On the basis of IGF-1, malnutrition was found in 16 patients, based on RBP malnutrition was found in 18 patients. There were no statistically significant differences between the groups (malnutrition vs proper nutrition) based on IGF-1 and RBP in terms of demographic and postoperative parameters. Using the univariate logistic regression model, we found no effect of malnutrition in terms of IGF-1 on postoperative complications (OR: 0.865 95%CI: 0.153–4.905; p=0.865) nor prolonged hospitalization (OR: 1.300 95%CI: 0.304–5.560; p=0.713). The univariate logistic regression model based on RBP found no effect of malnutrition on postoperative complications (OR: 1.538 95%CI: 0.271–8.718; p=0.613) nor prolonged hospitalization (OR: 1.091 95%CI: 0.256–4.648; p=0.903). Malnutrition showed no statistically significant impact on POD1 diet toleration and mobilization.
Conclusions: In our study, malnutrition identified with the use of IGF-1 and RBP markers seemed not to deteriorate postoperative outcomes in patients undergoing laparoscopic surgery for colorectal cancer.
Key words: colorectal cancer surgery, malnutriotion, serum markers, postoperative complications

Characteristics and management of liver abscess

Tatjana Ivanova
Riga Stradiņš University, Faculty of medicine, Latvia

Jeļizaveta Stepanova
Riga Stradiņš University, Faculty of medicine, Latvia

Trustees:
Artūrs Ozoliņš Associate Professor, MD, PhD
Jānis Gardovskis Professor, MD, PhD

Introduction: Liver abscess (LA) is a common intraabdominal pathology mostly caused by pyogenic infection. It may be potentially life-threatening without appropriated management. The aim of the present study was to determine clinical and laboratory characteristics of patients with LA as well as evaluate their therapy options.
Aim of the study: To perform the clinical analysis of the patients with LA as well as to evaluate the treatment options
Material and methods: This retrospective-prospective study included 51 patients with diagnosis of LA who were treated in Clinical University hospital in the time period from 2018 to 2020. The diagnosis was based on clinical symptoms, radiological and microbiological findings.
Results: Results showed that of the total number of patients with diagnosis of LA (n=51) – 49% were women and 51% were men; mostly among individuals with median age 68 (60–69). The clinical features were abdominal pain (73%), fever (71%), weakness (22%), vomiting (8%). The risk factors were detected for 55% of patients (n=28): biliary tract disease – 79%, diabetes mellitus type 2 – 43%, pancreatitis – 14% and alcoholism – 7%. The pyogenic liver abscess was found in 73% (n=38) and most frequently was induced by Klebsiella pneumoniae – 58% (n=22). The most common affected liver lobe was right – 57%. Solitar abscess was in 55% of cases and multifocal abscess – in 45%. LA was complicated by bacteriemia in 18% of cases. All patients received antibacterial therapy according to microbiological findings. Percutaneous drainage was used in 72,5% (n=37), surgical drainage – in 13,7% (n=7), both methods – in 9,8% (n=5) and only antibacterial therapy – 4% (n=2).
Conclusions: The present study may draw attention from clinicians to pay attention to LA in patients with non-specific symptoms for early diagnosis and successful therapy. LA treatment should involve multidisciplinary team with possibilities to do minimally invasive procedures as well as surgical operations.
Key words: liver abscess, risk factors, clinical characteristics, percutaneous/surgery drainage, antibacterial therapy

Efficacy evaluation of phage-based products as part of supporting therapy of oncological patients receiving EGFR inhibitors

Elina Abdeeva
I.M. Sechenov First Moscow State medical University (Sechenov University), Moscow, Russia

Trustee: Ekaterina Orlova Assistant Professor

Introduction: According to current data, the incidence of dermatological toxicity (DT) associated with treatment of cancers by inhibitors of tyrosine kinase receptors of epidermal growth factor (EGFR, epidermal growth factor receptor) reaches 90–95%. The most common methods of correcting acne-like manifesta-

tions of DT are the prescription of systemic antibiotic therapy, which is extremely undesirable for patients with metastatic liver diseases.

Aim of the study: To devel alternative methods for the prevention and treatment of acne-like manifestations of DT anti-EGFR therapy based on the study of skin microbiota composition.

Material and methods: Pustule culture using standard media at the time of inclusion and 2 weeks after the initiation of therapy. The study included 24 patients in the standard therapy scheme (STS) and 20 patients in the "Phagoderm" therapy scheme (STSP). Statistical data processing was carried out using PASW Statistics 18. Level of reliability was defined as $p \leq 0.05$ in all comparisons.

Results: At the end of this two-week study, we observed a 76% decrease in the microbial content in the first group and an 80% decrease in the second group.

Research limitations: In 33% of the patients in the control group due to a 1.5- to 2-fold increase in their liver transaminases (ALT, AST)

Conclusions: 1. DT complicated by secondary pyoderma requires the use of systemic antibiotic therapy associated with hepatotoxicity. This is particularly undesirable for patients with metastatic liver disease.2. Supporting therapy with phage -based products is effective and can be used alone (in mild cases), or in combination with other therapies (for moderate-to-severe cases)3.Thus, the dose of hepatotoxic systemic antibiotic therapy can be reduced

4. This approach allows continuing treatment of the main disease without impairing a patient's quality of life

Key words: dermatologic toxicity, skin adverse events, metastatic colorectal cancer, EGFD-inhibitors, phage-based therapy

Differences between implementation of ERAS protocol among patients undergoing primary and revisional bariatric surgery

Maciej Zając
Jagiellonian University Medical College, SKN II Katedry Chirurgii

Jakub Rusinek
Jagiellonian University Medical College, SKN II Katedry Chirurgii

Adrian Zagórski
Jagiellonian University Medical College, SKN II Katedry Chirurgii

Trustees:
Piotr Major Professor, MD, PhD
Tomasz Stefura MD

Introduction: Enhanced recovery after surgery (ERAS) is becoming an increasingly popular protocol in bariatric surgery. It has been demonstrated over several studies, that implementation of this procedure leads to positive outcomes following weight loss surgery, however there are differences between implementation of ERAS that have not been extensively researched. Revisional operations are conducted to achieve weight loss in patients that, following the primary procedure, have drastically gained weight.

Aim of the study: The aim of this study was to assess the differences in compliance to ERAS protocol in patients that underwent primary and revisional bariatric surgery.

Material and methods: Data concerning patients that underwent revisional bariatric surgery was gathered retrospectively, using records of one academic center. Secondly, using the characteristics of the patients in revisional group (sex, age, weight, comorbidities) we have identified by matching patients in the same databases that underwent primary bariatric surgeries. We analyzed data concerning the implementation of ERAS protocol, including preoperative, intraoperative and postoperative interventions.

Results: Patients were divided into two groups- group 1 (revision, n=33) and group 2 (primary bariatric surgery, n=30). We have analyzed 15 aspects of ERAS protocol. In all patients the following criteria were fully met: preoperative counseling and patient's education, laparoscopic surgeries, no nasogastric tubes postoperatively, postoperative oxygen therapy (4–6 l/min). On average, for patients undergoing revisional bariatric surgery, 11 points of ERAS protocol were fulfilled, while for patients undergoing primary procedure 11. Statistical analysis found no significant differences in compliance to ERAS protocol between the two groups (p=0.274).

Conclusions: Undergoing primary or revisional bariatric procedure does not affect the compliance to the ERAS protocol, there is no difference in the implementation of this protocol when it comes to conducting primary or revisional surgery.

Key words: ERAS, bariatric surgery, revisional surgery, compliance

Comparison of postoperative care and functional recovery among patients undergoing primary and revisional bariatric surgery

Jakub Rusinek
Jagiellonian University Medical College, Studenckie Koło Naukowe II Katedry Chirurgii Ogólnej

Maciej Zając
Jagiellonian University Medical College, Studenckie Koło Naukowe II Katedry Chirurgii Ogólnej

Adrian Zagórski
Jagiellonian University Medical College, Studenckie Koło Naukowe II Katedry Chirurgii Ogólnej

Trustees:
Piotr Major Professor, MD, PhD
Tomasz Stefura MD

Introduction: Bariatric surgery is a mean of drastically reducing weight for obese patients at high risk of mortality and morbidity that have failed in reaching adequate weight loss using different methods (lifestyle changes, diet, pharmacological treatment).

Revisional surgery is crucial element of treating secondary weight gain after undergoing the primary procedure.
Aim of the study: The aim of the study was to assess the differences in postoperative care and recovery of patients that underwent primary and revisional bariatric surgery.
Material and methods: Data concerning patients that underwent primary and revisional bariatric surgery was gathered retrospectively in one academic centre. Patients with revisional bariatric surgery were identified using the records of the Jagiellonian University Collegium Medicum Hospital (n=33). Using the same database patients who underwent primary bariatric procedure were found using case-control method, matching on the bases of preoperational weight, BMI, comorbidities, age and sex (n=30). Primary outcomes included differences in operative time, intraoperative adverse events, postoperative complications, reoperations, painkillers administration, length of stay, IV fluids administration.
Results: There were no statistically significant differences between patients in revisional vs primary group in operative time (139.45 min vs 123.00 min, p=0.249), postoperative complications (6.06% vs 0%, p=0.439), reoperations (6.1% vs 0%, p=0.493), hospitalization time (5 days vs 4 days, p=0.343), IV fluid administration during the operative day (680.30 vs 701.67, p=0.800). Analysis found significant difference in the rate of intraoperative adverse events (27.3% vs 6.7%, p=0.046) and administration of extra painkillers (OR= 15.52, p=0.002).
Conclusions: Data gathered shows, that there are no differences in postoperative care and functional recovery among patients undergoing primary or revisional bariatric surgeries.
Key words: bariatric surgery, revisional surgery, postoperative care, functional recovery

Recife score: A promising tool predicting complications after bariatric surgery

Nina Skalska-Dziobek
Students' Scientific Group at 2nd Department of Surgery, Jagiellonian University Medical College, Kraków, Poland.

Izabela Karpińska
Students' Scientific Group at 2nd Department of Surgery, Jagiellonian University Medical College, Kraków, Poland.

Gabriela Kanclerz
Students' Scientific Group at 2nd Department of Surgery, Jagiellonian University Medical College, Kraków, Poland.

Jakub Strojek
Students' Scientific Group at 2nd Department of Surgery, Jagiellonian University Medical College, Kraków, Poland.

Trustees:
Piotr Major Professor, MD, PhD
Michał Wysocki MD

Introduction: Bariatric surgery was proven to be the most effective and safe obesity treatment. However, co-morbid conditions in obese patients contribute to the incidence and severity of complications after intervention. Assessment of postoperative adverse outcomes, based on preoperative parameters seem to be crucial for surgeons in qualification process. Recently, Recife score has been proposed as new risk stratification tool for complications after bariatric surgery.
Aim of the study: To validate the performance of Recife score as the predictor of 30-day complications after bariatric treatment.
Material and methods: The retrospective analysis included patients after Roux-en-Y gastric bypass (RYGB) or sleeve gastrectomy (SG) who completed 1-year follow-up. The Recife score was calculated for each patient. The primary endpoint was 30-day postoperative complications including: gastrointestinal leak, gastrointestinal stricture, rhabdomyolysis, bleeding, wound infection, port site hernia and abscess. Optimal cut-off points for Recife score were chosen using Youden's index. The score relationship with adverse outcomes was assessed using uni- and multivariate logistic regression. Discrimination was evaluated by area under the receiver operating characteristic (AUROC) whereas calibration by Hosmer–Lemeshow test.
Results: Out of 185 patients enrolled in our study 109 (58.9%) were women whereas 76 (41.1%) were men with mean age 43 years. 78.4% of patients underwent SG whereas 21.6% of them had RYGB. The most common comorbidities were: hypertension (64.9%), diabetes (29.7%) and obstructive sleep apnea (27.0%). Postoperative complications occurred in 10.3% of patients. Recife Score above 4 was independent risk factor of adverse outcomes after operation in logistic regression analysis (OR 18.39; p<0.0001). It demonstrated outstanding discrimination (AUROC 0.91; p<0.0001) and statistically good calibration (p=0.56).
Conclusions: Recife score is an accurate tool in preoperative assessment of adverse outcomes after bariatric surgery. Further external validation of Recife score at the international level is needed.
Key words: risk scores, external validation, adverse outcomes, bariatric surgery

Clinical Profile and Treatment Strategies of HCC

Jeļizaveta Stepanova
Riga Stradiņš University, Faculty of medicine, Latvia

Tatjana Ivanova
Riga Stradiņš University, Faculty of medicine, Latvia

Trustee: Artūrs Ozoliņš Associate Professor, MD, PhD

Introduction: According to the Barcelona Clinic Liver Cancer (BCLC), the Child-Pugh (CP) score and imaging studies is used in the current staging system for hepatocellular carcinoma (HCC), which defines the optimum treatment management. It includes hepatic resection as well-accepted therapy for HCC, but many patients develop a cancer recurrence, what could be a poor prognostic factor for patients.
Aim of the study: The aim of this study was to provide the overview on clinical features and treatment of HCC.

Material and methods: This study included 48 patients with HCC who were treated in Pauls Stradiņš Clinical University hospital in the period starting from January 2015 till December 2020. The patients included in the study had a diagnosis of HCC based on radiological, histological criteria and/or biochemistry.
Results: The common age of HCC patients: 55–64 years, with a predominance of men (79%). The common risk factors were detected for 29 patients (n=29) – liver cirrhosis (25%), hepatitis C virus (HCV) infection (21%) and such combinations as liver cirrhosis+HCV infection (45%). Totally alpha fetoprotein was noticed in laboratory tests in 28 cases (n=28). The HCC staging based on TNM classification was performed for operated patients (n=23). CP score was perceived for 29 patients (n=29): 17 patients had Class A, 8 patients – Class B, 4 patients – Class C. Analysing total number of patients (n=48), 25 patients had received surgical intervention, among them – 2 transplantations, 23 patients had received non-operative treatment. The HCC recurred in 15 cases from the patients' group with primary operative therapy.
Conclusions: Concluding the data of our study, it is an extremely important to timely diagnostice and correctly classificate patients with HCC for the further choice of treatment strategy.
Key words: hepatocellular carcinoma, BCLC, CP score, cancer recurrence, alpha fetoprotein, treatment strategy

The assessment of acute abdomen treatment in COVID-19 infected patients

Nastassia Chakhovich
Jagiellonian University Medical College / medical faculty

Bartosz Roś
Jagiellonian University Medical College / medical faculty

Magdalena Niemirowska
Jagiellonian University Medical College / medical faculty

Oskar Sarzyński
Jagiellonian University Medical College / medical faculty

Zuzanna Oleniacz
Jagiellonian University Medical College / medical faculty

Mateusz Siwek
Jagiellonian University Medical College / medical faculty

Trustee: Mirosław Dolecki MD, PhD

Introduction: SARS-CoV-2 pandemic created a new, completely unexpected challenge for modern medicine. Physicians of all specialties, including surgeons, faced unknown problems with treatment of their patients.
Aim of the study: The aim of this study was to assess the results of treatment of COVID-19 patients with acute abdomen.
Material and methods: 56 patients, hospitalized between March and December 2020 in 2nd Department of General Surgery of University Hospital in Krakow were included in the study. Patients were admitted to the hospital due to acute abdomen. All of them had symptomatic COVID-19 infection, confirmed by SARS-CoV-2 qualitative test (samples obtained from nasopharynx). We analyzed causes of acute abdomen, modality, presence of morbidity, intensive care unit stays and mortality. Patients data were prospectively collected in electronic database and descriptive analysis was performed.
Results: 23 women (41%) and 33 men (59%) were included. Mean age of patients was 60,2 years old (range 21–95). The causes of acute abdomen were: paralytic ileus caused by peritonitis (27 cases), mechanical ileus (13 cases), gastrointestinal bleeding (12 cases), acute intestinal ischaemia and peritoneal bleeding (1 patient each). 27 patients were treated surgically – 17 laparotomies, and 9 laparoscopic cases. In 1 more case conversion was needed. 29 patients were treated conservatively. Morbidity occurred in 15 cases, including 12 cases of non-surgical complications and 3 cases (5,7%) of surgical complications. Admission to intensive care unit was necessary in 9 cases. Moreover, mortality included 10 cases (17,8%).
Conclusions: In addition to the health risks associated with COVID-19 infection, the acute abdomen that has developed in the course of this infection causes additional challenges for hospital and operating room staff. Little is known about the relationship of acute abdomen and COVID-19, which requires further research.
Key words: acute abdomen, peritonitis, COVID-19, surgical treatment

Comparison of species of microorganisms obtained from peritoneal cavity in patients with diffuse peritonitis with covid coinfection and without it

Magdalena Niemirowska
Jagiellonian University

Nastassia Chakhovich
Jagiellonian University

Bartosz Roś
Jagiellonian University

Zuzanna Oleniacz
Jagiellonian University

Oskar Sarzyński
Jagiellonian University

Mateusz Siwek
Jagiellonian University

Trustee: Mirosław Dolecki MD, PhD

Introduction: The pandemic time has an influence on treatment of patients with acute abdominal diseases. A lot of patients had been treated in home surrounding without exposure to hospital bacteria species.
Aim of the study: The purpose of the study is to compare species of microorganisms from covid-positive and covid-negative patients with diffuse peritonitis.
Material and methods: The study group is 16 patients hospitalized from March to December 2020 in Department of

General Surgery, Oncological Surgery and Emergency Medicine University Hospital in Cracow. All of them had symptoms of covid infection verified by nasal swab test. All of them had a bacteriological sample taken intraopertively. Comparison group consists of 80 patients hospitalised and operated in 2014–2019 with microbiological sampling done. The data base was created with Excel spreadsheet.

Results: 12.5% patients from the study group had sterile sample, 25% had 1 species of microorganisms, 12.5% had 2 species, 50% had 3 and more species. In comparison group 16,3% of patients had sterile sample, 1 species of microorganisms was presented in 35% patients, 2 in 20%, 3 and more in 28,7%. There were differences in numbers of microorganisms from each species in samples taken from peritoneal cavity from patients from study and comparison group.

Conclusions: There are differences between patients with and without covid infection in number of species of microorganisms gained from peritoneal cavity during surgery due to diffuse peritonitis.

Key words: diffuse peritonitis, covid, microorganisms, acute abdomen surgery, coinfection, pandemic time

Risk of Preterm Birth in Patients after Previous Cesarean Delivery

Agne Plume
Lithuanian University of Health Sciences, Kaunas, Lithuania

Trustee: Egle Savukyne MD

Introduction: Cesarean section (CS) scar is considered a risk factor for spontaneous preterm birth (PTB) in a subsequent pregnancy.

Aim of the study: To determine if a previous CS is a risk factor for PTB.

Material and methods: The study involved a retrospective analysis of 92 pregnant women who underwent first and second-trimesters ultrasound screening at Kaunas Klinikos Obstetrics and Gynecology department. Selection criteria included no history of PTB, singleton pregnancy and at least one previous CS. We analysed: maternal age, tobacco use, previous obstetric history, first and second-trimester cervical length, gestational age, mother's body mass index (BMI).

Results: The average age of patients was 33 (range, 22–41), 13 actively smoking, mean BMI of 25 (range, 18.7–36.9). Six preterm births occurred. Three of those were induced due to eclampsia. Mean gestational age was 38.77±2.62 weeks (range, 23–42 weeks). There was no statistically significant differences in maternal age 30.4±4.0 vs 32.8±4.4, (p=0.246), number of prior births 2.4±0.6 vs 2.8±0.8, (p=0.091), mother's BMI 27.6±4.2 vs 25.0±4.3, (p=0.148) between preterm and term birth groups. There was no statistically significant correlation between tobacco use and PTB (p=0.589). There was no statistically significant correlation between cervical length in the first (p=0.071) or second (p=0.804) trimesters and the fetuses' gestational age. Comparing subgroups of women after the previous two (n=21) and one CS (n=71), there was no statistically significant difference in PTB rate (p=0.130).

Conclusions: Maternal age, tobacco use, BMI, number of prior births and cervical length did not have any statistical impact on the PTB rate in selected patients. It is essential to mention that three of them were induced from six PTB in this group due to eclampsia, and the other three occurred to women after two previous CS. Observing this patient group, previous CS is not a risk factor for PTB.

Key words: Preterm birth, cesarean section

Internal Medicine

Jury:

Prof. Tomasz Guzik, MD, PhD
Prof. Tomasz Mach, MD, PhD
Prof. Maciej Małecki, MD, PhD
Karolina Piotrowicz, MD, PhD

Coordinators:

Aleksandra Ożga, Natalia Zmysłowska

List of papers

Renal manifestations in patients with tuberous sclerosis complex

Ewa Maria Sokolewicz
Medical University of Gdańsk

Trustees:
Alicja Maria Dębska-Ślizień Professor, MD, PhD
Agnieszka Tarasewicz MD, PhD

Introduction: Tuberous sclerosis complex (TSC) is a rare genetic disorder affecting many organs. Epilepsy, accompanied by structural brain abnormalities is the most common symptom in childhood. In adult TSC patients renal manifestations including angiomyolipomas (AML), renal cysts, renal cell carcinoma (RCC), are related to significant morbidity and mortality. Aim of the study: Aim of the study was to determine renal involvement in TSC adult patients.
Material and methods: In a cross-sectional study we analyzed 56 TSC patients (30 F, 26 M) in the mean age of 31.27±10.54 yrs. Based on the patient interview, blood and urine test and imaging methods, the prevalence of AML, renal cysts, RCC, hypertension, as well as kidney function (creatinine level, eGFR, proteinuria (urinary protein-to-creatinine ratio;uPCR), albuminuria (urinary albumin-to-creatinine ratio; uACR) were studied.
Results: 52/92,85% patients presented with AML, 30/53.57% had renal cysts, 1 was diagnosed with RCC. 9/16.07% patients underwent nephrectomy, as the result of AML complications. Creatinine level and eGFR were 1.0 mg/dL and 87.27 mL/min, respectively. Mean uPCR was 258.28 mg/g; uPCR>150mg/g was found in 16/28.57% and uACR>30 mg/g in 21/37.5% patients. Out of 56 individuals, 27 and 20 were diagnosed with chronic kidney disease (CKD) stages 1 and 2, respectively and 8 (14.28%) presented CKD stages 3–5 at the time of admission. 35.7% patients were diagnosed with arterial hypertension.
Conclusions: The prevalence of CKD3-5 as well as its potentially modifiable risk factors, hypertension, proteinuria, albuminuria in adult TSC patients is high. It is crucial to pay special attention to renal involvement in this set of patients, and avoid nephrectomy due to AML whenever it is possible. The importance of holistic approach in this group of patients is proved once again.
Key words: TSC, RCC, AML, CKD

Lipoprotein(a) is associated with severe outcomes and acute kidney injury in coronavirus disease 2019 (COVID-19): a prospective, observational study

Ivan Szergyuk
Jagiellonian University Medical College, Faculty of Medicine,

Maria Helena Santos de Oliveira
Federal University of Parana, Department of Statistics

Trustee: Brandon Michael Henry MD

Introduction: Thrombosis is a well-established complication of coronavirus disease 2019 (COVID-19). Lipoprotein(a) (Lp(a)) is a prothrombotic and anti-fibrinolytic lipoprotein whose levels may be increased in hyperinflammatory states. However, its role has not been clearly defined in the pathogenesis of COVID-19.
Aim of the study: To measure Lp(a) levels in a cohort of COVID-19 patients presenting to the emergency department, and explore its role in the pathophysiology of the disease, particularly development of severe acute kidney injury (AKI) given previous observations of secondary thrombotic microangiopathy (TMA) involving the kidneys.
Material and methods: In this prospective observational study, serum Lp(a) as well as clinical outcomes such as disease severity and development of severe AKI, were measured in 50 COVID-19 patients and 30 matched sick controls. Lp(a) was also assessed for correlation with a wide panel of inflammatory and hemostatic biomarkers.
Results: Serum Lp(a) did not significantly differ between COVID-19 patients and sick controls, though its concentration was found to be significantly associated with severity of COVID-19 illness, including acute kidney failure stage (r=0.380; p=0.007), admission disease severity (r=0.355; p=0.013), and peak severity (r=0.314; p=0.03). Lp(a) was also positively correlated with interleukin (IL)-8 (r=0.308; p=0.037), fibrinogen (r=0.344; p=0.032) and creatinine (r=0.327; p=0.027), and negatively correlated with ADAMTS13 activity/VWF:Ag (r=-0.335; p=0.021); but not with IL-6 (r=0.241; p=0.106).
Conclusions: Taken together, these results suggest that Lp(a) elevations are associated with adverse outcomes as well as enhanced risk of micro- and macro-thrombosis in patients with COVID-19, although this effect may be aggravated by a genetically determined hyper-Lp(a) state rather than any inflammation induced elevations. Moreover, secondary thrombotic microangiopathy-induced severe AKI may also be mediated by elevated Lp(a) and IL-8 via NETosis. Further research should focus on examining for associations between apo(a) gene polymorphisms and COVID-19 outcomes, as well as elucidating the precise mechanism of Lp(a) and IL-8 in the pathophysiology of COVID-19.
Key words: lipoprotein(a), coronavirus disease 2019, acute kidney injury, coagulopathy, thrombosis

The effect of vitamin D on the course of rheumatoid arthritis

Alīna Agule
Faculty of Medicine, Rīga Stradiņš University (RSU), Riga, Latvia

Trustee: Anda Kadiša MD

Introduction: Vitamin D deficiency has been implicated in pathogenesis of many autoimmune diseases, including rheumatoid arthritis (RA). It has been found to be associated with development of the disease, however, the evidence from epidemiological studies concerning the relationship between serum vitamin D concentrations and RA is inconsistent.
Aim of the study: This study aims to evaluate vitamin D impact on RA course and does RA treatment affect vitamin D level.

Material and methods: 80 RA patients were included and tested on RF, antiCCP, CRP and serum vitamin D level. Patients completed a questionnaire on the course of the disease and received treatment. Disease activity score 28 (DAS28) was calculated.
Results: Vitamin D level was insufficient in 40% of patients. 77.5% of RA patients were taking vitamin D supplements. The absence of supplementation of vitamin D was related to higher prevalence of vitamin D deficiency (p=0.001). Levels of vitamin D had negative correlation to swollen joint count (r= -0.096, p=0.39) and VAS score (r= -0.119, p=0.29). There was no correlation between vitamin D level and DAS28 (r= +0.035, p=0.759). The duration of vitamin D supplementation had negative correlation to CRP level (r = -0.105, p=0.418). All patients who did not report current joint pain were taking vitamin D supplements (p=0.05). Vitamin D insufficiency was associated with higher CRP (p=0.347), RF (p=0.728) and antiCCP (p=0.604) levels. The prevalence of vitamin D insufficiency was higher in those receiving NSAIDs (52%, p=0.229), glucocorticoids (52.4%, p=0.394) and adalimumab (47.1%, p=0.370) than other therapies. There was no association between vitamin D and stage of RA, as well as RA extra-articular manifestations.
Conclusions: The study data suggest that vitamin D level may affect RA activity and aggressiveness. Most medications used to treat RA do not significantly affect vitamin D depletion.
Key words: rheumatoid arthritis, vitamin D, anti-CCP, RF, DAS28

A first wave of COVID-19 in Vilnius University Hospital Santaros Klinikos: a retrospective observational study of hospitalized patients

Karolina Lubyte
Faculty of Medicine, Vilnius University, Lithuania

Trustees:
Ligita Jancoriene Professor, MD, PhD
Birute Zablockiene MD, PhD
Ieva Kubiliute MD

Introduction: Coronavirus disease (COVID-19) spread quickly across the globe and also affected Lithuania. While pandemic is still ongoing, it is important to analyze local outbreaks and learn from our practice to avoid healthcare disruption and deaths as much as possible.
Aim of the study: To determine basic characteristics of COVID-19 patients hospitalized in Vilnius University Hospital Santaros Klinikos (VUHSK) during the first pandemic wave.
Material and methods: This is a retrospective observational study of COVID-19 patients hospitalized from 13th March to 30th April, 2020, in VUHSK. Demographic, epidemiologic, clinical data were analyzed using descriptive statistics.
Results: Study included 179 hospitalized patients, 92 (51,4%) were women, median age – 49 years. The mean duration of hospitalization – 10 days. Most cases (65, 36,3%) were associated with travelling abroad. The main symptoms were feverishness (147, 82,1%), malaise and cough (116, 64,8% respectively), fever (99, 55,3%), shortness of breath (51, 28,5%). Almost half of patients (88, 49,2%) had comorbidities. The most common – essential arterial hypertention (75, 39,9%). Oxygen saturation <94% noticed in 82 (45,8%) patients. Basic laboratory tests showed lymphopenia in 57 patients (31,8%), 122 (68,2%) had elevated C-reactive protein levels. Radiologic features of pneumonia were noticed in 106 (56,4%) patients. General mortality rate was 2,8% (5 patients), 12 (6,7%) patients transmitted to intensive care unit. The main treatment was oxygen therapy and Hydroxychloroquine combination with Azithromycin (HCQ+AZI) (79, 44,1%) given experimentally, antibiotic therapy (73, 40,8%) for bacterial and low molecular weight heparins (89, 49,7%) for thrombotic complications.
Conclusions: During the first wave of COVID-19 in VUHSK respiratory insufficiency and pneumonia were noticed in half of hospitalized patients. While specific treatment was unavailable, HCQ+AZI was given just after clinical trials occurred. Medications with oxygen therapy were enough to achieve low proportion of critically ill, fatal outcomes. Further studies would be needed to compare the characteristics of the first and second waves.
Key words: COVID-19, hydroxychloroquine combination with azithromycin (HCQ+AZI), mortality, oxygen therapy, pneumonia

The relationship between chronic pain and mobility in multimorbid patients

Sedleckaitė Kotryna
Vilnius University, Faculty of Medicine, Vilnius, Lithuania

Simonavičiūtė Kotryna
Vilnius University, Faculty of Medicine, Vilnius, Lithuania

Trustees:
Gailiūtė Ieva MD
Simanauskas Kazys MD, PhD
Vencevičienė Lina Assistant Professor

Introduction: Although multimorbidity is a highly prevalent health problem and is not yet supported by evidence-based clinical recommendations, it is generally agreed that a goal of care and treatment for these patients is to ensure their ability to take care of themselves: mobility at home, opportunity to visit family and etc. Unfortunately, achieving this goal of treatment can be hampered by the chronic pain in multimorbid patients (MP).
Aim of the study: To investigate the relationship between chronic pain and the mobility in MP.
Material and methods: 72 (46 males, 26 females; 64,03±8,74 years) MP self-reported feeling chronic pain. Patients were divided in two groups: with pain (WP)(n=41; 57,7%) and without pain (WoP)(n=31; 43,7%). Both groups filled 2 questionnaires for mobility assessment. There were used the sum of the section "Mobility" of the questionnaire of Independence And Self-Care Maintenance (ISCMQ) (from 5 to 25 points) and the section "Mobility" (1 – no problems; 2 – some problems; 3 – confined to bed) of European Quality of Life Scale (EQ-5D-3L). Results were compared using Student t and Fisher Exact tests.

Results: WP comparing to WoP patients had higher results in ISCMQ (9,68 vs 8,48; p=0,044) and more often had some problems than no problems in EQ-5D-3L (76,7% vs 42,9%; p=0,004), there were no patients who were confined to bed.
Conclusions: The results showed that the MP with chronic pain had more often and bigger problems with mobility. To ensure comprehensive treatment of MP, it is important for the clinicians to pay attention to the presence of chronic pain and its impact on MP everyday life.
Key words: multimorbidity, chronic pain, mobility

Can depression and anxiety affect social life of multimorbid patients?

Kotryna Simonavičiūtė
Vilnius University, Faculty of Medicine, Vilnius, Lithuania

Kotryna Sedleckaitė
Vilnius University, Faculty of Medicine, Vilnius, Lithuania

Trustees:
Ieva Gailiūtė MD
Kazys Simanauskas MD, PhD
Lina Vencevičienė Assistant Professor

Introduction: Social life is a part of a person's time spent doing enjoyable things with others, which is a significant part of the general well-being. It is well established that multiple chronic diseases can increase suffering from anxiety and depression, which complicates the multicomplex care of these patients. Moreover, mental health issues can affect patients' socialization too. In this study we estimate the relationship between mental state and patient social life quality, raising the attention of clinicians for the possible comprehensive care factors for multimorbid patients.
Aim of the study: To evaluate the correlation between depression, anxiety and social life (SL) in patients with multimorbidity.
Material and methods: 72 (46 males, 26 females; 64,03±8,74 years) multimorbid patients filled two questionnaires. Hospital Anxiety and Depression Scale (HADS) (deteriorating from 0 to 21 points) was used to evaluate a presence of a patient's anxiety and depression. To assess SL criteria, the results of the section "social activities and communication" were summed up (deteriorating from 7 to 35 points) in a questionnaire of Independence And Self-Care Maintenance (ISCMQ). The results were analyzed using Shapiro-Wilk test, Spearman's correlation and linear progression with the SPSS program.
Results: Both anxiety (r=0.413; p<0.01) and depression (r=0.555; p<0.01) correlated with a patient's self-reported SL. Evaluating the strength of the effect of anxiety and depression to the SL, depression (β=0.433; p=0.004) compared to anxiety (β=0.155; p=0.292) was the good predictor.
Conclusions: Depression and anxiety affects multimorbid patient SL and this relationship taken into account can help clinicians to provide thorough care.
Key words: social life, depression, anxiety, multimorbid patient

Is there something new concerning the topical glucocorticosteroids therapy of adult patients with atopic dermatitis?

Emil Krzysztofik
Student Scientific Group, Department of Dermatology, Jagiellonian University Medical College, 31-501 Cracow, Poland

Aleksandra Gamrat
Student Scientific Group, Department of Dermatology, Jagiellonian University Medical College, 31-501 Cracow, Poland

Klaudia Miklusiak
Student Scientific Group, Department of Dermatology, Jagiellonian University Medical College, 31-501 Cracow, Poland

Przemysław Hałubiec
Student Scientific Group, Department of Dermatology, Jagiellonian University Medical College, 31-501 Cracow, Poland

Trustees:
Andrzej Jaworek MD, PhD
Anna Wojas-Pelc Professor, MD, PhD

Introduction: Application of topical glucocorticosteroids (TCS) is the standard management of mild-to-moderate atopic dermatitis (AD). The control of skin symptoms and frequency of adverse reactions determine the treatment outcome. Thus, identifying the factors that affects these aspects is of the clinical importance.
Aim of the study: The aim of the study was to assess the efficacy and adverse reactions of TCS treatment in adult patients with AD, and to identify the parameters that influence these entities.
Material and methods: We analyzed data from anonymous questionnaires collected from 150 patients with AD. Skin lesions severity was assessed by the dermatologist with the Three Item Score (TIS) system.
Basic characteristics included age, sex, education level and use of emollients, and Topical Calcineurin Inhibitors (TCI). The questionnaire about the TCS therapy course involved the TCS preparations used within the last 2 weeks, incidence and type of adverse reactions.
The measurement of total IgE (tIgE) concentration was done using the UniCAP analyzer.
Comparisons were performed by $\chi 2$ or 2-tailed Fisher test and U Mann-Whitney's test or Kruskall-Wallis' ANOVA (with post-hoc Dunn's test). The Spearmann's correlation coefficient was calculated to determine the relationship between continuous variables. Multiple regression was used to identify associations between used TCS and adverse reactions.
Results: Patients who applied hydrocortisone commonly presented a mild severity of skin lesions (TIS-Me:2,min.:1,max.:9,P>0.05) while those who used clobetasol or mometasone exhibited the most severe symptoms (TIS-Me:8,min.:1,max.:10,P<0.001 for both). Age and tIgE were independent indicators of disease

severity grade (r=0.33,p<0.001;r=0.73p<0.001). Application of clobetasol resulted in the highest number of local complications. The more frequent use of emollients was connected with the lower incidence of perioral dermatitis after TCS.
Conclusions: Use of superpotent TCS is associated with an extremely high risk of adverse reactions. The correct application of emollients and supportive use of TCI may reduce the complications of TCS and provide better outcomes of the treatment.
Key words: atopic dermatitis, topical glucocorticosteroids, emollients, topical calcineurin inhibitors, immunoglobulin E

Deep vein thrombosis as a COVID-19 complication

Ewa Kopyto
Student Scientific Society at the Department of Interventional Radiology and Neuroradiology, Medical University of Lublin

Trustee: Anna Drelich-Zbroja Professor, MD, PhD

Introduction: Covid-19 is a disease caused by SARS-CoV-2 coronavirus. In December 2019 the virus was first noticed in Wuhan, China, form where it spread throughout the world. Clinical symptoms of the infection are fever, non-productive cough and shortness of breath. The course of disease is mild in most cases, however it is associated with higher risk of severe complications in older patients suffering from chronic comorbidities. It was also noted that in patients with Covid-19 the probability of stroke increases more than in the other viral infectious diseases.
Aim of the study: The aim of this work is to emphasize the possibility of serious complications of COVID-19, including deep vein thrombosis.
Material and methods: SARS-CoV-2 infection was confirmed in 23 patients. Each of them experienced symptoms such as cough, fever and osteoarticular pain. None of the patients had previously received treatment for deep vein thrombosis. D-dimers were examined in each patient up to 5 days after the end of isolation and ultrasound of the lower limbs was performed up to 7 days from the end of isolation.
Results: In the study group, D-dimers ranged from 670 ng/ml to 7,000 ng/ml. Deep vein thrombosis was diagnosed in 3 patients, which is about 8% (2 in popliteal vein and 1 in deep veins of shin). In these patients D-dimers were 1,800 ng/ml, 3,200 ng/ml and 5,000 ng/ml.
Conclusions: Elevated D-dimer levels are common complication of COVID-19. Deep vein thrombosis occurs in approximately 8% of patients with elevated D-dimer levels and is not associated with the highest number.
Key words: COVID-19, complications, deep vein thrombosis

Cardiology, Invasive Cardiology, Cardiosurgery

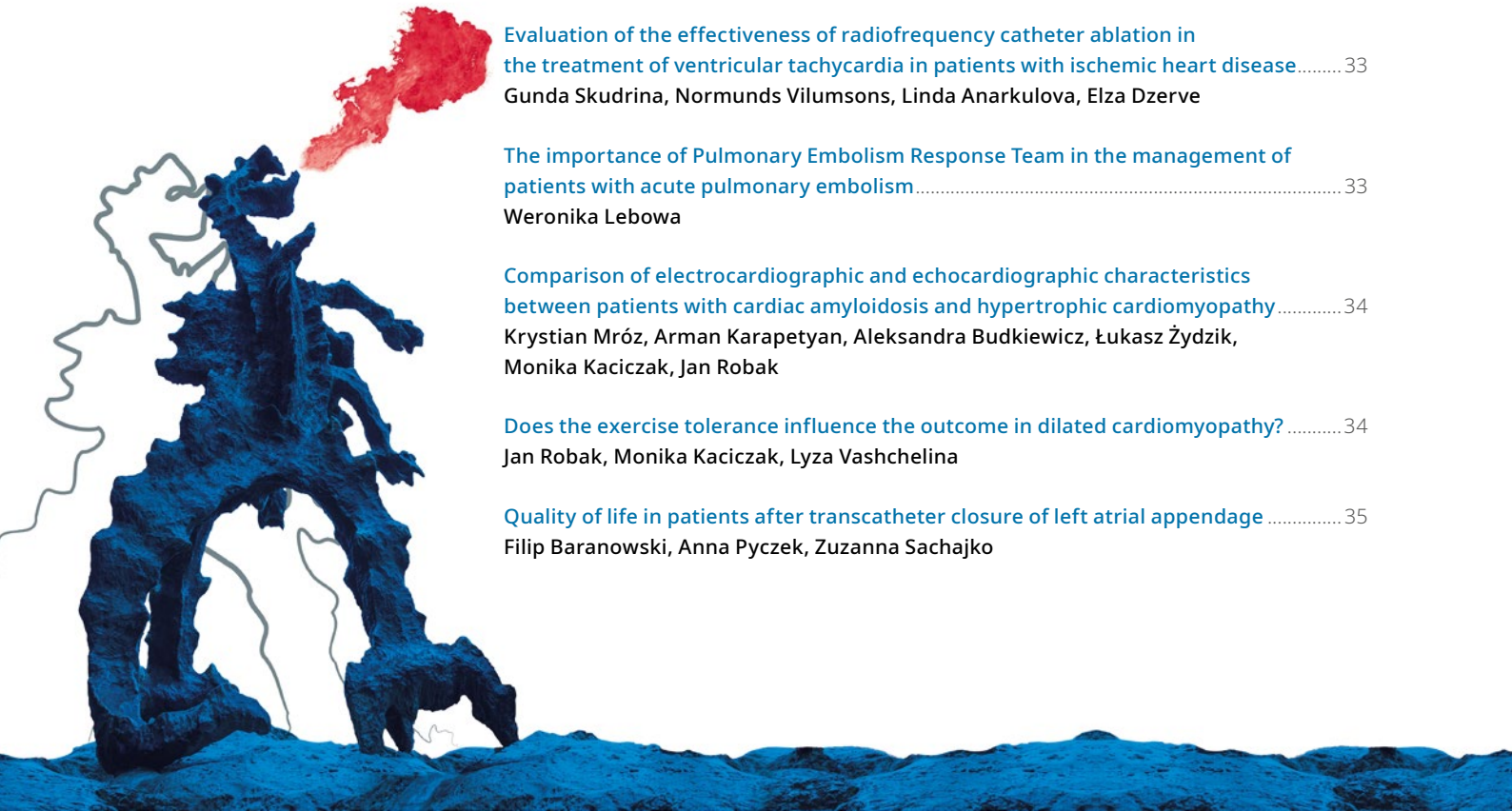
Jury:

Prof. Andrzej Surdacki, MD, PhD
Agnieszka Olszanecka, MD, PhD
Prof. Leszek Bryniarski MD, PhD
Karol Wierzbicki MD, PhD
Prof. Andrzej Gackowski, MD, PhD
Prof. Artur Dziewierz MD, PhD

Coordinators:

Aleksandra Karcińska, Jakub Furczyński

List of papers



Comparison of regadenoson and dipyridamole safety profile during stress myocardial perfusion imaging (MPI) study

Gabriela Kanclerz
Students' Scientific Group Medical Imaging in Cardiology, Department of Cardiac and Vascular Diseases, Jagiellonian University Medical College, John Paul II Hospital, Krakow, Poland

Jan Roczniak
Students' Scientific Group Medical Imaging in Cardiology, Department of Cardiac and Vascular Diseases, Jagiellonian University Medical College, John Paul II Hospital, Krakow, Poland

Weronika Zielińska
Students' Scientific Group Medical Imaging in Cardiology, Department of Cardiac and Vascular Diseases, Jagiellonian University Medical College, John Paul II Hospital, Krakow, Poland

Justyna Bączalska
Students' Scientific Group Medical Imaging in Cardiology, Department of Cardiac and Vascular Diseases, Jagiellonian University Medical College, John Paul II Hospital, Krakow, Poland

Błażej Cymerman
Students' Scientific Group Medical Imaging in Cardiology, Department of Cardiac and Vascular Diseases, Jagiellonian University Medical College, John Paul II Hospital, Krakow, Poland

Joanna Ożga
Students' Scientific Group Medical Imaging in Cardiology, Department of Cardiac and Vascular Diseases, Jagiellonian University Medical College, John Paul II Hospital, Krakow, Poland

Trustees:
Magdalena Kostkiewicz Professor, MD, PhD
Katarzyna Holcman MD, PhD
Agnieszka Stępień MD

Introduction: The pharmacological stress test with vasodilating agents is a useful diagnostic tool for patients with contraindications for the classical stress test provided by physical activity before the single-photon emission computed tomography myocardial perfusion imaging (SPECT MPI) study. Dipyridamole is currently the most often used agent. There is less experience regarding application of regadenoson, a selective α(2A) receptor agonist.
Aim of the study: The aim of this study was to compare the occurrence of the side effects of regadenoson and dipyridamole during SPECT MPI.
Material and methods: We conducted a retrospective observational evaluation of 283 consecutive patients who underwent pharmacological stress MPI study in the years 2015–2020 in the John Paul II hospital in Cracow. Patients were divided into two groups: those who have received dipyridamole (Group 1, n=240) and who have received regadenoson (Group 2, n=43). The collected data included the patient's characteristics, clinical data from the stress test, side effects (divided into mild: headache, vertigo, nausea, vomiting, dyspnea, chest discomfort, hot flushes, overall weakness, and severe: bradycardia, hypotonia, loss of consciousness).
Results: The patient's mean age was 70±9 years, mean BMI of 29.7±5.2, most of them were male (56%). Overall, there were 100 side effects observed, including 44 severe and 56 mild. Overall, 14 patients required reversal with aminophylline and 5 oxygen administration. There was no significant difference in the side effects occurrence between the groups (26.67% vs. 23.26%, p=0.693). The decrease of systemic blood pressure (SBP), diastolic blood pressure (DBP) and mean arterial pressure (MAP) was significantly greater in the Group 1 than in the Group 2 (p<0.05).
Conclusions: Regadenoson in comparison to dipyridamole did present a similar safety profile. However, the use of this agent has resulted in a lesser drop in SBP, DBP and MAP.
Key words: dipyridamole, regadenoson, cardiac stress test, myocardial perfusion imaging, single photon emission computed tomography

Changes of Ventricular Repolarization in Unstable Angina after Percutaneous Coronary Intervention

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

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

Trustees:
Daiva Emilija Rekienė MD, PhD
Jonas Jucevičius MD

Introduction: The repolarization of ventricles is reflected by QTc and JTc intervals in the 12 – lead ECG. Prolongation of these intervals can occur in unstable angina and is a risk factor for sudden death. PCI can reduce the duration of these intervals.
Aim of the study: To determine the impact of reperfusion on the course of QTc and JTc intervals in patients with unstable angina following PCI.
Material and methods: 25 patients presented first time with unstable angina and have not undergone PCI before were retrospectively enrolled in this study. Patients with history of previous ischeamic disease, cardiomyopathy, valvular heart defects or anemia were not enrolled. The measurements of QTc and JTc intervals were performed on 12 – lead ECG before PCI and 4-5 days after it. Data significance was evaluated using the Wilcoxon test. Results are stated as follows: median (min – max), p. The p < 0,05 was considered significant.
Results: The mean duration of QTc interval in lead V5 and JTc interval in leads V2, V5, V6 4–5 days after PCI was statistically

significantly shorter compared with values before PCI (QTc, V5 Before PCI: 420 (370 – 500) ms; After: 400 (320 – 450) ms; p = 0,036; JTc, V2 Before PCI: 310 (250 – 410) ms; After: 300 (220 – 360) ms; p = 0,041; V5 Before PCI: 320 (280 – 390) ms; After: 298,8 (240 – 340) ms; p = 0,033); V6 Before PCI: 320 (260 – 430) ms; After: 300 (240 – 330) ms; p = 0,01). In all other leads the mean duration of QTc, JTc intervals and QTd, JTd values 4–5 days after PCI were not statistically significantly shorter, but results demonstrated a high tendency to decrease.

Conclusions: Successful PCI has a beneficial effect on ventricular repolarization treating unstable angina 4–5 days after the intervention.

Key words: ventricular repolarization, QTc interval, JTc interval, unstable angina, percutaneous coronary intervention

Complex ventricular arrhythmias in dilated cardiomyopathy

Kaciczak Monika
Jagiellonian University Medical College, SSG of Heart Failure at Department of Cardiac and Vascular Diseases in John Paul II Hospital in Krakow, Poland

Robak Jan
Jagiellonian University Medical College, SSG of Heart Failure at Department of Cardiac and Vascular Diseases in John Paul II Hospital in Krakow, Poland

Vashchelina Lyza
Jagiellonian University Medical College, SSG of Heart Failure at Department of Cardiac and Vascular Diseases in John Paul II Hospital in Krakow, Poland

Trustees:
Dziewięcka Ewa MD
Rubiś Paweł Associate Professor, MD, PhD

Introduction: One of dilated cardiomyopathy (DCM) hallmark is a ventricular arrhythmia that may result in sudden cardiac death (SCD). However, the prevalence and significance of ventricular tachyarrhythmias (VT) in DCM is still not well investigated.

Aim of the study: Comparison of clinical profile and outcome between DCM patients with and without VT.

Material and methods: Between 2010–2018 we analysed records of 325 consecutive DCM patients (aged 53±13years, 81% male) with Holter monitoring. Between March and April 2019 information on patients' status were gathered after 47±30 months. VT was diagnosed if data were present in medical documentation, it occurred during ECG monitoring or device interrogation.

Results: 85 (26%) DCM patients had VT. Patients with and without VT did not differ in terms of symptoms duration (48±56 vs. 38±58months) and severity (NYHA: 2.6±0.9 vs. 2.5±0.9), presence of a left bundle branch block (28% vs. 21%) (all p>0.05). VT patients had lower heart rate (77±15 vs. 83±21bpm, p=0.049) and larger left ventricle (36±6 vs. 34±6mm/m 2, p=0.02). However, there were no differences in other chambers' dimension (basal diameter of right ventricle: 20±4 vs. 20±5mm/m 2, left atrium: 15±4 vs. 15±4cm 2 /m 2, right atrium: 12±4 vs. 12±4cm 2 /m 2) or systolic function of left (ejection fraction: 25±8 vs. 26±10%) and right ventricles (TAPSE: 18±4 vs. 18±5mm) (all p>0.05).Moreover, patients with VT had higher assessed pulmonary artery systolic pressure (36±17 vs.32±17mmHg), more frequent moderate or severe mitral regurgitation (46% vs. 61%) and higher NT-proBNP (3381±6264 vs. 3367±4257pg/ml) (all p<0.05). Finally, VT was found to be associated with a higher death rate during follow-up [20 (24%) vs. 34 (14%), p=0.046].

Conclusions: DCM patients with and without VT did not differ in terms of clinical settings and most echocardiographic parameters. However, patients with VT had larger left ventricle and higher NT-proBNP. Moreover, VT was found to be associated with higher mortality.

Key words: dilated cardiomyopathy, complex ventricular arrhythmias

Patient's knowledge of daily activities, need for information and quality of life after cardiac electronic device implantation

Szymon Góral
Students' Scientific Group at the Ist Department of Cardiology, Interventional Electrocardiology and Hypertension, Jagiellonian University Medical College, Krakow, Poland

Marta Teliżyn
Students' Scientific Group at the Ist Department of Cardiology, Interventional Electrocardiology and Hypertension, Jagiellonian University Medical College, Krakow, Poland

Trustee: Agnieszka Olszanecka MD, PhD

Introduction: Cardiac implantable electronic devices (CIED) such as pacemakers or cardioverter defibrillators prevent from dangerous heart arrhythmias. Insufficient postintervention education may result in behaviour that poses a threat to the proper functioning of the implanted device or, on the contrary, in incomplete recovery related to a restraint in daily activities.

Aim of the study: The evaluation of knowledge of daily activities' safety among patients with CIED and an analysis of the relationship between the state of knowledge and perceived postintervention quality of life.

Material and methods: The study group included 100 patients (57% men) with CIED, recruited in the University Medical Centre. Data on the patient's knowledge about daily activities, medical procedures and perceived quality of life was collected using a self-prepared questionnaire, which comprised 57 simple and multiple-choice questions.

Results: The analysed group included patients aged 28 to 97 (mean age 73). Amongst them, 26% either have not received or have not read the information booklet. 2/3 of them either need more information about their device (51%) or do not possess essential knowledge (15%). Patients raised concerns about performing daily activities such as: car-driving (38%), using seatbelts (14%), bathing (15%), returning to work (51%), climbing stairs (16%). Respondents reported anxiety when using computers (39%), mobile phones (51%), microwaves (73%), electric toothbrushes (51%), hairdryers and electric shavers (32%). Patients with improvement in quality of life were characterised by a higher level of knowledge concerning their device.
Conclusions: Patients with CIED will have to obtain knowledge of their medical condition, concomitant capabilities and limitations in order to undergo a fully successful rehabilitation. Comprehensive and easily comprehensible recommendation may play a key role in improving patients' quality of life, which is essentially the ultimate goal of any treatment.
Key words: pacemaker, cardiac implantable electronic devices, postintervention education, patient knowledge

Evaluation of the effectiveness of radiofrequency catheter ablation in the treatment of ventricular tachycardia in patients with ischemic heart disease

Gunda Skudrina
University of Latvia, Faculty of Medicine, Riga, Latvia.

Normunds Vilumsons
University of Latvia, Faculty of Medicine, Riga, Latvia.

Linda Anarkulova
University of Latvia, Faculty of Medicine, Riga, Latvia.

Elza Dzerve
University of Latvia, Faculty of Medicine, Riga, Latvia.

Trustee: Kaspars Kupics MD

Introduction: Ventricular tachycardia (VT) is a major cause of death in patients with ischemic heart disease. Implantable cardioverter-defibrillator (ICD) significantly improves survival in such patients; however there is increasing evidence that radiofrequency catheter ablation (RFCA) can significantly reduce necessity of ICD discharges.
Aim of the study: The aim of this research is to evaluate the efficiency of RFCA in the treatment of VT in patients with ischemic heart disease
Material and methods: This retrospective study was performed in the Latvian Cardiology Center of Pauls Stradins Clinical University hospital in the period from 2018 to 2020. Patients were selected from 18 to 90 years of age, with a history of VT and divided into two groups. Inclusion criteria were: history of ischemic heart disease, implanted ICD with adjunctive RFCA as a treatment of VT. Inclusion criteria for the control group were: history of ischemic heart disease and implanted ICD.
Results: The study population included 35 patients, 6 females and 29 males, with mean age of 63,29 (SD 9,67) years. We included 14 patients of ablation group, 5 females (35,71%) and 9 males (64,29%). The mean age was 66,71 (SD 10,35) years and the mean letft ventricular ejection fraction was 37,71% (SD 11,31). No recurrence of VT was observed in 85.7% (n = 12). The mortality rate 30 days after ablation was zero. In the control group, we included 21 patient, 1 female (4,76%) and 20 males (95,24%). The mean age was 61 (SD 10,35) years. The mean left ventricular ejection fraction was 36,67% (SD 10,11). VT paroxysms recurred in 33.33% of cases. There were statistically significant association between the both groups and the recurrence rate of VT ($\chi 2=4,21$; DF=1; p=0,040).
Conclusions: RFCA reduces the incidence of ICD shocks episodes in patients with history of myocardial infarction and VT.
Key words: ventricular tachycardia, radiofrequency catheter ablation, ischemic heart disease.

The importance of Pulmonary Embolism Response Team in the management of patients with acute pulmonary embolism

Weronika Lebowa
Jagiellonian University Medical College, Students Scientific Group for Pulmonary Circulation Diseases, Department of Cardiac and Vascular Diseases, John Paul II Hospital in Krakow, Poland

Trustee: Jakub Stępniewski MD, PhD

Introduction: Acute pulmonary embolism (PE) remains a significant cause of morbidity and mortality worldwide. Pulmonary Embolism Response Teams (PERT) have recently been introduced to improve care of patients with PE, but the benefits of their working are still unclear.
Aim of the study: The aim of the study was to compare PE treatment methods, hospitalization time and mortality, before and after PERT implementation in the referral PE center in Krakow, Poland.
Material and methods: We investigated data of patients hospitalized in our center between January 2016 and December 2020 with a diagnosis of acute PE. Specifically, we analysed the simplified Pulmonary Embolism Severity Index (sPESI), applied therapy, in-hospital mortality and length of hospitalization (LOS). As the PERT was introduced in our center in January 2018, we compared date of patients hospitalized before (pre-PERT) and after (post-PERT) this date.
Results: We included 287 patients with acute PE aged 66 ± 15 (51% females), 109 (38%) pre-PERT and 178 (62%) post-PERT implementation. Pre-PERT 71.6% of patients were scored ≥1 in the sPESI scale as compared to post-PERT (91.6%). Majority of patients were treated with anticoagulation only in pre- and post-PERT (96.2% vs 85.1%, p=0.01), but reperfusion treatments with the use of alteplase, catheter-directed therapies or surgical embolectomies were more commonly applied in the post-PERT period, than pre-PERT (1.8% vs 8.4%, p=0.02; 1.1% vs 4.2%, p=0.08; 0.9% vs 2.3%, p=0.40, respectively). The mortality rate

was 5.5% pre-PERT vs 1.7% post-PERT, p=0.07 and the LOS was on average 10 ± 8 days pre-PERT vs 9 ± 7 days post-PERT, p>0.05.
Conclusions: Implementation of the PERT in the investigated institution was associated with an increase in admission of more severely ill PE patients and more common use of advanced reperfusion therapies. The mortality rate in the post-PERT showed a favorable trend.
Key words: acute pulmonary embolism, PERT, pulmonary embolism response team, PE therapy, retrospective study

Comparison of electrocardiographic and echocardiographic characteristics between patients with cardiac amyloidosis and hypertrophic cardiomyopathy

Krystian Mróz
Department of Cardiac and Vascular Diseases of the Jagiellonian University in John Paul II Hospital in Cracow

Arman Karapetyan
Department of Cardiac and Vascular Diseases of the Jagiellonian University in John Paul II Hospital in Cracow

Aleksandra Budkiewicz
Department of Cardiac and Vascular Diseases of the Jagiellonian University in John Paul II Hospital in Cracow

Łukasz Żydzik
Department of Cardiac and Vascular Diseases of the Jagiellonian University in John Paul II Hospital in Cracow

Monika Kaciczak
Department of Cardiac and Vascular Diseases of the Jagiellonian University in John Paul II Hospital in Cracow

Jan Robak
Department of Cardiac and Vascular Diseases of the Jagiellonian University in John Paul II Hospital in Cracow

Trustees:
Katarzyna Holcman MD, PhD
Paweł Rubiś Associate Professor, MD, PhD

Introduction: Amyloidosis is a severe, rare disease, in which abnormally folded protein is deposited throughout the body. It leads to serious complications, such as heart failure. However, diagnostic differentiation from hypertrophic cardiomyopathy (HCM) may be challenging.
Aim of the study: To compare electrocardiographic and echocardiographic characteristics of patients diagnosed with cardiac amyloidosis (CA) and HCM.
Material and methods: We included 25 patients with CA and 32 consecutive HCM patients. They were diagnosed between January 2019 and December 2020. We compared clinical, echocardiographic, electrocardiographic and laboratory data, including levels of N-terminal pro-brain natriuretic peptide (NT-proBNP), creatinine, estimated glomerular filtration rate, alanine aminotransferase and aspartate aminotransferase measurements.
Results: Overall, CA patients had lower systolic blood pressure (CA: 113,8 ± 19 mm Hg vs. HCM: 129,5 ± 22,7 mm Hg; p=0,009), higher NT-proBNP levels (CA: 11 856,2 ± 24 439,7 pg/ml vs. HCM: 1152,3 ± 1421,9 pg/ml; p=0,00 015) and more frequently presented NYHA III/IV class (AC: 56% vs. HCM: 28,1%; p=0.033). Echocardiography revealed more increased posterior wall thickness (CA: 16,6 ± 4 mm vs. HCM: 12,9 ± 4 mm; p=0,001), right atrial area (CA: 25,3 ± 6,3 cm^2 vs. HCM: 17,2 ± 4,6 cm^2; p=0,000 006) and lower left ventricle ejection fraction (CA: 48,3 ± 12,7% vs. HCM: 64 ± 10,7%; p=0,000 005) in the CA group. Furthermore, in electrocardiography (ECG) in the HCM group atrial fibrillation (CA: 16% vs. HCM: 0%; p=0,019), abnormal heart axis (CA: 56% vs. HCM: 21,9%; p=0,008) and low QRS voltage (CA: 56% vs. 3,1%; p=0,00 001) were less often observed, unlike the features of left ventricle hypertrophy (CA: 0% vs. HCM: 96,9%; p=0,000).
Conclusions: Despite the similarities in the clinical presentation and myocardial thickening in echocardiography, patients with CA have significantly lower QRS voltage in ECG. Thus, the features of myocardial thickening in echocardiography in the group do not correspond with the ECG signs of hypertrophy.
Key words: hypertrophic cardiomyopathy, cardiac amyloidosis, electrocardiography, echocardiography

Does the exercise tolerance influence the outcome in dilated cardiomyopathy?

Jan Robak
Jagiellonian University, Medical College

Monika Kaciczak
Jagiellonian University, Medical college

Lyza Vashchelina
Jagiellonian University, Medical College

Trustees:
Ewa Dziewięcka MD
Paweł Rubiś Associate Professor, MD, PhD

Introduction: Dilated cardiomyopathy (DCM) is the main cause of heart failure (HF) in young adults and the primary cause of heart transplant (HTX). One of main symptoms of HF is exercise tolerance impairment (iET). It can be assessed with subjectively NYHA classification or objectively 6-minute walk test (6MWT).
Aim of the study: Comparison of HF profile and outcome between DCM patients with and without iET, and analysis of different iET classifications.
Material and methods: We prospectively analysed hospital records of 102 DCM patients (aged 45 years, 87,3% male) from 2020. 6 months after inclusion we assessed the presence of the composite endpoint (death, HTX, left ventricular assist device implantation [LVAD]). We defined iET as <350m in 6MWT.
Results: 19 (18,6%) patients had iET. They had more prevalent atrial fibrillation (42,2% vs 22,9%), higher resting heart rate (76,6±15,3 vs 70,5±13,0bpm), larger atria (left: 15,6±4,2 vs 13,4±3,8mm/m^2, right 11,9±3,8 vs 9,7±2,6mm/m^2]), lower haemoglobin (14,1±1,3 vs 14,9±1,6g/dl) and higher loop

diuretics'dosages (78,4±115,2 vs 30,6±35,6mg/d) (all p<0,05). There were no difference in self-reported HF symptoms (NYHA: 2,1±0,7 vs 1,8±0,6), both ventricles' sizes (LVEDd: 30,4±5,4 vs 31,9±4,6mm/m^2, RVOT 35,4±7,0 vs 35,1±5,6mm) and systolic function (LVEF: 31,0±11,8 vs 29,4±9,6%, TAPSE 19,7±4,3 vs 19,5±4,0mm), NT-proBNP (1277,0±1245,3 vs 1081,7±1522,2pg/ml), comorbidities' prevalence and implemented pharmacotherapy.

The composite endpoint was present in 3 (2,9%) patients (2 patients with iET, 1 patient without iET): 2 deaths, 2 HTX and no LVAD. In contrast to NYHA class (OR 21,87 [95%CI 1,69 – 282,60], p=0,02), 6MWT distance was not found to be prognostic parameter in DCM (OR 0,99 [95%CI 0,98 – 1,01], p=0,10).

Conclusions: DCM patients with and without impaired exercise tolerance did not differ in term off HF profile, including echocardiographic parameters and NT-proBNP. Furtherly, subjective NYHA classification was found to be more precise prognostic parameter than more objective 6MWT. However, further studies are required.

Key words: Dilated cardiomyopathy, heart failure, exercise tolerance impairment, six minute walk test, NYHA

Quality of life in patients after transcatheter closure of left atrial appendage

Filip Baranowski
Jagiellonian University Medical College / Faculty of Medicine

Anna Pyczek
Jagiellonian University Medical College / Faculty of Medicine

Zuzanna Sachajko
Jagiellonian University Medical College / Faculty of Medicine

Trustee: Monika Komar Professor, MD, PhD

Introduction: While oral anticoagulants remain the main strategy of prevention of thromboembolic events in patients with atrial fibrillation, left atrial appendage closure has become an alternative recently. Elimination of LAA is a procedure dedicated to patients with nonvalvular AF and contraindication to anticoagulation therapy.

Aim of the study: To determine the QoL in patients after transcatheter closure of left atrial appendage and to compare patients self-rating and echocardiography at 12 month follow-up.

Material and methods: 60 adult patients (mean age of 69,7 ± 8,5) with nonvalvular AF and contraindication to anticoagulation therapy, who underwent transcatheter left atrial appendage occlusion were analyzed. QoL was measured using the SF36 questionnaire. Scores were transformed to a scale of 0–100, where higher scores represent higher functioning. SF36q were repeated in all patients before procedure, 45 days, 3 and 12 months after procedure as well as transesophageal echocardiography (45 days after procedure) and transthoracic echocardiography (45 days, 3 and 12 months).

Results: The LAA device was implanted in all patients, one procedure was complicated by pericardial effusion. Transesophageal echocardiography 45 days after device implantation revealed minimal residual shunt in 4 patients (6,6%) which resolved at 3 month follow-up. TEE performed after 45 days showed thrombus on the device in 3 patients (5%). Anticoagulation therapy was prescribed and the clots dissolution was obtained at 12 month follow-up in all patients. All of the QoL parameters improved at 12 month follow up, compared to their baseline data. The mean SF36q scale increased significantly in 41 (68.3%) patients of mean 10,71 ± 6,1 after 12 month observation. The mean PCS increased significantly in 46 (76.6%) p<0.001 as well as the mean MCS in 39(65%) patients, p<0.001 at 12 months.

Conclusions: Transcatheter closure of LAA is a safe and effective procedure and caused significant improvement of QoL, measured by SF36 questionnaire at 12 month follow-up.

Key words: atrial fibrillation, quality of life, left atrial appendage, thromboembolic event

Prevalence of coronary artery disease risk factors among 70 years old female patients and myocardial perfusion defects in the single-photon emission computed tomography imaging (SPECT MPI).

Sebastian Goncerz
Students' Scientific Group Medical Imaging in Cardiology, Department of Cardiac and Vascular Diseases, Jagiellonian University Medical College, John Paul II Hospital, Krakow, Poland

Paweł Stępień
Students' Scientific Group Medical Imaging in Cardiology, Department of Cardiac and Vascular Diseases, Jagiellonian University Medical College, John Paul II Hospital, Krakow, Poland

Szymon Piróg
Students' Scientific Group Medical Imaging in Cardiology, Department of Cardiac and Vascular Diseases, Jagiellonian University Medical College, John Paul II Hospital, Krakow, Poland

Katarzyna Graczyk
Students' Scientific Group Medical Imaging in Cardiology, Department of Cardiac and Vascular Diseases, Jagiellonian University Medical College, John Paul II Hospital, Krakow, Poland

Zuzanna Kalarus
Students' Scientific Group Medical Imaging in Cardiology, Department of Cardiac and Vascular Diseases, Jagiellonian University Medical College, John Paul II Hospital, Krakow, Poland

Trustees:
Magdalena Kostkiewicz Professor, MD, PhD
Katarzyna Holcman MD, PhD
Agnieszka Stępień MD

Introduction: Over the last decades, there has been a significant increase in the proportion of elderly people in our society. Coronary artery disease (CAD) often has nonspecific clinical presentation among elderly women.
Aim of the study: The purpose of our study was to investigate myocardial perfusion disorders in single-photon emission computed tomography myocardial perfusion imaging (SPECT MPI) and the prevalence of cardiovascular risk factors in women aged 70 years or over.
Material and methods: We conducted a retrospective observational evaluation of 273 consecutive female patients who were referred for SPECT MPI, which was performed in the John Paul II Hospital in Krakow between 2003 and 2008 and were at least 70 years old at that time. The data was collected from medical documentation, including demographic data, clinical data, SPECT study results and CAD risk factors, namely obesity, smoking, diabetes mellitus, hypertension, hyperlipidemia, and positive family history of CAD.
Results: Overall, there were enrolled 273 women in mean age 74,6 ± 3,72. The studied population was divided into two groups depending on perfusion disorders detected by SPECT (Group 1- with perfusion defect, n=161; Group 2- without perfusion defect, n=112). Obesity (19,64% vs. 32,92%; p=0.02), higher BMI (27.46 vs. 28.32; p=0.09), previous myocardial infarction (10.71% vs. 24.22%; p=0.005) and cardiac revascularization procedures in the past (6.25% vs.20.5%; p=0.001) were significantly more common in the first group. There was no difference in prevalence of other investigated risk factors between groups.
Conclusions: Our study has concluded that nearly half of referred 70-year old women presented perfusion defects in SPECT. From assessed CAD risk factors obesity was associated with perfusion disorders in detected in SPECT MPI.
Key words: single-photon emission computed tomography, myocardial perfusion imaging, obesity, cardiovascular risk factors, coronary artery disease

Pediatric cardiac surgery service facing COVID-19 worldwide pandemic – single center experience

Julia Haponiuk-Skwarlińska
Medical University of Warsaw, Faculty of Medcine

Trustees:
Konrad Paczkowski MD, PhD
Maciej Chojnicki MD, PhD
Ireneusz Haponiuk Associate Professor, MD, PhD

Introduction: The SARS-CoV-2 infection, first diagnosed in China in December 2019, became a spreading worldwide pandemic, and seriously affected many areas of public health and systems of care. As the first case of COVID-19 was confirmed on 4th of March 2020 in Poland, National Health Found Institution recommended the limitation of elective surgeries from the 23rd of March until further notice. However, babies with congenital heart defects(CHD) continued to be born usually with the need of emergency surgery in a narrow period of time, to provide an effective result and prevent life-threating complications.
Aim of the study: The aim of this study is to investigate the effect of COVID-19 pandemic on congenital heart defects surgery program, and its institutional performance in pediatric cardiac surgery department.
Material and methods: Demographics, admittance and discharge, cardiac surgeries as well as final results were collected and compared between pandemic-free 2019 year(preCOVID group) and COVID-19 pandemic 2020 year(COVID group)
Results: The number of admissions to the department(942 patients in 2019, 978 patients 2020), monthly average number of cases(79 patients/month in 2019, 82 patients/month in 2020) and average time of hospital stay(M=3,36 in 2019, M=3,66 in 2020) did not show any significant difference(p=0.97). The pre-COVID number of cardiac surgeries was 218(102 with use of extracorporeal circulation[ECC], 216 non-ECC) similar to 221 during COVID year(94 with use of ECC, 127 non-ECC) (p=0,97). No significant difference was observed in terms of mortality scores and postoperative results between the two years. During the COVID year a strict safety precautions were instantly implemented at the department. No case of SARS-CoV-2 infection among patients or department staff was confirmed during COVID year. Statistical significance was assumed for P values of less than 0.05.
Conclusions: Congenital cardiac surgery program can be safely and effectively performed without restricted case volume, on the condition that appropriate safety precautions are conscientiously maintained during the pandemic period.
Key words: COVID-19, SARS-CoV-2, pediatric cardiac surgery, pandemic, institutional program

Does functional capacity depend on the left ventricle hypertrophy pattern in patients with hypertrophic cardiomyopathy?

Aleksandra Budkiewicz
Jagiellonian University Medical College

Łukasz Żydzik
Jagiellonian University Medical College

Arman Karapetyan
Jagiellonian University Medical College

Monika Kaciczak
Jagiellonian University Medical College

Krystian Mróz
Jagiellonian University Medical College

Lizaveta Vashchelina
Jagiellonian University Medical College

Trustees:
Aleksandra Karabinowska MD
Paweł Rubiś MD, PhD

Introduction: Hypertrophic cardiomyopathy (HCM) is a genetic heart disease characterized by left ventricle hypertrophy (LVH) unexplained by secondary causes. Asymmetrical septal hypertrophy (ASH) is the most common LVH pattern. Other types include concentric, apical or 2- or more segments-involved. Due to increased stiffness of the left ventricle and decreased cardiac output, HCM patients often report exercise intolerance, which impairs the ability to perform activities of daily living and worsens quality of life.

Aim of the study: We aimed to compare functional capacity in HCM patients with ASH and other patterns of LVH.

Material and methods: We included 65 consecutive HCM patients (mean age 52 ±15) enrolled between 2015 and 2020. The data were collected retrospectively based on medical records. Patients were divided into two groups according to the type of LVH – ASH (n=37, 57%) and non-ASH, including concentric, apical or 2–3 segments-involved (n=28, 43%). The following parameters were compared between the groups: NYHA class, systolic (SBP) and diastolic blood pressure (DBP), heart rate (HR), distance in 6-minute walk test (6MWT) and perceived exertion in Borg scale. Types of LVH were established based on echocardiographic measurements.

Results: The results show that none of compared parameters differed significantly between two groups. All patients (n=65) ASH (n=37; 57%) Non-ASH (n=28; 43%)
p-value
NYHA class 1,8 ± 0,8 1,8 ± 0,9 1,8 ± 0,8
p=0,9
SBP [mmHg] 130 ± 22 128 ± 21 134 ± 23
p=0,51
DBP [mmHg] 79 ± 16 78 ± 15 81 ± 18
p=0,76
HR [/min] 71 ± 13 73 ± 14 69±11
p=0,24
Distance in 6MWT [m] 405 ± 111 400 ± 103 411±121
p=0,22
Borg scale 2,8 ± 2,2 2,7 ± 2 3±2,4
p=0,71

Conclusions: Functional capacity was found not to be related to the pattern of LVH in HCM patients. Further research on larger group of patients is needed to confirm our results.

Key words: hypertrophic cardiomyopathy

Dentistry, Maxillofacial Surgery, Otolaryngology

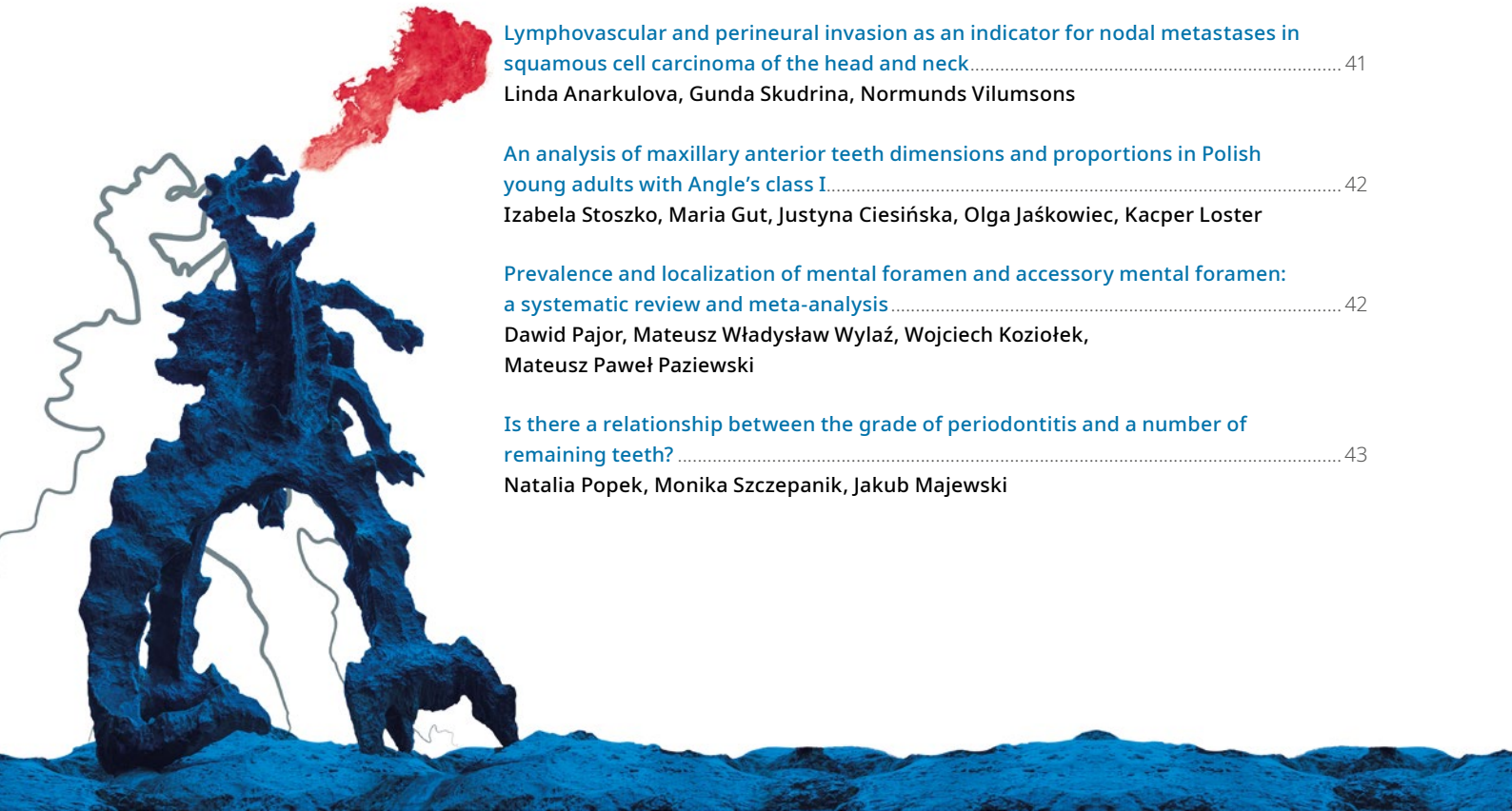
Jury:

Prof. Małgorzata Pihut, MD, PhD
Prof. Grażyna Wyszyńska-Pawelec, MD PhD
Prof. Marta Cześnikiewicz-Guzik, MD PhD
Krzysztof Gronkiewicz Md, PhD
Prof. Tomasz Kaczmarzyk MD, PhD
Dr hab. n. med. Iwona Gregorczyk-Maga, MD, PhD
Dr hab. n. med. Mariusz Szuta, MD, PhD

Coordinators:

Zuzanna Kazibudzka, Jakub Dziubek

List of papers



Influence of types of the mucosa of the alveolar process on the structure of the gingival cuff in the implant area

Volchok Anastasia
Belarusian State Medical University, Minsk, Department of Oral surgery, 4rd year student of the Dental Faculty

Ginko Kiril
Belarusian State Medical University, Minsk, Department of Oral surgery, 4rd year student of the Dental Faculty

Trustee: Shevela Tatiana Associate Professor, MD, PhD

Introduction: This paper represents the results of a clinical study on the comparative assessment of the mucous membrane types of the alveolar bone and the effect of their structure on the inflammatory reactions development around the dental implant. The results are given reasons to conclude that the connection presents between the development of mucositis and the anatomical structure of the mucous membrane in the dental implant area.
Aim of the study: comparison between a gingival cuff in the implant area in patients with different types of gingival mucosa structures.
Material and methods: 28 patients who had installed dental implants (the first stage of the operation) were monitored. And then the gingival cuff shaper was installed at the second stage of the operation. The mucous membrane was opened with a mucotome in the implant area after local anesthesia with a solution of ultracaine (1,7 ml; 4%).
Results: Analysis of the mucosal structure of the alveolar ridge showed that first type 1 was detected in 5 (17.9%) patients (in the region of the anterior maxilla – 3 (10.7%) and the region of premolars in the upper and lower jaw – 2 (7.1%). The second type was detected in 17 (60.7%) patients in the mandible in the molar region. The third type was found in 6 (21.4%) patients in the molar region of the maxilla.
Mucositis developed in most cases among patients with 3-rd type of mucous membrane around the gingival implant (5 people).
Conclusions: the type of mucous membrane of the alveolar bone affects on the formation of the gingival cuff in the area of the installed implant. The presence of a formed gingival cuff prevents microorganisms from entering the contact area and the development of inflammatory complications.
Key words: the mucous membrane, dental implant, mucositis

Influence of prolonged immersion in selected denture cleaners on mechanical properties of acrylic denture base

Monika Kluczewska
Jagiellonian University Medical College

Aleksandra Dziarkowska
Jagiellonian University Medical College

Trustee: Andrzej Gala MD, PhD

Introduction: Among prosthetic patients, elderly ones are the majority. Their age often correlates with the occurrence of dementia, cognitive and memory disorders. Apart from mechanical cleaning, chemical cleaning is crucial to maintaining optimal denture hygiene. Improperly used dental cleaning agents may have a negative effect on mechanical properties of the denture. Unfortunately, it is common for patients to store their appliances in cleaning agents for extended period of time.
Aim of the study: Presented research is designed to determine which substance is the least destructive for the surface of acrylic denture, during prolonged immersion time.
Material and methods: Heat-cured acrylic samples of two different brands were prepared according to manufacturer's instructions. Selected denture cleaning agents were: Corega Tabs, chlorhexidine, Listerine, vinegar, castor oil and hydrogen peroxide. Prepared specimens were immersed in chosen solutions. The control group was stored dry. Acrylic samples were tested after 8 hours of immersion (imitating patient's one-time negligence) and after 112 hours, which is an equivalent to 2 weeks of immersion for 8 hours a day (imitating notorious improper cleaning). During immersion, specimens were stored in thermostatic chamber. Instron, the universal testing machine, was used to conduct bend and tensile test. The results were subjected to statistical analysis.
Results: To a certain extent, all cleansing liquids had particular impact on the surfaces of the samples. Non-recurring, prolonged immersion had lower impact on the specimens than the repeated, prolonged one.
Conclusions: Patients struggling with proper use of cleaning solutions should be advised a denture cleaner that affects acrylic surfaces in the slightest. Based on our study, we were able to determine, for which solutions, immersion time must be obeyed.
Key words: denture, denture cleaners, acrylic, prosthetics, elderly patients

Prevalence and inheritance of ankyloglossia, a literature review

Alina Klavane
Riga Stradins University, Department of Therapeutic Stomatology

Trustee: Gundega Jakobsone Associate Professor, MD, PhD

Introduction: Ankyloglossia is a congenital condition that restricts tongue mobility. The restriction of lingual mobility can cause breastfeeding difficulties in neonates, change articulation and influence the dentofacial development.
Aim of the study: The study was aimed to investigate and synthesise the literature on the topic of
the prevalence and inheritance of ankyloglossia.
Material and methods: Requirements included in the PRISMA guidelines were used in the literature search. The following databases were used: PubMed, NCBI and ScienceDirect. The key-

words were related to Ankyloglossia inheritance, Ankyloglossia prevalence. No lower publication data limit was employed, the upper limit was January 2021. There were no language restrictions. Case-series and poor-quality cohort and case-control studies, expert opinion were excluded. The author was the only evaluator of the articles.
Results: One hundred sixteen studies were identified. The publication date was between 1975 and 2020. Thirty studies met all the inclusion criteria and were included in this review. Twenty-six records report, that prevalence of ankyloglossia varied between 0,1% to 46.3% in different populations. The prevalence numbers varied depending on publication date and the definition of ankyloglossia. Three records reported significant increase in the prevalence of ankyloglossia in the period between 2012 and 2016 compared to older data of the same populations. Two studies suggest X-linked inheritance. Four articles report that the cause of ankyloglossia might be mutations in coding region of the TBX22 gene. The finding has been challenged by one study. Eight studies reported significantly higher prevalence of ankyloglossia in males.
Conclusions: The prevalence of ankyloglossia varies depending on the definition of ankyloglossia and publication date. Ankyloglossia is more common in males than females, but the etiology and inheritance still need to be researched further.
Key words: ankyloglossia, tongue tie, inheritance, incidence, prevalence

Vascular tumors at the Department of Otolaryngology of the Medical University of Gdańsk – 8 years review

Krzysztof Koźmiński
Medical University of Gdańsk / SSC of Otolaryngology MUG

Paulina Mierzwińska
Medical University of Gdańsk / SSC of Otolaryngology MUG

Trustee: Wojciech Brzoznowski MD, PhD

Introduction: Vascular anomalies include two main groups: tumors and vascular malformations. This classification was created in 1982 by Mulliken and Glowacki and poses an important distinction as developmental defects and tumors exhibit different growth characteristics. Hemangiomas are the most common tumors in childhood, about 10% of them are revealed already at birth and even 70% of all hemangiomas are revealed in the first weeks of life. There is a tendency to occur more frequently in the population of girls than of boys. They are located in the head and neck in 60%. Vascular malformations are relatively rare and they are non-neoplastic lesions resulting from disturbances in the morphogenesis of vascular tissue. Vascular malformations can be venous, arterial, lymphatic and mixed. They are characterized by the dominant type of vascular canals.
Aim of the study: The main purpose of the study is to present information patients with vascular tumors hospitalized in the Department of Otolaryngology in Gdańsk.
Material and methods: The paper presents over 50 cases of vascular tumors appearing in the Department of Otolaryngology in Gdańsk over the years 2013–2020 and presents important information on their diagnosis and treatment, as well as demographic data.
Results: The group of hospitalized patients turned out to be representative of epidemiological data, however, there are relatively more adults (82%). The majority of patients are men (59%). Most of the cases pose in the blood vessels, but there are also lymphoid tumors.
Conclusions: The most common vascular tumors are haemangioma capillare and granuloma pyogenicum, and the most common treatment method is surgery. Vascular defects constitute a complex and highly variable group of head and neck masses, for which correct diagnosis is key to determining the treatment method.
Key words: hemangioma, treatment, vascular malformation, vascular tumors

Lymphovascular and perineural invasion as an indicator for nodal metastases in squamous cell carcinoma of the head and neck

Linda Anarkulova
University of Latvia, Faculty of Medicine, Riga, Latvia

Gunda Skudrina
University of Latvia, Faculty of Medicine, Riga, Latvia

Normunds Vilumsons
University of Latvia, Faculty of Medicine, Riga, Latvia

Trustee: Sigita Hasnere MD

Introduction: Squamous cell carcinoma of the head and neck (SCCHN) is the seventh most common carcinoma worldwide and is strongly associated with tobacco use, alcohol consumption and human papillomavirus (HPV). Risk factors for metastatic disease are advanced TNM, histological grade and lymph node status, as well as lymphovascular invasion (LVI) and perineural invasion (PNI). LVI has been associated with nodal metastases and both LVI and PNI plays important role in locoregional recurrence.
Aim of the study: To evaluate the association between nodal metastases and lymphovascular or perineural invasion.
Material and methods: A retrospective study included 30 patients with histologically diagnosed SCCHN and surgery as the primary treatment. The data were taken from Pauls Stradins Clinical University Hospital oncological council reports in year 2020. Age, gender, cancer localization, TNM staging and histological data were documented. Collected data were statistically analyzed in IBM SPSS Statistics 22.0. Association was determined by Pearson Chi-square test and was considered statistically significant at $p<0.05$.
Results: The mean age of the patients was 63,2 years (SD=12,3). There were 30% (n=9) females and 70% (n=21) males in this study. Nodal metastases (N+) were positive in 40% (n=12) cases

and in 60% (n=18) cases nodes were without metastases (N0). LVI was found in 53% (n=16) cases while PNI was found in 37% (n=11) cases. Both LVI and PNI was found in 13% (n=4) cases. There were 50% (n=8) LVI and 64% (n=7) PNI in nodes without metastases. No statistically significant relationship between nodal metastases and lymphovascular or perineural invasion was found (p>0.05).

Conclusions: In this study, there was no association between nodal metastases and lymphovascular or perineural invasion. Majority of patients without nodal metastases had positive LVI or PNI.

Key words: SCCHN, lymphovascular invasion, perineural invasion, nodal metastases

An analysis of maxillary anterior teeth dimensions and proportions in Polish young adults with Angle's class I

Izabela Stoszko
SSG of Occlusion Norms, Department of Prosthodontics, Jagiellonian University Medical College, Cracow, Poland

Maria Gut
SSG of Occlusion Norms, Department of Prosthodontics, Jagiellonian University Medical College, Cracow, Poland

Justyna Ciesińska
SSG of Occlusion Norms, Department of Prosthodontics, Jagiellonian University Medical College, Cracow, Poland

Olga Jaśkowiec
SSG of Occlusion Norms, Department of Prosthodontics, Jagiellonian University Medical College, Cracow, Poland

Kacper Loster
SSG of Occlusion Norms, Department of Prosthodontics, Jagiellonian University Medical College, Cracow, Poland

Trustees:
Jolanta Loster Associate Professor, MD, PhD
Aneta Wieczorek Associate Professor, MD, PhD

Introduction: Many studies on maxillary anterior teeth proportions were conducted on different populations, but none of them were performed in Poland. The knowledge about accurate teeth proportions regarding Polish population could be a guideline in teeth restoration or periodontal surgery.

Aim of the study: The aim was to assess the maxillary anterior teeth dimensions in young Polish population.

Material and methods: The study was a retrospective analysis of the data collected in 2011–2013 (study no. NN403 589 138 – the group of 260 young adults, volunteers from Poland, 17–19 y.o., both sexes). 237 plaster models were analyzed and measured using digital calipers. The analysis with excluding 33 models as a result of missing teeth or mechanical damage and choosing 131 models with Angle's class I for further analysis. The data was also compared to other methods of establishing esthetic smile such as Golden Proportion (GP) and Recurring Esthetic Dental proportion (RED) and statistically analyzed using Statsoft STATISTICA.

Results: For Polish population, the mean mesiodistal width values of the Upper Central Incisor and Upper Lateral Incisor equal 8,47mm ± 0,63 (RUCI – Right Upper Central Incisor), 6,53mm ± 0,74 (RULI – Right Upper Lateral Incisor), 8,48mm ± 0,66 (LUCI – Left Upper Central Incisor) and 6,52mm ± 0,70 (LULI – Left Upper Lateral Incisor). The proportion between Upper Central Incisor Width and Upper Lateral Incisor Width was established as 1.31:1 compared to GP (1.618:1). The mean width-to-height ratio of RUCI was determined as 91,0%. Intercanine width (ICW) mean value was determined as 38,30mm ± 2,56. RED proportion (RUCI:ICW) mean value, usually considered as 70%, was established as 73%.

Conclusions: Presented results can be a guideline for dentists restoring natural smile in Polish population.

Key words: maxillary anterior teeth, mesiodistal width, CIW, GP, RED

Prevalence and localization of mental foramen and accessory mental foramen: a systematic review and meta-analysis

Dawid Pajor
Jagiellonian University Medical College, Faculty of Medicine, Institute of Clinical Anatomy

Mateusz Władysław Wylaź
Jagiellonian University Medical College, Faculty of Medicine, Institute of Clinical Anatomy

Wojciech Koziołek
Jagiellonian University Medical College, Faculty of Medicine, Institute of Clinical Anatomy

Mateusz Paweł Paziewski
Jagiellonian University Medical College, Faculty of Medicine, Institute of Clinical Anatomy

Trustee: Krzysztof Andrzej Tomaszewski MD, PhD

Introduction: Mental foramen (MF) and accessory mental foramen (AMF) are considered to be crucial anatomical landmarks for maxillofacial surgical procedures. Particular attention should be paid to the possible occurrence of AMF during surgical procedures involving the mandible, in order to avoid neurovascular complications.

Aim of the study: To determine the prevalence and of MF and AMF on both sides of the mandible in overall population.

Material and methods: Articles were selected from databases (PubMed, Embase, ScienceDirect, Web of Science, Google Scholar) in which the main objective was to evaluate the prevalence of MF through assessment in situ, panoramic radiography, CT or CBCT. The level of statistical significance was set at $P \leq 0.05$.

Results: 164 articles were enrolled in the analysis. The mean pooled prevalence of AMF was examined in studies comprising a total of 15 732 mandibles. It was present in 7,3% of the cases ($p<0.001$, 95% CI: 6.3–8.4%). MF was present in 99,8% out of

19 132 mandibles. Only 0.02% of MFs were unilateral, but it was not statistically significant (p=0.999).
Conclusions: In conclusion, we found AMF to be rather prevalent structure. Information about MF and AMF presented in the study emphasize that clinicians must be acutely aware of this anatomical variation and plan treatment for each patient individually with prior use of CBCT or panoramic radiography in order to perform safer maxillofacial procedures and avoid complications such as difficulty in obtaining anesthesia or nerve injury.
Key words: accessory mental foramen meta-analysis

Is there a relationship between the grade of periodontitis and a number of remaining teeth?

Natalia Popek
Student Research Group, Chair of Periodontology and Clinical Oral Pathology, Faculty of Medicine, Jagiellonian University Medical College, Kraków, Poland

Monika Szczepanik
Student Research Group, Chair of Periodontology and Clinical Oral Pathology, Faculty of Medicine, Jagiellonian University Medical College, Kraków, Poland

Jakub Majewski
Student Research Group, Chair of Periodontology and Clinical Oral Pathology, Faculty of Medicine, Jagiellonian University Medical College, Kraków, Poland

Trustees:
Zuzanna Oruba MD, PhD
Tomasz Kaczmarzyk Associate Professor, MD, PhD

Introduction: Periodontitis is a multifactorial inflammatory disease characterized by a progressive destruction of the tooth-supporting apparatus. According to the new Classification of Periodontal and Peri-Implant Diseases and Conditions (2017) the biologic features of the disease, including the rapidity of its progression, are reflected in three-stage grading system. One of the criteria to determine the grade of periodontitis is the ratio of radiographical bone loss and age (RBL/age).
Aim of the study: The aims of the present study were to: 1) evaluate the distribution of grades of periodontal disease among the sample population of adult patients and to 2) determine whether there is a correlation between the number of remaining teeth and the periodontitis grade.
Material and methods: The retrospective study was carried out on orthopantomograms (OPGs) of adult patients randomly selected from the archives of Dental University Clinic in Kraków. The number of remaining teeth and RBL was evaluated for each OPG. RBL was estimated as a percentage of root length not surrounded by alveolar bone at the site of the most extensive loss. Third molars were excluded from the analysis. The ratio of RBL and age was calculated to determine the grade which was classified as A for the value of < 0.25; B for 0.25 – 1.0 and C for > 1.0.
Results: OPGs of 182 patients (66 males, 116 females) were evaluated. The majority of patients presented with grade B (n=97), followed by grade A (n=65) and C (n=20). The number of remaining teeth was decreasing with the increasing grade. Patients with grade A (n=65) had an average of 24.6 teeth; grade B (n=97) – 21 teeth and grade C (n=20) 20 teeth.
Conclusions: Patients with higher grades of periodontal disease are more prone to loose their teeth. It is important to identify those groups of patients to implement early periodontal treatment.
Key words: periodontal status, periodontitis grade, bone loss/age ratio

Psychiatry, Neurology, Neurosurgery

Jury:

Prof. Stanisław Kwiatkowski,MD,PhD
Jeremiasz Jagiełła, MD, PhD
Borys Kwinta, MD, PhD
Michał Mielimąka MD,PhD
Prof. Agniesza Słowik, MD, PhD
Aneta Myszka, MD

Coordinators:

Maria Naruszewicz, Juri Urbanowicz

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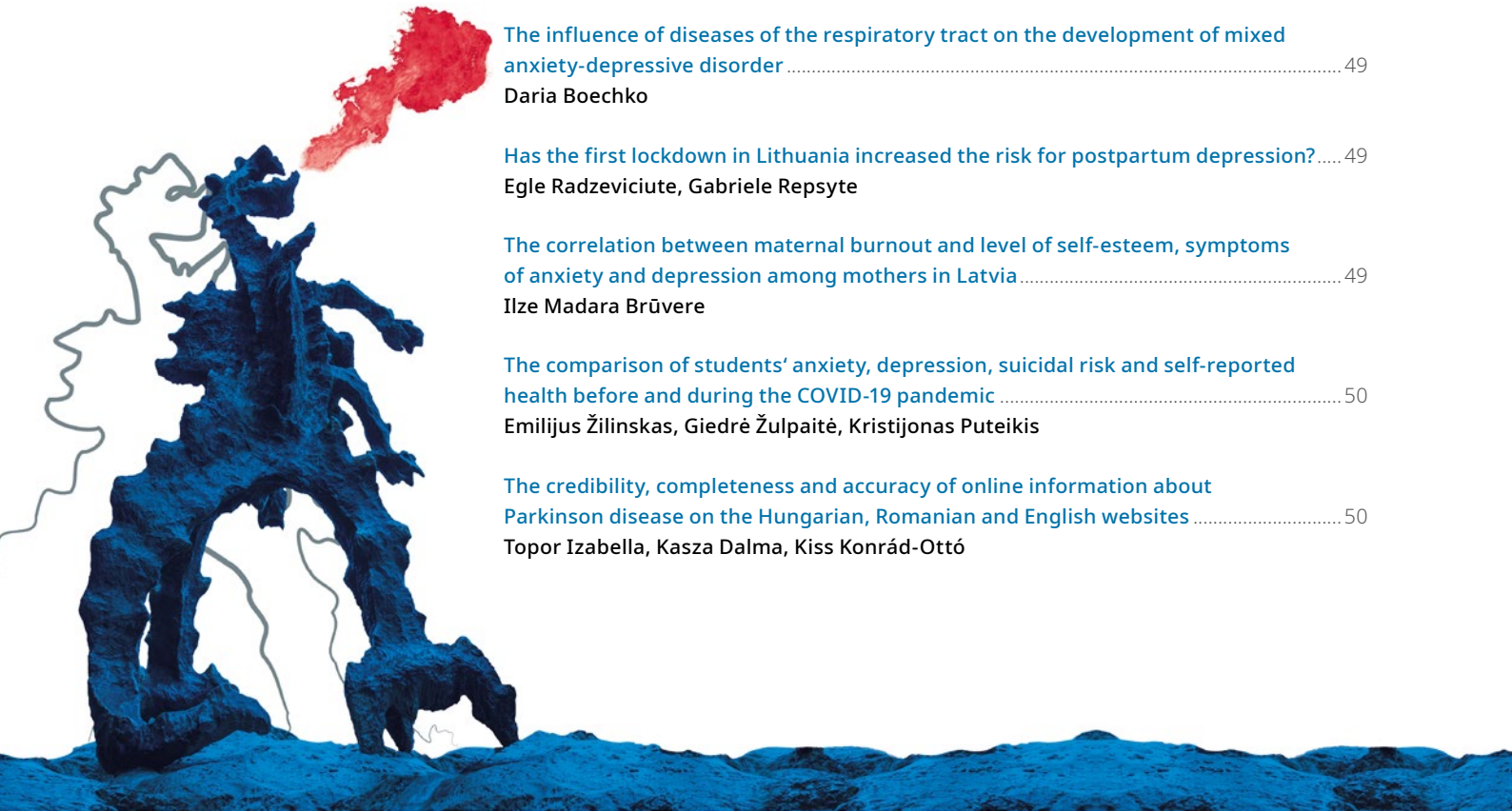


Individualised assessment of primary central nervous system lymphoma: MRI features for prediction of clinical outcome

Kazimieras Melaika
Vilnius University, Faculty of Medicine

Monika Orvydaite
Vilnius University, Faculty of Medicine

Trustee: Zilvinas Chomanskis MD

Introduction: Primary Central Nervous System Lymphoma (PCNSL) is defined as an aggressive, rare, mostly diffuse large B-cell (DLBCL) histological type lymphoma without dissemination outside the CNS. Current PCNSL assessment models lack accuracy, therefore certain magnetic resonance imaging (MRI) characteristics could provide a more objective and individualised assessment of the disease.
Aim of the study: We aimed to identify certain PCNSL MRI characteristics and evaluate relation with clinical outcome and the aggressiveness of the disease.
Material and methods: Cases of immunocompetent adults diagnosed with PCNSL were retrospectively analysed. Clinical data including age, sex, immunologic status, biopsy results, treatment method, and outcome were obtained from medical records. The number of lesions, deep regions involvement and ventricles infiltration were evaluated analysing MRI images. Slicer 3D software was used to calculate the total volume of the tumour tissue. $P < 0.05$ (two-sided) was considered to be statistically significant. Descriptive statistical analysis was completed using RCommander software.
Results: In total, 30 patients (average age 61.08, SD=9.47 years) were included in the study, 60.00% (n=18) of them being female. Analysing head MRI single lesions were detected in 60.00% (n=18) of cases, whereas two lesions, and three or more lesions accounted for 16.67% (n=5) and 23.33% (n=7) of cases respectively. Lateral ventricles and basal ganglia invasion were observed in 30.0% (n=9) patients. Wider dissemination was associated with an increased risk of death (OR=2.22). The average tumour tissue volume was 15.69 cm^3 (SD=11.45). Tumour progression was observed in 26.7% (n=8) patients with an average time of 39.9 months (SD=31.23) after the first line treatment. Death occurred in 23.3% (n=7) of the cases, 71.43% (n=5) of them due to the tumor progression.
Conclusions: Single lesions in the head MRI were detected most often. The involvement of ventricles and/or basal ganglia is associated with higher mortality and more aggressive course of the disease.
Key words: PCNSL, DLBCL, MRI characteristics, individualised assessment

Healthcare workers' concern about workplace violence and applied prevention, intervention and postvention measures and their effectiveness in Rokiskis mental institutions

Agnė Skvarnavičiūtė
Lithuanian University of Health Sciences

Dominyka Martinėlytė
Lithuanian University of Health Sciences

Trustee: Benjaminas Burba MD

Introduction: Violence in the workplace, most commonly experienced in the healthcare sector, is a global problem and a cause for concern. Educating and training employees on the prevention, intervention and postvention of violence at work is essential to ensure workplace violence.
Aim of the study: To find out the healthcare workers' concerns about workplace violence and the applied violence prevention, intervention and postvention measures and to evaluate their effectiveness in Rokiskis mental institutions.
Material and methods: The study was based on anonymous questionnaires and comprised healthcare workers of 2 Rokiskis mental institutions. Statistical analysis of 58 questionnaires was performed using the data collection and analysis software package SPSS 22. The interdependence of categorical variables was assessed by the chi – square ($\chi 2$) criterion and Kendall correlation analysis.
Results: The majority of respondents (46.6%) mentioned that they are concerned about violence in their current workplace. We obtained that more employees who work in shifts (62.5%) compared to employees that do not work in shifts (26.9%) reported that they are concerned about violence in their workplace (p=0.006). In addition, more respondents who had experienced physical violence claimed that they are concerned about violence in the workplace (86.2%) compared with those who claimed not to be concerned (13.8%) (p=0.032). 91.4% of respondents answered that preventive measures are applied, 93.1% of respondents reported knowing interventional measures, only 77.6% of respondents answered that postvention measures are applied. 9.8% answered that preventive, interventive and postventive measures work well, 23.6% answered that they work, 36.8% think that they are neither ineffective nor effective, 29.6% that they are ineffective or completely ineffective.
Conclusions: Almost half of the respondents answered that they are concerned about workplace violence. Ninety per cent of respondents answered that preventive, interventive and postventive measures are applied in their workplace, but only ten per cent of respondents think that the measures work well.
Key words: workplace violence, prevention, intervention, postvention.

Neurosurgical and urological outcomes of untethering procedure in TCS in children

Wiktoria Wolny
Jagiellonian University Medical College, Department of Pediatric Neurosurgery, Cracow, Poland

Jerzy Skuciński
Jagiellonian University Medical College, Department of Pediatric Neurosurgery, Cracow, Poland

Michał Cioch
Jagiellonian University Medical College, Department of Pediatric Urology, Cracow, Poland

Jacek Kotuła
Jagiellonian University Medical College, Department of Pediatric Urology, Cracow, Poland

Trustees:
Olga Milczarek MD, PhD
Barbara Dobrowolska-Glazar MD, PhD

Introduction: Tethered cord syndrome [TCS] is a neurological condition caused by rigid attachments of the spinal cord to surrounding tissues. The extension results in metabolic, vascular, and mechanical changes in functioning of the spine, leading to further obstacles, such as neurological, urological or orthopedic impairments. The spinal damage induces symptoms comprising motor and sensory dysfunction, micturition and bowel function disorders, scoliosis and foot deformities. Surgical untethering with intraoperative neurophysiological monitoring is currently the main treatment of TCS which may alleviate disturbing symptoms and prevent further complications.
Aim of the study: We made analysis of the neurosurgical and urological outcomes of pediatric patients who underwent surgical untethering of the spinal cord.
Material and methods: We present the retrospective analysis of 20 pediatric patients who underwent surgical untethering of the spinal cord with intraoperative neurophysiological monitoring in University Children's Hospital of Cracow. Pre- and postoperative full neurological investigation was done in all children while urodynamic tests were conducted in 14 of them. We reviewed common symptoms, associating disturbances, characteristics of TCS, outcomes and complications of the treatment.
Results: Motor skills did not improve in 11 patients and worsened in 4. Although improvement was observed in only 5 patients, one of them passed the driver license exam and deserves special mention. Early postoperative complications occurred in 8 patients, while late in 5, 8 children required reoperation. The number of patients with a good urine bladder compliance increased from 2 to 5, 4 patients with previous little bladder capacity reached 75% of expected bladder capacity.
Conclusions: Although the results of untethering treatment may seem unsatisfactory, it should be noted that without it the risk of deterioration of neurological state is very high. The aim of the treatment is focused at improving the quality of life, especially as regards independence and self-service. This is why the procedure should be considered by TCS patients' parents.

Key words: tethered cord syndrome, TCS, untethering, neurogenic bladder, pediatrics, urology, neurosurgery

Medical vs non-medical students' perceived COVID-19 related risks and their emotional state in the early stage of the coronavirus pandemic in Poland

Ishani Khanna
Medical University of Warsaw, Psychological Student's Science Club PSYCHE

Trustee: Magdalena Łazarewicz MD, PhD

Introduction: Medical students report experiencing higher levels of mental distress than students from other fields. However, in stressful situations, i.e. pandemics, medical knowledge, ability to select reliable information and ease of understanding of the threat might be protecting factors.
Aim of the study: This study aimed to investigate the relationship between study field (medical vs non-medical), perceived risk of COVID-19 infection/fatality and emotions.
Material and methods: Self-reported data from a web-based sample (N=4,071) of Polish university students aged 18–30 was collected between 25/04–11/08/2020, mainly (95%) during the nationwide quarantine. A self-designed questionnaire measured perceived risk of coronavirus infection and fatality for the student and respective age group (%) and emotions. SPSS 27.0 was used for statistical analysis. Independent Samples Tests and Mann-Whitney U Tests were used to check for differences between medical (n=1,628) and non-medical students (n=2,443) in emotions and assessments of coronavirus-related risks; and Spearman's rho to investigate the correlation between perceived risks and emotions.
Results: Medical and non-medical students didn't differ in the level of perceived own risk of getting infected (34% in both groups, p=.999), but assessed risk for their peers getting infected as slightly higher (40% vs 37%, p=.003, r=-.05). Simultaneously, medical students assessed the risk of fatality lower than non-medical students, both for themselves (11% vs 16%, p<.001, r=-.11) and peers (10% vs 13%, p<.001, r=-.10). Medical and non-medical students didn't differ in negative emotions, but reported higher levels of positive emotions, all p<.001, Cohen's d.11 to.17. With exceptions, the higher the perceived risks, higher the negative emotions and lower the positive emotions, all p<.02.
Conclusions: Medical studies have a significant but relatively small impact on their perception of coronavirus-related risks and mood, possibly protecting students from experiencing negative emotions and enhancing positive emotions.

Key words: students, coronavirus, COVID-19, perceived risk, mental health

The influence of diseases of the respiratory tract on the development of mixed anxiety-depressive disorder

Daria Boechko
Tyumen State Medical University/ department of psychology and pedagogy with course of psychotherapy

Trustee: Boris Yurievich Prilenskiy Professor, MD, PhD

Introduction: The analysis of the influence of hypoxia of infectious genesis of such diseases on the mental state of patients is of great interest.
Aim of the study: To assess the influence of infectious diseases on the occurrence of anxiety-depressive disorders.
Material and methods: We have conducted the analysis of 200 HADS tests in patients with the diagnosis "Pulmonary Tuberculosis" and patients with COVID-19.
Results: In the course of the study, we divided patients into 2 groups of 100 persons each. The Group No. 1, patients with the diagnosis "Pulmonary Tuberculosis". We found clinically apparent depression in 35 persons, clinically apparent anxiety disorder and depression in 12, sub-clinically apparent anxious disorder and mild depression in 3 persons, and sub-clinically apparent anxious disorder in 3 persons.
The Group No. 2 was made by patients with "COVID-19" diagnosis. In the course of analysis of questionnaires, we found clinically apparent anxiety and depression in 27 cases, 5 persons had clinically apparent anxiety and sub-clinical depression, and in 2 patients anxiety and depression were apparent sub-clinically. Anxiety disorders were found in 20 patients, in clinically apparent form. Depressive disorders were found in 18 persons, including 14 with clinically apparent ones and 2 patients with sub-clinically apparent disorders.
Conclusions: 1. On the basis of the data obtained, it should be mentioned that patients with the new Coronavirus infection had 3 times more cases of anxiety disorders as compared to patients with Pulmonary Tuberculosis. 2. Depressive states of various degrees of manifestations were found in both groups with practically the same frequency and were found in 50% (Group No. 1) and 52% (Group No. 2) of all patients. 3. In both Groups, the percentages of depressive disorders were 14 times greater than that in the entire population (3.4% of the world's population have depression, according to the data of the WHO).
Key words: anxiety, depression, COVID-19, tuberculosis.

Has the first lockdown in Lithuania increased the risk for postpartum depression?

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

Gabriele Repsyte
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Trustee: Lina Adomaitiene MD, PhD

Introduction: First Covid-19 lockdown in Lithuania have brought lots of anxiety and uncertainty. Restrictions affected pregnancy and birth allegedly aggravating woman's as well as child's psycho-emotional state. Postpartum depression is common pregnancy complication affecting both mother and child, therefore, it is important to assess how COVID-19 pandemic alters the risk for postpartum depression.
Aim of the study: To investigate the risk for postpartum depression during first lockdown in Lithuania.
Material and methods: The research was conducted in December 2020. Women who have given birth during the period of first lockdown in Lithuania (March 16th – June 16th) and who have given birth later (respectively, case and control group) were asked to answer an anonymous online survey remembering their last pregnancy and early postpartum period. The questionnaire consisted of Edinburgh Postnatal Depression Scale (EPDS) and questions about pandemic factors. Results were considered significant when p<0,05.
Results: Case group n=91, control group n=115. Difference between case and control groups in depression risk (p=0.83) and in suicidal thoughts (p=0.681) was not detected. EPDS score medians did not differ between case (median 12(0–30)), and control group (11(0–29)), p=0,3. In the control group no significant depression risk difference was detected between ones infected with COVID-19 during pregnancy (mean 17.6(s=7.956)), and not infected (11,58(7.766)), p=0.096, nor between the group of decreased pregnancy visits due to pandemic (median 13 (0–30)), and the group with number of visits not affected by pandemic (9(0–29)), p=0.057. Reading the pandemic news every day, median 12(1–19), hearing them accidentally, (12(0–30)), and consciously avoiding any news on COVID-19 topic, (18(3–25)), had no effect on postpartum depression risk, p=0.633.
Conclusions: Giving birth alone was not associated with higher risk of postpartum depression.
A decrease in the follow-up visits did not affect pregnant individual's mood during first lockdown.
COVID-19 related media exposure had no impact on postpartum mood level.
Key words: postpartum depression, COVID-19, pandemic, pregnancy

The correlation between maternal burnout and level of self-esteem, symptoms of anxiety and depression among mothers in Latvia

Ilze Madara Brūvere
Riga Stradiņš University, Faculty of Medicine, Latvia

Trustee: Lelde Logina MD

Introduction: Although lower self-esteem levels, symptoms of anxiety, and depression are often linked to and associated with maternal burnout, there is no established data in other

researches that confirms the relationship between these variables.
Aim of the study: To find out the correlation between maternal burnout and the level of self-esteem, symptoms of anxiety, depression.
Material and methods: A quantitative cross-sectional study in Latvia's mothers' population was conducted in December 2020 – February 2021. In the study, 837 mothers participated. Maternal burnout was assessed using the Parental Burnout Inventory (PBI), self-esteem was assessed using Rosenberg's Self-Esteem Scale (RSES), depression symptoms were assessed using the Patient Health Questionnaire-9 scale (PHQ-9), anxiety symptoms were evaluated using the General Anxiety Disorder-7 scale (GAD-7). The obtained data were analyzed in IBM SPSS Statistics 26.0 (Spearman's correlation coefficient, linear regression analysis).
Results: Age median for all mothers 30 years (IQR 27–33). Statistically significant (p<0,001), positive, strong correlations between maternal burnout and symptoms of anxiety (Rs=0,672) and depression (Rs=0,667) and statistically significant (p<0,001), negative, moderate correlations between PBI and RSES (Rs=-0,574) were found. Statistically significant (p<0,001) regression equation was obtained between independent variables (GAD-7, PHQ-9, RSES) and dependent variable (PBI), there was no multicollinearity between independent variables VIF<5. Approximately 51,6% of PBI score variations could be explained with independent variables' score. For each point obtained point on GAD-7, PBI score grows for 1,67 points (b1=1,665, p<0.001), for each point on PHQ-9 – 1,15 points (b1=1,146, p<0.001), for each point obtained on RSES, PBI score lowers for 0,54 points.
Conclusions: The study proves that more severe anxiety and depression symptoms statistically significantly correlate with higher maternal burnout levels. Lower self-esteem also statistically significantly correlates with higher burnout levels. More than 50% of maternal burnout could be explained with scores gotten on GAD-7, PHQ-9, RSES.
Key words: anxiety, depression, self-esteem, burnout syndrome

The comparison of students' anxiety, depression, suicidal risk and self-reported health before and during the COVID-19 pandemic

Emilijus Žilinskas
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Giedrė Žulpaitė
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Kristijonas Puteikis
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Trustee: Rima Viliūnienė Associate Professor, MD, PhD

Introduction: Socioeconomic strain, reduced socializing and hindered learning during the COVID-19 pandemic presumably led to a deterioration in physical and psychiatric health in the student population.
Aim of the study: To determine changes in depression, anxiety, suicidal ideation levels and self-reported health among students in Lithuania during the pandemic and define variables that may be associated with poor psychiatric health.
Material and methods: We conducted two online surveys at higher education institutions in 2019 and in 2021. The questionnaires consisted of The Hospital Anxiety and Depression scale (HADS), The Sense of Coherence scale (SOC-3), questions concerning subjective health evaluation and suicidal ideation. Questions about experiences related to COVID-19 crisis were included in the second survey.
Results: 658 students completed the survey in 2019 and 1002 in 2021. There was a statistically significant increase in HADS depression subscale score in 2021 (Mann Whitney U=277 692.5, p<0.0001), but not anxiety subscale score. Students perceived their health as worse in 2021 (Mann Whitney U=301 759.0, p=0.002). Less respondents had thoughts or plans of suicide for the last 12 months (-8.7%, p=0.005 and -5.6%, p=0.033, respectively, among those who overall had suicidal thoughts) and there was no significant change in rates of reportedly attempted suicide. Higher HADS scores and poor self-reported health were more common in those who had attempted suicide (p<0.0001), but only the latter variable was a statistically significant predictor (OR=2.33, p=0.001) for suicide (Nagelkerke R2=0.149, p<0.0001). Worse self-reported health, worse SOC, worsening in personal relationships, lower income, lack of comfortable place to study, male gender were found to be significant (p<0.05) explanatory variables for higher levels of depression (F(6.995)=149.5, p<0.0001, adj. R2=0.471).
Conclusions: Our data reveals that despite a decrease in self-reported health status and increase in depressive symptoms, the pandemic did not significantly increase the rates of anxiety, suicidal ideation or suicide attempts among students in Lithuania.
Key words: depression, suicidal risk, self-reported health

The credibility, completeness and accuracy of online information about Parkinson disease on the Hungarian, Romanian and English websites

Topor Izabella
George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Targu Mures, Romania

Kasza Dalma
County Emergency Hospital of Tirgu-Mures

Kiss Konrád-Ottó
County Emergency Hospital of Tirgu-Mures

Trustee: Nădășan Valentin Associate Professor, MD, PhD

Introduction: The Internet has become one of the main sources of health-related information for the general population.

Unaware users may be at risk when exposed to poor online information about medical conditions.
Aim of the study: The goal of the study was to assess the quality of information regarding Parkinson disease (PD) on the Hungarian, Romanian, and English websites addressing the general population.
Material and methods: The cross-sectional study included 25 websites for each of the three languages. Each website was rated for credibility, completeness and accuracy by two independent evaluators. Inter-rater agreement was tested using Cohen's Kappa test. Quality scores were computed on a scale ranging from 0 to 10. Mean scores were compared by language using Kruskal-Wallis (KW) test or ANOVA test. The cut-off value for statistical significance was set at 0.05.
Results: The mean credibility score was 4.2 for the Hungarian, 4.5 for the Romanian, and 5.7 for the English websites. The mean completeness score was 2.8 for the Hungarian, 3.9 for the Romanian, and 5.4 for the English websites. The mean accuracy score was 6.6 for the Hungarian, 7.0 for the Romanian, and 7.3 for the English websites. Omnibus tests have shown significant differences among the credibility scores ($p=0.0074$) and completeness scores ($p<0.0001$) but no statistically differences between accuracy scores ($p=0.3457$). Dunn post tests have shown that English websites had significantly higher credibility and completeness scores compered to Hungarian websites ($p<0.01$).
Conclusions: Although the English websites had slightly better completeness and credibility scores, the users must carefully weigh the reliability of the information about PD on the internet, regardless of the websites' language, since websites with good or very good completeness scores were rare even among the English websites.
Key words: Parkinson disease, intrenet, quality of health-related information

The relationship between insomnia severity at the start of the semester and during the exam period in medical students from the first to last year

Gvozdenović Zlatko
Faculty of Medicine, University of Sarajevo

Badžak Džana
Faculty of Medicine, University of Sarajevo

Trustee: Maida Rakanović Todić Professor, MD, PhD

Introduction: Insomnia is characterized by the inability to fall asleep and or remain sleeping for a period of time. Students can often suffer from insomnia due to their lifestyle, exams, daily stress and worries.
Aim of the study: The aim of this study was to determine the existence and/or worsening of insomnia in medical students. Also does stress combined with stimulating substances interfere in a student's life. Our research serves to raise insomnia awareness and the harm it brings.
Material and methods: The study was a cross-sectional study. It included 418 respondents, aged 19 to 36 from the 1st to the 6th year of the Faculty of Medicine, University of Sarajevo, conducted through a Google Forms survey, with 16 questions. Insomnia questions were done following the official "Insomnia Severity Index" (ISI) questionnaire which offers an objective score for the severity of this condition. Paired Samples t Test was used to test statistical difference between two time points. The relationship between variables was assessed using Pearson correlation analysis.
Results: ISI score worsened from pre-exam ($M= 1.72$, $SD= 0.84$) to during the exam period setting ($M=2.57$, $SD=1.02$). This change was statistically significant $t (419) = -18.093$, $p=0.001$. Test showed low but significant positive association between worsening of ISI score during the exam period and students of female gender ($r=0.223$, $p=0.0001$). There was low negative correlation between worsening of ISI score and following variables: student's age ($r=-0.107$, $p=0.029$), frequency of nicotine consumption ($r=-0.183$, $p=0.0001$) and ISI score pre-exam ($r=-0.162$, $p=0.001$).
Conclusions: With all of this data, we conclude that, stress suffered during medical exams, combined with the intake of CNS stimulating substances, has a positive effect when it comes to the worsening of sleep and life quality in medical students. Quality of life is severely harmed when an individual hasn't had a good night's sleep in a month's period.
Key words: insomnia, students, insomnia severity index, CNS stimulation

Prelimiting the development of posthaemorrhagic hydrocephalous in preterms after severe IVH – analysis of Rickham reservoir efficacy depending on IVH anatomic extent and time of Rickham reservoir implantation

Adam Bębenek
Students Research Group at the Department of Pediatric Neurosurgery, Jagiellonian University Medical College, Cracow

Wojciech Grabowski
Students Research Group at the Department of Pediatric Neurosurgery, Jagiellonian University Medical College, Cracow

Trustees:
Prof. Stanisław Kwiatkowski Professor, MD, PhD
Olga Milczarek, PhD. MD, PhD

Introduction: Postrhaemorrhagic hydrocephalus (PHHP) remains one of the most severe and difficult to eliminate sequela of prematurity. It arises as a consequence of intraventricular haemorrhage, blood effusion to periventricular matrix germinalis (MXG) occurring in 3/1000 neonates born <30 HBD. PHHP develops in 60–90% of patients who suffered severe IVH. Increased pressure on the walls of cerebellar ventricles

leads to white matter compression resulting in the patient's mental retardation and seizures. Depending on the anatomic extent of extravasated blood other symptoms (axial laxity and paresis) occurs. No IVH management standards have been settled yet. Basic surgical treatment involves shunting techniques: subcutaneous reservoir, external ventricular drainage and ventriculoperitoneal shunt.

Aim of the study: In this study, we aimed to find dependencies between the anatomic extent of the IVH and time of Rickham reservoir (RR) implantation to determine efficient methods of IVH treatment and PHHP prophylaxis.

Material and methods: The retrospective study was conducted evaluating 29 patients (2012–2020) who suffered IVH of at least III grade in Papile's scale and who met inclusion criteria which comprised: prematurity, severe IVH diagnosed with transfontanellar USG, RR as primary treatment and exclusion of other conditions resulting in hydrocephalus. We assessed: average diagnosis time, anatomic IVH extent, IVH symmetry, time from diagnosis to RR implantation and time from RR to ventriculoperitoneal shunt (VPS) implantation. Data were calculated using TIBCO Statistica.

Results: No statistically significant dependency between the anatomic extent and VPS avoidance rate or time from RR to VPS has been found ($p>0.05$). A statistically significant correlation between the time to RR implantation and time between RR and VPS implantation has been discovered ($p<0,05$).

Conclusions: IVH anatomic extent seems not to influence the dynamics of PHHP development in terms of treatment as results in all anatomic areas are comparable. Shorter time between IVH diagnosis and RR implantation seems to influence the VPS implantation time and necessity.

Key words: subcutaneous reservoir, SR, IVH, intraventricular haemorrhage

Implant subsidence phenomenon in patients after anterior cervical discectomy and fusion: incidence rate and associated pain recurrency

Adam Bębenek
Faculty of Medicine, Jagiellonian University Medical College, Cracow

Bartłomiej Juszczak
Faculty of Medicine, Jagiellonian University Medical College, Cracow

Trustee: Bartosz Godlewski MD, PhD

Introduction: Anterior cervical discectomy and fusion (ACDF) is performed in patients who suffer from persistent (despite treatment) pain or neurologic deficits caused by cervical spondylosis. The procedure involves an anterior approach to the vertebral column, disc removal and intervertebral implant placement. Subsidence is defined as implant migration into adjacent vertebral endplates. This phenomenon causes a reduction in intervertebral body height and may result in pain recurrence or persistency.

Aim of the study: In this study, we aimed to determine if subsidence phenomenon is associated with the recurrence or persistency of spondylosis symptoms.

Material and methods: A single-centre, prospective study, evaluating 100 patients (regardless of sex) who underwent ACDF, was conducted. Subsidence and intervertebral space assessment was based on cervical lateral radiographs obtained on five occasions: preoperatively, 1 day after surgery, 1 month after surgery, 6 months after surgery and 12 months after surgery. For clinical assessment, a visual analogue scale for pain intensity and neck disability index were used. Patients were assessed on 4 occasions: preoperatively, 1 month after surgery, 6 months after surgery and 12 months after surgery. All patients were operated on using the same technique and all radiographs were obtained in the same laboratory. Data were calculated using TIBCO Statistica.

Results: Subsidence was found in 19 out of all 100 cases, median intervertebral heigh reduction after subsidence was 4 mm. NDI score indicating the necessity for further treatment was found in 4 out of all cases after 12 months with only 2 patients with subsidence among them. No statistically significant dependency between subsidence and NDI or VAS score after 12 months has been found ($p>0.05$).

Conclusions: Subsidence seems no to be the risk factor for pain and disability recurrence or persistency.

Key words: spinal surgery, acdf, cervical radiculopathy, cervical spondylosis

Efficacy of Spetzler-Martin scale-tailored multimodal therapy in the management of ruptured and unruptured brain arteriovenous malformations in children

Łukasz Antkowiak
Department of Pediatric Neurosurgery, Medical University of Silesia, 40-752 Katowice, Poland

Marta Rogalska
Medical University of Warsaw, 02-091 Warsaw, Poland

Trustee: Marek Mandera Professor, MD, PhD

Introduction: Brain arteriovenous malformations (bAVMs) are characterized by abnormal connections between the arterial and venous systems without an interposed capillary bed. Bleeding from ruptured bAVMs represents the most prevalent cause of pediatric intracranial hemorrhage. Although the annual risk of bAVM rupture is estimated at 2–4%, it is associated with significant morbidity and mortality. Spetzler-Martin (SM) scale can predict the surgery-related risk associated with the management of bAVMs.

Aim of the study: The purpose of this study was to assess clinical and radiological outcomes of pediatric patients who underwent multimodal therapy for the management of bAVMs.

Material and methods: We reviewed medical records of pediatric patients who underwent interventional bAVM treatment (surgery, embolization, radiosurgery; solely or in combination) in the Department of Pediatric Neurosurgery, Medical University of Silesia in Katowice between 2007 and 2020. SM score was calculated for each patient following digital subtraction angiography (DSA) imaging. Lesions were additionally divided into low-grade (SM I-III) and high-grade (SM IV-V). DSA images following interventional therapy were analyzed to estimate bAVM obliteration rate.
Results: We identified 39 patients (12 with unruptured and 27 with ruptured bAVMs). 15 patients presented with focal neurologic deficit, 37 with low-grade bAVMs and 2 with high-grade lesions. Control DSA imaging revealed complete obliteration in both patients who presented with high-grade bAVMs. Complete obliterations was achieved in 70% of low-grade bAVMs. Unruptured bAVMs were obliterated in 50% while ruptured in 82%. There was no intraoperative and postoperative mortality. Clinical status at discharge showed neurologic deficits resolution in 67% of patients, while 33% remained disabled.
Conclusions: Rupture of bAVM carries a significant risk of morbidity. Application of Spetzler-Martin scale resulted in a 67% rate of favorable outcomes without any intervention-related morbidity and mortality. Although the annual risk of bAVM rupture is low, particularly children with expected prolonged survival might benefit from interventional treatment of unruptured bAVM.
Key words: arteriovenous malformations, intracerebral hemorrhage, radiosurgery, embolization, clinical outcomes

Cell blood count supported the routine diagnostic process of schizophrenic patients

Maja Szelągowska
Department of Medical Diagnostics, Jagiellonian University, Medical College, Medyczna 9, 30-688 Krakow, Poland.

Trustees:
Wirginia Krzyściak MD, PhD
Maciej Pilecki MD, PhD

Introduction: Schizophrenia is one of the most serious psychiatric disorders but its diagnosis remains unclear. Immunological system is found to play an important role in pathogenesis of Schizophrenia. Different markers of inflammation were assessed is schizophrenic patients' samples and there were found to be significantly changed comparing to healthy individuals. Hence, it is necessary to evaluate these changes and provide new biomarker of Schizophrenia.
Aim of the study: The aim of the study was to find a potential association of Cell blood count (CBC) parameters with occurrence of schizophrenia.
Material and methods: Blood samples were obtained from 36 schizophrenia patients and 33 control samples without psychiatric disorders. Blood samples were collected during routine collection of material in the first week after the admission of the participants and after 12 weeks. PANSS scale was used for clinical assessment.
CBC was assessed by Sysmex XN-2000 automated analyser.
All patients consented in writing to participate in the experiment. The study was approved by the Bioethics Committee of the Jagiellonian University Collegium Medicum.
Results: In this study, we found significant correlations between CBC parameters and severity of psychotic symptoms. There were positive correlation between neutrophil count and positive (P), negative symptoms (N), general psychopathology (G) and overall results (T) of PANSS scale at the admission time, also between neutrophil count and P scale after 12 weeks. There were negative correlation between percentage of lymphocytes and P, N, G and T scales at the admission time.
Conclusions: Schizophrenic patients are in the serious condition at the admission time. They show features of decompensation, metabolic syndrome and high cardiovascular risk. As many recent studies revealed immunological system and oxidative stress play important role in pathogenesis and development of Schizophrenia. All features mentioned above may be both causes and results of inflammatory process what explains correlations between PANSS scale and changes in a CBC.
Key words: schizophrenia, Cell blood count, neutrophiles, leukocytes, PANSS

Which postpartum depression risk factors persist important during COVID-19 pandemic?

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

Gabriele Repsyte
Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Kaunas, Lithuania

Trustee: Lina Adomaitiene MD, PhD

Introduction: The pandemic not only affected people's physical health, but also left a mark on their psychoemotional states. This is important for women who gave birth during the pandemic, when women's care changed as well as other parts of daily life have been affected.
Aim of the study: To evaluate postpartum depression risk factors in women who gave birth during the COVID-19 pandemic in Lithuania.
Material and methods: This study was conducted in December 2020. Women who have given birth during all COVID-19 pandemic in Lithuania (since March 16th, 2020) were asked to fill in the anonymous online survey about their last pregnancy. The questionnaire consisted of Edinburgh Postnatal Depression Scale (EPDS) and questions about postpartum depression risk factors of proven importance in Lithuanian population. Results were considered to be significant when $p<0.05$.
Results: 206 respondents were accepted. Positive correlation was found between EPDS score and family relationships

(r=0.326, p<0.001), however this score did not differ between marital status groups (p=0.377). EPDS score was significantly affected by newborn feeding being the lowest in breastfeeding group (median 10 (0–29)), p<0.001. The difference in depression risk when number of pregnancy follow-ups due to pandemic restrictions decreased (median 13 (0–30)) and when it was not affected by the pandemic (median 12 (1–18)) was significant as well, p=0.004. Negative correlation between depression risk and parity was also found, r=-0.254, p<0.001. All the other possible risk factors did not significantly affect EPDS score in this sample.

Conclusions: Better relationship with a partner/husband is related to lower risk of depression.

Women who are unable to breastfeed are at higher risk of developing depressive symptoms.

Less follow-ups during a pandemic is one of the risk factors of postpartum depression.

The increased risk of depression is higher for primigravida.

Key words: postpartum depression, partner relationship quality, COVID-19, pandemic, pregnancy

Physiotherapy
(Polish language session)

Jury:

Alicja Fąfara, PhD
Marta Barłowska-Trybulec, PhD
Agnieszka Wnuk-Scardaccione, PhD
Prof. Roman Nowobilski, PhD
Prof. Agnieszka Mazur-Biały, PhD
Bartosz Trybulec, PhD
Małgorzata Kulesa-Mrowiecka, PhD
Prof. Magdalena Wilk-Frańczuk, PhD
Prof. Jan Bilski, PhD
Grzegorz Mańko, PhD
Agnieszka Śliwka, PhD

Coordinators:

Aleksandra Majchrzak, Karolina Martyniuk

List of papers

Ocena aktywności mięśni przywodzicieli ud podczas chodu na niestabilnym podłożu w porównaniu z wynikami Y Balance Test (Lower Quarter) i wskaźnikiem BMI- badanie pilotażowe

Weronika Bartecka
Zakład Fizjoterapii Wydział Nauk o Zdrowiu Uniwersytet Jagielloński Collegium Medicum Kraków

Julia Barabasz
Zakład Fizjoterapii Wydział Nauk o Zdrowiu Uniwersytet Jagielloński Collegium Medicum Kraków

Paula Borczyk
Zakład Fizjoterapii Wydział Nauk o Zdrowiu Uniwersytet Jagielloński Collegium Medicum Kraków

Opiekunowie:
dr Joanna Zyznawska
dr Grzegorz Frankowski
dr Małgorzata Kulsesa-Mrowiecka

Wprowadzenie: Mięśnie przywodziciele ud pełnią ważną rolę w stabilizacji chodu. Gdy podczas chodu zmieni się podłoże ze stabilnego na niestabilne, należy spodziewać się większego zaangażowania tych mięśni, a co za tym idzie wymagany będzie wyższy poziom koordynacji. Jednym z narzędzi do oceny poziomu koordynacji jest Test Y-Balance. Parametry mierzone podczas tego testu stanowią ocenę poziomu równowagi dynamicznej człowieka. Deficyty w zakresie tych parametrów świadczą o zaburzeniu równowagi i mogą stanowić ryzyko urazu.
Cel pracy: Za cel pracy postawiono analizę pobudzeń z zapisu sEMG dla mięśni przywodzicieli ud podczas chodu po niestabilnym podłożu w porównaniu z wynikami YBT odnośnie asymetrii funkcjonalnej i wskaźnika BMI.
Materiały i metody: Grupę badanych stanowiło 25 studentów Fizjoterapii w wieku od 20 do 25 r.ż. (x=20,6 ±1,5 lat), średnia wartość wskaźnika BMI (x=21,67±3,14 kg/m^2). Przeprowadzono autorski kwestionariusz dotyczący obecnego stanu zdrowia i aktywności fizycznej badanego oraz Y– Balance Test. Następnie badani pokonywali tor po niestabilnym podłożu – chód po 20 dyskach sensomotorycznych. Praca mięśni przywodzicieli ud monitorowana była badaniem sEMG. Do analizy statystycznej zastosowano test ANOVA Kruskala-Wallisa oraz korelację Spearmana. Poziom istotności statystycznej przyjęto na poziomie p<0,05.
Wyniki: Mediany pobudzeń (uV) dla mięśni przywodzicieli uda i piszczelowych przednich prawej i lewej kończyny dolnej nie różniły się istotnie statystycznie w zależności od interpretacji wskaźnika odchylenia YBT. Wykazano istotne statystycznie różnice (p=0,024) dla wskaźnika BMI. Stwierdzono istotnie statystycznie dodatnią korelację między wskaźnikiem BMI a wartością bezwzględną wskaźnika odchylenia YBT (r=0,64; p=0,001).
Wnioski: Wartość odchylenia YBT nie ma związku ze średnią (uV) pobudzenia mięśni przywodzicieli ud, natomiast wskaźnik BMI wpływa na wynik odchylenia YBT.

Porównanie aktywności mięśni piszczelowych przednich oraz przywodzicieli ud podczas chodu po stabilnym podłożu z całkowitą i ograniczoną kontrolą wzroku – badanie pilotażowe

Paula Borczyk
Uniwersytet Jagielloński Collegium Medicum / Wydział Nauk o Zdrowiu

Julia Barabasz
Uniwersytet Jagielloński Collegium Medicum / Wydział Nauk o Zdrowiu

Weronika Bartecka
Uniwersytet Jagielloński Collegium Medicum / Wydział Nauk o Zdrowiu

Opiekunowie:
dr Joanna Zyznawska
mgr Grzegorz Frankowski

Wprowadzenie: Wzrok to jeden z najważniejszych zmysłów odgrywający kluczową rolę podczas lokomocji. Oczywistym jest, że całkowite wyłączenie kontroli tego narządu podczas chodu u osób widzących w znacznym stopniu wpływa na jakość przemieszczania się. Należy spodziewać się większego nakładu pracy ze strony niektórych mięśni kończyn dolnych w przypadku ograniczenia kontroli wzroku.
Cel pracy: Porównanie aktywności mięśni piszczelowych przednich oraz przywodzicieli ud podczas chodu po stabilnym podłożu z całkowitą i ograniczoną kontrolą wzroku, ze zwróceniem uwagi na zależność pomiędzy wyłączeniem wzroku po jednej stronie a wzrostem aktywności mięśni po stronie przeciwnej.
Materiały i metody: Do badania zakwalifikowano 25 osób w wieku od 20 – 25 roku życia. Do oceny aktywności mięśni wykorzystano sygnał sEMG, a ograniczoną kontrolę wzroku uzyskano za pomocą plastrów okulistycznych Viscoplast. Zebrane wyniki przeanalizowano z użyciem testu t-studenta dla prób zależnych.
Wyniki: Średnie wartości dla aktywności mięśnia piszczelowego przedniego prawego podczas chodu po stabilnym podłożu z całkowitą kontrolą wzroku; z prawostronnym jej ograniczeniem oraz z wyłączeniem wzroku po lewej stronie wynosiły odpowiednio: 39,3288±15,02uV; 39,152±14,03uV oraz 55,932±62,81uV. Analogicznie dla mięśnia piszczelowego przedniego lewego: 44,148±25,58uV; 44,112±25,79 oraz 46,532±45,33. Wyniki te nie były istotne statystycznie. Średnie wartości dla aktywności mięśni przywodzicieli uda prawego podczas chodu po stabilnym podłożu z całkowitą kontrolą wzroku; z prawostronnym jej ograniczeniem oraz z wyłączeniem wzroku po lewej stronie wynosiły odpowiednio: 48,986±51,45uV; 64,772±86,44uV oraz 73,6164±96,70uV. Dla mięśni przywodzicieli uda lewego były następujące: 41,5524±51,8uV; 54,568±73,83uV oraz 60,5912±68,19uV.
Wnioski: Analiza sygnału sEMG wskazuje na większą aktywność mięśni przywodzicieli ud podczas chodu po podłożu stabil-

nym z ograniczoną kontrolą wzroku niż z pełną. Aktywność mięśni piszczelowych przednich nieznacznie ulegała zmianie podczas badanych prób. Dodatkowo badania wykazały, że nie ma korelacji podczas wyłączeniem wzroku po jednej stronie a zwiększoną aktywnością mięśni po stronie przeciwnej.

Ocena aktywności mięśni przywodzicieli ud oraz mięśni piszczelowych przednich podczas chodu po stabilnym oraz niestabilnym podłożu – badanie pilotażowe

Julia Barabasz
Uniwersytet Jagielloński Collegium Medicum / Wydział Nauk o Zdrowiu

Paula Borczyk
Uniwersytet Jagielloński Collegium Medicum / Wydział Nauk o Zdrowiu

Weronika Bartecka
Uniwersytet Jagielloński Collegium Medicum / Wydział Nauk o Zdrowiu

Opiekunowie:
dr Joanna Zyznawska
mgr Grzegorz Frankowski

Wprowadzenie: Podczas chodu, w zależności od podłoża, zmienia się aktywność mięśni stabilizujących postawę. Mięśnie piszczelowe przednie oraz przywodziciele ud należą do grupy odpowiedzialnych za utrzymanie równowagi dynamicznej podczas przemieszczania się.
Cel pracy: Celem pracy było porównanie aktywności mięśni przywodzicieli ud oraz mięśni piszczelowych przednich w zapisie sEMG podczas chodu po podłożu stabilnym i niestabilnym. Dodatkowo porównano czasy tych dwóch przejść na tym samym dystansie.
Materiały i metody: Grupę badanych stanowiło 25 studentów UJ CM (19 kobiet i 6 mężczyzn) w wieku od 20 do 25 roku życia. Każdy z badanych miał za zadanie pokonać w swoim tempie 10m po stabilnym i niestabilnym podłożu (20 dysków sensomotorycznych). Podczas chodu wykonywany był pomiar sEMG dla mięśni piszczelowych przednich i przywodzicieli ud oraz mierzony czas przejścia. Wyniki zebrano i przeanalizowano z użyciem testu t-studenta dla prób zależnych.
Wyniki: Średnia aktywność dla mięśni piszczelowych podczas chodu po podłożu niestabilnym wyniosła: dla prawego – 99,45±60,66uV, dla lewego – 86,08±37,74uV. Dla mięśni przywodzicieli: strona prawa – 57,26±74,34uV, strona lewa – 56,28±63,20uV. Po podłożu stabilnym średnia mierzonego parametru wyniosła: piszczelowy przedni: prawy – 39,33±15,02uV, lewy – 44,15±25,58uV, przywodziciele ud: prawe – 48,99±51,45uV, lewe – 41,55±51,80uV. Podobnie zestawiono wymiar pola pod wykresem, które świadczy o pracy i zaangażowaniu badanych mięśni. Podłoże stabilne: piszczelowy przedni: prawy – 337,17±145,12uV, lewy – 384,28±249,94uV; przywodziciele ud: prawe – 409,94±450,17uV, lewe – 347,08±460,71uV. Podłoże niestabilne: piszczelowy przedni: prawy – 1370,2±1146,88uV, lewy – 1150,32±621,05uV; przywodziciele ud: prawe – 757,36±1075,21uV, lewe – 689,4±731,44uV. Średni czas przejścia po niestabilnym podłożu wynosił: 13,14s; po stabilnym: 8,45s. Na podstawie testu t-studenta uzyskano wyniki istotne statystycznie.
Wnioski: W trakcie chodu po niestabilnej powierzchni mięśnie piszczelowe przednie oraz przywodziciele ud angażowane są zdecydowanie bardziej niż w trakcie chodu po podłożu stabilnym. Pokonanie tego samego dystansu po podłożu niestabilnym wymaga dłuższego czasu niż po podłożu stabilnym.

Poziom odczuwanego stresu a aktywność bioelektryczna mięśni skroniowych – badania pilotażowe

Grzegorz Zieliński
Zakład Medycyny Sportowej, Wydział Nauk o Zdrowiu, Uniwersytet Medyczny w Lublinie

Zuzanna Podstawka
Interdyscyplinarne Koło Medycyny Sportowej, Zakład Medycyny Sportowej, Wydział Nauk o Zdrowiu, Uniwersytet Medyczny w Lublinie

Opiekunowie:
dr Michał Ginszt
dr Magdalena Zawadka
dr hab. Piotr Gawda

Wprowadzenie: Terminem „stres" można określić jest jednym z głównych czynników zagrażających homeostazie. Faktyczne lub postrzegane zagrożenie dla organizmu określa się jako „stresor", a odpowiedź na stresor „reakcją na stres". Chociaż reakcje na stres ewoluowały jako procesy adaptacyjne, dostrzegalne jest, że ciężkie, długotrwałe reakcje na stres mogą prowadzić do uszkodzenia tkanek i rozwoju wielu jednostek chorobowych. Ze względu na złożoną etopatiologię zaburzeń czynnościowych układu ruchowego narządu żucia (ZCURNŻ) w aktualnym piśmiennictwie podaje się czynniki inicjujące (uraz, obciążenie czynnościowe) oraz utrwalające (behawioralne, społeczne, emocjonalne). Szereg badań klinicznych wydaje się potwierdzać związek między zaostrzeniem dysfunkcji w obrębie narządu żucia a silnymi doznaniami emocjonalnymi, zwłaszcza u osób młodych w końcowym okresie dojrzewania i wczesnej dorosłości.
Cel pracy: Celem badania było określenie wpływu poziomu odczuwanego stresu ocenionego przez kwestionariusz PSS-10 na zmiany aktywności bioelektrycznej mięśni skroniowych.
Materiały i metody: Do badania włączono 68 osób (w średnim wieku 22 lat ± 2 lata), w tym 12 mężczyzn oraz 56 kobiet, które na podstawie kwestionariusza PSS-10 zostały podzielone na 3 grupy: z niskim (n=19), średnim (n=23) oraz wysokim poziomem odczuwanego stresu (n= 26). Były to osoby zdrowe bez ZCURNŻ, określonych na podstawie kwestionariusza RDC/BKD. Spoczynkowa aktywność bioelektryczna mięśni skroniowych

była rejestrowana przez 10 sekund w pozycji spoczynkowej żuchwy z wykorzystaniem elektromiografu BioEMG III. Analizę statystyczną przeprowadzono za pomocą korelacji rang Spearmana.
Wyniki: Najsilniejszą korelację stwierdzono między wynikiem kwestionariusza PSS-10 a napięciem spoczynkowym mięśni skroniowych w grupie osób z wysokim poziomem stresu ($p < 0{,}001$). Istotnych korelacji nie zaobserwowano w grupie osób z niskim oraz średnim poziomem odczuwanego stresu.
Wnioski: Wysoki poziom odczuwanego stresu jest istotnie związany ze zwiększoną spoczynkową aktywnością bioelektryczną mięśni skroniowych, co może być związane z częstszym występowaniem napięciowych bólów głowy u osób z ww. poziomem stresu. W celu potwierdzenia powyższych obserwacji konieczne są dalsze badania w obrębie mięśni narządu żucia z uwzględnieniem zróżnicowanych grup wiekowych.

Wpływ bodźca wzrokowego na spoczynkową aktywność mięśni żucia

Grzegorz Zieliński
Zakład Medycyny Sportowej, Wydział Nauk o Zdrowiu, Uniwersytet Medyczny w Lublinie

Opiekunowie:
dr hab. Anna Matysik-Woźniak
prof. Robert Rejdak
dr hab. Piotr Gawda

Wprowadzenie: Na funkcję mięśni żucia wpływa wiele czynników, takich jak: problemy z posturą, urazy, problemy psychofizjologiczne i zmiany zgryzu. Sugeruje się, że większe napięcie bioelektryczne mięśni narządu żucia mogą być jednym z czynników predysponujących do Zaburzeń Czynnościowych Układu Ruchowego Narządu Żucia. Literatura coraz częściej dostrzega, że niektóre cechy czaszkowożuchwowe mogą być związane zarówno z funkcjami oka, wpływem bodźca wzrokowego, jak i wadami funkcjonalnymi.
Cel pracy: Celem metaanalizy było określenie wpływu bodźca wzrokowego na aktywność mięśni skroniowych (TA) oraz żwaczy (MM) w spoczynku.
Materiały i metody: Przeszukano bazy danych PubMed oraz Web of Science. Do identyfikacji odpowiednich badań użyto kombinacji słów kluczy: "myopia", "hyperopia", "eye'', ''electromyography'', "temporomandibular joint", "masticatory" (według Medical Subject Headings-MeSH). Słowa klucze „myopia", „hyperopia" zostały wykorzystane w celu analizy badań pod kątem kwalifikacji osób zdrowych do grup kontrolnych. Oceniono badania, które zostały zakwalifikowane do metaanalizy narzędziem QUADAS-2. W metaanalizie posłużono się standaryzowaną różnicą średnich, definiowanej w oprogramowaniu jako d Cohena. Heterogeniczność analiz obliczano, stosując statystyki Q oraz I2. Próg istotności ustalono na poziomie 5%.
Wyniki: Metanaliza wykazała istotnie różnice miedzy bodźcem wzrokowym a napięciem bioelektrycznym mięśni TA u osób zdrowych $p=0{,}0257$. Różnic nie zaobserwowano przy mięśniach MM.
Wnioski: Występuje połączenie między wzrokiem a mięśniem skroniowym u osób bez ZCURNŻ oraz bez wad refrakcyjnych. Można rozważyć badania okulistyczne przy częstych epizodach napięciowych bólów głowy lub bruksizmu. Potrzebne są dalsze badania nad analizą tego zjawiska.

Wpływ terapii manualnej na impostację głosu śpiewaczki operowej – badanie pilotażowe

Julia Ciuryk
Uniwersytet Jagielloński Collegium Medicum Studenckie Koło Naukowe Fizjoterapii i Neurorehabilitacji

Opiekun: dr Małgorzata Kulesa-Mrowiecka

Wprowadzenie: Emisja głosu to proces wytwarzania i wyprowadzania głosu na zewnątrz, na które składają się następujące skoordynowane czynności: oddychanie, fonacja, artykulacja i powstający przy tym rezonans. Dzięki specyficznej łączności tkankowej za pomocą powięzi, rozluźnienie mięśnia przepony umożliwia zmniejszenie napięcia w rejonie krtani, co przyczynić się może do prawidłowej impostacji. Badania przeprowadzone wśród muzyków: instrumentalistów oraz wokalistów, wskazują m.in. na dominację występowania napięciowych bólów głowy u osób zawodowo pracujących głosem. Ponadto, objawy przeskakiwania, uczucia blokady oraz bólu okolicy skroniowo – żuchwowej występują częściej u wokalistów.
Cel pracy: Wykazanie wpływu terapii manualnej na poprawę impostacji głosu u śpiewaczki operowej.
Materiały i metody: Badniu pilotażowemu poddana została 29-cio letnia śpiewaczka operowa. W badaniu wykorzystano autorski kwestionariusz ankiety pozwalający określić problematykę związaną z wykonywaniem zawodu wokalistki. Pacjentka została poddana analizie posturalnej oraz serii zdjęć mających na celu porównanie asymetrii ciała przed i po zakończeniu terapii. Dodatkowo, przed rozpoczęciem cyklu wizyt terapeutycznych wykonano badanie ROM odcinka szyjnego kręgosłupa, oceniono ruchomość chrząstki tarczowej a także wykonano zmodyfikowaną próbę Czermaka, oceniającą przepływ powietrza wydechowego przez jamę nosową w trakcie fonacji. Terapia powięziowo-mięśniowa mobilizacji przepony oraz krtani. Oceniono również bóle powięziowo- mięśniowe układu stomatognatycznego w skali NMRS.
Wyniki: W ocenie efektów terapii wykorzystano szereg testów oraz autorskie badanie ankietowe zarówno przed jak i po terapii manualnej. Badania pozwoliły ocenić zmiany posturalne oraz zmiany dolegliwości bólowych w mięśniach układu stomatognatycznego po 5 sesji terapeutycznej oraz po 10 sesji terapeutycznej.
Wnioski: Częstość występowania bólu pochodzenia mięśniowo – powięziowego u charakterystycznych grup zawodowych takich jak wokaliści, aktorzy czy osoby na co dzień pracujące głosem, wskazuje na konieczność stworzenia fizjoprofilaktycznego programu nauczania oraz ewentualnej ścieżki diagnostycznej tego schorzenia w celu zminimalizowania chronicznych postaci fonastenii.

Występowanie zaburzeń skroniowo-żuchwowych u osób wykonujących trening siłowy przed i w trakcie trwania pandemii SARS-CoV-2

Bernadeta Piwowar
Uniwersytet Jagielloński Collegium Medicum/ Wydział Nauk o Zdrowiu/ Instytut Fizjoterapii

Roksana Myga
Uniwersytet Jagielloński Collegium Medicum/ Wydział Nauk o Zdrowiu/ Instytut Fizjoterapii

Opiekunowie:
dr Małgorzata Kulesa-Mrowiecka
mgr Grzegorz Frankowski

Wprowadzenie: Trening siłowy jest współcześnie popularną formą aktywności fizycznej. W celu lepszej aktywizacji mięśni osoby trenujące mogą zaciskać zęby, co może rzutować na prawidłowe funkcjonowanie układu stomatognatycznego. Pandemia SARS-CoV-2 mogła przyczynić się do zmniejszenia aktywności fizycznej i mieć wpływ na występowanie zaburzeń skroniowo-żuchwowych.
Cel pracy: Celem badania było wykazanie czy istnieje zależność pomiędzy wykonywaniem treningu siłowego a występowaniem zaburzeń skroniowo-żuchwowych oraz ocena uczęszczania na zajęcia treningowe przed i w trakcie trwania pandemii SARS-CoV-2.
Materiały i metody: W badaniu udział wzięło 583 osoby w wieku od 16 do 65 r.ż. (kobiety stanowiły 63,6%, mężczyźni 36,4% badanej grupy). Wykorzystano autorski kwestionariusz ankiety zamieszczony na portalu ankieteo.pl. Zawierał pytania dotyczące występowania zaburzeń skroniowo-żuchwowych oraz częstości treningów przed i w trakcie trwania pandemii SARS-CoV-2.
Wyniki: 1. Bóle głowy po przebudzeniu zgłaszało 67,9%, natomiast 77% odczuwało wzmożone napięcie i dolegliwości bólowe w obrębie twarzy. 2. Wśród ankietowanych, u których występowały braki uzębienia 80,7% posiadało również szumy uszne. 3. W związku z pandemią SARS-CoV-2 38,2% ankietowanych trenowało rzadziej niż przed pandemią oraz 40,6% ankietowanych odczuwało lęk przed podjęciem aktywności fizycznej i kontaktem z innymi osobami w związku z sytuacją epidemiczną. 4. Zaciskanie zębów przy stosowaniu maksymalnego obciążenia występowało u 27,9% ankietowanych.
Wnioski: Stwierdzono, że wśród osób wykonujących trening siłowy najczęściej występują zaburzenia skroniowo-żuchwowe takie jak ból głowy po przebudzeniu, wzmożone napięcie i dolegliwości bólowe w obrębie twarzy. Dodatkowo zauważono, że w związku z pandemią SARSCoV-2 zmniejszyła się częstotliwość i czas wykonywania treningu siłowego co mogło być spowodowane lękiem przed podjęciem aktywności fizycznej oraz kontaktem z innymi ludźmi.

Występowanie zależności pomiędzy czynnym zakresem ruchomości (ROM) odcinka szyjnego kręgosłupa w płaszczyźnie strzałkowej a klasyfikacją Angle'a

Roksana Myga
Uniwersytet Jagielloński Collegium Medicum/ Wydział Nauk o Zdrowiu/ Instytut Fizjoterapii

Bernadeta Piwowar
Uniwersytet Jagielloński Collegium Medicum/ Wydział Nauk o Zdrowiu/ Instytut Fizjoterapii

Opiekunowie:
dr Małgorzata Kulesa-Mrowiecka
mgr Grzegorz Frankowski

Wprowadzenie: Połączenia pomiędzy odcinkiem szyjnym kręgosłupa a stawami skroniowo-żuchwowymi są przedmiotem badań biomechaników. Wada zgryzu może powodować według różnych koncepcji ograniczenia ruchomości kręgosłupa szyjnego.
Cel pracy: Celem badania było wykazanie czy istnieje zależność pomiędzy czynnym zakresem ruchomości (ROM) odcinka szyjnego kręgosłupa w płaszczyźnie strzałkowej a klasyfikacją Angle'a.
Materiały i metody: Do oceny włączono wyniki pomiarów u 12 dzieci (6 chłopców i 6 dziewczynek) w wieku od 8 do 14 r.ż. (średni wiek 10 ±1,90 roku). Podczas badania przedmiotowego wykonano trzykrotny pomiar ruchomości odcinka szyjnego kręgosłupa w płaszczyźnie strzałkowej i poprzecznej przy pomocy inklinometru CROM. Średnie z pomiarów zostały porównane z tabelą fizjologicznych norm ruchomości kręgosłupa szyjnego u dzieci od 3 do 12 r.ż. Dokonano również pomiarów liniowych zakresów ruchomości w stawach skroniowożuchwowych oraz wyznaczono tor żuchwy na podstawie diagramu Farrara.
Wyniki: W grupie dzieci 9–14 r.ż. posiadających wadę tyłozgryz zgięcie kręgosłupa szyjnego w płaszczyźnie strzałkowej było o 25,30% większe w porównaniu z normami ruchomości odcinka szyjnego kręgosłupa u dzieci z podziałem na wiek. W grupie dzieci w wieku 8 r.ż. posiadających wadę zgryzu zgięcie w płaszczyźnie strzałkowej kręgosłupa szyjnego było o 22,99% większe względem normy, natomiast u dzieci bez wady zgryzu zgięcie w płaszczyźnie strzałkowej kręgosłupa szyjnego było o 11,94% większe od normy.
Wnioski: W badanej próbie wykazano zależność pomiędzy występowaniem ograniczeń ruchomości odcinka szyjnego kręgosłupa a wadą zgryzu. Planowane są dalsze badania w celu wyciągnięcia wiążących wniosków.

Wpływ sytuacji epidemicznej na aktywność fizyczną osób regularnie ćwiczących – crossfit i siłownie

Urszula Jaskólska
Wydział Nauk o Zdrowiu, Uniwersytet Jagielloński Collegium Medicum

Paulina Kawska
Wydział Nauk o Zdrowiu, Uniwersytet Jagielloński Collegium Medicum

Paulina Skucińska
Wydział Nauk o Zdrowiu, Uniwersytet Jagielloński Collegium Medicum

Opiekunowie:
mgr Grzegorz Frankowski
dr Małgorzata Kulesa-Mrowiecka

Wprowadzenie: Pierwszy przypadek epidemicznego zachorowania w Polsce odnotowano 4 marca 2020 roku, natomiast od 20 marca obowiązuje stan epidemii. Wraz z szybkim wzrostem liczby zachorowań w kolejnych miesiącach, polski rząd zaczął wprowadzać obostrzenia związane z ograniczeniem użytkowania przestrzeni publicznej. Zawieszenie działalności niektórych placówek i organizacji dotyczyło m.in. klubów fitness i siłowni.
Cel pracy: Celem pracy była ocena wpływu sytuacji epidemicznej związanej z koronawirusem SARS-CoV-2 na aktywność fizyczną osób regularnie ćwiczących na terenach klubów fitness i siłowniach.
Materiały i metody: Do przeprowadzenia badania wykorzystano ankietę internetową. Formularz został podzielony na trzy sekcje, tj.: I. charakterystyka badanej grupy, II. aktywność fizyczna w dobie pandemii, III. aktywność fizyczna przed pandemią. Pytania zostały opracowane na podstawie kwestionariusza IPAQ (International Physical Activity Questionnaire). Do analizy wyników badanej grupy zastosowano testy statystyczne Shapiro-Wilka i Wilcoxson'a oraz przyjęto poziom istotności statystycznej $\alpha=0,05$; $p< \alpha$. W badanej próbie znaleźli się kobiety i mężczyźni w przedziale wiekowym 18–40 lat.
Wyniki: W przebadanej próbie uzyskano wynik istotny statystycznie. Pandemia koronawirusa SARS-CoV-2 i obostrzenia z nią związane mają istotny wpływ na zmniejszenie aktywności fizycznej, w tym tygodniowego wydatku energetycznego MET, wśród osób ćwiczących na terenach klubów fitness i siłowniach. Zaobserwowano również wzrost czasu spędzanego w pozycji siedzącej w ciągu dni powszednich tygodnia.
Wnioski: Obostrzenia związane z pandemią koronawirusa SARS-CoV-2 w szczególnym stopniu dotknęły placówki kultury sportowej, co wiązało się z całkowitym zawieszeniem ich działalności do czasu odwołania. Sytuacja w związku z restrykcjami rządowymi miała znaczący wpływ na spadek tygodniowego równoważnika metabolicznego MET u osób ćwiczących w klubach fitness i siłowniach. Zmniejszenie aktywności fizycznej wpłynęło na wydłużenie czasu spędzanego w pozycji siedzącej. Dodatkowo zaobserwowano wzrost wagi respondentów podczas trwania pandemii. W perspektywie czasu może skutkować to dolegliwościami bólowymi wywołanymi przez przeciążenia w obrębie kręgosłupa oraz kończyn. Wskutek zmniejszonej aktywności fizycznej u sportowców podczas pandemii może wzrosnąć kontuzjogenność po powrocie do sportu.

Pediatrics, Neonatology

Jury:

Prof. Mateusz Jagła, MD, PhD
Prof. Przemko Kwinta, MD, PhD
Prof. Mirosław Bik-Multanowski, MD, PhD
Prof. Szymon Skoczeń, MD, PhD
Prof. Monika Miklaszewska, MD, PhD (max. 20 abstraktów)
Prof. Dorota Drożdż, MD, PhD
Prof. Rafał Chrzan, MD, PhD
Katarzyna Przybyszewska, MD, PhD

Coordinators:

Wiktoria Wolny, Michał Okarski

List of papers

The danger of parental mistakes during prenatal and neonatal stages of life – case series

Weronika Nedza
Jagiellonian University Medical College, Department of Pediatrics, Wielicka Street 265, 30-663, Kraków, Poland

Trustee: Mateusz Jagła Associate Professor, MD, PhD

Introduction: The study on patients of the Neonatal Intensive Care Unit [NICU] proves that the hospitalization of some children may be the result of parental neglect. The case series was prepared to show how harmful the behaviors of parents can be.
Aim of the study: This study aims to draw the attention to consequences of insufficient parental education in the field of taking care of both – fetus and newborn.
Material and methods: Case series include 6 newborns admitted to the NICU of University Children's Hospital of Cracow from 2010 to 2020. The children suffered from various problems and diseases. However, in all cases, the sickness was the result of parental mistake.
Results: In 4 out of 6 cases the hospitalization was the effect of prenatal harm. The first child suffered from FAS syndrome. The mothers of the second and third patients were taking retinoids during pregnancy, which caused retinoic acid embryopathy. The mother of the fourth newborn underwent a car accident which resulted in microcephaly of the newborn. The last two cases refer to the neglect during the postnatal care i.e poisoning with boric acid (causing acute renal failure, hypertension, and cardiac insufficiency), as well as the chemical burn of the skin and poisoning with thiocyanate (due to bath with sweet almonds oils).
Conclusions: The study indicates that the hospital stay might have been avoided if parents had proper knowledge and complied with the professional recommendation. The doctors should be aware of harmful behaviors caused by the patients' families (which may account for serious illnesses or even deaths) and give some thought to the parental education to prevent from committing mistakes. Therefore, a questionnaire survey about the sources of parental knowledge related to taking care of the child, which may determine the possible causes of such a problem, is ongoing.
Key words: Parental Education
Injuries in newborns
Parental neglect

Methylation and expression of FTO and PLAG1 genes in childhood obesity: insight into anthropometric parameters and glucose-lipid metabolism

Wojciech Kowalczyk
Student Scientific Group of Pediatric Oncology and Hematology, Jagiellonian University Medical College, Krakow, Poland

Agnieszka Łazarczyk
Student Scientific Group of Pediatric Oncology and Hematology, Jagiellonian University Medical College, Krakow, Poland

Karol Miklusiak
Student Scientific Group of Pediatric Oncology and Hematology, Jagiellonian University Medical College, Krakow, Poland

Trustees:
Szymon Skoczeń MD, PhD
Wojciech Czogała MD, PhD
Małgorzata Czogała MD, PhD

Introduction: Obesity is emerging as one of the major concerns in pediatrics. Growing evidence shows that epigenetic factors, as key regulators of gene expression, contribute to the development of adiposity. FTO (FTO alpha-ketoglutarate dependent dioxygenase) is a gene of well-established connection with adiposity, while a protooncogene PLAG1 (PLAG1 zinc finger) has been only recently linked to this condition.
Aim of the study: The aim of the study was to evaluate epigenetic (i.e. methylation) and expression changes of FTO and PLAG1 in children with obesity. The results were also correlated with quantitative parameters (anthropometric, glucose-lipid metabolism and blood pressure).
Material and methods: A cross-sectional study was performed on a cohort of 26 participants. Expression and methylation were measured in peripheral blood mononuclear DNA using microarray technic and a method based on restriction enzymes, respectively. T-test was applied to compare methylation and expression of studied genes between groups of 16 obese and 10 normal-weight children. Spearman's correlation coefficients were calculated to assess changes in methylation and expression in the context of obesity-related parameters.
Results: We showed significantly higher expression of FTO and PLAG1 genes and higher FTO methylation in the obesity group. FTO methylation correlated positively with waist circumference (WC) percentile, plasma triglycerides and fasting insulin levels. Higher FTO expression was associated with an increase in WC percentile and body fat percentage (BF%), higher concentrations of insulin and fasting free fatty acids (FFA), increased HOMA-IR (insulin resistance homeostasis model assessment index) and lower fasting glucose levels. Increase in PLAG1 expression correlated with higher BF% and fasting FFA concentrations.
Conclusions: The results linking FTO and PLAG1 expression to obesity and obesity-related parameters were consistent with current data from the literature. In contrast, the counterintuitive outcomes regarding methylation highlight the complexity of epigenetic transcriptional regulation mechanisms depending on the activated gene locus. This was the first study of PLAG1 gene in obese pediatric population.
Key words: epigenetics, expression, FTO, PLAG1, obesity, children

Evaluation of parents' knowledge about vitamin D3 supplementation in children

Andrzej Szydłowski
Medical University of Silesia/Departament of Paediatrics in Bytom

Anna Szydłowska
Medical University of Silesia/Departament of Paediatrics in Bytom

Trustee: Jolanta Pietrzak MD, PhD

Introduction: Vitamin D3 (cholecalciferol) is a fat-soluble substance that is produced endogenously when ultraviolet rays from sunlight strike the skin and trigger vitamin D3 synthesis' processes. It has a pleiotropic positive effect in children body. Both underabundance and overabundance of this vitamin may lead to severe health-related consequences.
Aim of the study: The aim of the study was to evaluate parents' knowledge about correct vitamin D3 supplementation in children.
Material and methods: A Nationwide anonymous survey among 100 parents (91 female, 9 male) was conducted via the Internet. The questionnaire was divided into two sections: demographic data and vitamin D3 state-of-supplementation review. The questionnaire evaluated, in accordance with age and personal recommendations, if the daily demand for vitamin D3 was met in each child, including deficiency-risked health conditions and comorbidities.
Results: 81% (n81) of parents declared administration of medicinal products containing vitamin D3. 30,9% (n25) declared medicine administration. Meanwhile 27,1% (n22) administered an actual drug. 19,8% (n16) could not answer the question. 46% (n46) declared vitamin D3 concentration within normal range, yet only 27% (n27) of children have ever had their vitamin D3 blood concentration controlled. 7% (N=7) of parents had no knowledge of any vitamin D3 concentration control ever performed. Nevertheless the result of the study was that 56% (n56) questioned meets the guidelines for vitamin D3 supplementation. However, 38% (n38) may be exposed to under abundance, and 6% (n6) to overabundance of vitamin D3. In the risk factor group (n8) 62,5% (N=5) have never underwent vitamin D3 control.
Conclusions: To conclude it is vital to raise awareness of parents in the topic of vitamin D3 supplementation. It is especially necessary among children with obesity and other vitamin D3-defficiency risk factors. Moreover, parents should become more aware of the difference between a drug and a dietary supplement.
Key words: cholecalciferole children supplementation diet

Prevalence of contact allergens in children's skincare products in Lithuanian market

Emilė Tilindytė
Vilnius University Faculty of Medicine, Lithuania

Odilija Rudzevičienė
Clinic of Children's Diseases, Vilnius University Faculty of Medicine, Institute of Clinical Medicine

Ieva Adomaitė
Clinic of Children's Diseases, Vilnius University Faculty of Medicine, Institute of Clinical Medicine

Trustees:
Odilija Rudzevičienė MD, PhD
Ieva Adomaitė MD

Introduction: The prevalence of contact allergens in children's skincare products in Lithuanian market is currently unknown. The parents of allergic children are facing difficulties when choosing safe for skin products and tend to associate marketing claims or product price with product quality. It is unknown whether these factors are associated with product safety.
Aim of the study: To analyse the prevalence of contact allergens in children's skincare products in Lithuania and their association with marketing claims and product price.
Material and methods: We reviewed 210 skincare products' type, price, marketing claims and ingredient labels for contact allergens included in Standard European Baseline and Cosmetics series. Categorical variables were compared using the Chi-square test and Fisher's exact test, allergen prevalence and price were compared using Independent Sample T-test.
Results: Out of all reviewed products 202 (96.2%) listed at least one contact allergen. A total of 664 allergens were recorded, of which 181 (27.3%) were fragrances, 64 (9.6%) Tocopherol, 59 (8.9%) Cocamidopropyl Betaine, 39 (5.9%) Panthenol, 39 (5.9%) Tocopheryl acetate, 38 (5.7%) Phenoxyethanol and 28 (4.2%) each: Benzyl alcohol, Propylene Glycol and Ethylhexylglycerin. The price difference per unit of measurement between products containing allergens and allergen-free products was insignificant ($p=0.319$). There was no statistically significant difference between product marketing claims and allergen prevalence ($p>0.05$).
Conclusions: Contact allergens are prevalent in children's skincare products despite the marketing claims about suitability for sensitive skin. The most common contact allergens are fragrances, Tocopherol and Cocamidopropyl Betaine. The price of the product does not depend on the prevalence of allergens present in the product.
Key words: Contact allergens, children's cosmetic products, pediatric contact dermatitis

The use of elastography in the study of varicocele in adolescent boys

Karol Bochyński
Students' Association, Department of Pediatric Radiology, Medical University of Lublin

Trustee: Grzegorz Jędrzejewski MD, PhD

Introduction: Elastography is an ultrasound technique used for the non-invasive assessment of tissue stiffness.
It is used to assess testicular flexibility in certain scrotal abnormalities. Usefulness of this technique was verified on adolescents with varicose veins.
Aim of the study: The purpose of this study was to evaluate testicular flexibility in adolescents with varicose veins using elastography.
Material and methods: The research was carried out between April and December 2017 year. Thirty patients with clinically diagnosed varicocele were enrolled in the study. All patients underwent tests using the LOGIQ E9 US apparatus. The tests were carried out with a 9 MHz probe. Shear wave elastography studies were performed in Department of Pediatric Radiology at DSK in Lublin. Five were performed on each testicle measurements: in the upper, front, middle, rear and lower poles.
Results: The mean age of the patients was 15 years. The average volume of testes with varicose veins was 9 ml. The mean results of transverse wave elastography of testes with varicose veins was 2.59 kPa. The IQR parameter in all measurements was below 20%. The relationship between the degree of varicose veins and was calculated. Testicular stiffness was greater in patients with varicocele than in the testes in control group.
Conclusions: The changes in tissue elasticity caused by testicular varicose veins confirm the need for surgery in patients with a difference in testicular volume greater than 20%.
Key words: elastography, adolescents, ultrasonography, varicoceles

Methylation and expression of FTO and PLAG genes – influence on adipokines and gastrointestinal tract hormones secretion

Karol Miklusiak
Student Scientific Group of Pediatric Oncology and Hematology, Jagiellonian University Medical College, Krakow, Poland

Agnieszka Lazarczyk
Student Scientific Group of Pediatric Oncology and Hematology, Jagiellonian University Medical College, Krakow, Poland

Wojciech Kowalczyk
Student Scientific Group of Pediatric Oncology and Hematology, Jagiellonian University Medical College, Krakow, Poland

Trustees:
Wojciech Czogala MD, PhD
Malgorzata Czogala MD, PhD
Szymon Skoczen MD, PhD

Introduction: Metabolic disorders like obesity, which are an increasingly common problem among children, are influenced by many factors, including secretion of adipokines and gastrointestinal hormones. Epigenetic mechanisms and gene expression seems to be crucial. The function of FTO gene (FTO alpha-ketoglutarate dependent dioxygenase) in the regulation of the global metabolic rate is well described, but the influence of protooncogene PLAG1 (PLAG1 zinc finger) is still not fully understood.
Aim of the study: The aim of our study was to investigate, whether the level of methylation and expression of FTO and PLAG1 genes correlates with the concentration of chosen gastrointestinal tract hormones and adipokines in children.
Material and methods:: A cross-sectional study on a group of 26 pediatric patients with various BMI values (15,3–41,7; median 28) was carried out. Expression and methylation were measured in peripheral blood mononuclear DNA by a microarray technique and a restriction enzyme method, respectively. All peptide concentrations were determined using the enzyme immunoassay method in fasting and after oral glucose administration. In order to evaluate the correlation between epigenetics data and the concentration of studied proteins, Spearman's correlation coefficient was calculated.
Results: The expression level of both FTO and PLAG1 genes was statistically significantly related to the concentration of adipokines: negatively for apelin and leptin receptor, and positively for leptin; both fasting and after oral glucose administration. Furthermore, both FTO methylation and expression negatively correlated with the concentration of resistin and visfatin. Cholecystokinin was negatively, whereas fibroblast growth factor 21 positively correlated with methylation and expression of the FTO gene, while FTO and PLAG1 expression was negatively associated with the level of cholecystokinin and glucagon-like peptide-1.
Conclusions: It was the first study linking the adipokines and gastrointestinal hormones concentrations with the expression of PLAG1 and FTO genes. Further research, including larger populations, on the effect of both genes on pediatric obesity, is necessary.
Key words: epigenetics, expression, FTO, PLAG1, children, adipokines

Lipid metabolism disorder and expression of lipid-associated genes among children undergoing the HSCT procedure

Przemysław Hałubiec
Jagiellonian University Medical College, Student Scientific Group of Pediatric Oncology and Hematology

Agnieszka Łazarczyk
Jagiellonian University Medical College, Student Scientific Group of Pediatric Oncology and Hematology

Karol Miklusiak
Jagiellonian University Medical College, Student Scientific Group of Pediatric Oncology and Hematology

Trustees:
Wojciech Czogała MD, PhD
Małgorzata Czogała MD, PhD
Szymon Skoczeń MD, PhD

Introduction: Lipid disorders are an increasingly important problem and recent reports indicate their significance in children undergoing HSCT (hematopoietic stem cell transplantation) procedure. Additionally, little is known about how genes associated with the lipid profile affects the lipid disorders in children.
Aim of the study: The aim of study was to evaluate abnormalities of the lipid metabolism in children before and after the HSCT in comparison to healthy and obese children. Additionally, expression of genes regulating lipid profile was assessed.
Material and methods: A cross-sectional study of 44 HSCT patients and two control groups composed of 49 obese and 27 healthy children (120 children in total) was conducted. In each group biochemical parameters, and chosen peptides concentrations were determined using the enzyme immunoassay method. Genes' expressions were measured in peripheral blood mononuclear DNA using a microarray technique. To evaluate the differences between the groups, the Mann-Whitney test, T-test or Wilcoxon signed-rank test were used.
Results: Lipid metabolism parameters differed significantly among patients before and after HSCT procedure. Concentration of pre-HSCT LDL (1,86±0,8vs.1,62±0,92[mmol/L];p=0,045) and initial leptin (17,56±27,25vs.11,3±21,38[ng/mL];p=0,037) were higher while total cholesterol (3,45±1,01vs.3,92±0,89[mmol/L];p=0,002) and HDL (1,07±0,36vs.1,36±0,51[mmol/L];p=0,016) were lower after HSCT. In pre-HSCT group, compared to the healthy controls, triglycerides (1,68±0,68vs.0,79±0,31[mmol/L];p<0,001) and hsCRP (9,8±13,35vs.1,7±3,22[mmol/L];p<0,001) were remarkably elevated whereas HDL (1,07±0,36vs.1,51±0,4[mmol/L];p<0,001) was decreased. In post-HSCT group, comparing to the healthy controls, leptin receptors concentration was higher (28,89±23,77vs.15,6±6,23[ng/mL];p=0,034) and post-load insulin was lower (28,56±32,54vs.39,24±26,05[µIU/mL];p=0,045). Some of analyzed genes in pre- and post-HSCT patients presented significantly different expressions compared to healthy controls (e.g. APOA1, APOA2, APOA4, APOE expression was higher 1,1–1,2 times while ECI2 expression was 1,3–1,5 times lower).
Conclusions: The HSCT procedure affects the patient's lipid metabolism. Metabolic parameters of patients before and after HSCT procedure differ from those of healthy children, resembling characteristics of the obese children. Further research is necessary to assess the role of gene expression in metabolic disorders.
Key words: epigenetics, expression, children, HSCT, lipids

The role of insulin-like growth factors and insulin-like growth factor-binding proteins in obesity in children

Klaudia Miklusiak
Student Scientific Group of Pediatric Oncology and Hematology, Jagiellonian University Medical College, Krakow, Poland

Karol Miklusiak
Student Scientific Group of Pediatric Oncology and Hematology, Jagiellonian University Medical College, Krakow, Poland

Emil Krzysztofik
Student Scientific Group of Pediatric Oncology and Hematology, Jagiellonian University Medical College, Krakow, Poland

Albert Wróbel
Student Scientific Group of Pediatric Oncology and Hematology, Jagiellonian University Medical College, Krakow, Poland

Trustees:
Szymon Skoczeń MD, PhD
Małgorzata Czogała MD, PhD
Wojciech Czogała MD, PhD

Introduction: Obesity is a complex condition seriously impacting on health. Insulin-like growth factors (IGFs) and insulin-like growth factor-binding proteins (IGFBPs) play role in regulation of cells proliferation and differentiation. This kind of signaling may be of importance in obesity development. However, little is known about the IGF-axis in healthy and obese children.
Aim of the study: The aim of the study was an analysis of expression of chosen IGF-axis genes and concentration of their protein products in obese children and healthy control, and their correlation with essential parameters associated with childhood obesity.
Material and methods: The study was conducted on 27 obese patient and 35 healthy children. Genes' expression was determined after isolation of peripheral blood mononuclear DNA using microarray technique. The peptides' concentrations were analyzed with the immunoassay method. The statistical analysis was performed using Statistica.
Results: IGFBP-3 and IGFBP-4 concentrations were significantly higher, while IGF-2, IGFBP-1, IGFBP-2, IGFBP-6 and IGFBP-7 were significantly lower in the obese children compared to the control group.
A comparison of the obesity and control groups revealed high expression differences for IGF1, IGF2, IGFBP-1, IGFBP-6, IGFBP-7 genes. The expression of IGF1 was higher (p=0.04) and the expression of IGF2 (p=0.01), IGFBP1 (p=0.021), IGFBP6 (p=0.03), IGFBP7 (p=0.006) genes was lower in the OB group.
The study revealed significant correlations between BMI, blood pressure, insulin and IGF-1 (positive), IGF-2, IGFBP-1, IGFBP-2 (negative); cholecystokinin and IGFBP-6 (positive); both ghrelin and leptin receptor with IGF-1 (negative) and IGF-2, IGFBP-1, -2

(positive); GLP-1 with IGF2, IGFBP-6 (positive); leptin with IGF-1 (positive), and with IGF-2, IGFBP-1, -2 (negative).
Conclusions: Obesity is related to the expression of the IGF-axis genes. Our study was the first to examine the expression of the IGF-axis genes in obese pediatric patients. As the available data for the expression and concentration of IGF-family proteins are inconsistent, further research, concerning pediatric obesity, including larger populations, is necessary.
Key words: IGF, IGFBP, obesity, children

Three-dimensional high-resolution anorectal manometry in diagnosis of children with functional constipation.

Justyna Konys
Medical University of Warsaw/ Department of Pediatric Gastroenterology and Nutrition

Emilia Szudejko
Medical University of Warsaw/ Department of Pediatric Gastroenterology and Nutrition

Agata Chorążyk
Medical University of Warsaw/ Department of Pediatric Gastroenterology and Nutrition

Trustees:
Marcin Banasiuk MD, PhD
Aleksandra Banaszkiewicz Professor, MD, PhD

Introduction: Three-dimensional high-resolution anorectal manometry (3DHRAM) is the most precise tool to assess anorectal function and can show more data than conventional manometry.
About 14% of children suffer from functional constipation (FC). One of the most important cause of constipation is dyssynergic defecation (DD). DD is defined as inappropriate propulsive force (measured as intrarectal pressure) and/or inadequate relaxation of the anal canal (measured as percent of anal relaxation) observed during defecation manoeuver.
Aim of the study: To evaluate children with functional constipation using 3DHRAM and to determine it usefulness in diagnosing DD.
Material and methods: We performed a retrospective study of children diagnosed with FC (FC group) who were evaluated by 3DHRAM. In all patients conventional manometric parameters were obtained. All data were compared to raw data obtained from children without symptoms from lower gastrointestinal tract published previously (healthy; H group). The diagnosis of DD was based on criteria used in adult population.
Results: 168 children (133 male, median age, 6.7 years; range, 1m-17yo) were included in the study.
Comparison of FC group and H group revealed lower values of mean resting pressure (77.6 mm Hg vs 89 mm Hg, p=0.000) and maximum squeeze pressure (184.6 mm Hg vs 208.5 mm Hg, p=0.008). In FC group the thresholds of the first sensation, urge and discomfort were significantly higher than in H group. Differences between FC group and H group were also observed in maximum rectal compliance (0.8 cm^3/mmHg vs 0.6 cm^3/mmHg, respectively; p=0.02).
During bear-down manoeuver DD was diagnosed in 88.4% of constipated children. In the FC group, the percent of anal relaxation was significantly lower than in the H group (6 vs 32.5).
Conclusions: Dyssynergic defecation is the most frequent cause of functional constipation in children. The elevated thresholds of sensation and increased rectal compliance were observed. 3DHRAM may help to determine the pathomechanism and to plan the most appropriate treatment of constipation in children.
Key words: dyssynergic defecation, paediatrics, contipation, gastroenterology

Neonatal period complications of infants born to mothers with diabetes

Evita Kokuša
Rīga Stradiņš University, Latvia

Trustee: Amanda Smildzere MD

Introduction: Newborns of mothers with diabetes are at increased risk for neonatal complications, including metabolic, hematologic, cardiac and respiratory disorders.
Aim of the study: Analyze complications of neonates born to mothers with diabetes.
Material and methods: A retrospective study was carried out using medical records of all newborns born to mothers with diabetes in Pauls Stradiņš Clinical University Hospital from January 1st, 2019 to December 31st, 2019. The analysis of gathered data was carried out by IBM SPSS 26, MS Excel.
Results: A total of 165 newborns were included in this study, 24 were born prematurely (14.5%). Gestational diabetes was the most common with 82.4% (n=136), type 1 and type 2 diabetes were less represented (n=21 and n=8). A total of 140 newborns had data available on blood glucose level within the first two hours of life (mean 3.4 mmol/L, SD±1.3 mmol/L), the rest (n=25) were not available in the archives. More than 1/3 of infants' (n=51) blood glucose levels were lower than 2.8 mmol/L, when additional oral feeding with breast milk or formula should be provided, and for 12 newborns lower than 2.0 mmol/L, when intravenous glucose therapy should be urgently initiated. For preterm newborns glucose levels were lower than for those born in term (p=0.014). Also, lower glucose levels were seen in infants born to mothers with type 2 diabetes (p=0.007). Large for gestational age (27.0%, n=45) and jaundice (34.0%, n=56) were also common complications associated with diabetes. Other complications such as polycythemia (n=11), respiratory distress (n=14) and cardiomyopathy (n=4) were with no significant impact. A total of 5 deaths were documented.
Conclusions: The collected data showed that complications amongst infants born to diabetic mothers were frequent especially hypoglycemia and macrosomia. As of 2020 a new clinical pathway for hypoglycemia was introduced, so as not to miss newborns in risk group.
Key words: newborn, glucose, hypoglycemia, diabetes.

Characteristics of the QT interval and its change in childrens with type 1 diabetes

Liudmyla Gospodarenko
Bogomolets National Medical University

Trustee: Gnyloskurenko G.V Assistant Professor

Introduction: Type 1 diabetes is one of the biggest problem in childs endocrinology. There are not enough information about clinical and scientific experience of treatment of children with type 1 diabetes and with acquired or congenital long QT syndrome (LQTS) health, which we can use for full control and risks prediction.
Aim of the study: The aim of this work is to identify risk groups for cardiovascular complications based on QT interval duration in children with type 1 diabetes.
Material and methods: The study involved 37 children aged 8 to 17 years with type 1 diabetes. We conducted twenty-four-hour Holter ECG monitoring and measurement of QT and QTc interval in 3 leads (CM5, CS1, CS3).
Results: The half of the children with diabetes had a syndrome of prolonged QT interval. The duration of the QTc interval in boys ii more compared to girls.Only 1/3 male patients had normal QTc interval duration in CM5 and CS1 leads. In the CM5 lead, 53.3% of boys had a QTc interval longer than 99 percentile. According to the results, we made classification of possible risk factors and determined three groups. The low-risk group included children who did not have an increase in the duration of QT and QTc intervals in any of the leads; the high-risk group included children who had an increase in the duration of the QT and QTc intervals and the variance of these intervals in several leads simultaneously. The medium-risk group included children who had prolongation of QT and QTc intervals in only 1 lead or had a change in the variance of these intervals.
Conclusions: It is important to use this results for further management of patients with diabetes type 1 and their insulin therapy and hypoglycemia which can have influence on syndrome of the prolonged QT interval.
Key words: long QT syndrome, type 1 diabetes, children

Maternal and neonatal outcomes in pregnancies complicated by placental abruption

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

Trustee: Viktorija Taraseviciene MD, PhD

Introduction: The main risk factors for placental abruption (PA) include smoking, preeclampsia, maternal hypertension or history of previous placental abruption. Mostly placental abruption manifests by bleeding, abdominopelvic pain, fetal tachycardia. Maternal complications can include DIC, renal failure and even death. Fetal complications can include low birthweight or perinatal death.
Aim of the study: To investigate and analyze risk factors, clinical features, maternal and neonatal outcomes of placental abruption.
Material and methods: A retrospective study was performed at the Department of Obstetrics and Gynecology, Kauno Klinikos, Lithuania. Database of placental abruption cases at this hospital in 2019–2020 was searched, analyzed, summarized and the results compared with the SPSS and MS Excel 2010 programs.
Results: Of the 141 cases, 132 were examined, of which only one complete placental abruption was found. Mostly placental abruption was up to 37 weeks of gestation (56,7%, p=0,019). The main risk factors were age up to 35 years (75.2%, p<0.001), multiple births (60.6%), or previous caesarean section (CS) (11.3%). Polyhydramnios (5%), gestational hypertension (4.3%) prevailed during pregnancy.
Bleeding (49.6%) and painful labour contractions (10.6%) were the most common clinical manifestations. In 59(41.8%) women, delivery was completed by CS due to life-threatening bleeding (19.9%) or suspected unstable fetal condition (11.3%).
73 of 140 newborns (51.8%) were preterm, 32 were hypoxic (pH<7,27), and 15(8,57%) were hypotrophic. 9 perinatal deaths were found.
24.1% of women lost > 500ml of blood, and 13,5% of women >1000ml. DIC – for three, HELLP – for two and acute renal failure for one woman was found.
Conclusions: 1.Placental abruption is a life-threatening obstetric complication for both mother and fetus, causing bleeding, prematurity, fetal hypotrophy, and death.
2.The main risc factors were multiple births, gestational hypertension, or previous caesarean section.
3.Patients were more likely to give a natural childbirth, and caesarean sections were performed more frequently due to the suspected unstable fetal condition and life-threatening bleeding.
Key words: placental abruption, risk factors, maternal outcomes, neonatal outcomes

Radiology, Technology, Biophysics

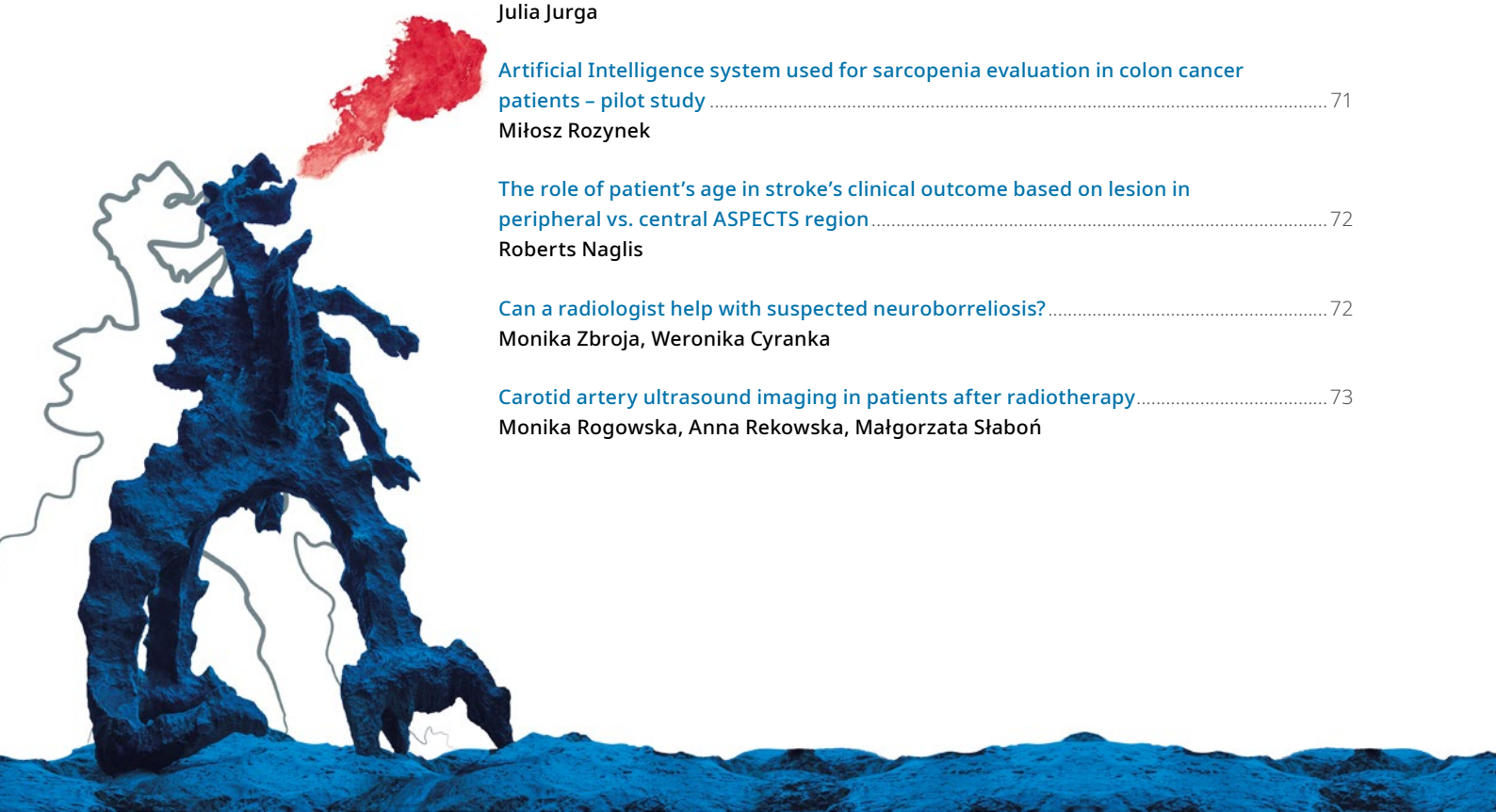
Jury:

Prof. Tadeusz Popiela MD, PhD
Paweł Brzegowy MD, PhD
Przemysław Płonka PhD, DSc
Prof. Andrzej Urbanik MD, PhD
Prof. Eugeniusz Rokita PhD
Bartłomiej Łasocha MD
dr hab. Grzegorz Tatoń, PhD
Wadim Wojciechowski MD, PhD (obecny na sesji)

Coordinators:

Małgorzata Czuba, Miłosz Błoński

List of papers



Results of splenic artery endovascular embolization in patients with traumatic spleen rupture

Ilva Kristiāna Langrate
Riga Stradins University, Faculty of Medicine, Latvia

Trustees:
Sanita Ponomarjova MD
Patrīcija Ivanova MD
Aina Kratovska MD

Introduction: Splenic artery embolization (SAE) is a common treatment of low-grade traumatic splenic rupture (TSR) (I-II), whereas in hemodynamically unstable patients or high-grade TSR (III-V) open surgery is preferred.
Aim of the study: To compile reasons of TSR in Latvia. To evaluate injury grade (IG) distribution in patients receiving SAE and to analyze association between splenic IG and changes of blood analysis before/after SAE.
Material and methods: In this single centre, retrospective case control study patients with TSR treated by SAE between 2014 and 2020 were included. IG was assesed with American Association for Surgery of Trauma (AAST) scale. Blood sample analysis performed on admission and 1st, 4th, 7th, 10th hospitalization days. Data analyzed by IBM SPSS program. Statistical significant confidence level of 90% was chosen ($p < 0.01$).
Results: 20 patients were included in this study: 5 (25%) female and 15 (75%) male. Mean age was 45.30 (SD ±17.35, range 23-88). In 50% of TSR polytraumatic event registered, fall from height-35%, forensic trauma-15%. According to AAST scale: 5% (n=1) had I IG, 15%(n=3) – II IG, 45%(n=9)- III IG, 35%(n=7) – IV IG. SAE was performed mean 2,6 days after admission (range 0–5 days). Patients with IV IG had the highest rate of progressive anemia ($p<0.01$) thus requiring SAE. 7 (35%) of all patients received erythrocyte mass transfusion. Highest trombocytosis level and increased post-treatment inflammatory activity was found on 7th day after SAE in III IG. One patient developed splenomegaly followed by splenectomy; no other cases of signifficant complications requiring laparotomy after SAE were found.
Conclusions: The most common reason of TSR in Latvia is polytraumatic event. SAE can be used in both low-grade and high-grade TSR with minor rate of complications. Further studies are necessary to compare postoperative results of SAE versus open surgery in patients with equal TSR grades.
Key words: trauma, splenic artery, embolization

Artificial Intelligence in Healthcare: The perspectives of Medical Students and Health Professionals

João Pedro Bessa
University of Beira Interior

Henrique Martins
University of Beira Interior

Trustee: Henrique Martins Associate Professor, MD, PhD

Introduction: When healthcare systems worldwide face unprecedented pressure the growth of information technology use and in particular artificial intelligence (AI) embedded tools promise to improve health and care. However, health professionals remain quite reticent about adopting AI technologies. Such attitude bears the potential to damper its successful implementation since they are key to this digital transition.
Aim of the study: This investigation aims to explore the perspectives and expectations of health professionals and medical students on the adoption of AI in healthcare while antecipating challenges, concerns and opportunities that accompany it.
Material and methods: Base on technology acceptance models and literature review an online survey was designed and applied. It was composed of eight multiple choice questions and seven questions using a seven-point Likert scale. Data was analyzed using IBM SPSS (v26) with a confidence interval of 95%.
Results: The preliminary results cover answers from 25 health professionals and 128 medical students undergoing clinical rotations.
One third of the respondents feels their institution is prepared to adopt more AI-based technologies, even though less than 5% feel supported to use them and less than 15% are satisfied with the current AI applications in the workplace.
The top challenges to AI implementation were: healthcare-associated bureaucracy (72%), technology costs (76%) and lack of training (67%). The main concerns associated with liability issues (74%), increased healthcare inequity (59%) and fear of making bad decisions following AI-based recommendations (55%).
Staff training (90%) and articulation with other stakeholders (59%) were considered key issues to faster development of adequate solutions.
Conclusions: AI use in healthcare is still in its begging, with respondents recognizing lack of support and alternatives despite showing interest. There are important challenges that need to be addressed and concerns that need clarification, mirroring the complexity of this matter.
It seems a wise adoption of AI depends on right attitude and education, particularly of last year medical students.
Key words: artificial intelligence; digital health; eHealth; eSkills

My child has a headache – should I be worried?

Dawid Wojtyczka
Students' Scientific Circle at the Department of Radiology and Radiodiagnostics, Public Hospital No. 1, Zabrze, Medical University of Silesia in Katowice, Poland

Magdalena Graca
Students' Scientific Circle at the Department of Radiology and Radiodiagnostics, Public Hospital No. 1, Zabrze, Medical University of Silesia in Katowice, Poland

Alicja Sobieraj
Students' Scientific Circle at the Department of Radiology and Radiodiagnostics, Public Hospital No. 1, Zabrze, Medical University of Silesia in Katowice, Poland

Trustees:
Ewa Kluczewska MD, PhD
Monika Kulig-Kulesza MD

Introduction: Headache is a disturbing symptom, which can be both connected with life-threatening conditions, as well as normal brain MRI (Magnetic Resonance Imaging). Collaboration with the pediatric ward allowed us to create a large database and conduct this study.
Aim of the study: The aim of the study was to find out how common are potentially life or health threatening lesions in pediatric patients who underwent MRI due to headache.
Material and methods: We retrospectively reviewed 625 contrast enhanced MRI of the brain obtained from the hospital database. The pediatric patients (249 boys [39,85%]) ranging in age between 5 to 17 years were referred to the MRI during diagnostics of headache. All MRI images were reviewed by a radiologist. The data was entered in an Excel spreadsheet and statistical tests were performed taking into account age, sex and type of referral.
Results: Detailed analysis showed 270 [43,2%] normal and 355 [56,8%] abnormal brain scans which were categorized into 4 groups according to severity of the finding. The group 0 has correct MRI scan (270 [43,2%]), the group 1 has lesions requiring urgent intervention (2 [0,32%]), group 2 include lesions which require further diagnostics (85 [13,6%]) and group 3 which does not require following diagnostics (268 [42,88%]). Number of patients with brain tumors was insufficient to perform statistical analysis. Among remaining patients statistics showed, that there is no significant relationship between sex, age, type of referral and clinical groups 0, 2 and 3 (p=0,0678; p=0,5275; p=0,4852, respectively).
Conclusions: Headache in pediatric patients is a highly non-specific symptom and remains a significant problem among children. Almost one in seven children among our patients needed further diagnostics. For that reason it is important to remember that headache can be related to severe clinical conditions.
Key words: pediatrics, headache, MRI, neuroradiology

Coexistence of cerebral arteriovenous malformations and arterial aneurysms

Aleksandra Saganek
Student's Scientific Group at the Chair of Radiology, Jagiellonian University Medical College in Krakow, Poland

Joanna Ożga
Student's Scientific Group at the Chair of Radiology, Jagiellonian University Medical College in Krakow, Poland

Katarzyna Jankowska
Student's Scientific Group at the Chair of Radiology, Jagiellonian University Medical College in Krakow, Poland

Jerzy Krzeszowiak
Student's Scientific Group at the Chair of Radiology, Jagiellonian University Medical College in Krakow, Poland

Julia Jurga
Student's Scientific Group at the Chair of Radiology, Jagiellonian University Medical College in Krakow, Poland

Trustee: Paweł Brzegowy MD, PhD

Introduction: Cerebral arteriovenous malformations (AVMs) are rare non-neoplastic vascular lesions with arteriovenous shunting. Their characteristic feature is a dysplastic network of vessels, the nidus. Intracranial haemorrhage remains the main complication of brain AVMs. The risk of such an event may be increased by coexisting aneurysms.
Aim of the study: To explore the coincidence of cerebral arteriovenous malformations and intracranial aneurysms.
Material and methods: The study included 40 subjects with AVM evaluated retrospectively, based on Digital Subtraction Angiography. The research examined coexistence of AVMs and aneurysms, the number of supplying arteries, median maximal diameter of nidus of AVMs and aneurysms. Statistical analysis was performed using R software. Results: In 18 cases (45%) coexisting aneurysms were found. The average age of the patients was 45.9±16.6 (range 17.8–78.49), 22(55%) of them were female. Malformations were found in the extent of circulation of ACA 10(25%), MCA 19(47.5%) and PCA 25(62.5%). In 14(35%) cases AVMs supplying arteries were multiple, and in 26(65%) single. AVMs supplied by multiple arteries were significantly larger than those supplied by a single artery (median maximal diameter 40mm vs 19mm, P<0.001). Median maximal diameter of AVM nidus was 25.42±14.82mm, intranidal aneurysm (located within the nidus) 3.88±2.84mm and extranidal aneurysm 5.39±2.51mm. All of the intranidal aneurysms were single. Malformations with intranidal aneurysms were significantly smaller than those without (median maximal diameter 10mm vs 25mm, P=0.0227). Patients with intranidal aneurysms were significantly younger (median age 21.25 vs 52.71 years; P=0.0162).
Conclusions: Aneurysms are common findings among patients with AVMs. Multiple arterial supply of AVMs has an impact on aneurysms size. Intranidal aneurysms tend to be isolated, smaller in size and occur at a younger age.
Key words: arterial aneurysms, cerebral arteriovenous malformations, nidus

Artificial Intelligence system used for sarcopenia evaluation in colon cancer patients – pilot study

Miłosz Rozynek
Jagiellonian University Medical College

Trustee: Wadim Wojciechowski Professor, MD, PhD

Introduction: Sarcopenia was previously considered as simple geriatric syndrome, but nowadays its role has grown expo-

nentially due to intensive research in this field. It has proven impact on various diseases, also oncological. In clinical practice imaging methods in evaluation of sarcopenia are mainly used for confirmation, but potentially they can also be used for assessment and case-finding. To achieve this, we need simple and fast method to segment muscles on cross-sectional imaging methods.

Aim of the study: The main aim of this research is to test an Artificial Intelligence model for sarcopenia evaluation on CT examinations of colon cancer patients.

Material and methods: 13 abdomen and pelvis CT examinations of 6 patients, 3 women and 3 men with average age of 62±4.1 years were used. 5 of them had 2 standard CT examinations, 1 had 3 CT examinations. Original AI model based on nnU-net deep learning model and fast graph-based algorithm which showed 95% accuracy on test set was used for segmentation of SAT (subcutaneous adipose tissue), VAT (visceral adipose tissue), internal organs, paraspinous muscles and other muscles at L1-L5 levels. Results of this segmentation were showed as percent of different segments on CT scans. Percentages of different tissues on subsequent examinations were analyzed.

Results: It successfully segmented all mentioned spaces on L1-L5 levels. In all cases percentage of paraspinous muscles and other muscles was smaller on subsequent examinations of the same patients – average 0.6% for paraspinous muscles and 0.3% on other muscles.

Conclusions: System that was used in this research has potential for fast and accurate body composition segmentation that can be used in sarcopenia evaluation. Due to small number of patients further investigation is needed.

Key words: artificial intelligence, body composition, imaging, sarcopenia.

The role of patient's age in stroke's clinical outcome based on lesion in peripheral vs. central ASPECTS region

Roberts Naglis
Rīga Stradiņš University, Faculty of Medicine

Trustee: Dr. Nauris Zdanovskis MD

Introduction: Acknowledging factors that are important in prediction of stroke's clinical outcome can ease the clinical management and decrease the burden of the disease.

Aim of the study: The aim of the study is to analyse clinical outcome based on patient's age and localisation of stroke lesion according to Alberts Stroke Programme Early CT Score(ASPECTS) division.

Material and methods: A retrospective analysis of 63 patients with acute middle cerebral artery ischemic stroke was done. Patient neurological evaluation was done by using NIHSS scale(The National Institutes of Health Stroke Scale) and ASPECTS scale for radiographic evaluation of follow-up noncontrast CT scan. Patients were divided in two groups based on affected ASPECTS region- central lesions(Nucleus caudatus, Nucleus lentiformis, Capsula interna, Insula) and peripheral lesions(M1- M6). Both study groups were divided in two sub-groups based on patient's age(less and equal to 75 years old; older than 75) and compared by clinical outcome graded with NIHSS.

Results: The mean ASPECTS score was 7.154±1.890 in the youngest age group and 6.676±1.986 in the oldest age group. NIHSS score was slightly higher in the oldest age group- 6.892±5.782 vs. 5.808±4.507. The mean NIHSS score was similar in peripheral lesion group in the youngest and the oldest study group- 2.500±1.974 and 3.667±3.154. The mean NIHSS score in case of central lesions was 6.800±4.606 in the youngest age group and 9.091±6.179 in the oldest age group. NIHSS score differences between age groups were not statistically significant in case of peripheral lesion(Mann-Whitney U test, n=21, u= 35.000, p>0.4) and in central lesion(Mann-Whitney U test, n= 42, u= 184.000, p>0.3).

Conclusions: Higher patient's age isn't associated with worse clinical outcome. Therefore, misjudged prediction of stroke's clinical outcome can be made by associating age as an important factor. Other factors such as lesion localisation according to ASPECTS must be considered and evaluated for more precise prediction of clinical outcome.

Key words: stroke, neuroimaging, ASPECTS

Can a radiologist help with suspected neuroborreliosis?

Monika Zbroja
Students' Scientific Society at the Department of Pediatric Radiology, Medical University of Lublin, Poland

Weronika Cyranka
Students' Scientific Society at the Department of Pediatric Radiology, Medical University of Lublin, Poland

Trustee: Magdalena Woźniak MD, PhD

Introduction: Neuroborreliosis is an infection of the central nervous system caused by Borrelia burgdorferi. The main symptoms are fatigue, drowsiness and depression. Symptoms may appear several weeks after the tick bite. There is a progressive inflammation of the nervous tissue, and patients usually consult a doctor only when joint or psychosomatic complaints appear. Imaging diagnostics is therefore extremely important in making a diagnosis. Magnetic resonance imaging (MRI) is an useful tool to visualize changes in the brain in the case of neuroborreliosis.

Aim of the study: Importance of MRI in the diagnosis of CNS lesions in the case of neuroborreliosis.

Material and methods: The study included a group of 13 patients referred for brain MRI with suspected neuroborreliosis. All patients, up to 5 months before the MR examination, underwent Lyme infection after a tick bite, which was confirmed by positive serological tests. Clinical symptoms such as muscle and joint pain, paresthesia, fatigue, somnolence and headache were observed in all patients.

Results: In 3 patients (23%), the MR image of the brain was normal. The remaining 10 patients (77%) had multiple, diffuse

hyperintense foci in white matter in T2 weighted images and in the FLAIR sequence. In 2 cases, the morphology of the meningeal signal was changed, suggesting meningitis. The previous infection with Lyme disease, positive neurological symptoms in correlation with MRI allowed for diagnosis of 10 patients with neuroborreliosis.

Conclusions: In summary, MRI is the method of choice in the diagnosis of neuroborreliosis. It allows for the assessment of changes in the brain and, together with the patient's clinical symptoms and laboratory tests, for a final and unambiguous diagnosis.

Key words: resonance magnetic imaging, neuroborreliosis, central nervous system infection

Carotid artery ultrasound imaging in patients after radiotherapy

Monika Rogowska
Students' Scientific Society at Department of Interventional Radiology and Neuroradiology, Medical University of Lublin, Poland

Anna Rekowska
Students' Scientific Society at Department of Interventional Radiology and Neuroradiology, Medical University of Lublin, Poland

Małgorzata Słaboń
Students' Scientific Society at Department of Interventional Radiology and Neuroradiology, Medical University of Lublin, Poland

Trustee: prof. dr hab. n. med. Anna Drelich-Zbroja
Professor, MD, PhD

Introduction: Ultrasonography of the carotid arteries is a painless and widely available diagnostic method. The examination allows for the diagnosis of pathologic lesions in vessels and accurate assessment of blood flow. Early detection of pathology in the arteries allows, among other things, assessment of the risk of cardiovascular episodes.

Aim of the study: To evaluate the incidence of carotid artery changes in patients undergoing radiotherapy.

Material and methods: Twelve patients, aged 48–73 years, were included in the study. All of them had undergone radiotherapy of the neck region within the last 5 to 15 years. In each patient, carotid artery ultrasound was performed as a main part of the study

Results: On the basis of the US results, the intima-media complex was found to be thickened in 1 of the patients. The remaining 11 patients were diagnosed with long-standing atherosclerotic plaques in the common carotid arteries, ranging in thickness from 1.8 to 2.6 mm. In addition, it was noted that the longer radiotherapy lasted, the larger the atherosclerotic stratification was.

Conclusions: According to the results, it was concluded that carotid artery changes are one of the complications after radiotherapy of the neck region. Ultrasonography is an effective method of choice in the diagnosis of the described lesions.

Key words: ultrasonography, complications, radiotherapy

Saint John Paul II as the Patron of the Małopolska Region

MAŁOPOLSKA
św. JANOWI PAWŁOWI II

Ladies and Gentlemen, Dear Pilgrims!

It is my great pleasure to inform you that the Congregation for Divine Worship and the Discipline of the Sacraments in the Vatican, by a special decree of 5 October 2020, confirmed the establishment of Saint John Paul II as the Patron of the Małopolska Region.

The decision of the Holly See is a confirmation of the strong ties that, until the end of his life, connected Saint John Paul II with his native land, its traditions and culture, but above all with its inhabitants of various traditions and religions, among whom he developed his respect for every human being.

Małopolska gained its patron in the year of the 42nd anniversary of the election of Karol Wojtyła to the Holy See, the jubilee of the 100th anniversary of the birth of the Polish Pope and the 15th anniversary of his death. This is a special sign for us, which brings hope that his life and work can today unite all citizens of Małopolska, regardless of the views, religion or traditions to which we refer.

This act constitutes an invitation for us to adopt into our lives the preaching and the indications which he has always addressed to us with care and love. The stability of the family, the upbringing of young generations, cultural roots in tradition and history, freedom and solidarity, and finally order in community life, which, rooted in Christianity, is linked to the strong inner striving of every human being for the Good and the Truth – these are the Holy Father's indications, dear to us all, which make us a true community. A community which is obliged in a special way to care for the legacy he has left us.

Witold Kozłowski

Marshal
of the Małopolska Region

Case Report Internal

Jury:

Barbara Zapała, PhD
Jacek Czepiel, MD, PhD
Prof. Stangel-Wójtkiewicz, MD, PhD
Grzegorz Dyduch, MD, PhD
Tomasz Nowakowski, MD, PhD
Uladzislau Ulasavets, MD

Coordinators:

Jan Koper, Olaf Chmura

List of papers

Multiresistant Klebsiella pneumoniae infection in kidney transplant recipient – a therapeutic dilemma

Wiktoria Grycuk
Department of Nephrology, Dialysis and Internal Medicine; Faculty of Medicine, Medical University of Warsaw, Poland

Trustee: Twardowska-Kawalec M. MD, PhD

Background: Urinary tract infections (UTIs) are the most common infectious complications in renal transplant patients. The worldwide spread of multidrug-resistant bacteria has become a serious threat to immunocompromised patients. Moreover, the existence of strains resistant to almost all antibiotics and the lack of clear guidelines in such cases of UTIs make them difficult to treat.
Case report: A 57-year-old kidney transplant recipient (8 years after grafting) was admitted to the Department of Nephrology with acute kidney injury (creatinine level rise from 2,6 mg/dl to 3,6 mg/dl) and suspicion of UTI recurrence. Laboratory tests revealed elevated inflammatory parameters. An ultrasound showed inflammatory lesions in the area of the kidney graft. The urine culture detected MBL-positive Klebsiella Pneumoniae, sensitive only to gentamycin and colistin. Despite the known nephrotoxicity of gentamycin, the treatment was started. Meanwhile, a multidisciplinary team meeting was held and the decision about a graftectomy was considered the optimal option. The main premises were the poor chances of the complete bacterium eradication from the urinary tract and the gentamycin nephrotoxicity. Unexpectedly, the patient did not consent to the graftectomy. The antibiotic treatment with gentamycin was continued for six weeks altogether. On the follow-up, the patient was in good general condition with his previous renal function. The urine cultures were negative and ultrasound showed partial regression of inflammatory lesions.
Conclusions: Constantly increasing multi-antibiotic resistance of bacteria forces us to use salvage therapies, particularly debatable in transplant patients where we fight for the preservation of the graft. A multidisciplinary approach in such cases is essential to consider the risks and potential benefits for the patient but ultimately, it should serve as an aid to make difficult decisions together. In the above case, our patient avoided graft loss and renal replacement treatment in the long-term.
Key words: kidney graft, urinary tract infection, multidrug-resistant bacteria, gentamycin

Bloody Stenotrophomonas maltophilia: a case series

Ieva Bartuševičienė
Faculty of Medicine, Vilnius University, Lithuania

Trustee: Šarūnas Judickas MD

Background: Stenotrophomonas maltophilia (SM) is commonly a non-virulent, but an important Gram-negative nosocomial pathogen, which can cause various complications. The most vulnerable group is immunocompromised patients, specifically with haematological malignancy and neutropenia, prolonged hospitalization, pneumonia and prior treatment with broad-spectrum antibiotics.
Case report: Case #1: A 25-year-old male was diagnosed with acute myeloid leukemia (AML). The patient was treated using two different chemotherapy protocols. Chemotherapy was complicated by febrile neutropenia. The patient received broad-spectrum antibiotic therapy. On the 36th day of hospitalization patient developed acute respiratory failure, followed by active pulmonary bleeding. He was admitted to an intensive care unit (ICU). The patient's status was deteriorating; he was intubated. Diffuse bleeding from both lungs was observed during bronchoscopy. Multiple organ dysfunction progressed and after an unsuccessful cardiopulmonary resuscitation (CPR), the patient died. Case #2: A 61-year-old man was diagnosed with acute myeloid leukemia (AML). Chemotherapy did not reach remission. Complete blood count (CBC) showed absolute neutropenia. The patient received broad-spectrum antibiotics. On the 45th day of hospitalization, the patient was presented with orthopnea, acute respiratory failure, and saturation of 65%, malaise. The patient has caught up bloody sputum a few times and was admitted to the ICU. Respiratory failure progressed and he was intubated. Within a few hours, he developed major pulmonary bleeding. A bronchoscopy was performed and bleeding from bronchi of right middle and lower lobes was visible, balloon obturation of the right intermediate bronchus was performed before embolization of bronchial artery for right middle and lower lobes. The bleeding continued, refractory shock progressed and after an unsuccessful CPR, the patient died.
Conclusions: Immunocompromised patients presenting with respiratory failure and signs of pulmonary bleeding should be suspected to have SM infection and early treatment with trimethoprim/sulfamethoxazole should be considered.
Key words: Stenotrophomonas maltophilia, sepsis, intensive care, antibiotic, pneumonia

Percutaneous revascularization in multivessel coronary artery disease: case report

Aleksandra Gąsecka
Małgorzata Mierzejewska

Trustee: Arkadiusz Pietrasik MD, PhD

Background: Multivessel coronary artery disease poses a therapeutic challenge.
Case report: Here, we present a case report of a 71-year-old man with three-vessel disease and high SYNTAX treated with successful two-staged PCI including one chronic total occlusion, following refusal to undergo CABG. The interventions were complicated with vascular access side aneurysm and exacerbation of chronic kidney disease, which were successfully

in-hospital treated. The two-year-follow-up after the procedures was uneventful.
Conclusions: This case demonstrates the potential feasibility, but also challenges associated with PCI in MVD with high SYNTAX score.
Key words: percutaneous revascularization, multivessel coronary artery disease, case report

Noninvasive cardiac imaging in a young female patient presenting with acute coronary syndrome

Andrija Gregov
University of Zagreb, School of Medicine

Trustee: Maja Hrabak Paar Assistant Professor – University Hospital Centre Zagreb, Department of Radiology, University of Zagreb School of Medicine

Background: Myocardial infarction with non-obstructive coronary arteries (MINOCA) is a condition described in patients with clinical presentation of acute coronary syndrome without obstruction of coronary arteries. In low-risk patients coronary CT angiography can be used to rule out coronary obstruction, whereas cardiac magnetic resonance imaging (MRI) is the method of choice to determine etiology of myocardial damage in patients with MINOCA.
Case report: A 25-year-old female patient with a positive family history of coronary artery disease presented to the emergency department with chest pain which started 10 days prior and intensified on the day of admission with tingling sensation in the left arm. Lab results of hs-cTnI were >50 000.0 ng/L which clearly indicated cardiac cause of the symptoms. ECG showed no pathological changes consistent with the acute coronary syndrome but Holter ECG revealed 622 VES during the course of 16 hours. Echocardiography showed normal heart morphology, except for postsystolic anteroseptal thickening, with EF of 60%, and no signs of pericardial effusion. Using coronary CT angiography coronary artery disease and coronary artery anomalies were ruled out. Finally, cardiac MRI scan with intravenous application of gadolinium contrast agent revealed edema and mid-wall and subepicardial late gadolinium enhancement in the inferior and inferoseptal region with the leading diagnosis of acute myocarditis. After a few days, the patient was discharged from the hospital at her own request with a recommendation of strict rest and supportive therapy. A follow-up echocardiography was scheduled in a month.
Conclusions: Cardiac MRI is a method of choice in differential diagnostics of acute coronary syndrome when no coronary obstruction is previously found. Based on the presence and distribution of late gadolinium enhancement it is possible to differentiate myocardial infarction, myocarditis, Tako-Tsubo cardiomyopathy and other rare causes of MINOCA.
Key words: MINOCA, myocarditis, cardiac MRI

Spondylodiscitis as complication of aortic valve endocarditis in patient with intracardiac device

Ivona Adamovic
School of Medicine, University of Zagreb, Salata 3, 10 000 Zagreb, Croatia

Mihaela Bencic
School of Medicine, University of Zagreb

Trustee: Sandra Jaksic Jurinjak MD, PhD

Background: Spondylodiscitis is infection of intervertebral disk and vertebral bodies. It can be caused by septic embolus which is formed far away from the vertebral column. The infection can cause abscess and neurologic deficit below the affected area. Spondylodiscitis can be complication of infective endocarditis (IE) in 8,5% of patients with IE. Spondylodiscitis is more frequent in older patients, Enterococci and Streptococcus gallolyticus being most frequent cause, but neurological symptoms do not occur in all patients.
Case report: A 67-year-old woman was initially presented with ischiatic pain, immobility, general weakness, occasional chills and shivering and axonal polyneuropathy. Magnetic resonance imaging showed spondylodiscitis of L3 and L4 vertebrae, indicating neurosurgical treatment. Patient was in long-term cardiological follow up because of cardiomyopathy, atrial fibrillation and tachycardia, and had intracardial defibrillator (ICD) implanted four years prior to event. Multimodality imaging including echocardiography, PET/CT showed infected thrombus attached to ICD electrode, vegetation 19x3 mm attached to aortic valve. Hemoculture was positive for Enterococcus faecalis and she was treated with vancomycin and ceftriaxone for six weeks. Because of positive PET CT finding, the ICD was percutaneously extracted. Due to progression of aortic valve vegetation and progression of aortic insufficiency, aortic valve replacement was performed with biological valve. Combined treatment of multidisciplinary team and antibiotic treatment for six weeks, lead to her back pain reducing and mobility improving as well as improvement of spondylodiscitis not needing neurosurgery.
Conclusions: Diagnosis of endocarditis in case of spondylodiscitis can be challenging, however it should always be included in differential diagnosis especially in patients with intracardial devices. If not diagnosed on time it can result with severe consequences. The treatment includes antibiotics, endocarditis eradication and surgery or neurosurgery, if the abscess is formed. In most cases multidisciplinary team and multimodality imaging is paramount.
Key words: spondylodiscitis, endocarditis, intracardial devices, multimodality imaging

Challenges in determining the etiology of acquired deficiency of coagulation factors: a clinical case report

Sarunas Kozenevskis
Vilnius University, Faculty of Medicine

Trustee: Vilma Kuzminskaite MD

Background: Acquired coagulopathies, such as acquired coagulation factors deficiency, are more common than inherited disorders. Despite that, it may not always be that easy in clinical practice to identify the causes of such disorders. An unusual clinical case, which became a real challenge in determining the etiology of acquired deficiency of coagulation factors, will be presented.
Case report: A 66-year-old woman fell from the bathroom at home and injured her left shoulder. As the pain continued, the woman arranged an appointment with a traumatologist. As the agreed consultation time approached, the woman noticed bleeding from urinary tract and an increasing overall weakness as well. The woman was urgently hospitalized in the urology department of Vilnius University Hospital Santaros Clinics. In this department, the patient was consulted by physicians in a variety of fields, also, various tests were performed, and of all of these tests, the results of the coagulogram drew everyone's attention. The blood coagulation system was severely unbalanced with a pronounced lack of coagulation factors II, VII, IX. The infusion of vitamin K and fresh frozen plasma stabilized the situation and returned key parameters closer to a normal range. Various causes of such changes have been differentiated, but although the main reason has not been elucidated, it was believed that these changes were most likely due to vitamin K deficiency, since an overdose of anticoagulants such as warfarin, was not confirmed.
Conclusions: An acquired deficiency of coagulation factors can be caused by a variety of reasons and it can be a real challenge in determining the underlying cause. This clinical case demonstrates the importance of assessing the whole situation from different perspectives, as the results of the performed tests do not always coincide with the details of the collected medical history.
Key words: bleeding, coagulation disorders, coagulation factors

Deep vein thrombosis and acute pulmonary embolism complicated by sudden cardiac arrest as a first symptom of May-Thurner syndrome: a case report

Aleksandra Włodarczyk
Jagiellonian University Medical College/ Department of Angiology

Trustee: Mikołaj Maga MD

Background: May-Thurner syndrome (MTS) is a rare condition of venous occlusion caused by compression of the iliac vein by the iliac artery and vertebral column, leading to the lower extremity deep venous thrombosis (DVT) and may be complicated by the pulmonary embolism (PE). MTS remains a diagnostic and therapeutic challenge in pregnant and non-pregnant patients.
Case report: We report a rare case of a 37-year-old Caucasian women admitted to the Angiology Department for diagnosis after an episode of massive acute pulmonary embolism (PE) and a deep venous thrombosis (DVT) with a sudden cardiac arrest in the mechanism of pulseless electrical activity in a 5-week second pregnancy. She underwent a successful anticoagulant therapy with the alteplase, low molecular weight heparin (LMWH) and aspirin. Besides those life-threatening events the patient gave birth to a healthy newborn by caesarean section. In past medical history she suffered from a chronic venous insufficiency treated with surgical removal of varicose veins of the lower left limb and DVT of the lower limbs in a primigravida. Findings from the phlebography with intravascular ultrasound (IVUS) imaging revealed compression of the left common iliac vein through the left common iliac artery causing narrowing of this vein and duplication of the left common iliac vein. She was diagnosed with a May-Thurner syndrome and successfully treated with venous percutaneous transluminal angioplasty (PTA) with a balloon catheter of the left common iliac vein. She does not currently report any DVT or PE episodes within next 36 months.
Conclusions: To our knowledge, this is the first case report of such a difficult complication of May-Thurner syndrome in a successfully treated pregnant patient. Given the challenges of performing a reliable detailed ultrasonography examination in patients with MTS, the phlebography might be considered in patients of unknown etiology of the recurrent lower extremities deep venous thrombosis.
Key words: May-Thurner syndrome, pulmonary embolism, deep vein thrombosis

Giant adnexal masses found incidentally at autopsy

Akvilė Vasiliauskaitė
Lithuanian University of Health Sciences

Trustee: Dalius Banionis MD

Background: Usually adnexal masses can be found in early stages, but sometimes socioeconomic status, cultural believes and fear of surgical procedures cause late diagnosis. If undiagnosed masses can reach an enormous size and ovarian cysts as large as 148,6 kg have been reported. It can be prevented by using right diagnostic tools and by encouraging women who notice symptoms or growing abdomen to seek medical attention. 3 cases of giant adnexal masses were found incidentally at autopsy.
Case report: The bodies of three women (51, 65 ant 75 years old) were examined. External examinations showed obesity

and swollen abdomen. Internal examinations revealed large adnexal masses:
1. Cyst of the left ovary, 38 cm in diameter, containing 28,500 ml of grayish cloudy fluid was found. Left ovary (14x16cm, 1085 g) was full of cysts (from 0,4 to 12 cm) with a gray, cartilage-like tissue between them. Histological examination of left ovary revealed mucinous tumor with borderline malignancy areas.
2. 7000 ml of bloody fluid in the peritoneum and gigantic left ovary (2850 g) with multiple cavities were found. Cavities (3 to 9 cm) were filled with serohemorrhagic fluid or gelatinous yellowish white masses. Some of the cavities walls and blood vessels were ruptured.
3. 1500 ml yellowish fluid inside the peritoneum cavity and a large cyst (29x29x22 cm filled with 2250 ml of cloudy fluid) of the right ovary was found. At the bottom of the cyst uterine myomas were found.
Conclusions: Three giant adnexal masses were examined: cyst 38 cm in diameter, containing 28,500 ml of cloudy fluid, left ovary (2850 g) with multiple cavities (3 to 9 cm) and cyst 29x29x22 cm in diameter filled with 2250 ml of cloudy fluid. Two of them were the cause of the death.
Key words: adnexal masses, swollen abdomen, autopsy

Almost complete response after hypofractionated radiotherapy with hyperthermia in a patient with unresectable low-grade pelvic fibromyxoid sarcoma

Anna Maria Janik
Medical University of Warsaw

Trustee: Piotr Rutkowski Professor, MD, PhD

Background: The primary treatment for low-grade STS is resection because they seem to be chemo-radioresistant. Thus, the management of locally advanced or unresectable disease is challenging. We believe that the addition hyperthermia to hypofractionated RT allow obtaining good local control with acceptable treatment toxicity (prospective phase II clinical trial SINDIR NCT03 989 596). The aim of the study was to present a case from the aforementioned study of a patient with unresectable pelvic low-grade fibromyxoid sarcoma with almost complete response after RT+HT.
Case report: A 52- year old women was admitted to Institute of Oncology with a pelvic low-grade fibromyxoid sarcom. MRI showed an unresectable 9 cm pelvic mass in contact with a right iliac bone. Due to the extent of the disease, anthracycline-based chemotherapy was proposed. She received three courses according to AI regimen, however, with no response.Then participation in SINDR trial was proposed (December 2018). She began the first part of RT+HT, namely 3.25 Gy per fraction to total dose 32.5 Gy + four deep HT (BSD-2000 hyperthermia system). The treatment tolerance was good, grade 2 intestinal and ski toxicity according to Common Terminology Criteria for Adverse Events v 4.0 was observed. After 6 weeks (February 2019), the next MRI revealed the tumor regression, however, only an attempt of very extensive surgery with permanent stoma was possible. Then it was decided to add a boost of RT+HT according to SINDIR protocol without surgery. She received 4 Gy per fraction to total dose of 16 Gy + two deep HT. In December 2019 a gradual regression of the tumor was observed.
Conclusions: The case shows that RT+HT may be an effective treatment in patients with locally advanced potentially chemoresistant STS. It provides a good local disease control with acceptable toxicity. The full results of SINDIR clinical trial are awaited.
Key words: soft tissue sarcoma, hyperthermia, hypofractionated RT, clinical trial, unresectable sarcoma

35-year old woman with unspeciffic symptoms of heart failure

Olaf Domaszk
Medical University of Warsaw

Magdalena Chudzik
Medical University of Warsaw

Trustee: Trustee: Krzysztof Ozierański MD, PhD

Background: 35-year old woman was admitted to the hospital with unspeciffic symptoms (such as: dyspnoea, palpitation and ascites). Patient had had significantly increased levels of: TnI, NT-proBNP and D-dimers. ECG showed AF and LBBB. The EF was severily reduced. After 10 days of hospitalization, clinical deterioration was observed (i.e. transient cardiac, arrest third degree atrioventricular block and renal insufficiency). Subsequently, patient underwent a MRI. The scan showed alterations characteristic for myocarditis. Notwithstanding, a definite diagnosis could not be achieved. Case report:The results of myocardial biopsy, allowed to make a definite diagnosis (non-infectious, chronic myocarditis with endomyocardial fibrosis). The 18F-FDG PET scan results were consistent with these findings. Conclusions:Due to its complex pathophysiology of myocarditis and unspeciffic signs and symptoms, diagnosis of myocarditis remains a very challanging. Due to the ESC guidlines, PET/CT is not recommended in myocarditis. However, in some cases the results of PET/CT scan might be clinically relevant. Importantly, results of endomyocardial biopsy are necessary to make a definite diagnosis. Key words: myocarditis, endomyocardial biopsy, molecular investigations, infection, autoimmune disease

Autoimmune encephalitis with anti-LGI-1 antibodies presenting with rapidly progressing dementia and epilepsy.

Dominika Świerczewska
Medical University of Lodz / Department of Neurology and Stroke

Michalina Wiwatowska
Medical University of Lodz / Department of Neurology and Stroke

Trustee: Bartosz Bielecki MD, PhD

Background: Autoimmune encephalitis (AE) with anti-leucine-rich glioma inactivated-1 (LGI-1) antibodies belongs to a group of inflammatory diseases of the central nervous system. LGI-1 is related to epilepsy control and has a suppressive effect on gliomas. Suggestive symptoms for anti-LGI-1 encephalitis include faciobrachial dystonic seizures, rapidly progressive cognitive impairment and hyponatremia.
Case report: 1: A 73-year-old man presented with rapidly progressing cognitive impairment, hallucinations and delusions. Few months earlier he was also diagnosed with epilepsy. In addition, he suffered from hyponatremia. The cerebrospinal fluid (CSF) and serum tests serology showed anti-LGI-1 antibodies. Brain MRI showed dispersed, small and nonspecific lesions. He was treated with anticonvulsants and steroids. After temporary improvement, symptoms deteriorated requiring psychiatric treatment.
2: A 68-year-old woman admitted with rapidly progressive dementia. Later she presented with generalized epilepsy and positive psychiatric symptoms. Laboratory tests showed hyponatremia. The CSF and serum analysis revealed anti-LGI-1 antibodies. Using MRI an isolated atypical punctuate lesion in the right frontal lobe was found. Following treatment with steroids, plasmapheresis, anticonvulsants and antipsychotics an improvement of both cognitive functions and psychiatric symptoms was observed.
Conclusions: Hallucinations and delusions with dementias are not uncommon among elderly patients. However, if the dementia is progressing rapidly, autoimmune encephalitis (AE) should be considered. Epilepsy and hyponatremia in addition with dementia may be suggestive of AE with anti-LGI-1 antibodies. This rare form of AE can be misdiagnosed as a psychiatric disorder and abnormalities may not be seen using MRI. AEs are considered paraneoplastic syndromes, careful testing is recommended. Additionally, AEs can respond well to treatment, such as plasmapheresis and glucocorticoids. The pathogenesis of AE with anti-LGI antibodies is not fully understood. It is now believed to be linked with abnormal secretion of vasopressin following LGI-1 expression in the kidney and in the hypothalamus.
Key words: encephalitis, LGI-1, dementia, epileptic seizures, hyponatremia.

Synchronous advanced rectal cancer and stomach signet ring cell carcinoma: rationality of chemoradiotherapy and complexity of the treatment

Kopaev A. O.
Department of oncology, Saint-Petersburg state University clinic

Trustee: Pavlov R. V. MD

Background: Rectal and gastric cancers are common gastrointestinal malignancy and are the most potential causes of cancer deaths in the world according to the WHO. However, signet ring cell carcinoma (SGRC) is a distinct subtype of gastric cancer, which requires special treatment modality. Simultaneous presentation of both these malignances is extremely rare and tends to face many clinical challenges. As an optimal treatment nowadays is doubtful, our clinical case tends to clarify some treatment aspects
Case report: A 52 year old woman was admitted with complains on epigastric abdominal pain and rectal bleeding during 2 months. Colonoscopy showed circular rectal mass 7 cm above the anal verge, pathomorphologically – adenocarcinoma G1. Gastroscopy revealed an ulcerative lesion in the middle third of the stomach body. Pathologist confirmed SGRC G3. CT and MRI showed rectal tumor on 7cm with invasion in perirectal fat and enlarged mesorectal lymph nodes (LNs), stomach wall thickening with perigastric LNs enlargement and the absence of distant metastasis. Laboratory results demonstrated elevation of carcinoembryonic antigen. Neoadjuvant treatment with FOLFOX regimen was initiated. After 3 courses reduction of mesorectum infiltration with a size of the mesorectal LNs was noted, rectal tumor downstaging and reduction of the perigastric LNs size was detected. One week after the chemotherapy simultaneous gastrectomy with D2 dissection and low anterior resection was performed. Postoperative period lasted without complications.Taking into account the fact of the aggressive biology of the SGRC and the rationality for adjuvant therapy at the background of neoadjuvant treatment, chemoradiotherapy was chosen as the best option for such patient. Follow-ups showed no relapses.
Conclusions: Synchronous malignancy is a very special situation and requires individualized management with associated risks. Our case was complicated by GSRC subtype, which has several features, such as chemoresistance, and suggested poor response to the standard treatment.
Key words: stomach signet ring cell carcinoma, synchronous malignancy

Combination of the immunotherapy and HIPEC in the treatment of colorectal peritoneal carcinomatosis followed by autoimmune colitis.

Kopaev A. O.
Department of oncology, Saint-Petersburg state University clinic

Trustee: Pavlov R. V. MD

Background: According to the WHO colorectal cancer (CRC) is the third most common and the second most lethal cancer around the world. Besides the hematogenous and lymphatic dissemination, CRC tends to spread in the peritoneal cavity, leading to peritoneal carcinomatosis (PC) which is associated with significantly decreased survival. A novel treatment method which combines cytoreductive surgery and hyperthermic intra-

peritoneal perioperative chemotherapy (HIPEC) demonstrates promising results. However, based on individualized approach some patients require additional modern immunotherapy and nowadays the optimal modality is controversial.

Case report: A 62 year old man presented with abdominal pain and a history of rectal bleeding during 1 month. Colonoscopy revealed a sigmoid tumor, histology confirmed adenocarcinoma. After the initial presentation PET/CT was performed with suspicion of PC. In order to make a definitive diagnosis of PC a diagnostic laparoscopy was performed and consequently confirmed PC. According to the benefits of medical research and an objective condition of the patient the cytoreductive surgery with HIPEC was considered as a potentially curative treatment. After the surgery the medical council estimated the initiation of FOLFOX + Panitumumab treatment based on the tumor molecular profile. After 4 courses PET/CT detected progression of the disease. The treatment was changed, 4 courses with FOLFIRI + Bemacizumab were unsuccessful. The regimen was changed to the treatment with Nivolumab. After 2 courses the patient was presented with severe diarrhea and was transferred to the intensive care unit with a diagnosis of immunotherapy-induced colitis (IIC) which was treated with intravenous methylprednisolone. When the patient stabilized with a corticosteroid treatment the immunotherapy with Nivolumab was continued.

Conclusions: Our case report outlines the difficulties which physicians can meet when treating metastatic CRC. Diagnostics of IIC and immunotherapy prolongation are still debatable. However, early diagnostic and treatment of potential complications are the key factors to successful management.

Key words: HIPEC, immunotherapy

Prolactinoma resistant to dopamine agonist therapy- therapeutic effect of temozolomide

Katarzyna Maria Matwiej
Jagiellonian University Medical College, Department of Endocrinology

Izabela Stachowicz
Jagiellonian University Medical College, Department of Endocrinology

Trustee: Grzegorz Sokołowski MD, PhD

Background: Prolactinomas are the most common pituitary tumors, which symptoms are associated with increased prolactin level and mass effect. The majority of prolactinomas respond to dopamine agonist therapy but some are resistant. Temozolomide is an oral chemotherapy agent, which has been recommended as a salvage medication for pituitary tumors unresponsive for standard treatment.

Case report: A 52-year-old man, presented in 2012 with symptoms of multiple pituitary insufficiency, diabetes insipidus and restricted eye-field. He was found to have significantly elevated serum prolactin of 223 549 ulU/ml and macroadenoma in size 45x27x30 mm in magnetic resonance imaging (MRI) with mass effect. Initially he was treated with dopamine agonist bromocriptine with improvement in prolactin serum level of 5160 uIU/ml, size of the tumor 31x25x29 mm and eye-field. In 2016 bromocriptine resistance was diagnosed due to tumor's progression in MRI and elevated serum prolactin level. The patient did not consent to the surgery. There was a trial therapy with somatostatin analogues with no response in serum prolactin level. In 2017 bromocriptine in combination with cabergoline was administered for further treatment. Significant progression in tumor size (60x37x31 mm), prolactin levels (151 303 ulU/ml) and reported symptoms were observed over the next two years. In 2019 the patient decided to undergo neurosurgery and was qualified to resection of prolactin macroadenoma. In the following months laboratory and imaging tests revealed another recurrence of pituitary tumor with subsequent progression. In 2020 the patient was qualified to the salvage treatment with chemotherapy agent temozolomide. A decrease in prolactin concentration and partial tumor regression in MRI were observed.

Conclusions: Presented case report shows the complexity of management of the patient with recurring prolactinoma. Therapy with temozolimide may constitute new possibilities for management of dopamine agonist resistant prolactin macroadenoma.

Key words: reflactory prolactinoma, dopamie agonist, temozolomide, chemotherapy, pituitary macroadenoma

A rare case of mycotic aneurism of a transplanted kidney in a patient with Alport Syndrome

Karolina Barczak
University of Rzeszow

Justyna Branewska
University of Rzeszow

Trustee: Monika Kraśnicka MD, PhD

Background: Alport syndrome is an inherited disorder of basement membranes caused by mutations affecting specific proteins of the type IV collagen family, presenting with nephropathy and extrarenal manifestations such as sensorineural deafness and ocular anomalies. A significant proportion of patients require a kidney transplant, which can have serious consequences. A rare but life-threatening complication is the mycotic aneurysm, which will be discussed in this case report.

Case report: The study analyzes the medical history of a 32-year-old patient with end-stage renal disease in relation to Alport syndrome. From 2009 he was treated with hemodialysis for 5 years. The next stage of treatment was kidney transplant, which was complicated by bleeding from the anastomosis site of the graft renal artery with the external iliac artery of the recipient. For this reason, the patient required an urgent graftectomy.

In 2015, at the age of 26, he underwent a second kidney transplant. Candiduria was diagnosed in the early post-transplant period. A follow-up ultrasound of the graft revealed the pathological vascular structure. Based on the angio-MR examination, the diagnosis of pseudoaneurysm at the site of the anastomosis of the renal artery and the common iliac artery was confirmed. The intraoperative examination established the final diagnosis of the mycotic aneurysm. Reconstruction of the iliac axis and arterial vascularization of the transplanted kidney were performed. Currently, the excretory function of the transplanted kidney is very good and stable (GFR-52 ml / min), we do not observe yeasts in the urine sediment.
Conclusions: The consequences of a disease such as Alport syndrome can lead to severe kidney failure in a short time and, as a result, end with a kidney transplant. The disease entity we describe, requires an interdisciplinary medical approach. The clinical course of mycotic aneurysms requires a high degree of vigilance from doctors in order to make a correct diagnosis.
Key words: Alport syndrome, renal artery aneurysm, mycotic aneurysm, renal-transplantation, end-stage renal disease

Glasdegib-based therapy for primary refractory acute myeloid leukemia: case report

Justinas Daraskevicius
Faculty of Medicine, Vilnius University

Trustee: Andrius Zucenka MD

Background: Up to 40% of patients with acute myeloid leukemia (AML) fail to achieve complete remission (CR) after intensive induction chemotherapy and are diagnosed with primary refractory disease (PRD). To date, allogeneic hematopoietic stem cell transplantation (alloSCT) remains the treatment-of-choice for these patients, but the safe and effective bridging strategies are obscure. Herein we present a case report of the patient who was successfully bridged to alloSCT using non-intensive experimental glasdegib-based regimen after failing three lines of therapy.
Case report: A 67-year-old male was diagnosed with de novo AML with 72.5% bone marrow blasts in January 2020. Molecular analysis revealed a normal karyotype and ASXL1, NRAS mutations were identified using next-generation sequencing method. Induction 7+3 chemotherapy was administered but persisting blastemia indicated poor response (31% blasts in peripheral blood (PB) on the 16th day). Salvage FLAG-IDA protocol was administered, but the percentage of blasts in the PB increased to 76% on the 14th day of treatment and the patient was diagnosed with PRD. A venetoclax-based ACTIVE regimen was initiated as third-line therapy, but the response remained poor (16.8% blasts in the PB on the 18th day). The patient proceeded to non-intensive fourth-line treatment with glasdegib + low dose cytarabine. Outpatient therapy was well tolerated and resulted in a CR after the 7th cycle. In November 2020, the patient received matched unrelated donor alloSCT and remains in CR.
Conclusions: Current case supports the idea that glasdegib-based regimen could be potentially used as a safe and effective pre-transplantation therapy for certain patients in the settings of PRD. Hopefully, novel targeted agents will be employed more widely improving the overall prognosis for patients failing conventional chemotherapy.
Key words: acute myeloid leukemia, primary refractory disease, targeted therapy, glasdegib

Antisynthetase syndrome – a rare cause of interstitial lung disease

Katarzyna Jankowska
Jagiellonian University Medical College

Trustee: Wojciech Szczeklik Prof. MD, PhD

Background: Antisynthetase syndrome is a rare inflammatory muscle disease that occurs in 1,2–2,5 per million people per year. Clinically we can observe myositis, interstitial lung disease, fever, arthritis, Raynaud's phenomenon, and so-called "mechanic's hands". The appropriate clinical image with the presence of antibodies against aminoacyl-tRNA synthetases is necessary for establishing the diagnosis.
Case report: A 40-year-old man was admitted to the Department of Pulmonology with suspicion of bacterial pneumonia with homogeneous opacification in a lobar pattern on the chest X-ray. He complained about malaise and generalized muscle pain persisting from one month. RT- PCR test for COVID-19 was negative. The medical history did not reveal any chronic diseases. Two days later, patients' general condition got worse and he was admitted to the ICU with acute respiratory distress syndrome. On admission, the patient was conscious, with verbal contact, he had a fever, and was on non-invasive ventilation. While waiting for blood culture results, empirical antibiotic therapy was introduced with no significant clinical response. The patient required intubation and mechanical ventilation in a prone position. Laboratory tests ruled out bacterial pneumonia but revealed the presence of antibodies against histidine—tRNA ligase (also called Jo-1). Antisynthetase syndrome was diagnosed and the immunosuppressive treatment was started. It was complicated with A.baumani pneumonia with a lung abscess and right pneumothorax. The chest drainage system was implemented as well as targeted antibiotics. 10 days later, the patient was relocated to the Pulmonology Ward in a stable general condition.
Conclusions: When pneumonia is diagnosed, physicians should rule out the possible underlying causes. Antisynthhetase syndrome is a rare disease but can be diagnosed by the presence of the myositis-specific autoantibodies.
Key words: dermatomyositis, antisynthetase syndrome, pneumonia, lung abscess, pneumothorax

Ossifying fibrolipoma causing posterior interosseous nerve syndrome

Lauren Young
Medical University of Sofia

Trustee: Saikat Ray MD

Background: Posterior Interosseous Nerve syndrome is a peripheral nerve palsy which can be caused by extrinsic compression. Lipomas are the most common benign soft tissue tumour in adults, however variant lipomas, such as fibrolipomas are rarer. Sometimes, the tumour tissue may undergo metaplasia, resulting in changes such as ossification.
Case report: A 54-year-old female presented with a 6-month history of difficulty extending her right little finger at the metacarpophalangeal joint and weakness in other extensor muscles. She had pain and swelling in her right arm, and the area felt tender on examination. MRI findings suggested this was an intramuscular lipoma. Upon surgical resection bony material was felt in the tumour. Histopathology revealed the tumour to consist of lobulated fatty tissue with interspersed spindle cell elements and numerous foci of ossification. This made the tumour an ossifying fibrolipoma, which was externally compressing the posterior interosseous nerve. To our knowledge, this is the first time this kind of tumour has been reported to cause posterior interosseous nerve syndrome.
Conclusions: In conclusion, this case emphasises the need to allow for early diagnostics and localisation of the lesion to allow for preoperative surgical planning. It also highlights the need of biopsy to accurately differentiate variant lipomas.
Key words: fibrolipoma, posterior interosseous nerve syndrome

Repeated episode of massive rhabdomyolysis in illegal fentanyl user

Miglė Kalinauskaitė
Faculty of Medicine, Vilnius University

Karolina Janonytė
Faculty of Medicine, Vilnius University

Trustee: Gabija Laubner MD

Background: Rhabdomyolysis is a potentially fatal condition. Intracellular contents released from damaged myocytes can cause acute kidney injury (AKI) which associates with increased mortality. Opioid abuse can cause non-traumatic muscle ischemia.
Case report: A 32-year-old male presented to the emergency department with severe pain and numbness in both legs and right arm. The symptoms started after a prolonged period of immobility caused by an overdose of illegal fentanyl. The patient was treated for rhabdomyolysis one month prior, when it resulted in AKI and renal replacement therapy. After physical examination, which showed swelling, stiffness and reduced sensation in extremities, urinary catheterization produced 300 ml of black urine. Initial blood tests showed elevated potassium (7,2 mmol/l), ALT and AST (1025 and 2632 U/l), CK (329 680 U/l), CRP (129,7 mg/l) and WBC (23,85*109/l). Position-related rhabdomyolysis and AKI were diagnosed and sepsis was suspected. The patient was transferred to toxicology ICU: renal replacement therapy was started immediately and, after blood cultures were drawn, he was put on Cefazolin empirically. Dialysis was performed daily for 4–6 hours with 2–3 litres of fluid removed. On day 10 blood cultures results showed S. epidermidis and Vancomycin was started. Endocarditis was ruled out by ultrasound. Trauma surgeon did not recommend fasciotomy for compartment syndrome. The case was complicated by C. difficile infection and Metronidazole was added. Laboratory results and diuresis gradually improved, but pain in extremities and hypesthesia remained. The patient was treated in Toxicology ICU for 18 days. After 32 days of hospitalization and 19 dialysis procedures he was transferred to hospice with remaining polyneuropathy and weakness but normal renal function.
Conclusions: This case represents an episode of severe three limb rhabdomyolysis one month after the patient was treated for the same condition. Timely diagnosis and early aggressive treatment are paramount to achieve a good outcome.
Key words: compartment syndrome, rhabdomyolysis, toxicology, fentanyl

Sexual obsessions in obsessive-compulsive disorder – a challenge for mental health professionals

Wiktoria Zawadzka
Medical University of Warsaw/ Faculty of Medicine

Trustee: Magdalena Flaga-Łuczkiewicz MD

Background: Obsessive-compulsive disorder (OCD) is a common psychiatric condition that affects circa 2,3% of the population at some point in their life. The prevalence of sexual obsessions in OCD remains unknown. Nonetheless, some studies show that these obsessions might be the third common theme in OCD. Despite the high prevalence of S-OCD (sexually themed OCD), its symptoms are often misdiagnosed by mental health professionals.
Case report: A 29-year-old female presented to a psychiatrist in an outpatient clinic 6 months after giving birth to her first child. The patient had symptoms of OCD since childhood, which mainly included many mental rituals. After the pregnancy, her condition deteriorated and the character of symptoms has changed. Now, her primary concerns were sexually related obsessions. She feared the possibility of developing sexual thoughts about her child and committing an incest. Being alone around the infant caused a major distress – the patient was continuously analysing her body for any signs of potential sexual arousal. She had a constant feeling of shame and guilt. On the basis of these symptoms and medical history, the patient was diagnosed with OCD and received the proper treatment. Apart from the psychiatric care, the patient was also seeing a therapist, who during one of the sessions misinterpreted her

obsessions as pedophilia and decided to call the police. This situation caused even bigger self-stigmatisation and trauma.
Conclusions: This case illustrates the problems arising from the misapprehension of sexual obsessions, which takes place even among mental health professionals. A recent study assessed clinicians' ability to identify some OCD manifestations and showed that 43% of them misdiagnosed sexual obsessions about children, with 1/3 assorting the symptoms to pedophilia. That puts a help-seeking patient at risk of not getting adequate treatment or even being notified to the police.
Key words: OCD, S-OCD, sexual obsessions, obsessive-compulsive disorder

Cholangiocarcinoma in a young male patient after liver transplantation because of primary sclerosing cholangitis – a case report

Karol Miklusiak
Student Scientific Group of Gastroenterology and Hepatology, Department of Gastroenterology, Jagiellonian University Medical College

Klaudia Miklusiak
Student Scientific Group of Gastroenterology and Hepatology, Department of Gastroenterology, Jagiellonian University Medical College

Trustee: Dorota Cibor MD, PhD

Background: Intrahepatic cholangiocarcinoma (ICC) is the 2nd most common primary liver cancer and one of its best described risk factors is the primary sclerosing cholangitis (PSC), that isolated can be efficiently treated with a liver transplantation (LT). However, the patients diagnosed with ICC are not eligible for liver transplantation (LT). Nonetheless, among a small number of transplant recipients, the ICC is accidentally diagnosed during histopathological examination of removed liver.
Case report: Onset of the disease
In a 20-year-old male patient the PSC was diagnosed. One year later, after the extended diagnosis, the patient was also diagnosed with ulcerative colitis. During the next year, the cirrhosis developed and for the first time the liver transplantation was considered. While remaining under control of the outpatient clinic, the symptoms exacerbated.
Liver transplantation
Due to the deteriorating condition, the patient was qualified for the liver transplantation. Meanwhile, 12 years after the disease onset, an appendectomy was performed for gangrenous inflammation – the following serious general condition cased liver decompensation. Finally, 2 years later, LT was performed.
Further treatment
Unfortunately, in the histopathological examination of explanted liver the ICC was diagnosed. In the control abdominal MRI performed 11 months after transplantation the patient was diagnosed with multifocal ICC in the transplanted liver, with tumor spreading in the lymph nodes. The patient could not be classified for another abdominal operation. Three months later, at the age of 35, the patient died in the home hospice.
Conclusions: Early liver transplantation in patients with PSC may reduce the risk of developing ICC – the serious condition with poor prognosis. ICC can be incidentally diagnosed inside the explanted liver, therefore the close clinical surveillance should be mandatory in all liver transplant patients, in order to detect and treat ICC as early as possible.
Key words: primary sclerosing cholangitis, intrahepatic cholangiocarcinoma, liver transplantation

A misdiagnosed malignant peritoneal mesothelioma treated as an ovarian cancer – a case report

Karol Miklusiak
Student Scientific Group of Clinical Oncology, Department of Clinical Oncology, Jagiellonian University Medical College

Trustee: Paweł Potocki MD, PhD

Background: Malignant mesothelioma is a rare cancer, but it is associated with poor prognosis and high mortality rate. The symptoms of peritoneal mesothelioma are vague and non-specific. Common initial complaint is abdominal distension and abdominal pain, which results in up to 50% incorrect diagnoses.
Case report: Clinical history
A 49-year-old female patient was referred to the Institute of Oncology with suspicion of ovarian cancer. The computer tomography (CT) examination revealed a cystic-solid lesion of the right ovary, with the features of dissemination into the peritoneal cavity. The patient underwent the laparotomy with historectomy, removal of appendages and resection of the greater omentum. The histopathology examination showed in both ovaries the small foci of serous papillary adenocarcinoma with metastatic changes in the greater omentum. The histopathologic stage was defined as pT3cN1, clinically FIGO IV.
Treatment
The patient was classified into 6 cycles of adjuvant immunochemotherapy. Post-treatment CT scan showed stabilization of the disease. 3 months later, the CT control scan revealed the presence of enlarged lymph nodes along the right common iliac artery. The patient was re-qualified for palliative chemiotherapy. After 9 chemotherapy administrations, disappearance of the densities and persistent postoperative epigastric hernia were observed.
The clarification of the diagnosis
The removal of the epigastric hernia with simultaneous segmental resection of ileum and fragments of peritoneum was performed. The histopathology examination with the immunophenotypic test contradicted the ovary as the tumor onset point, taking into account the epithelioid mesothelioma. When compared to the baseline histological examination, the picture was consistent. It was decided to introduce the metronomic therapy with vinorelbine, continued until today.
Conclusions: Despite the use of novel immunohistochemical and molecular markers, malignant mesothelioma may be misdiagnosed. Therefore, any tumors in the abdominal cavity

should be carefully assessed. Performing surgical procedures in patients with stable neoplastic disease may improve their quality of life.

Key words: malignant mesothelioma, ovarian cancer, misdiagnosis

Successful ustekinumab treatment for an acute general pyoderma gangrenosum in a patient with Crohn's disease and reactive arthritis – case report

Klaudia Miklusiak
Student Scientific Group of Gastrology and Hepatology, Jagiellonian University Medical College, Krakow, Poland

Karol Miklusiak
Student Scientific Group of Gastrology and Hepatology, Jagiellonian University Medical College, Krakow, Poland

Trustee: Dorota Cibor MD, PhD

Background: Pyoderma gangrenosum (PG) is a rare inflammatory process characterized by skin lesions that begin as pustules that become ulcers. PG often coexists with other systemic diseases. Except for topical, the systemic treatment is used, including, glucocorticosteroids, cyclosporine, or TNF antagonists, biological treatment is implemented.
Case report: A 31-year-old woman with diagnosed Crohn and reactive arthritis, corticosteroid dependent, on anti-TNF alfa therapy (adalimumab) presented skin lesions (originally looking like papules) on legs. Most of them were erythematous and covered by scabs. On the posterior surface of the left lower leg, two bleeding, deep and necrotic wounds were present. Histopathological examination confirmed PG. The implemented treatment included: intravenous glucocorticoids, azathioprine, and topical dermatological treatment. After that, the healing of ulceration was observed.
A month after completing adalimumab therapy, the patient presented new extended, painful lesions, that occurred on almost all parts of the body (legs, pubic region, corpus, scalp). Skin changes deteriorated significantly the patient's quality of life. In the most acute state of the PG there were observed 38 ulcerations. Due to the resistance to the current treatment, the decision was to enroll the patient in a clinical trial which included the administration of ustekinumab.
In July 2019 the patient started biological treatment. After a 7-month-treatment with the interleukin 12/23 antibody, all lesions disappeared.
Conclusions: This case lends further evidence for the role of interleukin-23 in the pathogenesis of pyoderma gangrenosum. It also suggests considering therapy with ustekinumab in PG, when previous standard systemic and topical treatments have failed.

Key words: Crohn's disease, pyoderma gangrenosum, steroids, ustekinumab, autoimmune disease

Difficult obstetric history in a patient with focal nodular hyperplasia

Klaudia Miklusiak
Student Scientific Group of Gastrology and Hepatology, Jagiellonian University Medical College, Krakow, Poland

Karol Miklusiak
Student Scientific Group of Gastrology and Hepatology, Jagiellonian University Medical College, Krakow, Poland

Trustee: Dorota Cibor MD, PhD

Background: Focal nodular hyperplasia (FNH) is the second most common benign solid tumor of the liver. Its etiology is unclear and the association with estrogen has been a subject of controversy. The cases of FNH enlargement during pregnancy and when using contraceptives have been described.
Case report: Diagnosis of focal nodular hyperplasia
The 29-year-old female patient presented with pain in the middle and right epigastrium. In physical examination no pathological findings were present. The USG revealed a lesion in the V and VI segments of the liver, which was diagnosed with MRI as FNH (24x22x18mm). Observation time
Annual liver ultrasound examinations were performed showing a stable lesion size. 4 years after the diagnosis of FNH, due to problems with getting pregnant, the diagnosis of primary infertility was made. Polycystic ovary syndrome, point endometriosis, glucose intolerance and hypertension were also diagnosed. Because of stable medical conditions, hormonal treatment to facilitate pregnancy was implemented.
Pregnancies
During the hormonal stimulation, the patient became naturally pregnant, however, the pregnancy ended in a miscarriage in the 16th week of gestation (WG). About one year later, the second hormonally induced pregnancy began. Regular follow-up visits with abdominal ultrasound were performed.
In the third trimester, the ultrasound showed a slight progression of the lesion – 30x28x22mm. In the 38th WG, a cesarean section was performed and a healthy female child was born. 4 months postpartum, a follow-up MRI scan showed a reduction in the hepatic tumor to pre-pregnancy size. Nowadays, the patient is in good general condition, breastfeeding, liver lesion remains stable in size.
Conclusions: Small FNH lesions seem not to be a risk of complicated pregnancy, although close observation is recommended. Hormonal stimulation of ovulation may be considered as a safe procedure in patients with FNH and difficulties with getting pregnant.

Key words: FNH, pregnancy, fertility problems

Cerebral toxoplasmosis in a newly diagnosed HIV infected patient

Krista Skrējāne
Riga Stradins University, Latvia

Trustee: Rūta Ozoliņa MD – Riga East University Hospital, Latvia

Background: Toxoplasmosis, caused by intracellular parasite, Toxoplasma gondii, is the leading cause of opportunistic infection and CNS lesions in AIDS patients. Since 2016, Latvia is a leading country in Europe of HIV infection (15.4 per 100,000 in 2019) and AIDS cases, although the incidence of toxoplasmic encephalitis related AIDS in Latvia is rare. Cerebral toxoplasmosis is life-threatening infection and could be a first manifestation of an undiagnosed HIV infection

Case report: A 27-year-old man was admitted to Riga East University Hospital with fever, altered mental status (Glasgow Coma Scale 12) and bilateral weakness, left greater than right. On admission he could not communicate. Anamnesis revealed the onset of headache, fever and syncopal episode 3 weeks earlier. Patient was admitted to the local hospital due to progression of mental confusion and progressive bilateral muscle weakness. Brain magnetic resonance imaging (MRI) showed multiple supratentorial and infratentorial focal lesions with surrounding edema, in some of them ring-enhancing pattern was noted. HIV antibody test results were positive. Patient was transferred to Riga East University Hospital for further examination and treatment. His laboratory data on admission – CD4+ T cell count of 88 cells/μL and HIV1-RNA viral load of 3.28 × 105 copies/mL. The serum IgG Toxoplasma gondii and the cerebrospinal fluid PCR for Toxoplasma gondii DNA were positive. Based on these findings, diagnosis of cerebral toxoplasmosis was made. Despite the immediately started anti-T. gondii treatment, patient developed a decerebrate posturing. Repeated CT revealed hemorrhagic imbibition in right hemisphere and significant edema. Patient was transferred to another clinical centre for a long term treatment.

Conclusions: This case report emphasizes the severity and rapid progression of toxoplasmic encephalitis, furthermore it illustrates the life-threatening condition because of late diagnosis of HIV infection.

Key words: Cerebral toxoplasmosis, AIDS, immunodeficiency

Clinical approach to a pulmonary embolism with N-butyl-2-cyanoacrylate in a 46-year-old woman – a case report

Jakub Pytlos
Medical University of Warsaw

Dominika Chojecka
Medical University of Warsaw

Trustee: Aleksandra Gąsecka MD, PhD

Background: Iatrogenic pulmonary embolism (PE) is an uncommon, yet potentially life-threatening condition. Mostly, it occurs due to migration of fragments of surgical devices to the pulmonary arteries, but it can also be a complication of tissue adhesives injection.

Case report: Herein, we present a case of a 46-year-old female patient with autoimmune hepatitis who was treated for duodenal varices with endoscopic injection sclerotherapy using N-butyl-2-cyanoacrylate as a sclerotic agent. Following the procedure, a computed tomography angiography (CTA) check-up scan revealed the presence of an embolic material in the branches of both pulmonary arteries, yet the patient was discharged home due to good overall condition. Unfortunately, twenty days later the patient was re-admitted due to dyspnoea, cough and pleuritic chest pain. On physical examination she was tachypnoeic and hypoxic. Repeated CTA exposed disseminated, hyperdense emboli in segmental and subsegmental branches of pulmonary arteries, confirming a diagnosis of an iatrogenic PE with cyanoacrylate.

The patient was consulted within the local Pulmonary Embolism Response Team. Given the haemodynamic stability, as well as the lack of laboratory and echocardiographic features of right ventricle dysfunction, the risk of interventional therapy was assessed to be higher than the risk of death and a decision was made to continue with the supportive therapy and a series of check-up examinations. Detailed follow-up of the patient's condition which took place over the following twelve-month period confirmed that the right path of management had been taken.

Conclusions: This case underlines the challenges in the management of iatrogenic PE, which remains unstandardized. Consultation in a multidisciplinary team should be an important part of a decision-making process to determine whether interventional therapy or non-interventional approach is more beneficial to the patient.

Key words: Pulmonary embolism, PERT, cyanoacrylate, sclerotherapy

Case report: ichthyosis

Evita Kokuša
Rīga Stradiņš University, Latvia

Trustee: Renāte Zariņa MD

Background: Autosomal recessive congenital ichthyosis is a rare disorder of keratinization with two main phenotypes – lamellar and nonbullous congenital ichthyosiform erythroderma – which are hard to differentiate. It is mostly characterized by abnormal skin scaling over the whole body. Incidence is estimated at 1 in 200,000 births.

Case report: Patient: male neonate, born prematurely (36+4 gestation weeks) with birth weight 2995 g, Apgar score – 8/9. First observations after birth – skin peeling all over the body, deformed fingers, toes and ears and eversion of eyelids. He was admitted to Children's Clinical University Hospital in a serious condition with diffuse subcutaneous oedema, erythroderma, skin scaling and fissures. After primary examination, parenteral feeding was initiated, skin was treated with lanolin ointment, hands and feet – with dexpanthenolum and glycerin ointment and eyes with dexpanthenolum gel. Four days later antibiotic treatment with vancomycin was initiated due to elevated inflammation markers. After isolating staphylococcus aureus from blood culture vancomycin was changed to oxacillin. Skin and faeces cultures tested positive for Escherichia coli (with extended-spectrum beta-lactamases). Nevertheless, inflammation markers stayed elevated and patient's condition im-

proved slowly, so gentamicin was added. Locally clotrimazole ointment was used for candida dermatitis and miconazole unguent for stomatomycosis. With condition improvements the patient was discharged. During hospitalization, gene panel testing was performed. ALOX12B gene mutation confirmed autosomal recessive congenital ichthyosis. There is no etiological treatment for ichthyosis, so therapy for this patient was symptomatic. The patient also had pes varus on both sides which were corrected with massage and ankle-foot orthosis in an outpatient setting.
Conclusions: New-borns with ichthyosis have decreased barrier function of the skin therefore sepsis and skin infections are very likely to occur. It is important to address these issues timely along with symptomatic treatment to improve patient's condition, although with time the state of skin can improve.
Key words: skin, congenital ichthyosis, inflammation.

Factor V Leiden mutation, placental abruption and disseminated intravascular coagulation syndrome (DIC) – a case report.

Klaudia Żak
Students Research Group, Department of Obstetrics and Pathology of Pregnancy, Medical University of Lublin, Poland

Bartosz Piszcz
Department of Obstetrics and Pathology of Pregnancy, Medical University of Lublin, Poland

Trustee: Aleksandra Stupak MD, PhD

Background: The frequency of the factor V Leiden mutation in congenital thrombophilia is estimated at about 15%, and it accounts for as much as 40% of all episodes of venous thromboembolism in pregnant women. Moreover, a relationship between thrombophilia and abruption of the placenta, which is complicated by, inter alia, disseminated intravascular coagulation (DIC), has been shown.
Case report: A 34-year-old patient, Gravida- IX, Para- III, 27 weeks' gestation reported due to abdominal pain and subjectively suspected outflow of amniotic fluid. Obstetrical history – first cesarean section of Fetal Growth Restriction (FGR) baby-boy, 6 spontaneous abortions, a confirmation of factor V Leiden mutation, next pregnancy – prematurely born FGR baby-girl. In the current pregnancy the physical examination revealed profuse bleeding from the genital tract. In the ultrasound examination – no fetal heart rate was found – the pregnancy was immediately terminated by caesarean section. A dead male fetus (850 g), was recovered. 1 day after, due to the identified disorders of the coagulation system (D-DIMER: 33 816.00 ng and others coagulation factors), low red cell parameters, platelet count below reference values she received 2 units red blood cells concentrate, 2 units of concentrated platelets, and 3 units of fresh frozen. There was no general improvement in patients well-being. On the second day after cesarean section, due to the increasing symptoms of hemorrhagic shock, a relaparotomy was performed and retroperitoneal hematoma was evacuated. In the following days, the patient's laboratory parameters and general condition begun to improve.
Conclusions: In women with congenital thrombophilia, it is necessary to use a prophylactic dose of low molecular weight heparins throughout pregnancy and its continuation until the end of puerperium. Other recommendations for prevention of FGR is to use aspirin from first trimester until 34 weeks' gestation, which is necessary to avoid complications that may be life-threatening.
Key words: V Leiden mutation, DIC, FGR

Autoimmune hepatitis and primary biliary cholangitis coexisting with amyotrophic lateral sclerosis

Zuzanna Buś
Jagiellonian University Medical College

Klaudia Miklusiak
Jagiellonian University Medical College

Trustee: Dorota Cibor MD, PhD

Background: Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disease characterized by the progressive injury of motor neurons leading to death. The only known risk factors are older age, male gender, and a family history of ALS. Recent studies suggest the comorbidity between ALS and autoimmune disorders. In therapy riluzole (a glutamatergic neurotransmission inhibitor) and edaravone (an antioxidant drug) are used.
Case report: In April 2016, a sixty-three-year-old man with diabetes, autoimmune hepatitis, and primary biliary cholangitis was admitted to the hospital with the suspicion of ALS. For one year he had reported exacerbating, painful tingling, numbness, paresthesia, contractions of hand muscles. The neurological examinations confirmed the preliminary diagnosis.
The patient had been on maintenance therapy with ursodeoxycholic acid, azathioprine due to active liver autoimmune diseases that led to the development of liver cirrhosis. Because of liver injury at that time the riluzole therapy was rejected.
One year later, due to the progression of ALS (decreased muscle strength in both upper limbs, which made it impossible for him to function on a daily basis) therapy with riluzole was implemented. The liver enzymes stayed stable. After two months, the patient decided to quit this therapy. One year later owing to disease progression, including shortness of breath, therapy with edaravone was administered. Since 2017 (with the short break of a couple of months) the patient has been regularly treated with edavarone. The disease shows a slow progression – currently, the patient can walk up to 50 steps per day but has no problems with breathing. The liver function tests and activity of aminotransferases are in the normal range.
Conclusions: This case demonstrates further evidence for a correlation between autoimmune diseases and ALS. It seems

that edavarone may be effective in slowing down the ALS progression.
Key words: amyotrophic lateral sclerosis, ALS, autoimmune hepatitis, AH, primary biliary cholangitis, PBC, edavarone, autoimmune diseases, diabetes

Liver failure associated to pazopanib in treatment of a rare pancreatic tumor

Ewelina Truszkowska
Poznań University of Medical Sciences, Department of Gastroenterology, metabolic, internal diseases and dietetics

Cyntia Szymańska
Poznań University of Medical Sciences, Department of Gastroenterology, metabolic, internal diseases and dietetics

Trustee: Liliana Łykowska-Szuber MD, PhD

Background: Pazopanib is a kinase inhibitor used in advanced renal cell carcinoma and specific types of sarcoma. Its inhibition of intracellular tyrosine kinase of vascular endothelial growth factor receptor and platelet-derived growth factor receptor is responsible for antiangiogenic properties of this drug. Monitoring of liver enzymes levels is crucial, since hepatic toxicity is one of the most common side effects. Mechanism is yet unknown, however HFE polymorphisms and production of a toxic intermediate are considered.
Case report: The 81-year-old male patient was admitted to the Oncology Department due to elevated liver enzymes (ALT 848 U/I, AST 591 U/I) and symptoms of stomach pain, nausea, vomiting and lack of appetite. Other abnormalities were increased levels of bilirubin and INR. At that moment, the patient was treated with pazopanib due to RCC (renal cell carcinoma) metastasis in the pancreas. RCC was diagnosed in 1995 and then the patient had a right nephrectomy done. After 25 years, CT revealed two pancreatic lesions, one in the head and another in its body. PET scan found also metastatic abdominal lymph nodes. Histopathology examination confirmed suspicion of late RCC metastasis to the pancreas. Patient began treatment with pazopanib. Taking into account his medical history, symptoms and laboratory findings, toxic liver failure associated with pazopanib was diagnosed. For a fact, pazopanib was discontinued and ornithine aspartate, dexamethasone and fluid therapy were administered. Aminotransferase levels and bilirubin dropped during hospitalization. Patient was discharged home and a visit to an oncological outpatient clinic was scheduled in order to determine further treatment.
Conclusions: Molecular targeted therapies are considered as safer, having less side effects than conventional radiotherapy and chemotherapy, however adverse effects still occur. Awareness of them is essential for proper follow up of a patient's health.
Key words: pazopanib, liver failure, kidney cancer

Rare case of Brownell-Oppenheimer variant of Creutzfeldt-Jakob disease

Marta Siliņa
University of Latvia, Faculty of Medicine

Trustee: Alfrēds Lukša MD

Background: Creutzfeldt-Jakob disease (CJD) is a rare progressive neurodegenerative disorder, that is caused by misfolded prion proteins. CJD can be sporadic, familial, or acquired either from a CJD patient or an animal with similar disease, for example, a cow with bovine spongiform encephalopathy. For diagnosis, nonspecific proteins as Tau protein, protein 14-3-3 are measured in cerebrospinal fluid (CSF). Brain biopsy, the only definitive diagnostic tool, is rarely performed due to high infection risk. CJD is characterized by long incubation period, rapid symptom progression. There is no specific treatment, and this disease is invariably lethal.
Case report: Patient, 51-year-old male, presents with complaints of progressive balance problems over the past month. Objectively, horizontal nystagmus, slight bilateral dysmetria and positive Romberg test is evident. Multiple clinical and visual diagnostic investigations are done, and none show any specific findings. Even though patient receives broad spectrum therapy, cerebellar ataxia is progressing. Patient also develops personality changes, dyskinesias, aphasia and visual disturbances. Further questioning of the patient's family reveal personality changes for the past year and a crucial fact about patient's occupation. He has taken part in multiple calve births. With time the symptoms progress even more, and patient is started on palliative care. Progressive symptoms, patient's history, and negative findings upon examination lead to believe that patient has progressive neurodegenerative, most likely, prion related disease. The diagnosis of Brownell-Oppenheimer variant of Creutzfeldt-Jakob disease is set after receiving positive protein 14-3-3 results in CSF.
Conclusions: It is crucial to diagnose and restrict this lethal neurodegenerative disease. If familiar, family members of the patient, stand a risk of inheriting this disease. If acquired, others with similar exposure (farmers, veterinarians), also are in risk of infection. Most importantly, CJD patients must be identified to rule out blood or transplant-related transmission.
Key words: Creutzfeldt-Jakob disease, prion disease.

Rare differential diagnosis of ischemic stroke: neurosyphilis

Marta Siliņa
University of Latvia, Faculty of Medicine

Trustee: Ilze Ikerte MD

Background: Cerebral ischemic stroke is debilitating, disabling and possibly lethal condition with multiple differential diagnosis. One of the rarest stroke mimics is a neurosyphilis. It is the tertiary (late) form of syphilis, sexually transmitted bacterial infection. Clinically neurosyphilis can present as myelopathy

or seizures, it also has neuropsychiatric, ocular, brain stem and focal forms. The latter closely resembles a stroke. Syphilis infection is often recognized early and therefore properly treated. Approximately only 28% of untreated syphilis patients develop tertiary form, making neurosyphilis very uncommon in developed countries.
Case report: Patient, 65-year-old male, presents with progressive numbness and weakness in the right-side limbs. Objectively, light right-side hemiparesis is evident. Native computed tomography (CT) confirms subacute ischemic lesion in the left parietal lobe, in the medial cerebral artery territory. Patient is started on adequate antiaggregant and supportive therapy, but 5 days later, objectively hemiparesis has progressed. Patient also presents with poor coordination, ataxia, sub-febrile temperature. Magnetic resonance imaging reveals multiple metastasis in both hemispheres, left cerebellum, and brainstem. Serum oncological markers are within normal range. CT demonstrates right side pneumonia and undetermined intraabdominal lymphadenopathy. Patient starts to develop bulbar syndrome. Finally, sexually transmitted disease (STD) screening is done, which reveals that patient is positive for treponema pallidum and human immunodeficiency virus. Diagnosis of late syphilis, symptomatic neurosyphilis is set, consulting with Latvian Centre of Infectious Diseases.
Conclusions: Neurosyphilis not only mimics stroke clinically, but it can also present similar findings in a CT scan. Being so uncommon, neurosyphilis is rarely considered as a stroke mimic, but missing the diagnosis of this condition leads to delayed onset of treatment. Untreated, this condition can be lethal. Therefore, screening for STDs can be beneficial even if they are not in the first line of differential diagnosis.
Key words: stroke mimics, neurosyphilis.

One victim, several suspects – looking for the cardiac source of an ischemic stroke

Łukasz Żydzik
Students' Scientific Group at the Ist Department of Cardiology, Interventional Electrocardiology and Hypertension, Jagiellonian University Medical College, Krakow, Poland

Trustee: Agnieszka Olszanecka Associate Professor, MD, PhD

Background: Embolism of cardiac origin accounts for 15–40% of ischemic strokes. In patient who had potentially embolic stroke, transthoracic (TTE) and tranesophageal echocardiography (TEE) are the key diagnostic modalities to establish the existence of a source of embolism.
Case report: A 40-year-old man was hospitalized in neurology department because of visual-field disturbances for 1,5 year. Magnetic resonance imaging revealed 11mm focal lesion in cerebellum – probably old ischemic stroke. Because of possible cardioembolic etiology, patient was referred to cardiologist. Physical examination revealed loud holosystolic murmur in apex, radiating to axilla. TTE showed severely enlarged left atrium (LA), mildly enlarged left ventricle with ejection fraction of 72% and prolapse of anterior mitral valve leaflet with 5mm flail gap, causing very eccentric and difficult to quantify mitral regurgitation (MR). Unusual morphology of interatrial septum with left-sided septal pouch was also detected. Because of high suspicious of silent atrial fibrillation, 24-hour Holter monitoring was done twice, but no arrhythmia was present. To accurately evaluate mechanism of MR, and to exclude presence of thrombus in LA, TEE was performed. It revealed flail A3 mitral valve scallop with ruptured chordae. There were no intracardiac thrombi, tumors or aortic plaque observed. Agitated saline contrast study excluded paradoxical embolism. The chronic MR was defined as severe based on valve morphology, eccentric jet reaching posterior wall of LA, systolic pulmonary vein flow reversal and enlargement of left-sided cardiac chambers. Patient was referred for mitral valve repair surgery.
Conclusions: Our patient had two potential sources of embolism identified. First is severe primary MR, causing enlargement of LA and thus, leading to high risk of atrial fibrillation. Second is left sided atrial septal pouch, that has been recently shown to increase risk of cryptogenic stroke. However, it is hard to state which of them, if any, was the culprit of stroke.
Key words: cardioembolism, mitral regurgitation, atrial septal pouch

T-cell lymphoma of the thyroid gland

Aleksandra Gamrat
Student Scientific Group, Department of Endocrinology, Jagiellonian University Medical College

Katarzyna Irzyk
Student Scientific Group, Department of Endocrinology, Jagiellonian University Medical College

Trustee: Małgorzata Trofimiuk-Müldner MD

Background: Primary thyroid lymphoma is a rare clinical entity; the annual incidence is estimated at 2 per 1 million. The mean age at diagnosis is 65 years. The risk factor is chronic thyroiditis. Almost all cases (98%) of primary thyroid lymphoma are B-cell lymphomas, and non-Hodgkin's lymphomas are predominant. T-cell lymphomas located in the thyroid gland are, therefore, extremely rare. Given the rarity of this disease, making a prompt diagnosis can be challenging
Case report: We report a case of primary thyroid T-cell lymphoblastic lymphoma in a 23-year-old woman. She was initially consulted because of dysphagia. Subacute thyroiditis and nodular goiter were diagnosed, and antibiotics were initiated. Due to rapid enlargement of a thyroid nodule, fine-needle aspiration biopsy was performed, based on which lymphoproliferative disease was suspected. Open biopsy of thyroid confirmed T-lymphoblastic leukaemia (pre-T ALL/LBL). The patient was treated with chemotherapy according to the hyper CVAD/MA regimen. Subsequently, she underwent allogeneic bone marrow transplantation (from an unrelated donor). The procedure was complicated by COVID-19 infection.

Conclusions: The purpose of this case report is to highlight the existence of such a rare condition. Primary lymphoblastic thyroid lymphoma should be considered in the differential diagnosis of a rapidly enlarging neck tumour, even in young people.
Key words: Case report; T-cell, lymphoblastic lymphoma; Thyroid.

Hemorrhagic fever with renal syndrome – a case report

Maša Puljiz
School of Medicine, University of Zagreb

Trustee: Ivan Puljiz Professor, MD, PhD

Background: There have been a number of cases of hemorrhagic fever with renal syndrome (HFRS) documented in the northern part of Croatia in recent years. We present a case of moderate form of HFRS during COVID-19 pandemic.
Case report: A 19-year-old previously healthy male was admitted to the tertiary care hospital in Zagreb Croatia, with a five-day history of fever (40°C), chills, shivering, headache and back pain. The day before admission, the patient suffered from visual disturbances. The epidemiological history was nonspecific. On admission the patient was afebrile – Tax. 36.9 °C (after antipyretic therapy), normotensive (RR125/95 mm Hg), dehydrated with conjunctival injection. Other clinical status was normal. On admission several laboratory findings were notable: thrombocytopenia (69x109/L), leukocytosis (13x109/L), hyponatremia (129 mmol/L), and slightly elevated: C-reactive protein (48.8 mg/L), urea (9.4 mmol/L), creatinine (119 µmol/L), aspartate aminotransferase (42 U/L) and gamma-glutamyl transferase (74 U/L). Haematuria and proteinuria were also recorded. Brain multi-slice computer tomography and chest X-ray were normal. Abdominal ultrasound revealed an enlarged spleen. Electrocardiogram (ECG) showed sinus rhythm (70/min). Specimens of blood and urine culture were sterile. Nasopharyngeal swab for SARS-CoV-2 was negative. A rapid immunochromatographic test confirmed acute Puumala virus infection (positive IgM antibodies). After admission, appropriate symptomatic and supportive therapy was initiated with monitoring of vital parameters. During the next few days of hospitalization, urea (16.2 mmol/L) and creatinine (163 µmol/L) were elevated, following the polyuric phase (5200 ml/24h). Until hospital discharge, laboratory findings and diuresis were normalized.
Conclusions: HFRS should be considered in the differential diagnosis of febrile illness accompanied with thrombocytopenia, elevated urea and creatinine even in case of a negative epidemiological history in northern part of Croatia. We believe this case is interesting to report since a number of infectious diseases can present with described symptoms and laboratory findings.
Key words: hemorrhagic fever with renal syndrome, Puumala virus

Case Report Surgical

Jury:

Olga Milczarek, MD, PhD
Tomasz Jędrychowski, MD
Aneta Myszka, MD
Tomasz Muszyński, MD
Michał Romaniszyn, MD, PhD

Coordinators:

Marcin Statek, Izabela Karpińska

List of papers

Case report: multiple surgeries for frequent desmoid tumor recurrence

Medeine Silene Markeviciute
Vilnius University / Faculty of Medicine

Trustee: Vetra Markeviciute MD

Background: Desmoid tumors are very rare mesenchymal neoplasms with an estimated incidence of 1 per 3500 all cancer cases. Even though they have a benign histologic appearance and do not metastasize, they are locally invasive, aggressive, and cause significant complications, like deformity, morbidity, and obstruction of vital organs.
Case report: A 22-year-old man was referred to an orthopedic surgeon for palpable mass on the posterior calf surface and pain. In April 2018, aggressive fibromatosis was diagnosed by a biopsy done to assess changes seen on MRI. Tumor excision was performed after 2 weeks. After 6 months, due to recurrence – partial resection of m. gastrocnemius was performed. During 2018–2020, 4 more recurrences were diagnosed – in total, the patient underwent 5 surgeries in 3 years. Last surgery – partial resection of m. gastrocnemius and Achilles tendon. After the last recurrence watch and wait tactic was chosen in hopes of spontaneous regression. But due to a rapidly worsening condition, surgery was indicated. It was followed by treatment with tamoxifen under the supervision of oncologists. Currently, the patient has severe muscle atrophy of the right shin due to multiple surgeries and is followed-up every 3–6 months due to a high risk of recurrence.
Conclusions: The treatment modalities of desmoids include surgery, minimally invasive surgery (high intensity focused ultrasound, radiofrequency ablation, cryoablation technique), radiotherapy; chemotherapy (tyrosine kinase inhibitors, methotrexate, vinblastine), NSAIDs, hormonal therapy (tamoxifen), and other agents in clinical trials. However, currently, there is no gold standard/recommendations and neither therapy is effective for high recurrence (25–77%). Desmoid tumors also have the capacity for self-limitation and, therefore, no treatment other than observation is sometimes possible expecting spontaneous regression (rates 28–50%). Treatment options for desmoid tumors are limited and assessment of treatment effects remains an unresolved issue due to no standard validated response criteria available.
Key words: desmoid tumor, aggressive fibromatosis

New technologies in spine surgery – case report of thoracic vertebral compression fracture treatment

Maciej J. Frączek
Students' Scientific Group at Department of Neurosurgery and Neurotraumatology, Jagiellonian University Medical College, Cracow
Students' Scientific Group at Department of Radiology, Jagiellonian University Medical College, Cracow

Miłosz Błoński
Students' Scientific Group at Department of Neurosurgery and Neurotraumatology, Jagiellonian University Medical College, Cracow

Trustee: Jarosław Polak MD, PhD

Background: Surgical fixation of most vertebral compression fractures (VCFs) is rarely needed. With vertebral fractures, surgery, or internal fixation, is only considered if there is evidence of instability of the spine. The rule in such cases is decompression of the nervous structures, restoration of anatomical relations and stabilization. In the case of unfavorable additional factors, such as advanced age, comorbidities, osteoporosis, meeting the abovementioned principles is a challenge. Case report: 76 years old male has been describing increasing back pain for 2 months with no related injury. RTG imaging has exposed kyphotic Th11, Th12 osteoporosis-related VCFs with displacement of the fracture towards the spinal canal. Patient has reported exacerbations of pain to 10/10 in NRS scale and impaired walking ability. There was no paresis in the lower limbs and sensory disturbances diagnosed. Surgery started with O-ARM device controlled percutaneous implementation of Legacy perforated screws through base of vertebral bodies of Th9-10 and L1-2. 3D imaging confirmed accurate screws placement. Cement was used to strengthen bases of vertebrates. Through screw canals guide barrels were implemented into Th11, Th12 bases. The same canals were used to implement Tectona (Alteris) device which elevated terminal laminas of broken Th11, 12 shafts. This space was also filled with cement. Afterwards Th11, 12 laminectomy was performed and Th11-12 articulate was removed. Rods were inserted on both sides and fixed in the socket of the screws with nuts. After surgery patient has reported improvement in walking and decreased back pain with no neurological complications. Cement from vertebrates has moved to venous circulation and gave pulmonary embolization without sudden worsening of a patient. Conclusions: In cases of unstable spine fractures in elderly with coexisting osteoporosis, with the occupation of spinal canal, use of modern technologies such as O-ARM, minimally invasive techniques, Tectona and vertebroplasty may enable safe conduct of complicated surgeries.
Key words: tectona device, neurosurgery, compression fracture, spine surgery, O-ARM

A complicated case of the aortic type B dissection

Ayla Hadzavdic
School of Medicine, University of Zagreb

Vesna Galjuf
School of Medicine, University of Zagreb

Trustee: Josip Varvodic MD – Department of Cardiac and Transplantation Surgery, University Hospital Dubrava

Background: Stanford type B aortic dissection involves aorta distal to the subclavian artery. It accounts for 25–40% of aortic dissections. The most common symptom is severe back and chest pain. Dissection is usually treated conservative, except for the uncertain cases. We present a case of progressively enlarging type B dissection treated with thoracic endovascular aortic repair (TEVAR) and afterwards with elephant trunk procedure due to complications after TEVAR placement.
Case report: In January 2008, 50-year-old hypertensive male admitted to the emergency room (ER) because of acute and severe back and chest pain. Multislice computed tomography angiography (MSCT-angio) was performed, which showed acute type B dissection. He was treated conservative. In April 2009 he was readmitted do ER with same symptoms. MSCT-angio showed 2cm progression in descending aorta. He underwent TEVAR. Again, in October 2010 he felt the same symptoms, but MCST-angio showed no significant changes. After that he was treated with modified anti-hypertensive therapy. In November 2011 he had severe chest pain and also was hemodynamically unstable. Control MSCT-angio showed progression, aortic arch enlargement up to 6cm and descending aorta up to 9cm. Also, there was dislocation of endo-graft. Replacement of ascending aorta and artic arch was performed together with retrograde stent replacement. Right axillary cannulation was performed. Patient was operated in moderate hypothermia (26 degrees Celsius) and bilateral antegrade cerebral perfusion. E-vita open plus (JOTEC BmbH, Germany) was implanted. The patient recovered and was dismissed from hospital ten days after surgery.
Conclusions: Stanford type B aortic dissections can present with complications which are associated with significant morbidity and mortality. Here we present how a complicate case of the aortic type B dissection can be managed with more than one option.
Key words: hypertension, chest pain, type B dissection, multislice computed tomography angiography (MSCT-angio), thoracic endovascular aortic repair (TEVAR)

Primary unilateral diffuse B cell lymphoma of high malignity in adrenal gland: case report

Ernests Kocetkovs
Riga Stradins University, faculty of medicine, Riga, Latvia.

Dainis Jakovels
Riga Stradins University, faculty of medicine, Riga, Latvia.

Trustee: Aleksejs Kaminskis. MD

Background: Adrenal lymphoma is an extremely rare and highly invasive malignant disease. Primary adrenal lymphoma constitutes fewer than 1% of cases of all extranodal lymphomas and only one third in that 1% are unilateral. In our clinical case we would like to present patient with primary adrenal lymphoma, unilateral (in left side) without other comorbidities.
Case report: A 65 year – old man was hospitalized with CT-verified formation in the left adrenal gland about 10 cm in size and retroperitoneal lymphadenopathy to 2 cm paraaortaly, aortocavaly. From his anamnesis he had weakness and fatigue during last 5 months. He didn't take any medications daily, as he never had comorbidities.
Patient's blood analysis was without significant changes. X-ray examination of lungs and scintigraphy were performed but dissemination process was not detected. Therefore surgical treatment was prescribed.
During the operation, laparotomy was performed and dissemination process in liver was not observed. Tumor mass was palpated in the left subphrenic space in left adrenal gland. Dense infiltrations were palpated paraaortally and preaortaly in place of lymph nodes. Left side of large intestine, spleen, pancreas were mobilized and it was a good opportunity to achieve the tumor mass. In the result the tumor was removed, the only tissue was remained in the aortocaval zone 6 × 4 cm because technically it could not be removed. After the operation the removed tissues and lymph nodes were sent for histological examination.
Histological conclusion was the following: diffuse B cell lymphoma of high malignity. After the operation the patient was sent home in satisfactory condition with further recommendations.
Conclusions: our clinical case is unique because the patient has primary unilateral tumor without associated infection with lymphoma (HIV, EBV were negative). The surgical treatment was one of the other treatment methods. The patient is waiting for further treatment.
Key words: adrenal gland, B lymphoma.

Giant Invasive Spinal Schwannoma of the Thoracolumbar Region

Anna Griezite
University of Latvia

Trustee: Raimonds Mikijanskis MD, PhD

Background: Giant invasive spinal schwannoma (GISS) is defined as a tumor that extends over more than 2 vertebral levels, erodes vertebral bodies, and extends posteriorly and laterally into the myofascial planes. Only a few reports of giant invasive thoracolumbar schwannomas have been issued due to its rarity.
Case report: A 28-year-old female presented with progressive low back pain and thoracolumbar kyphosis for 10 years. Her physical examination showed slight muscle weakness and hypoesthesia in both legs. A magnetic resonance imaging scan revealed a contrast-enhancing lesion in the spinal canal at T9 to L3 levels. The tumor was eroding T10, T11, and T12 vertebral bodies and T12 and L1 posterior elements and extending extraforaminal at T11 to L2 levels. The patient underwent laminectomy from T9 to T11 and L2 to L3. At the T12 and L1 levels, the tumor was exposed subfascial. The operation was performed under intraoperative neuromonitoring. The tumor was debulked with an ultrasonic aspirator and was totally removed in piecemeal fashion, and transpedicular interbody fusion was applied. On one year follow-up, no additional neurological deficit was found.

Conclusions: GISS schwannomas are rare tumors and distinct from other schwannomas. Thoracolumbar lesions such as schwannomas must be considered in the differential diagnosis of chronic back pain without clear etiology. Because of their local aggressiveness and extension, complete resection, preservation of neural structures, and preparedness to restabilize the vertebral column is important. Complete resection of giant invasive spinal schwannomas is possible with good outcomes. However, they have a tendency to recur, and close follow-up is needed.
Key words: spine, schwannoma, tumor, spinal canal

Reconstruction of multiple facial and skull structures following firecracker explosion

Sintija Kalvāne
University of Latvia, Faculty of Medicine

Darja Arīna Miškina
University of Latvia, Faculty of Medicine

Trustee: Stefans Rjabcevs MD

Background: Firecracker caused traumas are complicated and usually require multi-stage treatment. Multidisciplinary approach, complete diagnostics, adequate debridement and reconstruction of lost anatomical structures are necessary for best surgical and functional outcomes.
Case report: On 1th January 2014 a man in severe general condition was transferred to Riga Eastern Clinical University Hospital with a firecracker shot wound in the face, multiple fractures of the facial bones and skull, diffuse cerebral edema, nasal cerebrospinal fluid leak, right eye trauma. Right eye evisceration, hemostasis, wound revision and suture was performed immediately. On the second stage after 13 days anterior skull pit reconstruction and cerebrospinal fluid leak closure was performed. Patient was discharged after one month with reduced right hemiparesis and remained coordination disorders in the right limbs.
In April 2014 because of non-healing wound, wound revision, fistula excision, subcutaneous abscess drainage was done.
On 27th May 2015 patient was hospitalized with MRSA caused osteomyelitis of the frontal bone – after debridement was done, patient retained tissue defect and dead space that was reconstructed with an synthetic material in December.
In March 2017 the fistula has formed in postoperative region, tissue defect persistent. In December, the skull defect was closed with a free mm. latissimus dorsi flap. All wounds healed uneventfully and patient was discharged in stable condition.
In December 2018 remaining frontal bone defect was reconstructed with an allograft. On follow-up in December 2020 there is no sign of infections, patient continues rehabilitation.
Conclusions: Firework-caused craniofacial injuries are complicated and require multiple stage therapy. Trauma mechanism and long hospitalization time carries high risk for multidrug resistant bacterial infection development. Delayed complications are common and require multidisciplinary approach, including functional reconstruction of multiple anatomical structures.
Key words: explosive trauma, polytrauma, craniofacial reconstruction, MRSA osteomyelitis

Case of retroperitoneal malignant fibrous histiocytoma Grade 3 (pT2N0M0G3R2)

Elza Anna Noriņa
University of Latvia,Faculty of Medicine

Trustee: Sigita Hasnere MD – Oncology-Chemotherapist, Institute of Oncology, Riga Stradins University, Riga, Latvia

Background: Malignant fibrous histiocytoma also known as undifferentiated pleomorphic sarcoma or pleomorphic spindle cell sarcoma is a type of malignant sarcoma that occurs in patients 50 to 70 y.o. MFH is the second most common soft tissue sarcoma in adults and occurs most commonly in the extremities, trunk and in the retroperitoneum. Due to its difficult diagnosis retroperitoneal MFH can reach an uncommonly significant size.
Case report: Male, 51 y.o. in 2018 was diagnosed with decompansed type II diabetes, but in examination large retroperitoneal tumor was found in right side of the abdomen. After partial surgical resection histological findings showed multiple anaplastic histocitar and atipical multinuclear Giant cells leading to diagnosis of retroperitoneal MFH grade 3 (pT2N0M0G3R2). It was decided to start neoadjuvant chemotherapy with 3 courses of Ifosfamide and Doxorubicin. After each treatment tumor grew in size from 10 to 13 cm in total, so second line treatment with Dacarbazine was appointed. Tumor growth in size still remained, so third line treatment with Docetaxel and Gemcitabine was started, but was ineffective – tumor enlarged to 16 cm. Patient started having pain in the abdomen, loss of appetite and vomiting, so second partial surgical resection was done. Due to remained progression in 2020 patient underwent one more tumor resection, right side nefrectomy and splenectomy as a palliative treatment. After three months control CT findings showed rapid tumor progression and extensive metastatic process. Tumor material was sent to genetic testing for determination of CDK4 amplification mutation, which indicated potential sensitivity to CDK4 inhibitors. Week after starting initial treatment with Ribociclib patient died due to tumor progression.
Conclusions: Retroperitoneal MFH is an agressive rare tumor with low sensitivity to chemotherapy and high mortality, easy to misdiagnose. Patients diagnosed with MFH should be considered more radical treatment strategies.
Key words: sarcoma, fibrous histiocytoma

Disseminated papillary thyroid carcinoma – effects of the lenvatinib therapy

Maria Komisarz
Students' Scientific Group of Endocrinology, Department of Endocrinology, Jagiellonian University Medical College, Cracow, Poland

Dominika Szumilas
Students' Scientific Group of Endocrinology, Department of Endocrinology, Jagiellonian University Medical College, Cracow, Poland

Trustee: Małgorzata Trofimiuk-Muldner, MD, PhD

Background: Papillary thyroid carcinoma (PTC) is a type of well-differentiated thyroid cancer (DTC) accounting for 85–90% of all thyroid cancers and characterized by high long-term survival rates. DTC's therapeutic options include a combination of surgery, radioactive iodine (RAI) and levothyroxine suppression therapy. In recent years tyrosine kinase inhibitors (TKIs) such as lenvatinib were approved for advanced DTC patients.
Case report: The 62-year-old female was first admitted to the Department of Endocrinology with suspicion of metastatic PTC. PTC metastases to the neck lymph nodes, bones (manubrium, left sacroiliac joint with buttock infiltration) and liver were confirmed in computed tomography (CT) imaging, biopsy and histopathological examination. The patient was qualified for thyroidectomy with the right central and lateral lymphadenectomy and resection of manubrium with the tumor. Subsequently, she received palliative RAI therapy (in July 2019 and January 2020 – 7400Mbq in total) as well as external irradiation of the left sacroiliac joint (August 2019). Due to the disease progression, further treatment with RAI was discontinued, and rescue therapy with lenvatinib (daily dose of 24 mg) was started in September 2020 with mild side effects (arterial hypertension well controlled while on medical treatment). The patient reported a remarkable pain improvement. A significant decrease in thyroglobulin level was noted (from 61 078,0 ng/ml in August 2020 to 10 435,0 ng/ml in December 2020). Partial remission of lymph nodes, bone and liver metastases was confirmed in CT imaging. The patient continues the therapy with lenvatinib.
Conclusions: Lenvatinib therapy may not only result in partial remission of disseminated DTC but also improve patients' well-being.
Key words: lenvatinib, papillary thyroid carcinoma, case report

A case report of penile metastasis from rectal adenocarcinoma

Azuolas Algimantas Kaminskas
Vilnius University, Faculty of Medicine

Trustee: Audrius Dulskas MD, PhD

Background: Although colorectal cancer is one of the most common oncological diseases worldwide, its metastases to the penis are particularly rare. Scientific literature presents only a few dozens of cases like this.
Case report: A 64-year-old came to our clinic complaining of blood presence in the stool. Fibrocolonoscopy was performed and rectal ampulla tumor was detected and confirmed with biopsy (moderately differentiated adenocarcinoma). Chest and abdominal computed tomography (CT) scan with pelvic magnetic resonance imaging (MRI) were performed, and clinical diagnosis of rectal cancer (cT3N1) was confirmed. Patient was treated with neoadjuvant chemoradiotherapy followed by rectal resection with total mesorectal excision within 12 weeks. Pathologic examination of resected specimen confirmed moderately differentiated (G2) rectal adenocarcinoma with metastases to regional lymph nodes (ypT2N1b). Postoperative course was uneventful. Adjuvant chemotherapy was not prescribed. Three years later, patient started complaining of penile pain and solid formations along the entire length of the penis. On physical examination, a rough and raised tumor of unclear boundaries was observed in the head of the penis and solid infiltrations were observed in the corpora cavernosa, extending all the way to the root of the penis. CT scan showed irregular accumulation of contrast in the penis without distant metastases. Multidisciplinary team discussed the patient and decided to perform an amputation of the penis. Pathological examination of the resected specimen revealed the penile metastasis of low-grade (G2) adenocarcinoma of the colon. The postoperative recovery of the patient was adequate and he was discharged. Chemotherapy is scheduled within 4 weeks.
Conclusions: Penile metastasis from rectal cancer is a very rare condition with mostly poor prognosis. Surgical treatment could be primary option for localized symptomatic disease, however, metastasis to the penis often indicates advanced stage of the disease.
Key words: penile metastasis, rectal cancer, corpus cavernosum, corpus spongiosum, case report

Castleman disease

Weronika Lebowa
Jagiellonian University Medical College/ Students Scientific Group of General Surgery at the First Department of Surgery at the Jagiellonian University Medical College in Krakow

Trustee: Jakub Kenig Professor, MD, PhD

Background: Castleman disease (CD) is a benign lymphoproliferation of unknown etiology characterized by lymph node enlargement. CD is divided into unicentric CD, which involves a single enlarged lymph node or region of lymph nodes, and multicentric CD, which involves multiple lymph node stations.
Case report: A 26-year-old female reported to the surgical outpatient clinic with a hypoechoic lesion in the abdominal ultrasound, detected as part of routine checkups ordered by an occupational medicine doctor. The patient did not report any complaints. She was referred to the general surgery ward for further diagnosis. Computed tomography confirmed the tumor just below the bifurcation of the abdominal aorta. Laboratory testing, including tumor markers, did not reveal any abnormalities. Family history was unremarkable. SPECT examination excluded a neuroendocrine tumor. Due to the low BMI, the urachus tumor was suspected in the MRI scan, but the diagnosis was not confirmed. Exploratory laparoscopy was performed, in which a packet of lymph nodes was found below the aortic bifurcation. Enlarged lymph nodes were removed and sent for histopathological evaluation. The final diagnosis

was a hyaline-vascular type of Castleman disease. The postoperative course was uneventful. The patient was followed up in a surgical clinic.
Conclusions: Castleman disease remains a diagnostic challenge because of its usually asymptomatic course and lack of changes in biochemical tests. The unicentric CD can be successfully treated surgically. Close postoperative follow-up is necessary as recurrence may occur.
Key words: Castleman disease, benign lymphoproliferation, unicentric, abdomen, laparoscopic surgery

MEN1 syndrome – complicicity of curation with rare emergency presentation

Bogacheva Vera Mikhailovna
Pirogov Russian National Research Medical University, Moscow, Russian Federation

Denisov Fyodor Gennadievich
Pirogov Russian National Research Medical University, Moscow, Russian Federation

Trustee: Makhuova G.B. MD, PhD

Background: Multiple endocrine neoplasia type 1 (MEN1) is a rare heritable disorder characterized by tumors of the parathyroid glands (PG), anterior pituitary, and pancreas which tend to relapse and often presented by variable clinical picture. This treatment is a difficult challenge for the physicians, which require a multidisciplinary approach.
Case report: A 51 year old woman was admitted to the emergency department in severe condition with the clinic of acute abdomen. Based on CT scan – pneumoperitoneum. At the operation multiple perforations of the stomach, duodenum and small intestine were revealed. According to the history patient was suffered from the MEN1 for 10 years, underwent the right hemithyroidectomy, left hemithyroidectomy, corpocaudal resection of the pancreas. At the moment of hospitalization, the patient had functionally active adenomas of the left PG; microadenomas of the hypophysis and right adrenal gland were clinically inactive. In 2018 the patient was observed for the pathology of the PG at the specialized center with the rejection of surgical intervention due to a risk of recurrent laryngeal nerve damage because of the previous intervention. The patient complains of pain in the bones,joints,weakness, weight loss, and periodic pain in the epigastric region. Based on the patient's objective condition and hormonally active tumor of the parathyroid gland, a decision was made to remove the adenoma of the parathyroid gland. Operation was complicated by a massive scar process, but proceeded successfully. The postoperative period passed without complications.
Conclusions: Our case report outlines the rare presence of the multiple ulcers of the upper digestive tract in the context of the MEN1 syndrome. On the other hand demonstrates the complicicity of the treatment of this patient because of the need for numerous operations at the background of the repeated tumours.

Key words: multiple endocrine neoplasia, multiple ulcers of the upper digestive tract

Charcot – Marie – Tooth disease and anesthesia during orthopedic surgery

Vosyliūtė Rūta
Vilnius University, Faculty of Medicine

Trustee: Kuzminskaitė Vilma MD

Background: This case report describes a 60-year-old woman with a history of Charcot-Marie-Tooth disease (CMTD) since her early adolescence. CMTD is hereditary demyelinating peripheral neuropathy comprised by progressive muscle weakness, atrophy, motion and sensory disorders in all four extremities. Considering the fact that there is no clear consensus in literature about anesthesia management for CMTD patients, it seems relevant to share more experiences.
Case report: The operation took place at Vilnius University Hospital Santaros Klinikos. In the past this patient experienced surgical treatments of oligodendroglioma, partial resection of proximal phalanges and femur fracture. Her lower limbs shown significant weakness. After her last operation the deterioration of symptoms were observed – progressive muscle weakness in both arms appeared. Recently, the patient experienced injury at home while she was walking with an assistive device; femoral neck was fractured once again and operation needed to be done. Patients with CMTD are at higher risk of prolongation of muscle relaxation, hyperkalemia or even malignant hyperthermia. There are serious concerns related to general anesthesia such as decreased perioperative respiratory function and sensitiveness due to intravenous anesthetics. This is an example of successful case of performing total intravenous anesthesia which was combined of propofol, remifentanyl, fentanyl and nondepolarizing muscle relaxant rocuronium. Total hip endoprosthesis surgery was performed. Anesthesia was completed in 2 hours and 25 minutes without delayed muscle relaxation or respiratory sequelae. Early postoperative period went without complications, the patient was discharged from hospital. Unfortunately, the patient is not able to walk with assistive device right now, wheelchair is needed because of disease progression and experienced trauma.
Conclusions: Anesthesia for patients with CMTD is challenging. General anesthesia can be used as an alternative for regional one. Despite of anesthetic techniques, disease progression is unavoidable.
Key words: Charcot-Marie-Tooth, general anesthesia, total intravenous anesthesia, rocuronium

High accuracy of magnetic resonance imaging in post-traumatic spinal cord changes

Katarzyna Laszczak
Student Scientific Society at the Department of Interventional Radiology and Neuroradiology, Medical University of Lublin

Ewa Kopyto

Trustee: Anna Drelich-Zbroja Professor, MD, PhD

Background: Spinal cord herniation is the cord displacement outside the dura. The etiology of that phenomenon can be subdivided into iatrogenic, spontaneous and post-traumatic. Since 1973, when the first case of spinal cord hernia was reported to the literature, only 19 of them the result of a trauma. The greatest challenge is delay of symptoms appearance. There were cases in which neurological defects occurred 48 years after injury.
Case report: The patient with a recent history of cycling-injury was admitted to the clinic. After the initial physical examination, the patient was referred to computer tomography (CT) which did not reveal any bone fractures. Subsequently, he was directed to magnetic resonance imiging (MRI). Suprisingly this dianostic procedure showed wide-based intervertebral disc extrusion between C4 and C5 vertebrae, with the pressure on frontal surface of spinal cord and intervertebral foramina diameter. At this level the 15mm length oedema/ischaemic zones in the spinal cord were found. Between C6 and C7, C7 and Th1 as well as Th1 and Th2 MRI depicted the central herniation with pressure on buffer space.
Conclusions: MRI is the the method of choice in diagnosis of post-traumatic disc extrusion and spinal cord changes.
Key words: spinal cord hernia, post-traumatic herniation, MRI, central herniation

Endovascular repair of abdominal aortic aneurysm – role of diagnostic imaging in pre- and postoperative care

Anna Rekowska
Students' Scientific Society at Department of Interventional Radiology and Neuroradiology, Medical University of Lublin, Poland

Monika Rogowska
Students' Scientific Society at Department of Interventional Radiology and Neuroradiology, Medical University of Lublin, Poland

Trustee: Maryla Kuczyńska MD

Background: Abdominal aortic aneurysms (AAA), defined as pathologic dilation of aorta, are found in 0,5–3,2% of population. Multiple studies have proven superiority of endovascular repair of aortic aneurysm over conventional open surgery in terms of safety, efficiency and lower post-operative mortality. However, even this method involves certain risk of complications including endoleaks, migrations, kinks, stenoses and occlusions. In case of abdominal aorta repair, complications may occur in 16–30% of patients and among delayed complications, type II endoleaks are the most common ones.
Case report: We hereby present a case of a 75 year-old male patient, who was incidentally diagnosed with AAA, and has been regularly controlled using Doppler ultrasound and computed tomography angiography (CTA) between 2009 and 2019. By September 2019 observed aneurysm has extended its length from initial 5cm to 8 cm and diameter from 37mm to 48mm. In combination with progressive dilatation of both right and left iliac arteries and formation of intraluminal thrombus, the patient has been qualified for stent graft implantation and additional transmural fixation with Heli-FX implants (due to unfavorable AAA anatomy) to prevent migration or leak. Nevertheless, 6 months after the successful repair, type II endoleak has been indicated in control Doppler ultrasound and later confirmed in CTA. Therefore, additional embolization of enlarged aneurysm (source of endoleak) has been performed and up to date no further complications occurred.
Conclusions: Both CTA and Doppler ultrasound play crucial role in screening, monitoring aneurysm's growth and detection of potential postoperative complications. AAA are often asymptomatic and as long as they are not at risk of rupture, treatment is limited to radiological observation. Patients who undergone endovascular repair need to be frequently controlled using imaging methods to disclose possible pathologies within the implant or vessel.
Key words: abdominal aortic aneurysm, endovascular repair, endoleak, stent graft, CTA, Doppler ultrasound

Low-grade appendiceal mucinous neoplasm associated with pseudomyxoma peritonei – case report

Sabina Kolawa
Jagiellonian University Medical College / 1st Department of General, Oncological, Gastroenterological Surgery with Transplantology

Trustee: Jakub Kenig Associate Professor, MD, PhD

Background: Mucinous neoplasms of the appendix are a rare group of neoplasms, often confused with other different lesions. Their representation in student's literature is poor and insufficient to detect such a case. Pseudomyxoma peritonei is a clinical condition most commonly arising from neoplastic cells in the appendix. The objective of this clinical case report is to show a classic course of these diseases to ensure proper diagnosis and treatment.
Case report: This case presents a 59-year-old woman whose initial diagnosis and surgical treatment were targeted at mucinous ovarian cancer. During the first surgery, gynaecologists resected the uterus, ovaries, appendix and omentum majus. Thorough histopathological examination revealed LAMN

(Low-grade Appendiceal Mucinous Neoplasm) associated with diffuse spread into the peritoneal cavity, PMP (Pseudomyxoma peritonei). LAMNs, although usually benign in nature, can spread into the peritoneum and adjacent organs due to rupture of the appendix. Because of this, the patient underwent a radical CRS (cytoreductive surgery), during which the ascending colon, spleen and parts of the peritoneum were resected. No residual changes were present, thus HIPEC (Hyperthermic intraperitoneal chemotherapy) was performed. The postoperative course was uneventful.

Conclusions: The patient has a typical history of atypical, advanced stage neoplasm. The portrayal of its nature and treatment provides clinical value to future physicians.

Key words: mucinous, neoplasm, appendix, LAMN, PMP, surgery

Invasive treatment of refractory chronic rhinosinusitis in a 25-year-old patient with cystic fibrosis

Anna Surówka
Jagiellonian University Medical College

Marta Piasny
Jagiellonian University Medical College

Trustee: Joanna Szaleniec MD, PhD

Background: Cystic fibrosis is a genetic disease caused by autosomal recessive mutation in CFTR gene, which encodes cystic fibrosis transmembrane conductance regulator protein. This leads to production of abnormally hyperviscous secretions in exocrine glands. Lungs, digestive system and sweat glands are commonly affected. 10 to 50% of cystic fibrosis patients may also present recurrent nasal polyps. Usual treatment in this group of patients is Endoscopic Sinus Surgery (ESS), but in the following case this method turned out to be unsuccessful. This led to a decision to perform bilateral external frontal sinus surgery.

Case report: This is a case report describing a 25-year-old male patient suffering from cystic fibrosis and refractory chronic rhinosinusitis with nasal polyps. Main and the most concerning complaint of the patient was exophthalmos caused by bone destruction and penetration of the inflammatory changes to the orbit. Despite several ESS the result wasn't persistent. This led to a decision to perform the external frontal sinus bilateral surgery, but due to rapid recurrence the patient required FESS surgery 5 months later.

Conclusions: Although performed treatment in our patient doesn't seem to have persistent outcomes it increases the quality of life and helps with handling symptoms of chronic rhinosinusitis with nasal polyps.

Key words: chronic rhinosinusitis with nasal polyps, ESS, external frontal sinus surgery, cystic fibrosis

Multidisciplinary treatment of patient with giant small intestine cancer causing gastrointestinal bleeding and concomitant deep vein thrombosis

Natalia Zmysłowska
Department of General, Gastrointestinal, Oncologic Surgery and Transplantology, I Chair of General Surgery Jagiellonian University Medical College

Trustee: Jakub Kenig Associate Professor, MD, PhD

Background: Malignant small intestinal tumors are accounting for a small percentage of gastrointestinal cancers. Its nonspecific clinical manifestations and difficulties in radiological diagnostics often leads to misdiagnosis, and the proper treatment is delayed, which affects negatively at the patient survival.

Case report: This case presents 60-year-old patient with malignant tumor of the small intestine with swelling and pain of right lower limb.

A computer tomography (CT) was performed. The examination revealed an extensive tumor with marked features of active bleeding, infiltrating different sections of the small intestine. As to the patient's problem with lower limb, an ultrasonography (USG) was conducted, which showed a deep vein thrombosis with embolism in right popliteal vein. Due to an active gastrointestinal bleeding, a classic way of pharmacological thromboprophylaxis was out of the question. To prevent perioperative pulmonary embolism, patient was referred to Interventional Radiology Department, where after a confirmation about the patency of femoral, iliac vein and inferior vena cava, an inferior vena cava filter was temporarily applied. The tumor was radically resected and the postoperative course was uneventful. The inferior vena cava filter was removed on the 7th postoperative day.

Conclusions: The case provides literature review on rare malignant tumors of small intestine and its very good example of multidisciplinary treatment of complex disease.

Key words: malignant small intestinal tumor, deep vein thrombosis, gastrointestinal bleeding, inferior vena cava filter

Percutaneous mechanical thrombectomy as an effective treatment of acute pulmonary embolism: a case report

Julia Smyk
1st Chair and Department of Cardiology, Medical University of Warsaw

Trustee: Aleksandra Gąsecka MD, PhD MD, PhD

Background: Pulmonary embolism (PE) is the third most common cardiovascular disease after myocardial infarction and stroke. Surgical pulmonary embolectomy and percutaneous catheter-directed treatment are recommended as an alternative treatment options for patients with high-risk PE, in whom systemic thrombolytic therapy is contraindicated or has failed.

Case report: A 56-year-old female was admitted to the hospital due high-risk acute PE (sPESI 8,9%) complicated by respiratory and circulatory failure. The patient survived ischemic stroke of the right internal capsule and received conservative treatment since the therapeutic window for thrombolysis was exceeded. Previous medical history included STEMI of the anterior wall, treated with primary PCI of the LAD. Computed tomographic angiography revealed massive emboli located in the lobar and segmental branches of both pulmonary arteries, a thrombus in the right atrium appendage and descending aorta. The patient was consulted within the local Centre for the Management of Pulmonary Embolism and qualified for immediate percutaneous catheter-based therapy. Pulmonary angiography demonstrated a picture of chronic thromboembolic pulmonary hypertension with dilated and tortuous pulmonary arteries, ring-like and web-like thromboembolic lesions and chronic total occlusions, overlapping with fresh emboli. Percutaneous mechanical thrombectomy using Cleaner XT™ Rotational Thrombectomy System was performed in the distal part of the left pulmonary artery and proximal part of the right pulmonary artery. The chronic total occlusions in the left and right segmental arteries were treated with ballon angioplasty. The patient received sildenafil as a treatment. Three days following the procedure the control echocardiography demonstrated normal LVEF of 60% and no features of right ventricle overload.
Conclusions: Our case report underlines the crucial role of the local PE response team in the rapid clinical decision-making and treatment implementation. Although surgical embolectomy is the preferred form of treatment, we showed that the well-coordinated percutaneous intervention may be a viable alternative to surgery in patients requiring immediate intervention.
Key words: percutaneous mechanical thrombectomy, acute pulmonary embolism, case report

Asymptomatic meningioma and aortic dissection by 71 years old patient – case study

Zuzanna Czudy
Collegium Medicum of Univerisity of Zielona Góra, Radiotherapy Clinic

Marta Doderska
Collegium Medicum of Univerisity of Zielona Góra, Radiotherapy Clinic

Trustee: Róża Poźniak -Balicka MD

Background: Meningioma is a brain tumour originating in the arachnoid membrane, accounting for approximately 20 percent of all brain tumours. The causes of meningiomas are not well understood. Aortic dissection occurs when the inner layer of the aorta tears, forming a second blood-filled channel within the wall. Several risk factors are associated with aortic dissections, such as high blood pressure (hypertension), genetic disorders affecting the blood vessel wall, atherosclerosis, cocaine use and trauma.
Case report: We would like to present a case of a 71-year-old patient suffering from a meningioma brain tumour after resection of this lesion paresis of the right lower limb occurred. Implemented complementary radiotherapy. During treatment, a routine Computer Tomography of thorax was made that revealed suspicion of aorta impairment. The result of the abdominal aorta and iliac vessels angiography demonstrated the 12mm dissection with thrombus. After consultation with a cardiovascular surgeon, he recommended a follow-up visit in the cardiovascular clinic once a year.
Conclusions: Both aortic dissection and meningioma may not cause any symptoms and do not reduce quality of life hence they are often detected accidentally. The most important factor in choosing the right medical treatment is the clinical state of the patient. Medical interventions should only be implemented when a patient's condition demands it.
Key words: meningioma, aortic dissection, paralysis, radiotheraphy,

Repeated percutaneous transluminal angioplasty saved lower limb from amputation: a case report

Justina Jankauskaite
Vilnius University

Trustee: Arturas Mackevicius MD

Background: Atherosclerosis is the most common cause of popliteal artery occlusion or stenosis. Femoral-popliteal disease can be treated in a couple of ways: endovascular treatment or femoral-popliteal bypass surgery depending on patient's characteristics.
Case report: The patient is an 83-year-old female. Presented to the hospital in March with complains of pain in the right leg at rest and an ulcer on the right heel. Angiographic examination revealed an a. poplitea dextra critical stenosis. Percutaneous transluminal angioplasty with stenting of the a. poplitea dextra was performed. Unfortunately, the blood flow did not recover. It was decided to do a bypass surgery of the femoral-popliteal artery with a prosthetic graft, because the patient has previously underwent a superficial-vein phlebectomy. After the reconstruction, Doppler registration showed good AP blood flow, distal anastomosis. In August, blood circulation was good, pulse on both sides of the feet. However, in October, the patient complained of numbness and pain in the right leg at rest. Femoropopliteal bypass thrombosis was diagnosed. Because endovascular treatment was not successful before it was decided that it is impossible to perform it due to femoropopliteal segment calcification and atherosclerosis. Therefore, a thrombectomy was performed. Thrombus were removed during the operation, proximal blood flow was obtained, but there was no retrograde flow which indicated a distal obstacle. Therefore, the patient was admitted to an interventional radiology operating room, and repeated percutaneous transluminal angioplasty with stenting was performed. It was possible to

recanalize, dilate the stent and restore circulatory popliteal artery blood flow.
Conclusions: The femoral-popliteal segment can be affected by a variety of pathologic conditions, the most common- atherosclerosis. Proper treatment of patients with femoral-popliteal segment disease is challenging. When a patient has been deemed a candidate for endovascular treatment, the patient's characteristics and artery leison should be used to determine the ideal treatment.
Key words: atherosclerosis, endovascular treatment, angioplasty, PTA.

Lung transplantation despite Burkholderia cenocepacia infection – a case report

Marta Gmerek
Medical University of Silesia / Department of Cardiac, Vascular, and Endovascular Surgery and Transplantology, Silesian Centre for Heart Diseases, Zabrze, Poland

Paulina Księżopolska
Medical University of Silesia / Department of Cardiac, Vascular, and Endovascular Surgery and Transplantology, Silesian Centre for Heart Diseases, Zabrze, Poland

Trustee: Marek Ochman MD, PhD

Background: Burkholderia cenocepacia is an aggressive bacterial strain which causes infection contraindicating to lung transplantation (LTx). Among patients after LTx infections caused by B. cenocepacia is a relative determinant for a shorter survival rate and worse function of the graft.
Case report: We present a case of a 46-year-old patient who was qualified for Ltx due to CF and chronic respiratory failure. In September 2019, the patient was admitted to the hospital for qualification to LTx. A 6 Minute Walk Test (6MWT) was performed, which showed lowered saturation values (93% before and 91% after the test) at a distance of 307.6 m/6:00 min., Borg's scale: 3. Spirometry results showed severe obstruction (FEV1-25%, FEV/FVC-41%). Examination of the sputum culture revealed abundant growth of Burkholderia cenocepacia. The bacterium wasn't shown as ceftazidime and meropenem resistant, but in spite of treatment according to the antibiogram it was not eradicated. Ltx took place in December 2019. One month after the transplantation, the transplanted organ was functioning properly and the patient achieved full respiratory function. After the procedure bronchoalveolar lavage confirmed the presence of B. cenocepacia in transplanted lungs. Subsequent tests continued supporting the original result up until July, when the patient showed negative for B. cenocepacia. The patient was treated with sulfamethoxazole with trimethoprim and ceftazidime according to antibiogram.
In September 2020, the patient was re-admitted to the ward for a control hospitalization. Functional tests showed improvement in 6MWT (saturation 97% before and 96% after the test, distance 540 m/6 min., Borg's scale- 1, without desaturation) and in spirometry (FEV1-97%, FEV/FVC-126%). The patient's microbiological status remained negative for B. cenocepacia.
Conclusions: Lung transplantation is a life-saving operation for patients with severe pulmonary failure. Despite the risk of lung transplantation among patients with Burkholderia cenocepacia infection, it is worth considering this therapeutic route with appropriate preparation and clinical supervision.
Key words: lung transplantation, cystic fibrosis, Burkholderia cepacia, respiratory function tests

Pelvic congestion syndrome – case report

Jerzy Krzeszowiak
SSG at 1st Chair of General Surgery JU MC

Trustee: Jakub Kenig Associate Professor, MD, PhD

Background: Pelvic congestion syndrome (PCS) is a poorly understood and underdiagnosed, multidisciplinary disease. The research in this area are limited and current knowledge is based mostly on case reports. PCS presents with dull abdominal pain, lasting more than six months. Often it might be worsened by: changing body position, during or after intecourse or in the evenings. There are also many other symptoms of PCS, but mostly non-specific. Diagnostic process requires various approaches, including gynaecological, surgical, radiological, gastroenterological or haematological input. The aim of this work is to present the relevance of PCS in differential diagnosis of abdominal pain.
Case report: The patient was 36 years old female consulted in the 1st Chair of General Surgery JU MC. She presented with recurrent abdominal pain which lasted for a month. Any other symptoms were not reported. Past medical history and family history did not indicate any risk factors. Laboratory test were ordered, but the results did not reveal any abnormalities. Cancer, metastases, gastroenterological, gynaecological or urological diseases were taken into account in differential diagnosis. US of abdomen and pelvis did not show any pathology. After following four weeks the pain did not diminish. As a result CT scan was performed. The varicosities of left parametrium, probably caused by the retroaortic localisation of left renal vein, were indicative of PCS. Medical treatment was implemented. Currently, the patient is under observation. In case of lack of improvement, more invasive therapies such as surgical ligation of ovarian veins or transcatceter embolisation will be considered.
Conclusions: PCS is often omitted in differential diagnosis of pelvic or abdominal pain, what might have the result in ineffective therapy. Untreated PCS may have a detrimental influence on both physical and psychological condition of the patient.
Key words: pelvic congestion syndrome, abdominal pain

Pancreatic hepatoid cancer in 68-year-old woman – a surgical case report

Paulina Pietrzyk
Jagiellonian University Medical College, Faculty of Medicine; General, Oncological, Gastroenterological and Transplant Surgery Clinical Department

Damian Sroka
Jagiellonian University Medical College, Faculty of Medicine; General, Oncological, Gastroenterological and Transplant Surgery Clinical Department

Trustee: Jakub Kenig Associate Professor, MD, PhD

Background: Hepatoid cancer is a very rare cancer of pancreas imitating immunohistochemistry, morphology and behaviour of hepatocellular cancer. It is most commonly found in the stomach and ovary but may be present in other organs. Only few cases of hepatoid cancer in pancreas were described in literature. Because of the limited data of this disease, its clinical features such as behaviour, prognosis and treatment still remain unclear.
Case report: We present a case of 68-year-old woman who was admitted in the good general condition to the hospital because of pain in the abdomen and pelvis. The patient had the blood test taken which disclosed elevated liver enzymes and CRP. The colonoscopy showed 3 colon polyps and diverticula of the intestines. The ultrasonography of the abdomen revealed hyperechogenic metastatic mass in the liver. The patient was referred to the CT scan which confirmed enlarged liver with focal changes and suspected tumor in the head of pancreas. Moreover the focal change in the left suprarenal gland and lymph nodes involvement were found. Then biopsy was performed and revealed identical morphology to hepatocellular cancer of the liver, but doctors could have not excluded metastases of hepatoid cancer of the pancreas, because of atypical immunophenotype – a close correlation with the overall clinical picture was necessary. Currently the patient is being treated with palliative chemoteraphy.
Conclusions: An atypical immunophenotype may lead to the diagnosis of pancreatic hepatoid cancer which has poor prognosis. Due to its rarity, the treatment has to be standardized.
Key words: hepatoid cancer, pancreas, pancreatic cancer

Subarachnoid hemorrhage due to aneurysm rupture, bacterial meningitis and secondary spinal arachnoiditis in young lady.

Darja Arīna Miškina
University of Latvia, Faculty of Medicine

Sintija Kalvāne
University of Latvia, Faculty of Medicine

Trustee: Stefans Rjabcevs MD

Background: Arachnoiditis is a rare consequence of aneurysmal subarachnoid hemorrhage that can occur months to years after it. It can lead to severe disability due to paraparesis, so management of such patients includes rehabilitation, antianginal medications, symptomatic therapy and to this day remains a continuing challenge.
Case report: In 2017 the patient was brought to the Riga Eastern Clinical University Hospital due to severe headaches and gradually her condition began to deteriorate in the emergency department and patient became uncontacted (Glasgow Coma Scale 6–7 points). Computed Tomography(CT) was performed: Subarachnoid haemorrhage due to a.cerebellaris inferior posterior sinistra aneurysm rupture, IV ventricle haemorrhage and trunk edema was confirmed. Due to vital indications, ventriculostomy and aneurysm coilation was done.
In the postoperative period, the excretion of cerebrospinal fluid through ventriculostomy decreases, ventriculostomy was evacuated, but condition began to deteriorate – increasingly impaired consciousness, so lumbar puncture was performed and purulent meningitis was confirmed (Multidrug-resistant Klebsiella Pneumoniae). Meropenem was administered and condition improved. Control CT performed in 2019: Intradural adhesions – chronic arachnoiditis with enclosed cerebrospinal fluid in the anterior intradural part in C1 – Th3 and Th12 – L4, some isolated intradural cysts dorsal in the intradural space on the right side of Th3 and Th6, Th7 medially on the left side. Septic redistribution was performed. In 2020, CT was performed: Chronic arachnoiditis with adhesions, convincingly decreased spinal cord compression at the level of Th3.
The patient's condition is stable. Further treatment includes: rehabilitation of the patient – to reduce the risk of falls and for improvement of independent movement, supervision of a neurologist, analgesic therapy, Gabapentin usage in case of parestesia and B vitamins.
Conclusions: Due to its rareness, arachnoiditis is still challenging to predict. Prognosis is poor, with gradually increasing disability. Therapeutic approach is composite and purely symptomatic.
Key words: subarachnoid hemorrhage, arachnoiditis, cerebellar artery aneurysm.

Pharmacy

Jury:

Prof. Kinga Sałat, PhD
Prof. Sebastian Polak, PhD
Prof. Lucyna Pomierny-Chamioło, PhD
Dagmara Wróbel-Biedrawa, PhD
Prof. Małgorzata Starek, PhD
Prof. Paweł Zajdel, PhD
Justyna Dobrowolska-Iwanek, PhD
Prof. Bogusława Budziszewska, PhD

Coordinators:

Agnieszka Jarmuła, Agnieszka Brodzicka, Urszula Bąk

List of papers

HBK-15, a multimodal compound, reversed the impairment of the recognition and emotional memory consolidation processes

Ilona Paliwoda
Department of Pharmacodynamics, Faculty of Pharmacy, Jagiellonian University Medical College, Medyczna 9, 30-688 Krakow, Poland

Angelika Jagielska
Department of Pharmacodynamics, Faculty of Pharmacy, Jagiellonian University Medical College, Medyczna 9, 30-688 Krakow, Poland

Trustees:
Kinga Sałaciak MSc
Karolina Pytka Professor, MD, PhD

Introduction: Cognitive deficits and learning disabilities are an integral part of depression. They worsen the course of the disease and make treatment more difficult. Notably, cognitive dysfunction may be one of the main reasons for the antidepressants' ineffectiveness. Therefore, it is important to search for new compounds with both an antidepressant and a procognitive activity. In previous studies, HBK-15 (1-[(2-chloro-6-methylphenoxy)ethoxyethyl]-4-(2-methoxyphenyl)piperazine hydrochloride) showed significant antidepressant-like effect in animal models of depression after only a single administration.
Aim of the study: Here, we used a novel object recognition test and a passive avoidance test to assess intermediate- and long-term recognition and emotional memory, respectively.
Material and methods: Mice were injected intraperitoneally (i.p.) with saline or HBK-15 at different doses 30 min before behavioral testing. Intermediate- and long-term memory deficits were induced by MK-801 injection.
Results: We observed a significant increase in latency to entrance and novel object exploration time in mice injected with HBK-15. What is more, just a single administration reversed intermediate- and long-term memory deficits in mice injected with MK-801, and this effect manifested stronger after 24 hours.
Conclusions: Our results indicate that HBK-15 possesses a positive influence on cognitive function. Considering its previously proved antidepressant-like activity, due to its procognitive properties, HBK-15 might be superior to currently used drugs in the treatment of depression. Therefore, it requires further studies to define its full pharmacological profile.
Key words: depression, HBK-15, object recognition test, memory, passive avoidance test

The role of 5-HT1A receptor signaling pathways in the formation of intermediate-term memory engrams

Klaudia Klimończyk
Department of Pharmacodynamics, Faculty of Pharmacy, Jagiellonian University Medical College, Medyczna 9, 30-688 Krakow, Poland

Joanna Fąfara
Department of Pharmacodynamics, Faculty of Pharmacy, Jagiellonian University Medical College, Medyczna 9, 30-688 Krakow, Poland

Trustees:
Kinga Sałaciak MSc
Karolina Pytka Professor, MD, PhD

Introduction: Memory is rudimentary in human lives and refers to all data and information processing. According to the duration, we can distinguish short-, intermediate-, and long-term memory. Intermediate-term memory is a bridge between short- and long-term memory and can last for minutes, or even up to a day. The 5-HT1A receptor plays a pivotal role in proper memory functioning; however, the data about the role of signaling pathways associated with this serotonin receptor is still limited.
Aim of the study: Our study aimed to test which signaling pathways are important for intermediate-term memory formation using functionally selective 5-HT1A receptor agonists that preferentially activate various transduction pathways.
Material and methods: We used adult male Albino-Swiss mice. The compounds were administered per os, 60 minutes before the acquisition phase, and then we placed mice separately in experimental cages containing two identical objects. Mice were left there until the total time of the exploration of two objects was 20 seconds, but no longer than 10 minutes. After 4 hours (intermediate-term memory) we placed mice again in the cages, except that one object was switched for a new one. Mice were left in the cages until the total time of the exploration of two objects was 20 seconds, but no longer than 10 minutes as previously. In this case we measured the novel object exploration time. All experimental procedures were approved by the I Local Ethics Committee for Experiments on Animals of the Jagiellonian University in Krakow, Poland.
Results: The most active compounds were compounds 2 and 3.
Conclusions: We proved that for proper memory functioning, the 5-HT1A receptor agonist should activate either the β-arrestin recruitment or ERK1/2 phosphorylation. As expected, we observed that the simultaneous activation of both pathways is not beneficial for recognition memory.
Key words: 5-HT1A receptor, serotonin receptor, selective agonists, intermediate-term, memory engrams

Design, synthesis of some xanthone derivatives for potential inhibition of hyaluronidase

Katarzyna Brezdeń
Jagiellonian University Medical College Department of Bioorganic Chemistry Chair of Organic Chemistry Faculty of Pharmacy Medyczna 9, 30-688 Krakow, Poland

Trustees:
Anna M. Waszkielewicz Assistant Professor
Gabriela Mazur MSc

Introduction: Blood vessels endothelium contains hyaluronic acid (HA), and its main function is lowering permeability of blood ingredients through the vessels. Hyaluronidase is a known enzyme which depolymerizes HA, however causing oedema, telangiectasis and erythema. Esthetic problems of skincare are often addressed chemically, including use of flavonoids such as quercetin. Xanthone (9H-xanthen-9-one) derivatives are a group of biologically active substances that are naturally present in Garcinia mangostana as alfa-mangostin (MAG) or gambogic acid (GA). Such compounds reveal high antibacterial activity, especially against Gram-positive bacteria, anti-inflammatory, anti-angiogenic or anticancer activity. Considering the above-mentioned properties, we attempted to design new xanthone derivatives for potential sealing of blood vessels. Our methods included evaluation of inhibitory activity against hyaluronidase, thus preventing it from depolymerization of hyaluronic acid in blood vessels. The synthesis of 5-chloroderivatives of xanthone was performed, and a few compounds with potential inhibitory activity on hyaluronidase were obtained. The structures and purity were confirmed with use of physical-chemical analyses. Next, enzymatic studies were performed.
Aim of the study: Obtaining new xanthone derivatives for potential endothelial hyaluronidase inhibition.
Material and methods: Design, synthesis of 5-chloro-9H-xanthen-9-one derivatives, physical-chemical analyses (including LC-MS and 1HNMR spectra) and enzymatic testing. The hyaluronidase inhibitory enzymatic assay was conducted, in concentrations 50, 100, 200 microM. The activity of quercetin was used as a reference in the study.
Results: New derivatives of 5-chloro-9H-xanthen-9-one were acquired. A pilot experiment on hyaluronidase revealed better inhibitory properties on hyaluronidase compared to the standard quercetin.
Conclusions: Xanthone derivatives seem a promising new group of compounds for achievement of hyaluronidase inhibitors.
Key words: synthesis, xanthone, 9H-xanthen-9-one, hyaluronidase inhibitors, blood vessels

The influence of prenatal and early life high-fat diet exposure on the anxiety-like behavior in the offspring

Marta Małysz
Jagiellonian University Medical College, Faculty of Pharmacy, Toxicology Department

Aleksandra Więcek
Jagiellonian University Medical College, Faculty of Pharmacy, Toxicology Department

Trustees:
Ewa Niedzielska-Andres MD, PhD
Lucyna Pomierny-Chamioło Associate Professor, MD, PhD
Józef Mizera MSc

Introduction: Dietary habits may modulate the risk for depression and anxiety in both adults and adolescents. However, it is not clear, if prenatal diet may also influence a child's subsequent vulnerability to psychiatric illness. The most recent findings indicate a link between the high-fat maternal diet (HFD) and the mental health disorders in the offspring.
Aim of the study: The goal of the study was to determine anxiety-like behavior in the offspring exposed prenatally and in early life to HFD.
Material and methods: Wistar dams were fed with the HFD or normal chow (control group) three weeks before matching, during pregnancy and lactation. Next, we investigated time in the center zone in the open-field test in juvenile (28-day old) and adult (70-day old) male and female offspring.
Results: Time in the center zone was diminished in the HFD group in adult female offspring, and no changes were observed in juvenile female rats. No changes in the male group were found.
Conclusions: The obtained results indicate that maternal HFD can result in elevated anxiety-like behavior in offspring, but only in the female adult group. In addition, the results suggest that male offspring are more resistant to the impact of maternal diet on anxiety-like behaviors than females. his work has been supported by the research grant 2015/19/D/NZ7/00082 from the National Science Centre, Poland.
Key words: maternal diet, open field, offspring, a high-fat diet, anxiety

Influence of the maternal high-sugar diet during pregnancy and lactation on the anxiety-like behavior in the offspring

Aleksandra Więcek
Jagiellonian University Medical College, Toxicology Department

Marta Małysz
Jagiellonian University Medical College, Toxicology Department

Trustees:
Ewa Niedzielska-Andres MD, PhD
Lucyna Pomierny-Chamioło Associate Professor, MD, PhD
Józef Mizera MSc

Introduction: Obesity and mental disorders such as anxiety are common in youth. Recent literature data have shown that maternal high-sugar diet (HSD) may be a risk factor for the development of the anxiety-related disorders in the offspring.
Aim of the study: In our study, we examined the effect of prenatal exposure to a high-sugar diet on anxiety-like behavior in offspring.
Material and methods: The Wistar dams were fed with a high-sugar diet (HSD) or normal chow (control group) three weeks before matching, during pregnancy and lactation. Next, we investigated the time spent in the central zone in the open-field test in 28 (juvenile) and 70-day-old (adult) offspring.
Results: In both male and female groups, we observed no changes in the time spent in the central zone between juvenile and adult rats.
Conclusions: The results suggest that prenatal exposure to the HSD has no significant influence on the development of the anxiety-like behavior in the offspring.
Key words: high-sugar diet, open field, anxiety, mental disorders, maternal diet

Mycelial cultures of Ganoderma spp. – mycochemical potential and biological activity

Monika Balik
Jagiellonian University Medical College / Faculty of Pharmacy / Department of Pharmaceutical Botany / SSG of Medicinal Plant and Mushroom Biotechnology

Trustees:
Katarzyna Sułkowska-Ziaja Assistant Professor
Bożena Muszyńska Professor, MD, PhD

Introduction: The genus Ganoderma which represents arboreal fungi is known and traditionally used for medicinal purposes especially in traditional Chinese medicine. Numerous mycochemical investigations have proved the presence of valuable metabolites such as polysaccharides, phenolic compounds and terpenoids both in the fruiting bodies and biomass obtained from the mycelial cultures. These metabolites show anticancer, antioxidant or antiviral activity.
Aim of the study: The study aimed to determine the possibilities of chemical compounds biosynthesis by mycelial cultures maintained in specially constructed biofermentors with an aeration system and to examine biological activity of the extracts from obtained biomass.
Material and methods: The objects of research were species from the genus Ganoderma: G. adspersum, G. applanatum, G. carnosum, G. lucidum, G. pfeifferi, G. resinaceum. The conditions of conducting aerated cultures were optimized according to culture duration (10– and 20–day growth cycles). The content of phenolic acids, hydroquinone, indole derivatives, and selected tyrosinase inhibitors were determined in biomass extracts using the HPLC–DAD method. The total content of polyphenolic compounds was analyzed by the Folin–Ciocalteu method. The antioxidant activity of the tested extracts was determined using the DPPH method. Additionally, anti-tyrosinase activities of extracts were investigated.
Results: Extracts obtained from biomass grown in 10-day cycles demonstrated the higher contents of tested compounds. Among phenolic acids: gallic, protocatechuic, and p-hydroxybenzoic acid predominated quantitatively in most studied species. L-tryptofan dominated among indole compounds. Additionally, trace amounts of melatonin in most studied species were detected. Among tyrosinase inhibitors – kojic acid was determined in G. applanatum and G. carnosum, hydroquinone was confirmed in G. applanatum, G. pfeifferi and G. resinaceum. Correlation between the marked compounds and specific biological activity has been shown.
Conclusions: The model of aerated mycelial cultures proposed in the study promotes the accumulation of secondary metabolites with multidirectional therapeutic effects including the antioxidant and inhibition of tyrosinase effect.
Key words: medicinal mushrooms, mycelial cultures, antioxidant activity, Ganoderma spp.

'Toss a herb to your Witcher' – is the game a 'valley of plenty' in the field of herbal pharmacology?

Maria Naruszewicz
Brain Team, Jagiellonian University Medical College in Cracow

Grzegorz Waliszczak
Brain Team, Jagiellonian University Medical College in Cracow

Trustee: Aneta Myszka MD

Introduction: The Witcher fantasy franchise has received much attention recently among the public. Geralt of Rivia, the protagonist, uses a wide array of real herbs or their derivatives, oftentimes for their medical effects (eg.wound healing, antidotes, performance enhancement, poisoning his opponents). We decided to analyse the medical content, its correctness and educational value for the general audience, of the game TheWitcher3:WildHunt.
Aim of the study: To assess if the Witcher game includes verifiable information about medical herbalism and shows pharmacological effects of herbs and fungi. Can pop-culture promote knowledge of pharmacology?
Material and methods: TheWitcher3:WildHuntPC(GameOfTheYearEdition,V1.32) and TheWitcherWiki (https://witcher.fandom.com) were the sources regarding the herb appearance and their in-game use. The use of fungi was also acknowledged. KewSciencePlants of the WorldOnline was used as the basis of plant identification and their visual archetypes (MykoWeb for fungi). The herbs present were identified and graded with our

specially designed accuracy scale (0–5 pts., 0–1 for correct item (detailed picture of plant's part) graphics, 0–1 for correct object (depiction of the whole plant in game environment) graphics, 0–3 for number of medical properties shown: 0-none, 1-one, 2-two or three, 3-more than three).
Results: The game mentions at least 65 types of herbs and fungi, 39 were possible to assess. Mean overall accuracy scale score equaled 2.82 (SD±1.37). The best depictions include barberry, ergot and verbena (each received 5 pts.), the worst buckthorn, moleyarrow and Nazairi basil (each received 0 pts.). Several in-game uses are aimed precisely at a given herb (eg. Aconitum in a purgative mixture).
Conclusions: The game features quite correct depiction of medical herbs and can be informative for the general public, but these advantages are clouded by the admixture of fictional herb uses that makes the discernment between them hard for a person with little medical knowledge.
Key words: Witcher, herbal medicine, phytopharmacology, video games, herbalism

The impact of the elicitation of methyl jasmonate on the accumulation of phenolic compounds in mycelial cultures of Trametes gibbosa (Pers.) Fr.

Justyna Robak
Jagiellonian University Medical College Faculty of Pharmacy/ SSG of Medicinal Plant and Mushroom Biotechnology, Department of Pharmaceutical Botany

Trustees:
Katarzyna Sułkowska-Ziaja Associate Professor, MD, PhD
Bożena Muszyńska Professor, MD, PhD

Introduction: Phenolic compounds occurring in mushroom fruiting bodies and accumulated in biomass from mycelial cultures possess a high health-promoting potential including antioxidant, anti-inflammatory, or antimicrobial activity.
Aim of the study: The study aimed to investigate the effect of the elicitation with methyl jasmonate (MeJa) on increasing the production of phenolic compounds in aerated mycelial cultures of Trametes gibbosa (Pers.) Fr.
Material and methods: The object of the study was the mycelial culture of Trametes gibbosa (Pers.) Fr. carried out on a modified, liquid medium according to Oddoux. Two variants of elicitation were tested: the addition of MeJa on the tenth and twentieth day of a growth cycle. Using the DAD-HPLC method phenolic compounds in methanolic extracts from obtained biomass were quantified. The total phenolic content of the extract was determined by the Folin–Ciocalteu method.
Results: A significant increase accumulation of chemical compounds in the biomass obtained in mycelial cultures was demonstrated, depending on the day of elicitation in the growth cycle (as compared to control samples). Derivatives of hydroxybenzoic acid: gallic, p-hydroxybenzoic, and protocatechuic were determined qualitatively in the examined extracts. Additionally, L-phenylalanine and L-tryptophan were determined. The quantitative analysis of studied compounds showed an increase in both the total content of polyphenols and phenolic acids in the biomass elicited on the tenth day in the growth cycle.
Conclusions: The tested mycelial cultures of Trametes gibbosa (Pers.) Fr. can be proposed as a model for research on the dynamics of the accumulation of phenolic compounds – structures with recognized antioxidant activity. The next stage of the research will be to determine the biological activity of the elicited mycelium.
Key words: medicinal mushrooms, mycelial cultures, phenolic acids, methyl jasmonate

Metabolic evaluation of synthetic opioids on the example of U-47 700 with the use of in vitro methods

Ewa Poljańska
Department of Toxicology, Faculty of Pharmacy, JU MC

Weronika Chaim
Department of Toxicology, Faculty of Pharmacy, JU MC

Małgorzata Piechaczek
Department of Toxicology, Faculty of Pharmacy, JU MC

Trustees:
dr Sebastian Rojek MD, PhD
dr hab Beata Bystrowska Assistant Professor

Introduction: Nowadays, new psychoactive substances (NPS), that can be found in so-called "research chemicals" are one of the most serious toxicology threats. Only in 2018, there were 4257 deaths by NPS intoxication. The main reason for the toxicity of these substances is a lack of sufficient knowledge of its pharmacological properties, especially the metabolic changes. Among NPS synthetic opioids are the most dangerous group and the third most common in Poland. Currently, identification of NPS may be achieved practically only with the use of advanced analytical methods, such as liquid chromatography-mass spectrometry (LC-MS).
Aim of the study: The aim of the study was to establish the metabolites of synthetic opioid U-47 700 in in vitro methods, using human liver microsomes (HLM) and human liver S9 fraction, their determination by LC-MS and the comparison with the metabolites in the autopsy material.
Material and methods: Methanol standard solution of U-47 700 was evaporated to dryness and preincubated at 37°C with phosphate buffer and HLM or S9 fraction. Further, the reaction was initiated by adding NADPH solution, incubated for 30 minutes (in 37°C) and ended by addition of ethyl acetate. The samples were centrifugated, acidified and extracted to the organic phase, which was collected and evaporated to dryness. Finally, the metabolites were evaluated with the use of LC-MS and were compared to the metabolites determined in the postmortem material.
Results: In vitro model lead to obtaining U-47 700 metabolites consistent with its derivatives determined in post-mortem subjects.

Conclusions: In vitro methods, with the use of HLM or human S9 fraction, may serve as a complementary
method to the research on the biotransformation of NPS. Another aspect of this project could be the establishment of a scientific basis for forensic medical expertise in cases related to NPS usage.
Key words: NPS, metabolism, HLM, S9 fraction

The influence of transient cerebral ischemia on the expression of GABAAα1, GABA transporters and KCC2 in the frontal cortex (FC), dorsal stratium (DSTR) and hippocampus (HIP) – preclinical study

Joanna Wierciak
Department of Toxicology, Faculty of Pharmacy, Jagiellonian University, Medical College

Trustee: Ewa Niedzielska-Andres MD, PhD

Introduction: The ischaemic brain stroke is one of the leading causes of long-term disability and premature deaths. Cerebral ischemia induces necrosis of the brain where blood supply was interrupted. The tissue surrounding the area of stroke – the "penumbra region" – is supplied by the blood, but in a limited amount. This is accompanied by the activation of pathological tonic GAMMA-aminobutyric acid (GABA)-ergic neurotransmission in this area. Tonic GABA-ergic signaling suppresses the recovery of the neuronal functions in the penumbra region. The neuromolecular basis of GABA-ergic tonic signaling have not yet been understood.
Aim of the study: Based on the above-mentioned findings, we aimed to investigate the expression of GABA-ergic markers such as GABA transporters (Gat-1, GAT-2, GAT-3), GABAAα1 receptor, and K+-Cl—co-transporter 2 (KCC2) in chosen brain structures in order to characterize the neuromolecular changes that can contribute to pathological tonic GABA-ergic neurotransmission.
Material and methods: In our experiment, we used Sprague-Dowley rats (280–320 g). The animals were randomly assigned to the following groups: control, sham surgery (SHAM), and 90-minute middle cerebral artery occlusion (MCAO). Three days after the stroke onset, all animals were decapitated, and their FC, DSTR, and HIP isolated. The level of GABAAα1, GAT-1, GAT-2, GAT-3, and KCC2 was determined by the Western Blot analysis.
Results: The results show that the DSTR was the most affected brain structure. The analysis of GAT-3 expression showed that MCAO induced a significant decrease in GAT-3 level in the DSTR. It was not observed in the SHAM group.
Conclusions: To sum up, the observed changes suggest that three days after the stroke onset, the reduced expression of GAT-3 observed only in the MCAO group may underlie the rise in the concentration of GABA in the synaptic cleft, which enhances tonic GABA signaling. This research was funded by National Science Centre, Poland grant: 2018/30/E/NZ7/00247.

Key words: ischaemic stroke, GABAergic system, GABAAα1, GAT-1, GAT-2, GAT-3, KCC2

The accumulation of organic compounds in three crops of Agaricus bisporus

Monika Trepa
Jagiellonian University Medical College, SSG of Medicinal Plant and Mushroom Biotechnology Department of Pharmaceutical Botany

Jan Lazur
Jagiellonian University Medical College, SSG of Medicinal Plant and Mushroom Biotechnology Department of Pharmaceutical Botany

Trustees:
Bożena Muszyńska Professor, MD, PhD
Katarzyna Sułkowska-Ziaja Associate Professor, MD, PhD

Introduction: Agaricus bisporus (J.E. Lange) Imbach (white mushroom) from Agaricaceae family it is currently cultivated in at least seventy countries around the world. The most important feature of A. bisporus are its dietary and therapeutic properties resulting from the rich composition of metabolites and biologically active elements. It is a rich source of dietary fiber (chitin), exo- and endogenous amino acids, unsaturated fatty acids, including palmitic, linoleic and linolenic acids, easily digestible protein, antioxidant compounds, vitamins, bioelements.
Aim of the study: The aim of the study was to investigate the content of following organic compounds: indole and phenolic compounds, lovastatin, ergothioneine in three crops of fruiting bodies of A. bisporus from three different times – after 2, 3 and 4 weeks of cultivation on compost.
Material and methods: The samples of A. bisporus were taken from three different times – after 2, 3 and 4 weeks of cultivation from the surface layer of fruiting bodies from commercial cultivation in Poland. In order to make an output sample, six samples from area of 50 cm 2 and depth of up to 25 cm were taken. The fruiting bodies of A. bisporus were lyophilized and homogenized in an agate mortar and extracted in an ultrasonic bath. The extracts were dissolved in a methanol solution for HPLC analysis. Each analytical sample prepared was tested in three independent repetitions.
Results: Fruiting bodies harvested in first crop were characterized by the highest content of organic compounds. Results from this study shows that organic compounds accumulation efficacy is the lowest in second crops of A. bisporus.
Conclusions: The content of organic compounds varied in the tested materials, and the conclusion is that the ability of accumulation of these compounds depends on the composition of the substrate. Research is still needed to optimize cultivation methods in order to obtain the best product quality.
Key words: Agaricus bisporus, ergothioneine, lovastatin, mushroom cultivation

Mycelium Cordyceps militaris from in vitro cultures as a potential adaptogenic material

Wojciech Pająk
Jagiellonian University Medical College SSG of Medicinal Plant and Mushroom Biotechnology Department of Pharmaceutical Botany

Trustees:
Bożena Muszyńska Professor, MD, PhD
Katarzyna Sułkowska-Ziaja Associate Professor, MD, PhD

Introduction: Cordyceps militaris(L.) Link from Cordycipitaceae family is a mushroom parasitizing on the pupae of insects, with many health-promoting properties. Research is still being conducted on its use in the treatment of cancer and other civilization diseases.
Aim of the study: The aim of the study was to compare the content of biologically active substances in mycelium C. militaris and to compare their content in fruiting bodies of own and commercial crops and preparations containing them.
Material and methods: The research material was fruiting bodies and mycelium from in vitro cultures of C. militaris. In order to compare the quality of raw materials, dried fruiting bodies from commercial crops grown in China and two preparations/dietary supplements were purchased; fruiting body powder and 30% standardized for polysaccharide content (Cordyceps Powder from Mountain Rose Herbs – shredded mycelium and fruiting bodies, Cordyceps dietary supplement from Nomadic Herbals and Cordyceps from China Lover Store). Bioelements were determine by AAS methods and to determine the content of organic compounds(indole compounds, phenolic compounds lovastatin, phenylalanine, cordycepin) the HPLC methods were used.
Results: Fruiting bodies of C. militaris from own cultivation and mycelium from in vitro cultures were obtained. As a result of the conducted analyzes, it was found that mycelium of the tested species from optimized in vitro cultures may constitute functional food and a standardized material for the production of dietary supplements and potentially drugs.
Conclusions: The content of elements varied in the tested materials, and the conclusion is that the ability of C.miliatris to accumulate elements depends on the composition of the substrate. Research is still needed to optimize cultivation methods in order to obtain the best product quality. In the presented research, indole compounds in fruiting bodies, mycelium and preparations containing C. militaris were determined for the first time and the therapeutic potential of the obtained material was confirmed.
Key words: Cordyceps militaris, edible mushrooms, indole compounds, cordycepin, adaptogen activity

Forensic Medicine

Jury:

Ewa Rzepecka- Woźniak, MD, PhD
Filip Bolechała, MD, PhD
Krzysztof Woźniak, MD, PhD
Prof. Marek Sanak, MD, PhD

Coordinators:

Kamil Hapkiewicz, Gabriela Szypuła

List of papers

Alcohol in the suffocation mechanism by obstruction of the respiratory tract

Ewa Bokiniec
Jagiellonian University Collegium Medicum, Cracow, Poland

Anna Kaczmarska
Jagiellonian University Collegium Medicum, Cracow, Poland

Urszula Kaczmarska
Jagiellonian University Collegium Medicum, Cracow, Poland

Patrycja Kłaptocz
Jagiellonian University Collegium Medicum, Cracow, Poland

Katarzyna Łukoś
Jagiellonian University Collegium Medicum, Cracow, Poland

Aleksandra Malik
Jagiellonian University Collegium Medicum, Cracow, Poland

Trustee: Tomasz Konopka Associate Professor, MD, PhD

Introduction: Death caused by choking on vomit usually affects people deeply intoxicated with alcohol, who falls asleep in a supine position. The occurrence of vomiting in such circumstances may result in aspiration into the respiratory tract and death, as the cough reflex is abolished. We also found cases where people were still sober enough to eat and so they swallowed too large bites, which closed their larynx.
Aim of the study: The study aimed to determine the share of alcohol in the mechanism of suffocation by obstruction of the respiratory tract.
Material and methods: Retrospective analysis of autopsy protocols from the Department of Forensic Medicine in Cracow in the years 2016–2019 was conducted. We searched for deaths with high alcohol content in the urine and the blood, with simultaneous features of death due to suffocation.
Results: Based on data collected from the 2016–2020 protocols, we found 17 cases where alcohol was involved in the mechanism of suffocation by obstruction of the airways. All cases were male and the mean age was 43 years. In 4 cases, obstruction of the respiratory tract caused by food bite (1.5–3.8 per mille in the blood) was found to be the direct cause of death, in 12 cases asphyxiation with vomit (0.7–5.9 per mille in the blood) and 1 case asphyxiation with sawdust (2, 7 blood alcohol levels). Only in one out of 17 cases one of the typical features of death from asphyxiation was observed, i.e. ecchymosis in the conjunctiva, while emphysema was present in microscopic examination in 5 cases.
Conclusions: There is no association between the alcohol concentration in the body of the deceased and the mechanism of death from suffocation by vomit aspiration. The theory repeated in forensic textbooks that it is necessary to achieve a certain level of alcohol in the blood for death in the aforementioned mechanism is not supported.
Key words: alcohol poisoning, respiratory tract, suffocation, choking, forensic medicine

Comparison of suicidal poisoning with chemicals and drugs in the years 1930–1939 and 2010-2019 in the material of the Department of Forensic Medicine in Krakow

Maria Komisarz
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Wojciech Koziołek
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Gabriela Szypuła
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Patrycja Szczepaniak
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Gabriela Kanclerz
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Kamil Hapkiewicz
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Trustee: Tomasz Konopka MD, PhD

Introduction: It is clear that the types of poisons used to commit suicide have changed over time. Substances such as acids, bases, heavy metals, and alkaloids were used in the early 20th century. Currently, suicides most often use drugs, especially those intended for psychiatric patients, which is undoubtedly connected with the availability of drugs and medical services.
Aim of the study: Comparison of suicidal poisoning and poisons used to commit suicide in the 1930s and nowadays.
Material and methods: Autopsy protocols from years 1930–1939 and 2010-2019 gathered in The Department of Forensic Medicine in Cracow were studied. Prevalence of suicidal attemps, kind of chemicals/drugs used, age, sex relationships and probable motives were taken into account in our investigation.
Results: In the years 1930–1939 there were 184 cases of suicidal poisoning, 65 of which were men and 119 women. The most common poisons were corrosive substances, accounting for 69 cases, 44 cases were toxic gases, 24 were drugs and narcotics, 17 were heavy metals, and the remaining 30 cases were made of cyanide, iodized tincture or rat poison. Out of 138 poisoning suicides in modern years, 96 were committed by men, 42 by women. In 28.3% of cases, poison ingestion was associated with alcohol consumption. In this group, multi-drug poisoning was the most common, constituting 62 cases. 31 of the deceased used one drug for poisoning. In both groups, opioids, benzodiazepines, neuroleptics, or antidepressants were the most frequently chosen substances. Fatal intoxication with drugs or designer drugs occurred in 28 cases, in the remaining 17 cases substances such as carbon monoxide, cyanide, caffeine or plant protection products were used.

Conclusions: The conducted study showed significant decrease in corrosives and toxic gases usage, while drug intoxication's incidence is growing. Substances used in 1930s tend to cause macroscopic changes – easily identifable during autopsy, whereas drugs used nowadays do not leave such changes.
Key words: suicide, drug and chemicals poisoning

Presence of tentative incisions in cases of suicides commited with sharp implements.

Paulina Miziołek
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Zuzanna Oleniacz
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Paulina Sarba
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Mateusz Milo
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

El-Ayachi Jr Stitou
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Dawid Pajor
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Trustee: Associate Professor Tomasz Konopka MD, PhD

Introduction: Self-cutting with a use of sharp weapons, most commonly on the forearms and the neck, is still a substantial cause of suicide. The presence of tentative incisions indicates self-infliction of the wounds. They are usually superficial and less severe and are produced while assessing pain and gathering courage before attempting the final, fatal cut.
Aim of the study: The absence of tentative wounds provokes questions about the manner of death, such as the possibility of third parties involvement in the process. Aim of the study was to find out how often the cases of suicide without tentative wounds had occured and to summarize main locations chosen by the deceased for mutilation.
Material and methods: Data from the autopsy books of 2010–2019 were analysed and cases of suicide with the use of sharp weapon were selected. Moreover, data concerning the quantity and location of the wounds, sex, age and ethanol blood concentration during the incident was gathered.
Results: Fifty five cases of the deceased were analyzed. Three of them turned out to be mixed suicides, where more than one method was used (e.g. the cut followed by poisoning). In the remaining 52 cases the direct cause of death was a sharp weapon cut. 51 (98,1%) patients inflicted the tentative wounds. In one case, the presence of tentative wounds remains unclear. The most frequent location chosen by the deceased to inflict the main cut were the forearms (38,5%) and the neck (32,3%). In 14 (27,4%) cases, the tentative wounds occured far from the fatal wound. In 26 (51%) cases, there were more than four tentative wounds, in 10 (19,6%) there were more than ten.
Conclusions: The vast majority of patients who decide to commit suicide by self-cutting inflict the tentative wounds. In many cases a significant number of them are present.
Key words: suicide, self-infliction, tentative incisions

Sepsis as a cause of death among hospitalized patients

Anna Bereta
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Jan Roczniak
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Karolina Bruzda
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Emilia Torbus
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Michał Kozicz
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Trustee: Tomasz Konopka Associate Professor, MD, PhD

Introduction: Sepsis is defined as a life-threatening organ dysfunction caused by dysregulation of the body's response to infection; this response causes damage to tissues and organs. This consequence of long-term life support therapy is a common cause of death among hospitalized patients.
Aim of the study: To assess the number of deaths caused by sepsis among hospitalized patients, as well as evaluation of macroscopic and microscopic features of sepsis in dissection protocols of hospitalized patient.
Material and methods: 204 autopsy protocols of patients hospitalized in 2016–2017 in Małopolska were selected. Then, it was assessed whether the cause of death was sepsis, and if not, it was assessed whether the histopathological examination showed signs which indicate sepsis in the body of the deceased patient. Data with distribution other than normal has been presented as median with interquartile range (Q1-Q3).
Results: Sepsis was diagnosed by the examiner in 10.72% of cases as the cause of death. However, pathomorphological signs of sepsis were present in 16.10% cases. Patients who died during sepsis were hospitalized significantly longer than patients who died due to other causes (sepsis vs. other: 14.5 (5–28.5) days vs. 3 (1–7) days, p value = 0.003). There was no significant difference in terms of gender (occurence in male vs. female: 15.76% vs. 17.50%, p value = 0.788) or median of patient's age (sepsis vs. other: 51.5 (41.5–65.5) years vs. 54 (32–66) years, p value = 0.709).
Conclusions: Sepsis was one of the coexisting causes of death amongst 16.10% of hospital deaths, however, in around 1/3

of cases has not been stated as the main cause of death. Occurence of sepsis has been found to be correlated with prolonged hospitalization and independent of age or gender.
Key words: sepsis, autopsy

Large volume of urine in the bladder of cadaver is a useful marker for high blood alcohol concentration (BAC)

Mateusz Władysław Wylaź
Jagiellonian University Medical College, Faculty of Medicine, Institute of forensic medicine

Gabriela Kanclerz
Jagiellonian University Medical College, Faculty of Medicine, Institute of forensic medicine

Jakub Strojek
Jagiellonian University Medical College, Faculty of Medicine, Institute of forensic medicine

Edyta Kowina
Jagiellonian University Medical College, Faculty of Medicine, Institute of forensic medicine

Trustee: Tomasz Konopka MD, PhD

Introduction: It is said that large volume of urine found during the autopsy might indicate high blood alcohol concentration, although only a few researches on this topic have been conducted. What is more, the results of those investigations were ambiguous, therefore the issue had to be studied further.
Aim of the study: Postmortem large volume of urine in the bladder suggests questions about simultaneous high blood alcohol concentration (BAC) in the deceased. Therefore, the aim was to investigate whether urine volume and blood alcohol concentration correlate.
Material and methods: Data from the autopsy books of 2017–2020 were analyzed and cases of high urine volume and high blood alcohol concentration (BAC) were selected. The main objective was comparison of these two quantities. The level of statistical significance was set at $P \leq 0.05$.
Results: Out of 3735 analyzed cases there were 674 in which the volume of urine was equal or greater than 150ml. In this group the mean percentage of blood alcohol concentration was 1,55±1,49, which is significantly higher than in remaining cases, in which mean percentage was 0,33 ±0,86. By dividing cases into groups by level of alcohol concentration at levels of 1, 2, 3 and 4 promiles we observed an upward trend in the percentage of cases of equal or above 150 ml of urine in total number of cases (10,18% for cases with BAC below 1 promile, 37,6% with 1–1,99 promiles, 48,85% with 2–2,99 promiles and 57,14% and 62,69% for 3–3,99 and above 4 promiles respectively).
Conclusions: In conclusion, volume of urine in the bladder of cadaver correlates with blood alcohol concentration (BAC). Information presented in the study emphasizes that the high volume of urine should raise suspicion of intoxication.
Key words: BAC, volume, urine, autopsy, analysis

Forensic – medical analysis of a case of mass murder combined with the suicide of the perpetrator committed on December 10th, 1933 in Cracow.

Maria Naruszewicz
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Constantin Dreyer
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Michał Okarski
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Grzegorz Waliszczak
Students' Scientific Group of Forensic Medicine, Jagiellonian University Medical College in Cracow

Trustee: Tomasz Konopka Associate Professor, MD, PhD

Introduction: The archive of the Cracow Department of Forensic Medicine hosts three post-mortem protocols of two victims and the perpetrator of a homicide from December 1933. The course of the crime was unknown, so it was decided to reconstruct the event.
Aim of the study: The aim of our work was to recreate the course of two murders and a suicide that happened on December 10th, 1933 at 19 Świętej Gertrudy (Saint Gertrude) Street in Cracow, at the office of the trading company "Ryba"("Fish").
Material and methods: The autopsy reports were analysed to reconstruct the course of the crime, particularly to describe the location and type of gunshot wounds in the victims' bodies.
Results: The first victim was shot once and fatally by the bullet entering his back at the the left posterior
axillary line, 10 cm under the left axillary fold. The bullet left the body through the right nipple. The second victim was hit in the back and died later at a hospital. The entry wound was located 4 cm to the outside and 3 cm underneath the inferior angle of the left scapula. The exit wound was located 3 cm to the left in relation to the xiphoid process. The killer shot himself in the mouth. The entry wound was found in the palate, while the exit wound was situated at the top of the skull.
Conclusions: This is not a classic case of post-aggression suicide, because the analysis of the information
concerning the perpetrator does not indicate that suicide was his primary goal and his behavior may argue for a case of an honor killing or altruistic murder with suicide as a secondary intention. The analysis shows that the perpetrator acted in a planned and deliberate manner and his purpose was motivated by revenge.
Key words: suicide, murders, firearms

Public Health, Nursing

Jury:

Prof. Joanna Bonior, MD, PhD
Dr n. o zdr. Ilona Nenko, PhD
dr hab. Christoph Sowada, PhD
dr hab. Mariusz Duplaga, MD, PhD

Coordinators:

Katarzyna Jankowska, Bartosz Roś

List of papers

Factors associated with the occurrence of symptoms of major depression among Polish medical students

Łukasz Bryliński
Medical University of Lublin / Chair and Department of Family Medicine

Paulina Drożak
Medical University of Lublin / Chair and Department of Family Medicine

Katarzyna Augustowska
Medical University of Lublin / Chair and Department of Family Medicine

Agata Bura
Medical University of Lublin / Chair and Department of Family Medicine

Martyna Drożak
Medical University of Lublin / Chair and Department of Family Medicine

Piotr Duda
Medical University of Lublin / Chair and Department of Family Medicine

Trustee: Grzegorz Mizerski MD, PhD

Introduction: Depression is a disease that affects about 264 million people worldwide. Furthermore, it leads to the lowering of life quality and untreated can cause suicide. Medical students are a group particularly subjected to this illness. Research shows that 27.2% of them suffer from depression or show depressive symptoms and 11.1% experience suicidal thoughts.
Aim of the study: The aim of the study was to investigate the prevalence of depressive symptoms among Polish medical students and to determine factors that are associated with them.
Material and methods: 1023 medical students from 18 Polish universities and each year of education took part in the study. A survey which contained PHQ-9 questionnaire and author's questions was conducted. The answers to the questionnaire were collected in the April of 2020.
Results: About a half of the participants (51.61%) were found to have major depression. Overall, 30.21%, of the respondents were classified as having mild depressive symptoms, 26.00% – moderate depressive symptoms, 15.05% – moderately severe depressive symptoms and 10.56% – severe depressive symptoms. The analysis showed a relationship between depressive symptoms and: frequent feelings of loneliness, not doing sports regularly, not participating in social meetings often enough, not sleeping enough, having problems with maintaining stable body weight, reaching for alcohol in order to discharge negative emotions and not being religious. No relationship was found between depression and: year of studies and gender.
Conclusions: Depressive symptoms among Polish medical students are common. The research shows that there are many factors which can increase the risk of the occurrence of them. It is crucial to raise students' awareness about this disease and its predictors since many of them could be eliminated. It is worth noting that the survey was carried out during lockdown due to COVID-19 pandemic which might had affected the answers provided by the participants of the study.
Key words: depression, medical students

Analysis of changes in the quantity of selected essential medicines defined by WHO sold in 2015–2020 in relation to changes in health services and health prognosis

Gabriela Kanclerz
Jagiellonian University Medical College

Aleksandra Dorosz
Jagiellonian University Medical College

Krzysztof Grądalski
Jagiellonian University Medical College

Sylwia Lefek
Jagiellonian University Medical College

Aleksandra Midro
Jagiellonian University Medical College

Urszula Sołdaj, Wojciech Winiarski
Jagiellonian University Medical College

Trustee: Bartosz Lisowski MSc

Introduction: Globally the trend of increasing incidence and prevalence of civilization diseases can be observed. In this research we have analyzed a set of indicators of public healthcare's efficiency as a retort to this problem during the past few years.
Aim of the study: Our aim was to check if the amount of prescribed drugs facilitating treatment for various diseases are responding to mentioned trends.
Material and methods: Data from the National Health Fund and PEX Pharma Sequence about number of compiled Diagnostic and Oncological Treatment Cards, count of health benefits provided in public health facilities, amount of certain drugs sales and refunds were taken into consideration. These drugs were selected from WHO Model Lists of Essential Medicines by diseases which affect different systems of the human body. All drugs containing chosen substances available in Poland were considered.
Results: Analysis of collected data revealed an upward trend in terms of drugs sold in pharmacies, number of visits to primary health care units, hospitals and hospital emergency wards in years 2015–2019. Prevalence of many diseases such as diabetes, chronic renal diseases and chronic respiratory tract diseases has also risen, so these factors had similar trends in years 2015–2019. Despite that, during the first 10 months of 2020 in comparison to the same months in year 2019 all of the considered rates collapsed.
Conclusions: Our results suggest that in the years 2015–2019 health service in Poland was increasing the number of services

in response to changes in the health condition of the society. Modification of this trend in the first 10 months of 2020 in comparison to the same period in previous year may suggest that in a situation of difficult access to health services caused by SARS-CoV-2 pandemic patients received less treatment and also took less medications, even those used in chronic diseases.
Key words: essential medicines, chronic diseases, health care efficiency

Impact of Internet usage on health of elderly people in Poland

Katarzyna Szulc
Students' Scientific Circle of Health Promotion, Department of Health Promotion and eHealth, Faculty of Health Sciences, Jagiellonian University Medical College, Cracow, Poland

Trustee: Mariusz Duplaga MD, PhD

Introduction: Today, the Internet provides a convenient access to many services and forms of social inclusion. It could be particularly helpful for elderly people who frequently suffer from limited mobility. On the other hand, they are also frequently digitally excluded.
Aim of the study: The assessment of the impact of Internet use on physical and mental health and the utilisation of the health care system among older people in Poland.
Material and methods: The analysis was based on the data obtained from 1826 Polish respondents participating in the wave 6 of the Survey of Health, Ageing and Retirement in Europe (SHARE). The differences in life satisfaction between Internet users and non-users was assessed with t-Student test. The association of Internet use with health behaviours, utilisation of health services and mental problems was analysed with multivariate logistic regression after adjusting for age and gender.
Results: The mean age in the study group was 66.6 years (standard deviation, SD 10.02); the percentage of men was 43.4% (n=792). More than 70% of the respondents were married. The Internet had been used in the last week only by 25.3% of respondents. Internet users reported a higher life satisfaction than non-users (7.76 vs 7.00, t-Student test, p<0.001). Internet users less frequently than non-users smoked cigarettes (OR, 95% CI: 0.43, 0.23–0.78, p=0.009), but more frequently drank alcohol (1.50, 1.12–1.94, p<0.001). Internet usage was also associated with more frequent dental visits (4.92, 3.82–6.33, p<0.001), but not with admission to hospital (0.87, 0.63–1.20, p<0.001). Furthermore, Internet users less often experienced suicidal thoughts (0.39, 0.23–0.67) and sleep problems (0.77, 0.60–0.98, p<0.001), but not with perceived sadness (0.79, 0.63–1.01, p<0.001).
Conclusions: The use of the Internet is associated with higher life satisfaction and better mental health. Surprisingly, it is related with lower prevalence of smoking but with higher consumption of alcohol.
Key words: elderly people, digital exclusion, life satisfaction, health behaviours, mental health

Determinants of online patients' opinions about services provided by surgeons

Katarzyna Szulc
Students' Scientific Circle of Health Promotion, Department of Health Promotion and eHealth, Faculty of Health Sciences, Jagiellonian University Medical College, Cracow, Poland

Paulina Smoła
Students' Scientific Circle of Health Promotion, Department of Health Promotion and eHealth, Faculty of Health Sciences, Jagiellonian University Medical College, Cracow, Poland

Trustee: Mariusz Duplaga MD, PhD

Introduction: The websites enabling patients' opinions are a popular form of providing feedback on the quality of medical appointments. For many patients, such opinions are the criterion directing the choice of physician.
Aim of the study: The analysis of the determinants of patients' opinions about services provided by surgeons.
Material and methods: The analysis was based on the resources retrieved from the rankinglekarzy.pl website with WebScraper tool. The data of 6616 surgeons registered in the website was extracted including the number of specialities, scientific titles, practice location, number of opinions, mean total score and mean individual scores for trust in competency (TIC), provided explanations (PE), devoted time (DT), holistic approach (HA), politeness (POL) and being recommendable (REC).
Results: The mean number of opinions per physician was 2.25 (standard deviation 5.57) and the mean total score 3.85 (1.34). The mean total score was significantly associated with the size of the place where the practice was located. The highest scores received surgeons practising in cities with >500,000 residents and the lowest for places with 100,000–200,000 inhabitants (Kruskal-Wallis test, p=0.004). Higher score were obtained by surgeons practising in more than one location than by those with only one place declared (U Mann-Whitney test, p<0.001). The mean total score did not depend on the number of specialisations and having a scientific title. Mean individual scores of physicians' opinions showed a significant negative correlation with the number of opinions. Correlations coefficients were equal, for TIC -0.15, PE -0.14, DT -0.15, HA -0.14, POL -0.14 and for REC -0.14 (p<0.001 for all correlations).
Conclusions: Patients' assessment of the quality of serviced provided by surgeons depends on the size of the location where the practice is located and the number of places of practice but not on the number of specialities and scientific title.
Key words: online physicians rankings, surgeons, quality of service, patients' feedback

Health status and access to health services during COVID-19 pandemia among elders in Poland

Katarzyna Szulc
Students' Scientific Circle of Health Promotion, Department of Health Promotion and eHealth, Faculty of Health Sciences, Jagiellonian University Medical College, Cracow, Poland

Trustee: Mariusz Duplaga MD, PhD

Introduction: The COVID-19 pandemic is a challenge for the healthcare system and society. The availability of medical services enabling early diagnosis or continuation of therapy became a major problem. Older people suffering from multiple diseases are frequently devoid of adequate care.
Aim of the study: The assessment of the compliance with preventive measures and access to medical services among older adults during the COVID-19 pandemic.
Material and methods: The analysis was based on data obtained from Polish participants of the Survey of Health, Ageing and Retirement in Europe (SHARE) performed in June 2020. In addition to socio-demographic data, information on health status or access to health services was collected.
Results: The survey included 2936 subjects, of mean age 67.7 years (standard deviation 9.15), of whom 43.3% were male. As for epidemic preventive measures, 73.9% of respondents declared they always wore masks in public places, 95% always or often kept a distance from others. The most common newly diagnosed conditions (n=486, 16.6%) were arterial hypertension (n=229), heart attack (n=135), and diabetes (n=93). The percentage of respondents who forwent a scheduled appointment was 9.6%, 6.9% were denied of the consultation with a doctor, and 28.5% had their medical examination postponed. Women more frequently skipped medical appointments (chi2 test, p<0.001) and men had their visits postponed less frequently (chi2 test, p=0.002). Among respondents who reported improvement of health during the pandemic, 42.2% had their appointment postponed, among those whose status worsened, 36.0% confirmed postponed appointments (chi2 test, p<0.001). The worsening of health during the COVID-19 pandemic was associated with increased stress (p<0.001) and sadness (p<0.001). Surprisingly, having a family member or friend who contracted COVID-19 was not related with experiencing more sadness.
Conclusions: The COVID pandemic has affected the access of elderly people to medical services. In this group, high compliance with preventive measures recommended during the pandemic was observed.
Key words: COVID-19, elders, health status, access to health services

Does exclusion of meat from the diet is beneficial for the psychological wellbeing?

Kaja Kącka-Zięba
Students' Scientific Circle of Health Promotion, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow, Poland

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

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

Trustee: Mariusz Duplaga Professor, MD, PhD

Introduction: Vegetarian diets are a source of both concerns and expectations in terms of their impact on health status. In recent years, especially the flexitarian approach gained on popularity.
Aim of the study: The aim of the study was the analysis of socio-demographic, psychological and health status of the persons that excluded meat from their diets.
Material and methods: The analysis was based on the data of 522 respondents declaring exclusion of meat (NOMEAT) participating in the Social Diagnosis study (SD). From the remaining 21,584 participants of SD, a size-matched control group (MEAT) was generated. Respondents suffering from chronic diseases were excluded.
Results: Mean age (standard deviation) of NONMEAT and MEAT did not differ significantly (47.07 (18.2) vs 48.4 (18.4), p=0.81). The meat was excluded from nutrition more frequently by women than man (50.9% vs 40.2%), by singles than others (51.7%, 44.3% and 48.7%), by persons with at least postsecondary than lower levels of education (52.4% vs 45.1%), by persons younger than 40 years old than older (50.6% vs 45.4%). But only in case of sex, the differences were statistically significant (Fisher exact test, p=0.003). NONMEAT participated more often in public gatherings than MEAT (55.3% vs 44.7%, p=0.011). Unhappiness was reported by 19.7% of NOMEAT and only 13.7% of MEAT (p=0.05). Consistently, NONMEAT have experienced suicidal thoughts more often than MEAT (16.7% vs 8.9%, p=0.001). Simultaneously, enthusiasm (p=0.015) and appetite (p=0.028) were higher in NONMEAT than in MEAT. There were no significant differences in the prevalence of specific symptoms between both groups apart from nasal bleeding (more frequent in NONMEAT, 7.4% vs 4.1%, p=0.04).
Conclusions: The exclusion of meat from the diet is more frequently made by women, younger persons and those with a higher level of education. The analysis revealed that persons excluding meat from the diet might more often experience suicidal thoughts.
Key words: vegetarianism, flexitarianism, mental health, well-being, suicidal thoughts

The association of health literacy, self-assessed mental health and health behaviours in male firefighters

Wiktoria Derleta
Students' Scientific Circle of Health Promotion, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow

Trustee: Mariusz Duplaga Associate Professor, MD, PhD

Introduction: Professional firefighters are exposed to significant mental and physical burden. Although their health is routinely checked, health literacy (HL) and health behaviours (HB) are rarely addressed.
Aim of the study: The study focused on assessing the relationships between HL, mental health (MH) and HB of professional male firefighters.
Material and methods: The analysis presented in this paper was based on the data from a survey carried out on a convenience sample of firefighters from three units of State Fire Service located in Warsaw, Poland. An integrated tool used in the survey consisted of the short version of the European HL Survey questionnaire, the Health Behaviours Inventory (HBI), the General Health Questionnaire (12-item version), and a set of questions about sociodemographic status.
Results: Finally, 100 respondents took part in the survey. Their mean age was 35,5 years(standard deviation, 7,0). Mean HL was 11,4 (SD 3,9), mean mental health score 10,4 (SD 3,6) and mean score HBI score 76,6 (SD 12,1). Among study participants, 46,5% (n=40) had sufficient, 27,9% (n=24) problematic and 25,6% (n=22) inadequate HL. Participants with a higher HL, better self-assessed their mental health (p=0.004), demonstrated more positive psychological attitudes (p=0.001) and more favourable nutritional habits (p=0.044) than those with lower HL. There was no significant association between the level of HL and preventive behaviours (p=0.31) or health practices (p=0.11). Lower HL was associated with the propensity to alcohol consumption (Spearman ro=-0.22, p<0.05). Furthermore, ex-smokers had a higher level of HL (p=0,011) and health practices score (p<0.001)
Conclusions: HL is an important predictor of mental health and health behaviours in a vocational group of male firefighters. Firefighters with a higher HL have improved mental health and demonstrate more favourable health behaviours.
Key words: health literacy, mental health, health behaviours, firefighters

A mixed methods analysis of parents' opinions about the use of homeopathy by paediatricians

Dominika Banaś
Students' Scientific Circle of Health Promotion, Department of Health Promotion and eHealth, Faculty of Health Sciences, Jagiellonian University Medical College, Cracow, Poland

Katarzyna Sekulak
Students' Scientific Circle of Health Promotion, Department of Health Promotion and eHealth, Faculty of Health Sciences, Jagiellonian University Medical College, Cracow, Poland

Trustee: Mariusz Duplaga Professor, MD, PhD

Introduction: Complementary and alternative medicine (CAM) is gaining a growing popularity in the society despite firm negative opinions of prevailing part of medical community.
Aim of the study: The aim of the study was the assessment of homeopathy use by paediatricians on the basis of parents' comments.
Material and methods: From the portal ranking quality of paediatricians' services, 21,653 opinions issued for 5004 physicians by parents of treated children were retrieved. The opinions were analysed for the presence of comments on the use of homeopathy by a physician. Individual and total scores of physicians using and not using homeopathy were compared. Opinions underwent a qualitative analysis.
Results: Only 0,36% (n=78) retrieved opinions contained parents' comments about the use of homeopathy. The opinions of 1.30% (n=65) paediatricians included such comments.
Physicians using homeopathy received significantly more opinions from parents than those not using it (mean(SD): 14.5 (10.12) vs 9.5 (10.7), U Mann-Whitney test, p<0.001).
However, mean individual scores for competency, quality of explanations, devoted time, holistic approach, politeness and being recommendable as well as mean total scores did not differ significantly between both groups.
The analysis of opinions including parent's comments about homeopathy revealed that 16.7% (n=13) parents had neutral, 21.8% (n=17) negative and 61.5% (48) positive attitude to this method. The use of homeopathy influenced parent's opinion about a physician in 80.8% (n=63). The use of homeopathy instead of antibiotics was positively assessed in 37.2% (n=29) opinions. There were also 20.5% (n=16) opinions admitting the use of other CAM methods by a physician.
In 62.8% (n=49) opinions, a parent expressed conviction about the effectiveness of homeopathy. The cost of homeopathic agents was negatively assessed in 12.8% (n=10) opinions.
Conclusions: There is a relatively large group of paediatricians practising homeopathy. The number of parents revealing acceptance of homeopathy prevails over those with negative or neutral attitude.
Key words: homeopathy

The investigation of contact lens wearers in a non-clinical setting: knowledge and hygiene habits of Vilnius University students

Belousova Viktorija
Vilnius University, Faculty of Medicine

Vosyliūtė Rūta
Vilnius University, Faculty of Medicine

Kapačinskaitė Medeinė
Vilnius University, Faculty of Medicine

Trustee: Kirkliauskienė Agnė Associate Professor, MD, PhD

Introduction: Contact lens (CL) noncompliance is a proven factor for developing ophthalmic complications. Building awareness of proper behavior is inseparable from recognition of non-compliant habits.
Aim of the study: To determine the characteristics and routine habits of CL users and to assess the knowledge as well as the awareness of Vilnius University students about modifiable risk factors.
Material and methods: The research was carried out at Vilnius University, Institute of Biomedical Sciences, Department of Microbiology in 2019. The self – administered, anonymous survey was distributed to 56 asymptomatic CL wearers who were from different faculties of Vilnius University. The questionnaire included data about their demographics, CL hygiene and wearing habits. We divided all participants into 2 radical groups regarding the contamination. The comparison between participants' groups was made and risk factors related to ophthalmic complications were thoroughly analysed. Besides, we separated participants into 3 parts according to their hygiene habits (poor, intermediate, good). The statistical analysis of the data was performed with "IBM SPSS® Statistics 24.0".
Results: 83.9% (n=47) of participants were female and 16.1% (n=9) were male, participants aged 18 to 25. 23.21% do not clean the hands before putting on CL. 76.79% of wearers do not use disinfecting solution after removing CL. Unfortunately, all participants shown at least one behavior that put them at higher risk for infection. The main non-compliance factor that was revealed from this estimate is that 80.36% of CL practitioners use lenses for longer period than it is meant to be; there was found significant difference between contaminated group and non-contaminated group (p=0.0001). Inappropriate hygienic habits as sleeping (28.57%), swimming/showering (41.07%) were also reported.
Conclusions: This study indicates that 25% of respondents have poor skills in CL hygiene. Prevention strategies must be guided and wearers' knowledge should be broaden.
Key words: contact lens, students, hygiene, compliance

School-age children awareness, attitude and compliance to the COVID-19 safety precautions during the pandemic and factors that influence them

Anna Krasiļņikova
Rīga Stradiņš University, Faculty of Medicine

Diāna Blagoveščenska
Rīga Stradiņš University, Faculty of Medicine

Trustee: Darja Kaļužnaja, Rīga Stradiņš University MSc

Introduction: Teenagers are a very active social group, and therefore at high risk of contracting and spreading COVID-19, for which they are often asymptomatic. Assessing their opinions, knowledge and compliance will help us determine whether it might be necessary to improve/change the safety rules and distribution of information about COVID-19.
Aim of the study: We found out how teenagers abide by safety rules in different circumstances, what information sources they use, what kind of motivation they have for following the precautions.
Material and methods: Study was conducted among 8-12th grade students of Latvian schools in November-December of 2020. A 45-question Google-Forms survey was distributed to schools online. Completed questionnaires (n=161) were analyzed using IBM SPSS Statistics 26 (descriptive statistics, chi-square test).
Results: Almost all (93.1%,N=150) participants know the basic principles of COVID-19 transmission. However, only 23.6% believe that they are in the risk group for getting infected. Withal, in participants opinion, hand washing (95.0%;N=153), hand disinfection (89.4%;N=144), face mask use (85.7%;N=138) and social distancing (85.7%;N=138) are necessary for prevention of COVID-19. Nevertheless, lower amount of participants (74.5%,N=120) always use masks in public places and only a half of all participants always wash their hands (56.5%,N=91), keep social distance (55.9,N=90) and disinfect hands (49.1%,N=79) while in public. In comparison, when participants spend time with friends, a half of them always wash their hands (57.8%,N=93), a third part always wear masks (32.9%,N=53) and disinfect hands (29.2%,N=47), and only one fifth part (21.1%,N=34) always keep social distance while with friends.
Conclusions: As anticipated, teenagers have good knowledge about COVID-19 and necessary precautions, and majority agree that all safety measures are needed. Their habits are very dependent on the current rules set by the government, and therefore might change. Generally, children are very compliant to using COVID-19 prophylactic measures while in public, but are much less likely to use them when meeting friends.
Key words: COVID-19, adolescents, children, hygiene, hand washing, hand disinfection, masks, social distancing

Are computer game players with low health literacy more prone to develop gaming addiction?

Paulina Smoła
Students' Scientific Circle of Health Promotion, Department of Health Promotion and e Health, Faculty of Health Sciences, Jagiellonian University Medical College, Krakow

Trustee: Mariusz Duplaga MD, PhD

Introduction: Computer gaming is an important part of entertainment industry. On the hand, there are many voices warning about possible unfavourable consequences gaming.
Aim of the study: The main aim of the study was the assessment of prevalence of gaming addiction (GA) among Polish gamers. The association of GA with health (HL) and ehealth literacy (eHL) was also analysed.

Material and methods: An online survey was carried out among adult participants of Facebook group "Gracze to my!". The prevalence of addiction was assessed with Gaming Addiction Scale consisting of seven items (GAS Brief), HL with the European Health Literacy Survey questionnaire (HLS-EU-Q16) and eHL with eHealth Literacy Scale.
Results: The size of the study sample was 257; men made 77.0% (n=198). Mean age (standard deviation) of the respondent was 22.1 (4.9) years, GA score – 17.6 (5.3), HL score – 12.4 (3.3), eHL score – 29.7 (5.9). The criteria of GA were confirmed for 41.6% (n=107) gamers.
The percentage of warning scores in individual subscales (at least sometimes) was: for saliency – 56.0% (n=144), for tolerance – 76.3% (n=196), for mood modification – 58.4% (n=150), for relapse 32.3% (n=85), for withdrawal – 30.4% (n=78), for conflict – 25.3% (n=65) and for problems – 47.5% (n=122). The prevalence of GA was not associated with sociodemographic variables and daily Internet use. It was higher in respondents using the Internet for less than 10 years than in those using it longer (51.7% vs 36.3%, p=0.017).
HL was significantly higher in gamers with GA than those without GA (12.9 (3.0) vs 12.4 (3.3), p=0.011). eHL was lower in respondents with GA than in those without GA, but the difference was not significant (30.0 (5.8) vs 29.3 (6.1), p=0.23).
Conclusions: The gamers with GA have a lower level of HL. Surprisingly, the prevalence of GA is not associated with eHL.
Key words: gamers, games, game addiction, players' health, health behaviours

Depression in hearing impaired adults

Gabriela Kronberga
Rīga Stradiņš University, Latvia/Faculty of Medicine

Trustees:
Artūrs Miksons MD
Gunta Sumeraga MD, PhD

Introduction: Depression is a common mental illness and based on the latest available data it affects in average 6.7% of Latvian population.
Aim of the study: Aim of our study was to assess the level of depression in hearing impaired adults, determine the possible contributing factors and compare results with the average depression level in the Latvian population.
Material and methods: In this cross-sectional study, adults with five different stages of hearing loss were enrolled. Participants were asked to fill out Patient Health Questionnaire-9 (PHQ9) in voluntary basis in Pauls Stradiņš Clinical University Hospital, medical institution "Hearing systems" and electronically through hearing impairment support associations from March to December 2020. Additional information about gender, age, time of hearing loss, affected side were obtained to assess possible relation with PHQ9 score and depression degree. All data were summarized using MS Excel and analysed with IBM SPSS 25 (Spearman's correlation).
Results: Altogether 80 hearing impaired adults were enrolled – 26.25% (n=21) men, 73.75% (n=59) women. The mean age was 50.43 years (range 20 to 86 years). Overall, the prevalence of depression in hearing impaired adults was 45.1% (n=36) (25.0% mild, 13.8% moderate, 6.3% moderately severe). Prevalence among men 19% (n=4), among women 54% (n=32). There was moderate negative correlation between depression score and degree of hearing loss. (r = -0.356, p=0.001) as well as between age (r = -0.361, p=0.001). There were no statistically significant correlations between depression score and gender, time when hearing loss appeared, affected side and cause.
Conclusions: Results of this study showed that there is higher prevalence of depression in hearing impaired adults than in average population in Latvia. Depression was more common among hearing impaired women than men. The moderate negative correlation showed that higher degree of hearing loss and older age have lower rates of depression.
Key words: depression, hearing impaired adults, hearing loss

How does pelvic congestion syndrome influence women's quality of life?

Paweł Pasieka
Department of Angiology, Jagiellonian University Medical College

Trustees:
Mikołaj Maga MD
Paweł Maga Associate Professor, MD, PhD

Introduction: A pelvic congestion syndrome (PCS) is an underdiagnosed cause of chronic pelvic pain and is also characterized by dysmenorrhea, dyspareunia and other gynecological symptoms affecting women's daily life, but it hasn't been well studied yet.
Aim of the study: We conducted a survey study to assess the quality of life (QoL) of the patients with PCS.
Material and methods: The study enrolled women admitted to the Department of Angiology with diagnosis of PCS. The recently designed disease-specific Symptoms Questionnaire was translated into Polish and distributed among patients. The form contained questions regarding demographic data, EQ-5D, PCS-specific symptoms and utilized treatment. The results of EQ-5D survey were compared with Polish population data.
Results: 80 women (mean age = 43) answered the questionnaire. 71 had at least 2 children (mean = 2.4). The mean self-assessed QoL on VAS scale (1–100) equaled 70, lower than Polish general population (81.4). Our respondents also fared worse in present pain (71% vs. 40% in general), usual activity (21% vs 14%) and anxiety (44% vs 38%). Pain was the most common complaint among patients, being reported by 86% of the respondents and mostly appeared during menstruation in 61%. 47% of them described it as severe or very severe. It occurred throughout the month in 50% of respondents (severe/very severe for 15%) and as many as 41% of the respondents complained of dyspareunia (severe/very severe for 23%). There were no differences in symptoms incidence with regard to smoking,

age or BMI (p>0.05). 43% took medications for aforementioned symptoms.

Conclusions: Our analysis indicates that PCS is a condition detrimental to the QoL, mostly due to pain induced by the syndrome. It also further proves that patients with PCS tend to be premenopausal and multiparous, so we believe that PCS should not be overlooked in our daily practice when diagnosing chronic pelvic pain and dysmenorrhea.

Key words: pelvic congestion syndrome, quality of life, dysmenorrhea, chronic pelvic pain, dyspareunia

Basic Sciences Genetics, Molecular Biology

Jury:

Prof. Krzysztof Gil, MD, PhD
Prof. Jerzy Walocha, MD, PhD
Prof. Tomasz Brzozowski, MD, PhD
Prof. Marek Sanak, MD, PhD
Prof. Piotr Laidler, MD, PhD
Kinga Kocemba-Pilarczyk, PhD

Coordinators:

Michał Platschek, Grzegorz Waliszczak

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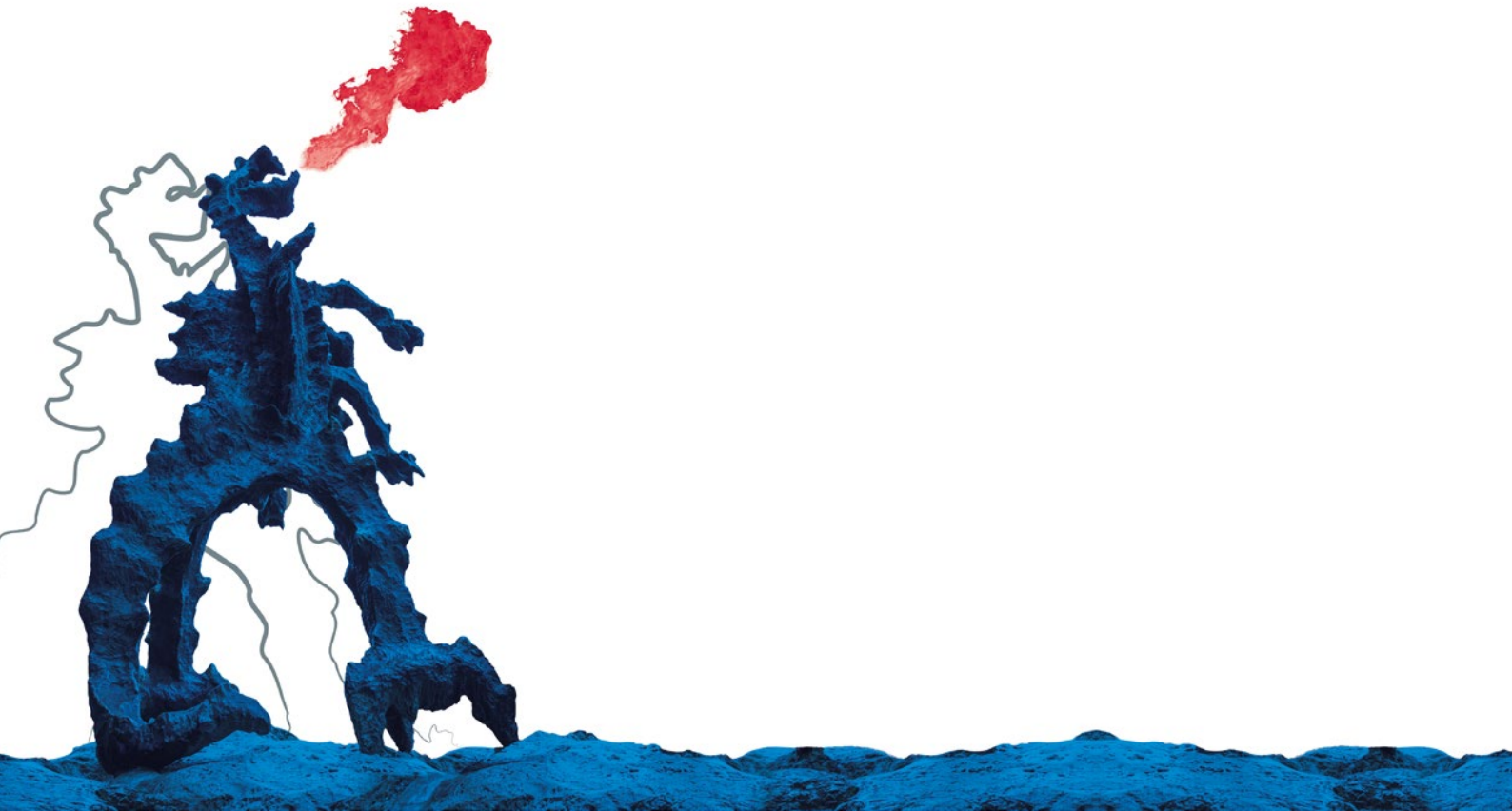


Are bearded doctors dangerous? Are smartphones and credit cards safe? The importance of hygiene and object disinfection around hospital and private practice settings as well as the public environment.

Wiktor Kostecki
Jagiellonian University Medical College

Kuba Kupniewski
Jagiellonian University Medical College

Vanessa Crain
Jagiellonian University Medical College

Mitchell Raymond Mann
Jagiellonian University Medical College

Marta Płońska
Jagiellonian University Medical College

Lingjuan Zeng
Jagiellonian University Medical College

Trustees:
Edyta Golińska MA
Agata Pietrzyk MD
Piotr Kochan MD

Introduction: Proper hand hygiene represents a simple, cost-effective way of preventing the spread of infectious diseases in the clinical setting. Data from the Centers for Disease Control and Prevention (CDC) has shown that about 722,000 healthcare-associated infections (HAIs) occur per year and that HAIs cause the death of about 75,000 patients. However, the maintenance of adequate sanitary practices among medical staff remains difficult to achieve. Bacteria has been found on the hands of medical staff after working with patients, including after wound care, intravascular catheter care, and handling patient secretions. Pathogens have also been identified on the hands of healthcare workers after less invasive procedures, including taking a patient's pulse, temperature, and blood pressure. Bacterial species transmitted in this manner include Klebsiella spp., Staphylococcus aureus including methicillin resistant S. aureus (MRSA), Clostridium difficile, and gram-negative bacteria.
Aim of the study: The goal of this study is to raise awareness about the continued prevalence of the transmission of pathogens in healthcare despite current hand sanitation regulations, and to encourage medical staff adherence to hand hygiene protocol.
Material and methods: Students imprinted fingers in three stages of cleanliness (unwashed, washed, and disinfected with alcohol) and other objects on trypticase soy agar (TSA) Petri dishes. The plates were incubated at 37oC overnight and photographed. The colonies grown on the Petri dishes were Gram stained and also identified using API kits.
Results: Bacterial growth was noted on almost all Petri dishes, including Bacillus subtilis, Staphylococcus aureus, Staphylococcus epidermidis, Staphylococcus warneri, Staphylococcus capitis, Staphylococcus lentus, Micrococcus spp., and other gram positive bacilli.
Conclusions: Infectious pathogens continue to exist on multiple surfaces, like personal items, but also on people's hands. Therefore, adherence to proper hygiene protocol becomes especially relevant in the clinical setting, where there is a risk of transmission of more serious diseases to vulnerable patients.
Key words: hand hygiene, hospital infections, adherence to protocol, hospital transmission, healthcare-associated infection

Does immunosuppression related to myeloid-derived suppressor cells occur before development of colorectal cancer?

Ewa Poljańska
Jagiellonian University Medical College

Izabela Siemińska
Jagiellonian University Medical College, Faculty of Medicine, Institute of Pediatrics, Department of Clinical Immunology

Trustee: Prof. Jarosław Baran, PhD Assistant Professor

Introduction: According to WHO colorectal cancer (CRC) is the third most common cancer and the second leading cause of cancer-related death worldwide. Colorectal polyps are considered as the premalignant state, histologically characterized by a small clump of cells that form on the lining of the colon or rectum. Over time some polyps may lead to dysplasia and cancer development. The myeloid-derived suppressor cells (MDSCs) are an important element of immunosuppression observed in many pathologies, including cancer and their level was shown to correlate with disease progression.
Aim of the study: The aim of the study was to determine if MDSCs-related immunosuppression occurs in patients with colorectal polyps before CRC is diagnosed.
Material and methods: Flow cytometry analysis of peripheral blood mononuclear cells from 5 adult patients with colorectal polyps and 5 adult healthy controls was performed to evaluate MDSCs populations level and their absolute count in peripheral blood. The MDSCs subsets: granulocytic (Gr-MDSCs), monocytic (Mo-MDSCs) and early-stage (eMDSCs) were identified according to phenotype characteristics (LIN-HLA-DR-CD11b+CD33+ and CD15+ CD14- or CD15- CD14+ or CD15-CD14-, respectively). The MDSC subsets were further isolated by flow cytometry cell-sorting and cultured with mitogen (PHA, anty-CD3) stimulated autologous T cells. Suppressive activity of MDSCs subsets on T cell proliferation was assessed by H3-thymidine incorporation assay.
Results: The level of Mo-MDSCs was significantly higher in the blood of patients with colorectal polyps when compared to healthy controls. Isolated Gr-MDSCs and Mo-MDSCs (CD33+HLA-DR- CD14-CD15+ and CD14+CD15-, respectively) effectively suppressed proliferation of autologous T lymphocytes in vitro, documenting their biological functions.

Conclusions: MDSCs-related immunosuppression occurs already in premalignant state, supporting conditions for cancer development.
Key words: myeloid-derived suppressor cells (MDSCs), colorectal polyps, flow cytometry

Resistance to first choice topical antibiotics in Staphylococcus aureus strains isolated from atopic dermatitis patients

Kinga Filipek
Medical University of Warsaw, Poland / Department of Medical Microbiology

Mateusz Ziomek
Medical University of Warsaw, Poland / Department of Medical Microbiology

Trustee: Ksenia Szymanek-Majchrzak Associate Professor, MD, PhD

Introduction: Atopic dermatitis (AD) is a chronic and complex skin disorder. The pathophysiology of AD involves genetic predisposition, impaired epidermal barrier and disrupted function of the immune system. Staphylococcus aureus plays a significant role in AD and also is one of the most common agents that cause lesional skin symptomatic infections. The first line of anti-staphylococcal topical antibiotics are mupirocin and fusidic acid.
Aim of the study: We tested the presence and the level of resistance to the most commonly used topical antibiotics: mupirocin and fusidic acid and we have assessed the possibilities of their application in empirical therapy.
Material and methods: In the study were included 126 strains of S. aureus isolated from 55 patients with clinically diagnosed AD. Isolates were collected from following locations: nonlesional skin, lesional but not infected skin and mucous membrane of nasal vestibule (respectively: 35, 48, 43 strains). The isolates were identified based on the protein profile by VITEK MS, Biomerieux mass spectrometry, according to the manufacturer's instructions. Resistance to antibiotics and MIC values were performed by using the disk-diffusion (FUS 10µg, MUP 200µg, Oxoid) and E-tests methods, according to EUCAST recommendations.
Results: Resistance to at least one of tested antibiotics was developed in 17% of isolates. Resistance to fusidic acid (on various level) was observed two times more frequent than resistance to mupirocin (always high level). There were no strains resistant to both antibiotics at once. The greatest number of antibiotic resistant isolates came from skin not affected by atopic lesions (23% of samples from this location).
Conclusions: Antibiotic resistance is still increasing and it's an important problem of modern medicine. Antibiogram should be performed to each of S. aureus isolate for every patient. This is necessary to reduce the increase of antibiotic resistance and apply appropriate and targeted treatment.

Key words: antibiotic resistance, atopic dermatitis, fusidic acid, mupirocin, Staphylococcus aureus

Anesthesiology, Intensive Care, Emergency Medicine

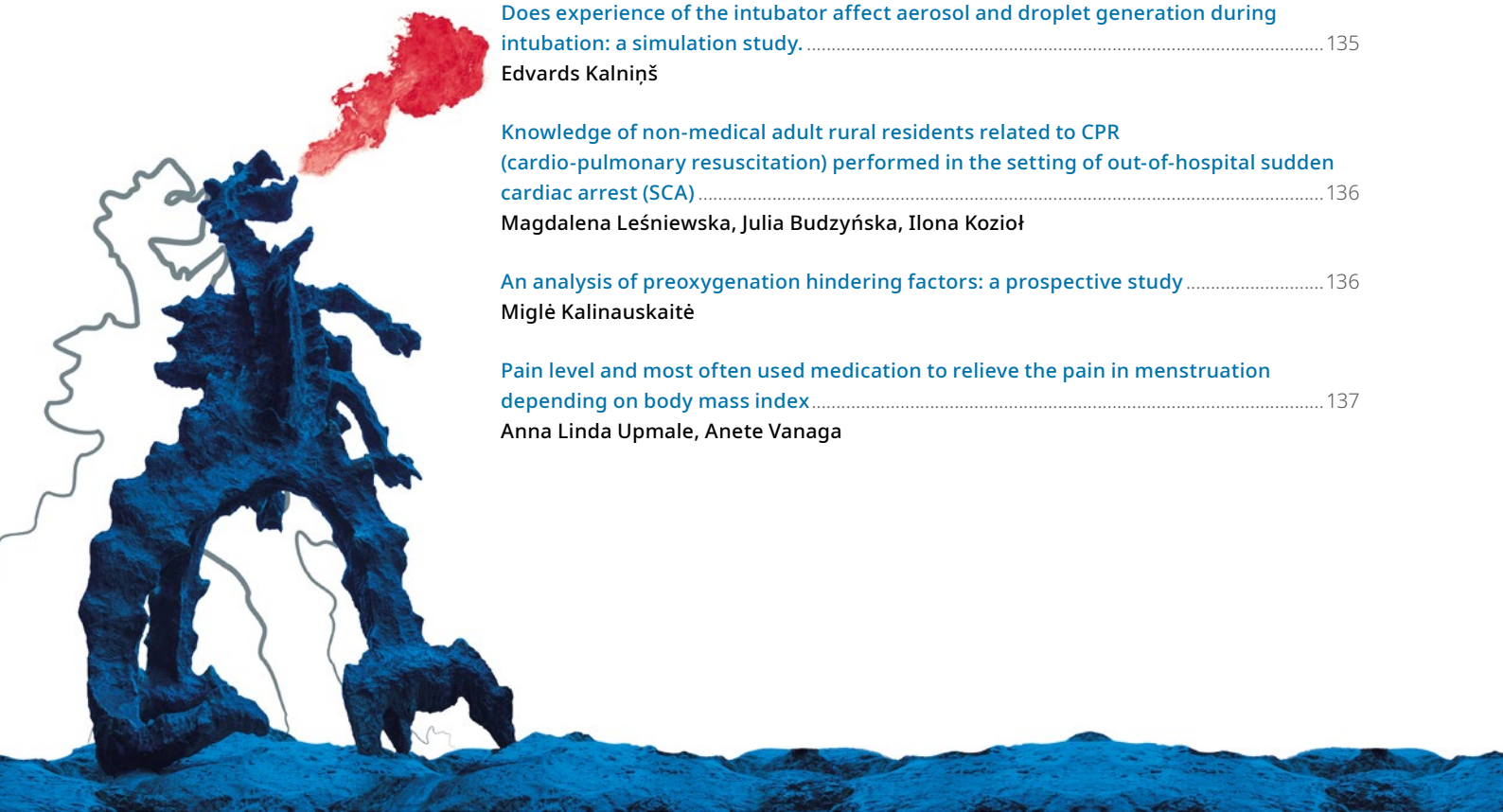
Jury:

Joanna Zorska MD
Prof. Janusz Andres, MD, PhD
Wojciech Serednicki, MD, PhD
Prof. Wojciech Szczeklik, MD, PhD
Grzegorz Cebula, MD, PhD

Coordinators:

Michał Surdacki, Weronika Lebowa

List of papers



Treatment of patients with community acquired pneumonia induced septic shock and comorbidities

Edvīns Bergmanis
Riga Stradins Univeristy, Faculty of medicine, Latvia

Trustee: Oļegs Sabeļņikovs Associate Professor, MD, PhD – Department of Anaesthesiology and Intensive Care, Pauls Stradins Clinical University Hospital, Riga, Latvia

Introduction: Pneumonia and septic shock is often cause of death of patients who are treated in intensive care unit. I/v fluids and vasopressors are cornerstones of therapy although it is important to understand how to balance them to acquire the best plausible result.
Aim of the study: The aim of this study was to estimate effect of infusion and vasopressor therapy depending on outcome in Intensive Care Unit (ICU) patients with community acquired pneumonia (CAP) induced septic shock.
Material and methods: Retrospective study was developed, which summarizes and analyses data of 25 patients with a CAP induced septic shock admitted to the ICU of Pauls Stradins Clinical University hospital in 2019. The data obtained were compared between survivors and non-survivors. For statistical analysis IBM SPSS Statistics 26.0 was used.
Results: Surviving group included 10, non-surviving group included 11 patients. Data of 4 patients who passed away in the first 24 hours from admission were excluded from analysis. Administered fluid volumes were similar in the both groups. However, in the first three hour surviving patient group average received fluid volume were 200ml more than in the non-surviving group. Surviving patients received lower vasopressor median doses and vasopressor support was declined within study period. Initial lactate levels were lower in the surviving group and in dynamic decreased more than in the non-surviving group. There were more commonly comorbidities in the non-surviving patient group.
Conclusions: Required vasopressor doses and magnitude of the dose dynamic are associated with ICU mortality. There was a tendency for lactate level to decrease more in the survival group than in the non-survival group, while lower doses of vasopressors were used. Administered fluid volume does not contribute significantly to ICU mortality. Comorbidities, initial lactate level and lactate dynamic is important predictors for the outcome in the ICU patients with CAP induced septic shock.
Key words: pneumonia, fluids, vasopressors, sepsis, shock

Adding antibiotics in dialysate fluid during renal replacement therapy: proof of concept

Ieva Bartuševičienė
Faculty of Medicine, Vilnius University, Lithuania

Trustees:
Jūratė Šipylaitė Professor, MD, PhD
Vaidas Vicka – Clinic of Anaesthesiology and Intensive Care, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
Alvita Vickienė – Clinic of Gastroenterology, Nephro-Urology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Lithuania
Donata Ringaitienė – Clinic of Anaesthesiology and Intensive Care, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Introduction: Studies have shown significant variability in antibiotic trough concentrations in critically ill patients receiving RRT. Unintended under-dosing leads to increased resistance of the microflora and sub-optimal effect, prolonged hospitalization and worse clinical outcome.
Aim of the study: The purpose of this study was to assess whether adding beta-lactam antibiotics to dialysate solution can maintain stable antibiotic concentrations during CRRT in experimental conditions.
Material and methods: A single compartment model reflecting the patient was constructed and connected to the RRT machine. CVVHD modality of RRT was chosen. Dialysate fluid was prepared in three different concentrations of meropenem (0 mg/L; 16 mg/L; 64 mg/L). For each dialysate concentration various combinations of dialysate and blood flow rates were tested by taking different samples. Meropenem concentration in all samples was calculated using spectrophotometry method.
Results: Constructed experimental model results suggest that decrease in blood meropenem concentration can be up to 35.6%. Moreover, experimental data showed that antibiotic loss during CVVHD can be minimized and stable plasma antibiotic concentration can be achieved with the use of a 16mg/L Meropenem dialysate solution. Furthermore, increasing meropenem concentration up to 64mg/L is associated with an increase antibiotic concentration up to 18.7–78.8%.
Conclusions: Our experimental study suggests that the administration of antibiotics to dialysate solutions may be an effective method of ensuring a constant concentration of antibiotics in the blood of critically ill patients receiving RRT. Further research confirming the safety and efficiency of the method application in clinical practice is required.
Key words: antibiotics, dialysate, meropenem, renal replacement therapy, excretion

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

Eva Vitola
University of Latvia

Sabine Jablonska
Riga Stradiņš University

Trustee: Dzintra Jakubaņeca MD

Introduction: A low quality of cardiopulmonary resuscitation (CPR) predicts adverse out- come. The usage of A-CPR following out-hospital cardiac arrest remains poorly described.
Aim of the study: To determine the implementation and effectiveness AutoPulse for
out-of-hospital cardiac patients in Latvia.
Material and methods: A retrospective cross-section study was carried out, involving adult patients with out-of-hospital cardiac arrest with sustained circulatory arrest.
The data from State Emergency Service of Latvia regarding the patients resuscitated with AutoPulse-CPR was used in the study
Results: From May 2016 to December 2018, 232 patients, 182 (78.4%) of those men and 50 (21.6%) women (p<0.001) were resuscitated with AutoPulse. The median age for women was 62.5 (12.0–92.0) years and 59.0 (17.0–88.0) for men (p = 0.101).Of those patients, in 70/232 (30.2%) cases the return to spontaneous circulation and a successful admission to the hospital, 59/70 (84.3%) were male and only 11/70 (15.7%) were women.
The median age (min-max) of patients who had survived was 58.50 (17–92) years, but in patients group who died, the median age 60.0 (12–88) years (p = 0.375). The aetiologies of cardiac arrest were followed: unknown cause 126/232 (54.31), the second most common cardiac arrest reason was an acute myocardial infarction in 44/232 (19%) cases, and Chronic Ischemic heart disease in 23/232 (9.9%) cases, while non-cardiogenic cause was present in 39/232 (17%) cases. 68.2% (30/44) of the patients with myocardial infarction and 14/23 (60.9%) of the patients with the diagnosis CIHD (p = 0.549) experienced the return of spontaneous circulation and were admitted to hospital.
The most common location of cardiac arrest was found to be a patient's residence – 137 (59.1%) cases, and 95 (40.9%) – in public places.
Conclusions: AutoPulse is effectively used in Latvia and the study shows a positive outcome
Key words: cardiac arrest, automated CPR, AutoPulse

Longterm outcome evaluation in patient undergoing deep hypothermic circulatory arrest in aortic arch surgery.

Edvards Kalniņš
Faculty of Medicine, University of Latvia, Raiņa bulvāris 19, Rīga LV-1013, LATVIA

Dāvis Poliņš
Riga Stradins University, Department ofAnaesthesiology and Reanimatology, Riga, Latvia.

Trustees:
Roberts Leibuss MD
Eva Strīķe Associate Professor, MD, PhD
Pēteris Stradiņš Professor, MD, PhD

Introduction: Aortic arch surgery is associated with low survival rates. Since 1985 deep hypothermic circulatory arrest (DHCA) is often used in this type of surgeries. Its main advantage is to provide bloodless surgical field while protecting brain tissue with hypothermia. Nevertheless, it still raises concerns of increasing neurologic sequelae and probable decrease of long term quality of life.
Aim of the study: To evaluate the possible effect of DHCA used in aortic surgery on patients' long term quality of life in a retrospective crossectional study.
Material and methods: From January 2019 to December 2020 24 patients had undergone aortic surgery requiring DHCA, 7 of those were excluded because of intrahospital death. For the rest of the patients Quality of life was evaluated using RAND SF36 questionnaire and MMSE test. Data regarding demographics and clinical characteristics were collected and analysed with IBM SPSS, a P value of less than 0.05 was considered significant.
Results: 12(71%) of the patients were men and 5(29%) were women. Mean age 60,71±13,8 years.Leading co-morbidity was PAH(64.7%).
There were 6(35.3%) elective and 11(64,7%) emergency cases. Mostly there was Stanford A dissection(82.4%). 94.7% had aortic arch replacement. Most common postoperative complication was infection- 29.4%.
The mean cardiopulmonary bypass time, aortal obstruction and reperfusion time was 212±38,3, 124±33.8 and 70,2±32,9 minutes, respectively. Core temperature during DHCA was 23,2±3,2. Rewarming rate was 0,12±0,07 C/min. No statistically significance between QOL and lowest DHCA temperature(p 0.059), Ao(p 0,544),reperfusion time(p0,618), CPB time(p 0.305) was observed. QOL and rewarming rate showed statistical significance(p 0,02).
Mean long term quality of life was 71.9±10.2% and mean cognitive index 27.9±5,3
Conclusions: There was no statistical significance between lower QOL and average temperature, Ao, CPB DHCA duration(p>0.05). Only rewarming time was found to be correlating with QOL.
Compared to other studies QOL was the same or higher, but compared to general population QOL is slightly decreased.
Key words: deep hypothermic circulatory arrest, long term quality of life

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

Edvards Kalniņš
Faculty of Medicine, University of Latvia, Raiņa bulvāris 19, Rīga LV-1013, LATVIA

Trustee: Sigita Kazūne MD, PhD

Introduction: COVID-19 pandemic is affecting many countries all over the globe. All the efforts are given to limit the spread of pandemic, including medical staff being infected when treating patients. For COVID-19 patient management, intubation may be needed, which also is an aerosol and droplet generating

procedure. It can promote virus spread via contact, droplet or aerosolization routes. It is advised that intubation is performed by an experienced intubator as it allows better visualisation of the vocal cords and shorter intubation time thus decreasing aerosol and droplet generation time.
Aim of the study: The aim of this study was to examine the extent of contact contamination, droplet spread and aerosolization that occur during intubation in a mannequin study and to compare the results between an experienced intubator and a young doctor.
Material and methods: In the experiment an atomiser device containing luminescent fluid was placed into Laerdal Airway mannequin's pharynx. An experienced intubator and a young doctor intubated the mannequin 5 times each using a videolaryngoscope while 0.5 mls of luminescent fluid was sprayed through atomiser. The droplet spread and contact contamination after intubation were visualised using ultraviolet light and standardized photographs taken. The extent of spread was evaluated using a 4-point Likert scale (0 to 3) by two independent observers. To assure the reliability of the results, the Cohen κ coefficient of interrater reliability between the 2 examiners was calculated.
Results: For experienced intubator contact contamination and droplet spread was 1(0–1) and 2(1–2). For young doctor the results were 2,5(2–3) and 1(0–1) for contact contamination and droplet spread, accordingly. The Cohen κ coefficient was 0.6, which demonstrated substantial agreement between examiners.
Conclusions: Less contact contamination was observed with experienced practitioner. Intubation done by young doctor resulted in less droplet spread.
Key words: COVID-19, intubation, aerosolization, intubator experience

Knowledge of non-medical adult rural residents related to CPR (cardio-pulmonary resuscitation) performed in the setting of out-of-hospital sudden cardiac arrest (SCA)

Magdalena Leśniewska
Medical University of Lublin / Medical Simulation Student's Research Society, Department of Didactics and Medical Simulation

Julia Budzyńska
Medical University of Lublin / Medical Simulation Student's Research Society, Department of Didactics and Medical Simulation

Ilona Kozioł
Medical University of Lublin / Medical Simulation Student's Research Society, Department of Didactics and Medical Simulation

Trustees:
Konrad Szast MSc
Monika Szaniawska MD

Introduction: Every year in Poland 56 000 out of hospital sudden cardiac arrests (SCA) occur. Cardio-pulmonary resuscitation is undertaken only in half of the cases. Time of ambulance approach is longer in rural then urban areas. Thus, witness knowledge and skills of dealing with an SCA have an important impact on the survival of the victim.
Aim of the study: The aim of the study was to determine the level of knowledge of basic life support undertaken in prehospital management in rural areas. The second objective of the study was to assess needs for CPR training among adults in rural areas.
Material and methods: The questionnaire was designed based on the review of literature and guidelines of the European Resuscitation Council. The questionnaire was shared on Facebook. The questionnaire consisted of the following parts: metric, experience of previous CPR, knowledge about CPR, assessment of demand and interest in expanding knowledge and skills in CPR. A total of 501 responses were collected, of which 316 from adult, non-medical rural residents were analyzed.
Results: Over 85% of respondents know how to assess consciousness of the victim, 95% of respondents know when to start CPR. About 1/3 of the respondents do not know the correct location of chest compressions. Moreover 65% of them cannot identify the correct frequency of compressions. Although rib fracture was one of the most commonly cited concerns, it was a potential reason to discontinue CPR only for 4.5% of respondents.
Conclusions: The lack of knowleadge was mostly noted in the technique of performing chest compressions. The study participants expressed a desire for further education.
Key words: out-of-hospital heart arrest, CPR, rural population

An analysis of preoxygenation hindering factors: a prospective study

Miglė Kalinauskaitė
Faculty of Medicine, Vilnius University

Trustees:
Greta Bružytė-Narkienė MD
Greta Timaitienė MD
Eglė Kontrimavičiūtė Associate Professor, MD, PhD

Introduction: The goal of preoxygenation is to denitrogenate the lungs and achieve an oxygen reserve to extend the safe apnoea time during intubation. The standard measurement for optimal preoxygenation (OP) is an alveolar oxygen concentration (EtO2) ≥90% in 5 minutes with 100% oxygen delivery via facial mask.
Aim of the study: To analyse the EtO2 value changes throughout preoxygenation and evaluate risk factors which can compromise the ability to achieve OP.
Material and methods: Prospective study after regional bioethics committee approval and registration in clinicaltrials.gov collected patients' demographic data, comorbidities, known

preoxygenation hindering factors (lack of teeth, facial hair, etc.), vital parameters, and data concerning the process of anaesthesia. EtO2 and SpO2 were measured in 30 second increments for 5 minutes during preoxygenation. The patients were grouped according to whether they had reached the OP goal (EtO2≥90%). Data was analysed with IBM SPSS Statistics 27.
Results: The study included 37 patients, 19 were female (51%), 18 male (49%), 58±20 years old, with a mean BMI of 27,6±4,6 kg/m^2. 18 patients had emergency surgery. 17 participants (46%) did not reach OP goal. In the OP group, the mean time to EtO2≥90% (TTE) was 196±64 seconds. Emergency patients were more likely to reach OP than elective patients (Phi=-0.355, p=0.031). The average TTE in the emergency surgery group was 180±66 seconds compared to 226±51 seconds for elective patients (p=0.345). Achieving OP did not depend on age or BMI (p=0.179; 0.681 respectively), on higher Mallampati and ASA scores or the number of factors known to hinder preoxygenation (p=0.574; 0.396; 0.987), was not influenced by any known risk factor independently.
Conclusions: Almost half of study patients did not achieve OP. Suboptimal preoxygenation was more frequently observed in patients undergoing elective surgery. No significant associations between risk factors and achieving OP were found, so individual patient characteristics are most likely at fault.
Key words: preoxygenation, anaesthesia

Pain level and most often used medication to relieve the pain in menstruation depending on body mass index

Anna Linda Upmale
Rīga Stradiņš University, Faculty of Medicine, Latvia

Anete Vanaga
Rīga Stradiņš University, Faculty of Medicine, Latvia

Trustees:
Dace Rezeberga Professor, MD, PhD
Ināra Miltiņa MD

Introduction: Menstrual symptoms, like heavy bleeding, cramping are widespread symptoms among the general population. More than halfof women experience period pain that may be so severe that there is a need for medical therapy to ease them. Aim of the study: The aim of this study was to evaluate the pain experienced during menstruation and most often used medication to relieve the pain depending on body mass index.
Material and methods: A cross-sectional survey including 910 women was carried out. Structured questionnaire was used, and data was analyzed using IBM SPSS statistics 26
Results: Mean age of 910 women was 27.4 (SD=8) and mean BMI index was 23.1 (SD=4). 67.9% (n=618) had normal body mass index. 86.5% (n=787) of all women had experienced menstrual cycle related symptoms during lifetime. On a scale from 1 to 10, an average pain level experienced during menstruation for all women was 7.4. The highest pain was experienced in BMI<18.5 on average 7.9, there the drug usage was the most often-84.2% (n=64). There is a statistically significant difference between the pain level and body mass index (p=0,01).69.3% (n=631) of women used medication to relieve the pain. 71.6% (n=452) of women used one medication, the most often in BMI>30 75.9% (n=22), while 28.4% (n=179) used 2 or more medication combinations, most often that was in BMI<18.5–29.7% (n=19). In all BMI groups, most common used drugs were NSAIDSs – Ibuprofen 80.3% (n=507) and antispasmodic drug-Drotaverine 20.1%(n=127), most commonly drug combination in all BMI groups were Ibuprofen plus Drotaverine 48.6%(n=87).
Conclusions: To conclude, results of study imply that 7 of 10 women have used medication for pain relief during menstruation. Most common medication used was Ibuprofen. Most often medication was taken in BMI<18.5 where the pain level was detected the highest, least medication was used in BMI 18.5–24.9 group, where the pain level was the lowest.
Key words: Menstrual cycle, pain, medication, BMI.

Orthopaedics, Sports Medicine

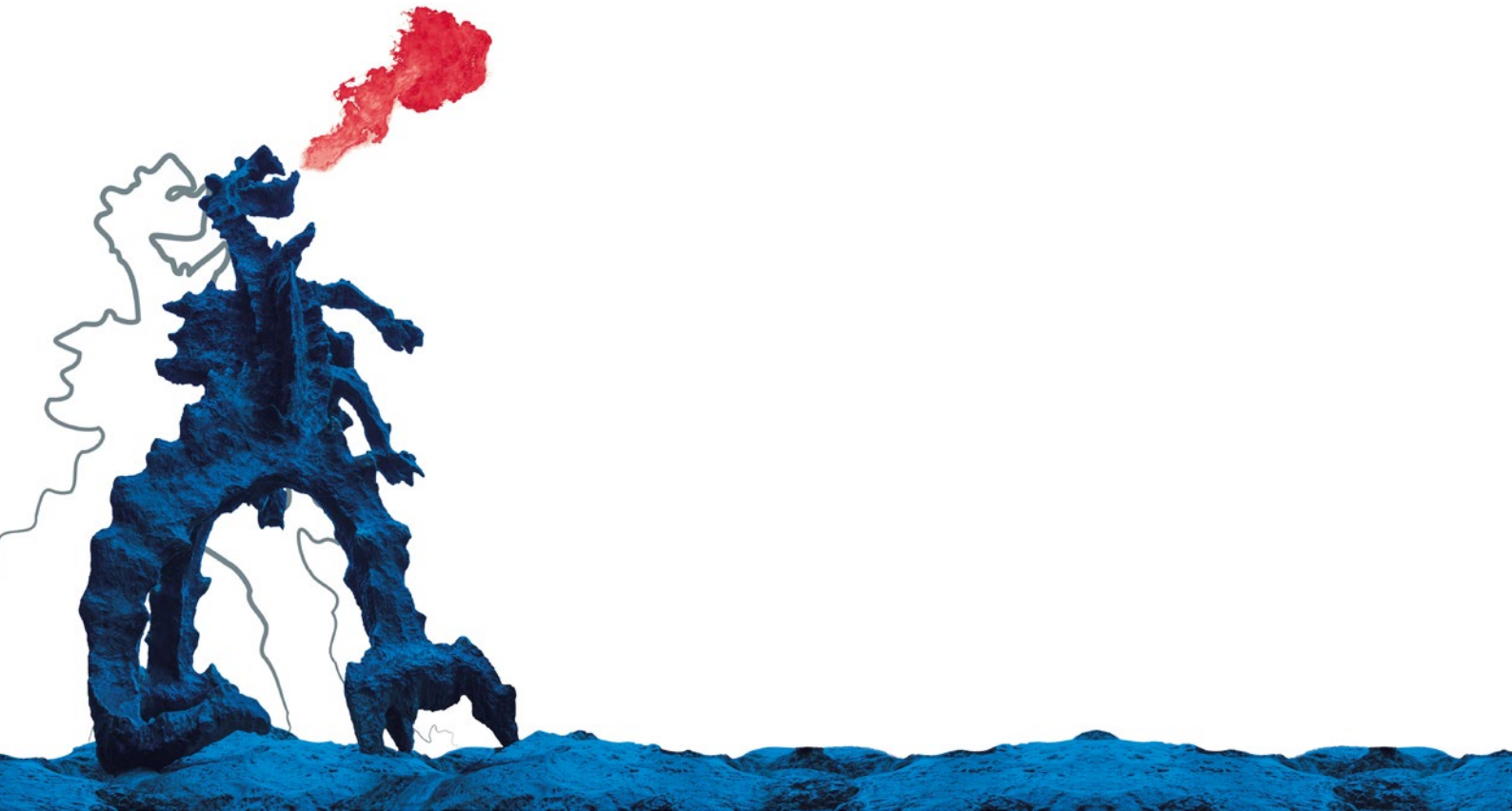
Jury:

Prof. Artur Gądek, MD, PhD
Jarosław Brudnicki, MD, PhD
Prof. Jerzy Sułko, MD, PhD
Wojciech Gawroński, MD, PhD

Coordinators:

Iga Grabrczyk, Szymon Urban

List of papers



Sports medicine in Lithuania: a general practitioners perspective

Emilija Višinskytė
Vilnius University

Ugnė Vaičiulytė
Vilnius University

Trustee: Teresė Palšytė MD

Introduction: Little research is done on the need, availability and the general understanding of sports medicine in Lithuania. In this study general practitioners (GPs) were interviewed about this topic, because they are the first physicians who consult patients in regard to physical activity and even so currently they cannot refer patients directly to a sports medicine physician (SMP).
Aim of the study: To evaluate the role and necessity of a SMP in Lithuania, assess GPs competence in consulting physically active patients.
Material and methods: A survey with general questions and specific clinical situations related to physical activity that a GP may encounter was shared in medic groups online. 104 responses were collected. Statistical analysis was done using Microsoft excel, R commander. Results were deemed statistically significant when p<0,05.
Results: 58,7% of GPs think they do not always have the competence to consult physically active patients, that does not depend on work experience, institution, region (p>0,05). The clinical situations included a paediatric patient, a pregnant woman, a postmenopausal woman, a relatively healthy young man, all had problems related to physical activity. GPs had to decide if they wished to consult these patients without help or refer them to a specialist of their choosing. In all of the situations the most common response was "refer to a SMP" even though not all of the patients, according to a SMP competences in Lithuania, fall under the care of a SMP. 93,3% of GPs would like to be able to refer patients directly to a SMP.
Conclusions: More than half of GPs think they do not always have the competence to consult physically active patients. Almost all of the respondents would like the ability to refer a patient directly to a SMP. Education about the role of a SMP is needed as well as a review of a SMPs competences.
Key words: sports medicine, sports medicine physician.

Factors associated with long-term mortality in children with hadcinjury admitted to the national pediatric intensive care unit in Latvia

Toms Kapusta
Universiti of Latvia

Viktorija Ivļeva
Riga Stradiņš university

Eva Vītola
University of Latvia

Trustee: Reinis Balmarks MD

Introduction: Every year in Latvia, like every else, there are hundreds cases with head trauma in children. Also is known that it is associated with mortality, so that why I took place in this research, to make clear, what are real statistics in my country.
Aim of the study: Head injuries in children are associated with high mortality and morbidity both in short and long term. There are no data available on long-term outcomes of children with head injuries in Latvia.
Material and methods: This retrospective, descriptive study was performed in the Pediatric Intensive care Unit of children's Clinical University Hospital. All children admitted to the PICU with head injury were included from 1998 to 2014. Clinical data were collected from paper medical records and from electronic medical records.
Results: From 823 children with head injury, 683 children were included in the study. 457(66.9%) were male and 226(33.1%) were female. From all studied children 653(95,6%) were alive and 30(4,4%) had died by November 25,2019. In Cox regression analysis age group, patient sex, surgical intervention were associated with risk of dying, while mechanical lung ventilation (HR 6.47;95% CI 2.86–14.66; p<0.001) and geographic region of Latgale (HR 3.7;95% CI 1.28–10.74; p=0.016) were independently associated with increased mortality.
Conclusions: While unsurprisingly patients with more severe injury requiring mechanic lung ventilation had worse outcomes, finding that patients from one particular region of Latvia have higher mortality requires further investigation and perhaps improvement of acute care services.
Key words: traumatology, trauma, head injury, children, mortality, pediatric

Early experience of acute temporary external fixation for calcaneal fracture

Jekaterina Kamenska
Rigas Stradiņš university, Latvia

Trustee: Vitālijs Pasters MD

Introduction: The morphology of calcaneus could be severely changed after fracture and is associated with high soft-tissue complication rate. Delayed restoration of calcaneus architecture is difficult because of soft tissue contracture and fast bone healing. In polytrauma patients, foot traumas aren't the priority for treatment and often are omitted.
Aim of the study: To show that external fixation (ExFix) is effective to restore normal calcaneal architecture in acute stage, helps with ORIF and reduces soft tissue complications.
Material and methods: Retrospective case series study. Five polytrauma patients with closed displaced calcaneus fractures were treated with medial external fixation in Riga East University hospital from May to December 2020. Bohler's and Gissane angles were compared after trauma, ExFix application

and ORIF. Time to ORIF, infection rate, wound complications were recorded. For statistical analysis IBM SPSS 25 was used. Willcoxon Signed Ranks Test was performed.
Results: 5 patients with 6 calcaneal fractures. 2 patients were treated only with ExFix. The average time to ORIF -14 days. No infections and wound complications were found. After trauma mean Bohler's angle was 10,17 (IQR 5,0 – 8,5) and mean Gissane angle was 147,17 (IQR 142–152,25). After ExFix application mean Bohler's angle – 35,17 (IQR 31,75–37,75) and Gissane angle – 135,33 (IQR 131,5–139,75). After ORIF mean Bohler's angle was 36,5 (IQR 32 – 42,5) and mean Gissane angle was 134 (IQR 130,75-137,25). Statistically significant difference was found between Bohler's angles (p=0.028) and Gissane angles (p=0,027) after trauma and after ExFix application. Other parameters couldn't be compared because of small sample size.
Conclusions: External fixation is a safe method of treatment for displaced calcaneal fractures in polytrauma patients with long waiting time for ORIF. Application of ExFix in acute stage helps to reduce soft-tissue complications and restore Bohler's and Gissane angles what is important during ORIF. ORIF should be done to restore the articular surface.
Key words: external fixation, calcaneal fracture, polytrauma

Clinical, radiological and laboratory evaluation of pamidronic acid efficacy in treatment and prevention from further bone fractures in children with secondary osteoporosis

Bartłomiej Juszczak
Paediatric Surgery Clinic, Institute of Paediatrics, Faculty of Medicine, Jagiellonian University Collegium Medicum, ul. Wielicka 265, 30-663, Cracow, Poland

Adam Bębenek
Paediatric Surgery Clinic, Institute of Paediatrics, Faculty of Medicine, Jagiellonian University Collegium Medicum, ul. Wielicka 265, 30-663, Cracow, Poland

Trustee: Jerzy Sułko Professor, MD, PhD

Introduction: Children suffering from chronic illnesses are at elevated risk for bone strength reduction and subsequent fractures, which are caused either by the impact of the underlying condition on proper bone structure development or induced by osteotoxic effect of medications such as glucocorticoids. While it is unattainable to eliminate risk factors of secondary osteoporosis in pediatric patients, incorporation of bisphosphonates should be considered in more substantial cases.
Aim of the study: To examine what kind of parameters should be considered regarding pamidronic acid efficacy in treatment of children with secondary osteoporosis. Do the Z-score measured by DXA and the level of ALP reflect the decision of treatment withdrawal?
Material and methods: 40 children, 20 girls and 20 boys, from 2 to 18 years of age, diagnosed with secondary osteoporosis have been examined retrospectively (2010–2020). 34 patients completed the therapy. All patients were administered intravenously with weight-based dosages of pamidronic acid every 10 – 13 weeks. Authors examined number of fracture events before, during and after treatment along with both initial and final bone density (DXA) and bone turnover marker ALP.
Results: 40 patients presented different types of fractures in the first place, but only 10 of them ruptured a bone through the duration of a drug administration period. 6 patients fractured a bone after completing the whole therapy. We have noticed a significant decrease in both the mean value of Z-Score from (3.65) to (-1.85) and the mean value of ALP from (281) to (127).
Conclusions: BPs have recently gained recognition as one of the most effective drugs in the first line treatment of secondary osteoporosis in children. Clinical, radiological and analytical parameters should be monitored and taken into consideration, but the optimal significance of each is insufficiently defined. Out of 6 patients, who had fractures after the treatment, 4 had their DXA value and ALP level within normal limits.
Key words: secondary osteoporosis, bisphosphonates, pamidronic acid, DXA, ALP

Complications and case fatality rate assessment in patients with proximal femoral fractures before and during COVID-19 pandemic

Jakub Drąg
Medical University of Silesia

Adam Smolik
Medical University of Silesia

Tomasz Król
Medical University of Silesia

Tomasz Włoch
Medical University of Silesia

Trustee: Przemysław Bereza MD, PhD

Introduction: Proximal femoral fractures are one of the most common in elderly patients. They are often associated with low energy falls and accidents among older people.
Aim of the study: The purpose of this study was to evaluate the cause of the fractures, postoperative complications and case fatality rate of the patients with femoral neck fracture and pertrochanteric fracture treated before and during COVID-19 pandemic.
Material and methods: The Department of Orthopaedics and Traumatology of SUM database was queried from October 2019 to December 2019 and from October 2020 to December 2020. This was the retrospective study of 74 patients with the average age of 79.2 years. 45 of the patients were diagnosed with pertrochanteric fractures (ICD-10 S72.1) and 29 patients with neck fractures of the femur (S72.0). All patients qualified to the study were compared based on their medical history, co-

morbidities, laboratory results and postoperative consultations during the hospital stay.
Results: We noted an increased mortality in patient with proximal femoral fractures when comparing the same period of 2019 and 2020, respectively 6.4% (2/31 cases) and 16.3% (7/43 cases). Among 43 patients treated in 2020 three deaths were noted in patients tested positive for COVID-19 (18,7%, 3/16) and 4 deaths out of COVID-19 negative patients (14.8%, 4/27). All patients had comorbidities. A major complication in these patients was severity of respiratory distress syndrome, respectively 6,45% (2/31) in 2019 and 9,3% (4/43) in 2020.
Conclusions: COVID-19 pandemic influenced on increased morbidity of patients with proximal femoral fractures, from 6,4% in 2019 to 16,3% in 2020 We observed the high number of deaths in the patients with pertrochanteric fractures in the whole group of patients, and relatively high number of deaths in patient with neck fractures in the period of coronavirus pandemic.
Key words: COVID-19, mortality, femoral fracture, femur, complications, comorbidities

COVID-19 Case Report

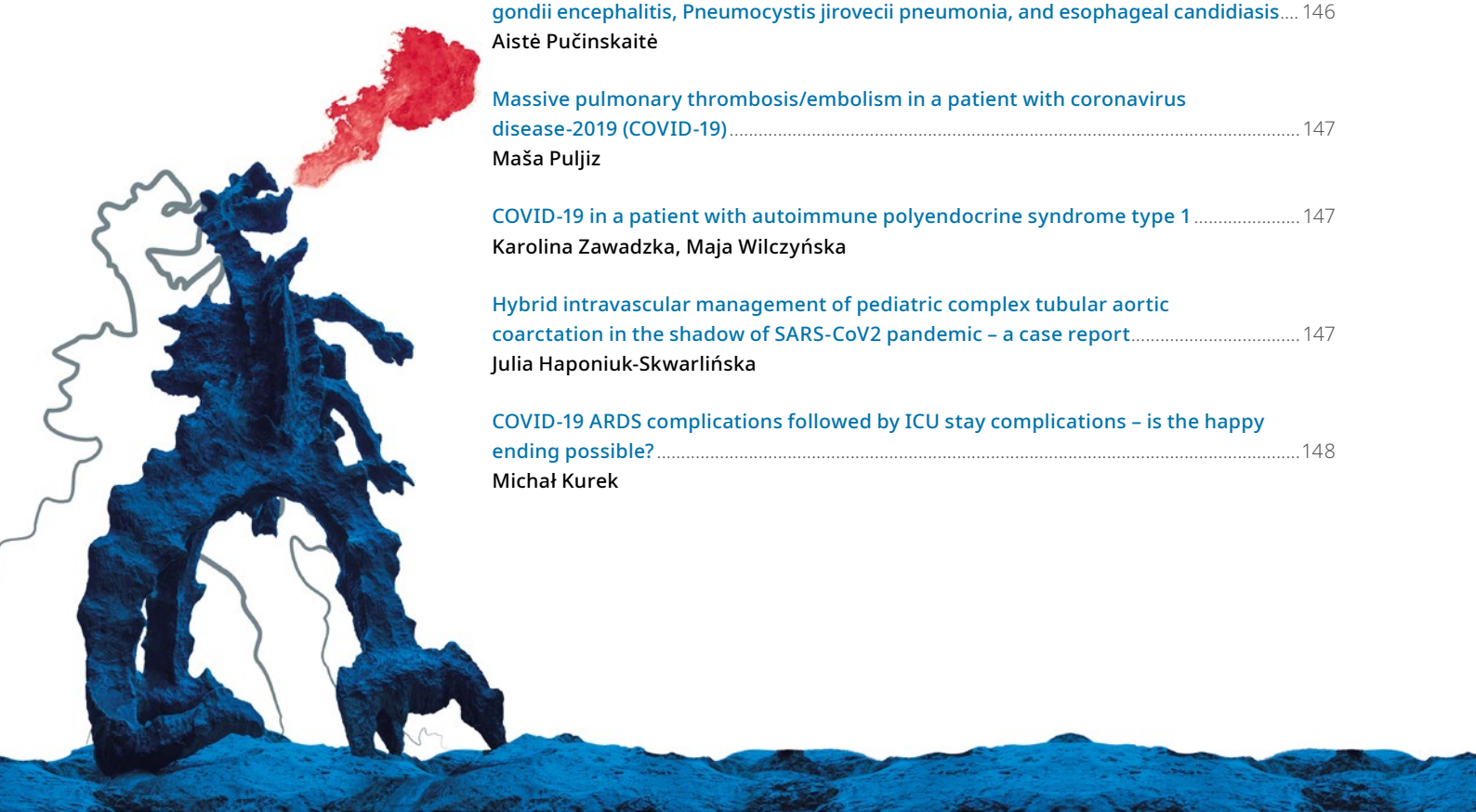
Jury:

Prof. Andrzej Surdacki, MD, PhD
Dr. Piotr Kochan
Dr Artur Drzewiecki

Coordinators:

Ewa Poljańska, Innesa Leonovich

List of papers



COVID-19 – a witness or accused of left ventricular systolic dysfunction? Case report

Justyna Bączalska
Students' Scientific Group at the Ist Department of Cardiology, Interventional Electrocardiology and Hypertension, Jagiellonian University Medical College, Krakow, Poland

Marcin Jankowski
Students' Scientific Group at the Ist Department of Cardiology, Interventional Electrocardiology and Hypertension, Jagiellonian University Medical College, Krakow, Poland

Trustee: Agnieszka Olszanecka MD, PhD

Background: Among cardiac manifestations of COVID-19, atrial arrhythmias and myocardial injury have been reported. The case illustrates an interesting coincidence between COVID-19 and paroxysmal atrial fibrillation (AF) with de novo diagnosed left ventricular systolic dysfunction.
Case report: A 38-years old male was transported from A&E unit to the cardiology department due to acute heart failure (HF) with significantly reduced left ventricular systolic function and confirmed SARS-Cov2 infection. On admission: the patient in average condition, with dyspnea (Sat02 97%), tachycardia (AF 160/min, BP 130/70mmHg), peripheral edema, distended jugular veins and enlarged liver. Symptoms developed 3 weeks before admission with progressive malaise and dyspnea. Any significant past medical history wasn't reported, except one episode of paroxysmal AF in 2018- at that time an echocardiogram showed preserved left ventricular function. A chest radiograph showed lung opacities typical for COVID-19 and pulmonary venous congestion. Echocardiography revealed significantly reduced ejection fraction, left ventricular and left atrial enlargement. Cardiac troponins were negative, NT-pro-BNP and CRP were elevated. The pharmacotherapy included ceftriaxone, low molecular weight heparin and high dosage of furosemide. For controlling the heart rate ad hoc amiodarone was used, and afterwards β-blocker in combination with digoxin was implemented. After excluding ischemic cause of HF in coronary angiography, a hypothesis of tachycardia-induced cardiomyopathy (TIC) was proposed. After 19 days of hospitalization the patient was discharged home in good condition, COVID-19-negative and with referral to pulmonary veins' catheter ablation or a cardioversion.
Conclusions: The case illustrates the complexity of diagnostics in COVID-19 subjects and indicating the role of acute infection in unmasking preexisting uncontrolled cardiac condition, questioning the role of infection as a cause of left ventricular dysfunction. TIC is a rare type of cardiomyopathy which occurs due to a long-lasting arrhythmia, most frequently an AF.
Key words: atrial fibrillation, COVID-19, tachycardia-induced cardiomyopathy

Case report of a young marathoner who developed severe COVID-19 acute respiratory distress syndrome (ARDS)

Mateusz Milo
SSG of Nephrology and Renal Replacement Therapy, Jagiellonian University Medical College, Krakow, Poland

Zuzanna Nowak
SSG of Nephrology and Renal Replacement Therapy, Jagiellonian University Medical College, Krakow, Poland

Trustee: Katarzyna Krzanowska Associate Professor, MD, PhD

Background: A novel infectious disease COVID-19 caused by SARS-CoV-2 has rapidly become a public health emergency. Although it is believed to be especially dangerous for patients with pre-existing conditions, even relatively healthy individuals can develop severe symptoms.
Case report: We present a case of a healthy 47-year-old marathon runner with complications from severe COVID-19 pneumonia, who was admitted to the Intensive Care Unit of The University Hospital in Cracow on the 17th day since testing positive for SARS-CoV-2. Patient had extracorporeal membrane oxygenation (ECMO) performed because of severe respiratory failure. Despite using high flow oxygen ventilation providing airway protection in the prone position, hypercapnia and hypoxia increased. Due to the developed acute kidney failure, continuous veno-venous haemodialysis was performed. A lot of focuses of intracranial hemorrage were revealed in CT. The microbiological assessment of urine and BAL sample showed presence of Acinetobacter baumanii, while the blood microbiological analysis Staphylococcus epidermidis (MRSE). Despite the treatment patient remained in a critical state. Extremely elevated level of interleukin 6 (IL-6) 283 500 pg/ml was observed during last days of hospitalization. The patient died in ICU on the 27th day.
Conclusions: Severe COVID – 19 patients are likely to have elevated IL-6 levels, which is considered to be one of the factors responsible for the cytokine storm. Intensive or prolonged exercises also tend to increase IL-6 levels. Although the exact reason behind the severe course of COVID – 19 associated pneumonia in our patient is unknown, it may be linked to the massively elevated IL-6 levels due to high physical activity.
Key words: SARS-CoV-2, COVID-19, pneumonia, inflammation, interleukin 6

Pandemic Times: is every dyspnoea with ground-glass opacities in chest computed tomography caused by COVID-19?

Anna Ruszecka
Faculty of Medicine, Jagiellonian University Medical College, Cracow Students' Scientific Group at the Ist Department of Cardiology, Interventional Electrocardiology and Hypertension, Jagiellonian University Medical College, Krakow, Poland

Natalia Mokrzycka
Faculty of Medicine, Jagiellonian University Medical College, Cracow Students' Scientific Group at the Ist Department of Cardiology, Interventional Electrocardiology and Hypertension, Jagiellonian University Medical College, Krakow, Poland

Trustee: Agnieszka Olszanecka MD, PhD

Background: Despite a whole raft of new difficulties being arisen during the COVID-19 pandemic, the risk of misdiagnosing and mistreating other similar, serious diseases is ought to be mentioned. The obligation of investigating the patient's SARS-CoV-2 status should not decrease the alertness for other potentially dangerous conditions. Such an unbiased approach would increase the physicians' efficacy and ease their patients' suffering, regardless of its reason.
Case report: An 80-year-old woman with arterial hypertension, coronary artery disease (anterior ST-elevation myocardial infarction treated with angioplasty of left anterior descending artery in 2016), chronic heart failure with preserved ejection fraction, paroxysmal atrial fibrillation (AF) and hypothyroidism was presented to the emergency department with a recurrent episode of dyspnoea and fatigue. The patient had previously been diagnosed and unsuccessfully treated with series of antibiotics for pneumonia. Chest high-resolution computed tomography was performed, showing bilateral ground-glass opacifications. Due to the similarity to the SARS-CoV-2 infection, the reported symptoms were strongly believed to be caused by the aforementioned virus. Multiple COVID-19 swabs delivered negative results. Detailed analysis of the patients history and laboratory tests finally guided the physicians to the amiodarone-induced pulmonary toxicity (APT) diagnosis and treatment.
Conclusions: Amiodarone is an anti-arrhythmic drug used in the treatment of AF with satisfying clinical results. Nonetheless, such medication choice may evoke serious adverse reactions, leading to APT.
Further consequences of this side effect, pulmonary fibrosis or respiratory failure, may easily be prevented by early recognition and appropriate treatment. Therefore, physicians need to stay aware and alert of this phenomenon.
Unfortunately, in times of the COVID-19 pandemic, the diagnosis of APT has become more challenging, given the striking symptom resemblance these two diseases bear.
Key words: Amiodarone, Amiodarone-induced pulmonary toxicity, ground-glass opacification, Coronavirus Disease 2019 (COVID-19), Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)

Post-COVID-19 acute cardio-reno-pulmonary syndrome in a renal transplant recipient

Karlo Beljak
School of Medicine, University of Zagreb

Zvonimir Begić
School of Medicine, University of Zagreb

Trustee: Nikolina Bašić-Jukić Professor, MD, PhD

Background: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection has significant impact on survival of infected patients with renal allograft. Post-COVID-19 follow-up of infected patients is largely unknown. Here we report a case of patient who survived COVID-19 and presented with cardio-renal syndrome (acute cardiac decompensation and allograft function deterrioration).
Case report: A 66 year-old man was addmited in emergency room because of dyspnea and pitty oedema of both legs. He had a history of diabetes mellitus type 2, hypertension, ischemic cardiomyopathy, metabolic syndrome, chronic heart failure, chronic kidney disease and obstructive sleep apnoea. He received his allograft kidney in 2015. for treatment of end-stage renal disease due to diabetic nephropathy. In November 2020, he was diagnosed with SARS-CoV-2 virus and had severe clinical course. After admission he was managed with aggressive parenteral diuretic therapy and oxigenotherapy. Results were positive because oedema retracted and dyspnea symptoms improved. He was discharged from the hospital in good overall condition. At outpatient check-up he presented with dyspnoea, leg oedemas and had elevation in serum creatininin, with a significant gain in body weight. After admission to hospital, computed tomography(CT) revealed post-infection pathological changes of „groung-glass" pattern. Parentheral use of diuretics enabled removal of excessive fluid (10 kg of his body weight), leading to improvement in both cardiac and renal allograft function.
Conclusions: Our patient possibly had cardio-reno-pulmonaly syndome, rare condition in which acute or chronic dysfunction of cardiovascular or renal system results in secundary dysfunction or injury of other system, in our patient possibly precipitated by the COVID-19.
Key words: cardio-reno-pulmonaly syndrome, post-covid-19 syndrome, acute heart failure, chronic kidney failure, renal transplantation

Pneumocystis pneumonia in time of COVID-19

Wojciech Skupnik
Jagiellonian University Medical College

Trustee:
Wojciech Szczeklik Assoc. Prof. MD, PhD
Anna Włudarczyk MD Associate Professor, MD, PhD

Background: Pneumocystis pneumonia is caused by Pneumocystis jirovecii – fungus, which can occur in the lungs. It is not pathogenic, if immune system works properly – having symptoms indicates that this is an opportunistic infection. Fever, nonproductive cough and dyspnoea appears after a few weeks since infection. Diagnosis is made based on chest X-ray and CT – imaging shows ground-glass opacity and confirmed by P.jiroveci DNA detection in the broncho-alveolar lavage or sputum sample.
Case report: 74-year old man was admitted to the ICU due to hypoxemic acute respiratory distress syndrome. On admission patient presented severe condition and was ventilated non-invasively with the use by face mask. Laboratory tests showed high level of inflammatory parameters. Chest X-ray revealed atelectatic changes and chest CT showed disseminated ground-glass opacities on both lungs. COVID-19 – related infection was excluded. Patient was intubated and placed on the ventilator with FiO2 of 0,7 – 0,8. Atypical pneumonia was suspected and treatment was based on doxycycline, teicoplanin, voriconazole and steroids. Testing of culture of bronchoalveolar lavage towards DNA of P. jirovecii gave a positive result. Sulfamethoxazole and trimethoprim were started. Further diagnostics let to identify acquired immunodeficiency syndrome due to HIV infection. Antiretroviral therapy was implemented – tenofovir and dolutegravir. Despite therapy, patient's condition was deteriorating. On the twentieth day of stay on ICU, enteroparesis was diagnosed and five days later patient died due to the circulatory failure.
Conclusions: During COVID-19 pandemic, diagnoses based on SARS-CoV-2 infection are widespread, nevertheless, as we can see, patients with AIDS in the course of pneumocystis pneumonia, can present similar clinical picture.
Key words: pneumocystis pneumonia, PCP, Pneumocystis jirovecii, AIDS, HIV

Post-COVID-19 lymphadenopathy

Zvonimir Begić
School of Medicine, University of Zagreb

Karlo Beljak
School of Medicine, University of Zagreb

Trustee: Iveta Merćep Professor, MD, PhD

Background: Lymphadenopathy is a lymph nodes (LN) disease, in which they can be abnormal in size, consistency and number. It is often symptom in clinical practice and it can be caused by infections and malign, autoimmune and storage diseases. COVID-19 is contagious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).
Case report: A 21-year-old female was admitted do Haematology department due to fever, erythema nodosum and swelling of the right inguinal region. She also had history of mineralocorticoid hypertension and hypogonadism caused by congenital adrenal hyperplasion (CAH). 1 month ago, she suffered from COVID-19 disease with mild symptoms. After admitting, inflammation parameters were high and laboratory tests showed hypokalemia and high troponine enzime, but electrocardiogram (ECG) and echocardiogram excluded cardiac pathology. Due to suspect lymphoproliferative disease, neck/chests/abdomen/pelvis computed tomoghraphy (CT) scan was done, together with LN biopsy. CT scan showed enlarged LNs bilateral in inguinal region, of which biggest one situated along outer right iliacal blood vessels. Pathohistological diagnosis (PHD) of LN best matched granulomatous lymphadenitis. 3 days after starting medicament therapy, her condition went to stabile and she was discharged from hospital. Further follow-up needed.
Conclusions: There is a lot of unknown facts about COVID-19 disease and a lot of its complications are yet to be explored. In this patient, we saw unexplained lymphadenopathy. Due to recently COVID-19 infection, we believe it could be post-infection complication.
Key words: lymphadenopathy, COVID-19, granulomatous lymphadenitis

A case report of COVID-19 and multiple HIV-induced infections: Toxoplasma gondii encephalitis, Pneumocystis jirovecii pneumonia, and esophageal candidiasis

Aistė Pučinskaitė
Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Trustee: Birutė Zablockienė MD, PhD

Background: There are not many cases of COVID-19 combined with HIV infection reported in the literature and the clinical course, as well as outcomes of this combination of infections, are unclear. We present a case of COVID-19 with multiple HIV induced infections.
Case report: A 36-year-old female was presented to the emergency department complaining of symptoms of fever and shortness of breath. Over the course of 6 months, she had unintentionally lost 12 kg in weight, lost a significant amount of hair, and has complained of weakness, headaches, and lack of appetite. Vital signs taken on admission revealed a blood pressure of 143/83 mm/Hg, a pulse of 94 beats per minute, a body temperature of 38°C, and oxygen saturation of 99% with an oxygen mask 6 l/min flow. A patient experienced a generalized tonic-clonic seizure and was completed unresponsive (GCS score of 3). Urgently, the patient was intubated and transferred to ICU. Complete blood count indicated an infection, however, a CD4 count test revealed just 8 cells/mm3. After testing cerebrospinal fluid Toxoplasma encephalitis was confirmed and bronchoalveolar lavage revealed Pneumocystis jirovecii infection. She was under the antiretroviral regimen for HIV consisted of emtricitabine (245 mg) and tenofovir (200 mg) every 24 hours, and lopinavir (200 mg) and ritonavir (50 mg) 2 tablets twice a day. Antimicrobial and antiretroviral therapies were started simultaneously. The acute respiratory phase is being treated with pulmonary ventilation and supplemental oxygen.
Conclusions: The patient has demonstrated clinical improvement from COVID-19 in 3 weeks from admission. However, treatment is still ongoing. Our findings suggest that even in

cases of multiple infections, clinical management together with respiratory therapy contributes to patient health improvement. Nevertheless, more research is needed to be done in order to understand the progression of COVID-19 among people living with HIV and the impact of antiretroviral therapy on outcomes for patients with COVID-19.

Key words: COVID-19, HIV, Toxoplasma gondii, Pneumocystis jirovecii

Massive pulmonary thrombosis/embolism in a patient with coronavirus disease-2019 (COVID-19)

Maša Puljiz
School of Medicine, University of Zagreb

Trustee: Ivan Puljiz Professor, MD, PhD

Background: Several reports have described significant procoagulant events, including pulmonary thrombosis/embolism (PTE) in patients with coronavirus disease-2019 (COVID-19). We present a COVID-19 patient with massive PTE without risk factors during the second week of the disease.

Case report: A 59-year old male, RT PCR positive for SARS-CoV-2 was admitted to the University Hospital for Infectious Diseases „Dr. Fran Mihaljević" Zagreb for fever, hacking cough and headache lasting for 8 days. In the last 4 days she complained of fever and nonproductive cough. Her medical history was unremarkable. On admission, the clinical examination showed mild altered general health status, tachycardia (110/minute), O2 saturation in hemoglobin (SaO2) of 95%. The pathological findings of the laboratory tests consisted of mild thrombocytopenia (133x109/L), slight C-reactive protein elevation (32.1 mg/L), mild hypokalemia (3.7 mmol/L) and increased plasma level of d-dimer (>4.45 mg/L). Chest radiograph revealed bilateral interstitial infiltrates. Multi-Slice Computer Tomography (MSCT) Pulmonary Angiography, revealed massive postcontrast filling defects in the distal portion of the left main pulmonary artery, extending in the left upper lobar branch and in the left interlobar artery. Postcontrast filling defects were also seen in the right upper lobe and middle lobe segmental branches as well as in all right lower lobe segmental branches. Postcontrast filling defects are consistent with large vessel pulmonary embolism and distal pulmonary microvascular occlusion. In the pulmonary "parenchymal" window, subpleural "ground glass" opacities and intralobular reticulation were seen in all pulmonary segments, bilaterally. Parenchymal consolidations were present in the right lower lobe.

Conclusions: Our study suggests that COVID-19 patients without risk factors, even with normal oxygen saturation can develop acute PTE during the second week of the disease due to procoagulant effect of SARS-CoV-2. Clinical deterioration with elevated value of D-dimer suggests possible PTE and requires urgent MSCT pulmonary angiography to confirm or refute PTE diagnosis.

Key words: Covid-19, pulmonary embolism, MSCT pulmonary angiography

COVID-19 in a patient with autoimmune polyendocrine syndrome type 1

Karolina Zawadzka
Department of Endocrinology, Jagiellonian University Medical College, Krakow, Poland

Maja Wilczyńska
Department of Endocrinology, Jagiellonian University Medical College, Krakow, Poland

Trustee: Małgorzata Trofimiuk-Müldner MD, PhD

Background: Autoimmune Polyglandular Syndrome type 1 (APS 1) is a rare genetic disorder caused by mutations in the autoimmune regulator (AIRE) gene. The disease is characterised by an immune-cell dysfunction which affects multiple endocrine glands. COVID-19 represents a global health emergency and patients with comorbidities, especially involving the immune system, could be prone to severe impairment.

Case report: A 40-year-old patient with APS type 1 was admitted to the endocrinology department due to weakness, dyspnoea, dry cough, lack of appetite and emesis. The patient denied both abdominal pain and diarrhoea. Her medical history was remarkable for APS type 1 manifesting with primary adrenal insufficiency, hypoparathyroidism, Hashimoto's disease, ectodermal dystrophy, alopecia, functional asplenia, pernicious anemia and malabsorption syndrome. Upon physical examination, she was afebrile and presented with tachycardia. Laboratory tests showed hyponatraemia, hyperphosphatemia, elevated C-reactive protein and procalcitonin level. The preliminary diagnosis of the adrenal crisis was made, and hydrocortisone was administered intravenously. Due to the positive SARS-CoV-2 test result, the patient was transferred to a COVID-19 intensive care unit. Chest X-ray revealed mild pulmonary infiltrates, and the patient required only a short-term, low-flow nasal cannula therapy. Pharmacological treatment included antibiotics, antithrombotic prophylaxis and hormone replacement therapy. After two weeks, she was discharged from the hospital with complete resolution of the symptoms and negative SARS-CoV-2 test.

Conclusions: Our case report shows that a patient with APS 1 syndrome may not exhibit all the typical symptoms of COVID-19. Nonetheless, the patient displayed an impending adrenal crisis, which could be a severe complication of COVID-19 in APS 1 patients requiring hospitalisation and prompt treatment.

Key words: COVID-19, SARS-CoV-2, APS type 1, Autoimmune Polyendocrine Syndrome type 1, AIRE

Hybrid intravascular management of pediatric complex tubular aortic coarctation in the shadow of SARS-CoV2 pandemic – a case report

Julia Haponiuk-Skwarlińska
Medical University of Warsaw, Faculty of Medcine

Trustee: Maciej Chojnicki MD, PhD MD, PhD

Background: Coarctation of the aorta(CoA) is a congenital heart defect defined as a narrowing in the region of aortic isthmus, clinically presenting with the peripheral perfusion disturbances in physical examination. Newborns are majority of the affected and surgery is the management of choice in these patients. However, some cases may not present with CoA symptoms until later childhood, with mostly percutaneous interventions as a favourable method of treatment. Aneurysms, heart failure and stroke are the main complications of untreated CoA, which explains low survival rate of undiagnosed patients.
Case report: A 5-year-old female patient in good general condition presented with a heart murmur during a prophylactic pediatric control. The patient was referred to pediatric cardiologist, but unfortunately due to ongoing COVID-19 pandemic only telemedical consultation was available, precluding physical examination. Finally, the patient was referred to hybrid pediatric cardiac surgery department as an urgent consultation of the dubious anamnesis.
The echocardiographic study revealed continuous, non-pulsatile flow in the abdominal aorta with a narrowed descending aorta behind the left atrium, and the CoA was a suspected diagnosis. The angio-computed tomography(CT) confirmed tubular(55mm long) narrowed section of thoracic aorta(to 2,5mm diameter) with concomitant collateral circulation.
Due to the anatomy of the aortic lesion the patient was referred for transcatheter stent graft(Bentley BeGraft© 9mm/57mm) implantation in the operating room with ECC-backup. An initial dilatation to 9 mm except the region around 6mm long narrowed to 5,2mm was performed. After 2 months, the stent graft was dilated again, and echocardiography confirmed uniformed aortic lumen(9mm).
The post-procedural course was uncomplicated, the patient was discharged home and referred for further control.
Conclusions: The CoA rarely occupy a non-typical region resulting in diagnostically challenging clinical presentation without a profound physical examination, particularly in a later childhood and pandemic settings, and may result in serious complications, if untreated.
Key words: coarctation of aorta, congenital heart defects, interventional cardiology, hybrid treatment, pediatrics

COVID-19 ARDS complications followed by ICU stay complications – is the happy ending possible?

Michał Kurek
Jagiellonian University Medical College

Trustee: Anna Włudarczyk MD

Background: Acute Respiratory Distress Syndrome (ARDS) is a highly life-threatening condition of lung dysfunction leading to severe hypoxia. It may be caused by COVID-19 induced pneumonia and always require intensive care.
Case report: A 64-year-old woman was moved to the Intensive Care Unit (ICU) from hospital of lower reference, where she had stayed over a month, due to ARDS in the course of SARS-CoV-2 induced pneumonia. Before hospitalization she was generally in good condition. During ICU admission patient was already intubated, mechanically ventilated and sedated. The imaging studies and blood tests were performed. Severe hypoxia and hipercapnia were revealed. The patient's history and condition and high D-Dimer value increase suggested pulmonary thromboembolism. It was confirmed by chest CT which also revealed the interstitial lung involvement. The therapeutic doses of low molecular weight heparin were administered. She was kept on the ventilator with high PEEP and gradually reduced oxygen. Control PCR test for SARS-CoV-2 was negative. In the next days – tracheostomy was performed and she tried to breath on her own successfully. Unexpectedly, she presented sudden loss of contact which led to reintubation. Acetylsalicylic acid and atorvastatin were administered due to suspicion of brain ischemia confirmed with head's CT. Therapy caused the massive hemorrhage from lower digestive tract treated conservatively. In consecutive days patient became better. In control neurological examination previous polyneuropathy was accompanied by hemipareris. Long-term sedation caused withdrawal syndrome observed as limited contact and seizure disorder. After 51 days patient was moved to Neurological Unit where ICU stay complications were treated.
Conclusions: The ARDS can have various clinical manifestations. It is worth noticing that the therapy is also associated with risk of serious side effects. Consequently, a regular and thorough examination is necessary to prevent, detect and appropriately react to dangerous complications.
Key words: ARDS, Acute Respiratory Distress Syndrome, pneumonia, COVID-19

Pediatrics Case Report

Jury:

Prof. Przemko Kwinta, MD, PhD
Prof. Szymon Skoczeń, MD, PhD
Prof. Mirosław Bik-Multanowski, MD, PhD
Prof. Dorota Drożdż, MD, PhD
Prof. Rafał Chrzan, MD, PhD
Katarzyna Przybyszewska, MD, PhD
Prof. Dorota Drożdż, MD, PhD
Prof. Przemko Kwinta, MD, PhD

Coordinators:

Wiktoria Wolny, Michał Okarski

List of papers

15-year-old paediatric patient with diagnosed panthotenate kinase-associated neurodegeneration

Katarzyna Rałowska
Faculty of Medicine, University of Rzeszów

Bartosz Ożóg
Faculty of Medicine, University of Rzeszów Agnieszka Gala-Błądzińska MD, PhD

Background: Panthotenate kinase-associated neurodegeneration (PKAN) is a neurodegenerative manifestation of brain iron accumulation, neuroregression, extrapyramidal movement disorders. The most recognizable, but not pathognomonic, MRI intracerebral sign of this disease is eye of the tiger pattern.
Case report: We present a case of 15-year-old Eastern European male with panthotenate kinase-associated neurodegeneration.
At the age of 6,5 the patient was suspected of PKAN disease. The suspicion was based on lower limbs pain, imbalance, frequent falling and MRI symmetric hypo-hyperintensive areas in the lenticular nucleus equivalent to eye of the tiger sign. Moreover the patient presented slurred speech, memory impairment and cognitive disorders. Bilateral positive Babinski symptom was also observed. At the age of 11 he was participating in the German 6-month clinical trial of deferiprone in patients with PKAN causing inhibition of the disease. A year after finishing the trial patient's symptoms started exacerbating. He developed forced retorted position, involuntary movements, sphincters incontinence and episodes of loss of consciousness. At the age of 15 the patient underwent subthalamic nucleus deep brain stimulator (DBS) implantation surgery. The intervention was complicated by acute respiratory failure, areflexion after anesthesia and episodes of seizures. He was also diagnosed with epilepsy and tetraparesis. Inability of swallowing made the decision of dropping percutaneous endoscopic gastrostomy (PEG). In the course of the disease the patient hasn't received any specific therapy for PKAN, because the treatment is still unavailable. Conclusions: Although there is a dynamic development of treatments in major diseases in medicine, there are still diseases like PKAN, that we can't offer any effective pharmacological treatment. Physiotherapy has crucial importance in improving quality of life. Conducting scientific research of new medicament and treatments has significant importance providing curability of rare diseases.
Key words: panthotenate kinase-associated neurodegeneration, rare disease, deep brain stimulator, iron accumulation

Isolated acute sphenoid sinusitis

Julia Kuczkowska
Medical University of Gdansk/ Otolaryngology department

Zuzanna Maliszewska
Medical University of Gdansk/ Otolaryngology department

Trustee: Wojciech Brzoznowski MD, PhD

Background: Isolated acute sphenoid sinusitis is an uncommon sinus infection, frequently misdiagnosed and usually not considered in the differential diagnosis of acute severe headache, with the potential of serious neurological complications.
Case report: Inflammatory disease of the sphenoid sinus is very uncommon in the pediatric population. A 10-year review of all patients at our institution, aged 16 years old or younger with inflammatory sphenoid sinus disease found 8 patients with isolated sphenoid sinusitis and 3 with sphenoid mucoceles. The most common symptoms were headache and visual disturbance. Five patients with uncomplicated sinusitis were successfully managed medically, while 3 with either complicated sinusitis or sinusitis not responding to antibiotics were treated by endoscopic sphenoidotomy. All patients with a mucocele were treated surgically. Isolated inflammatory sphenoid sinusitis should be considered in children age 7 years or older who present with a headache that does not respond to simple analgesia. Delayed diagnosis and advanced stage of the disease may lead to life-threatening complications.
Aim: To describe four patients with acute sphenoid sinusitis who presented with acute onset of severe headache and reviewed the role of medical or surgical management. Two patients did not require surgical intervention and medical treatment was sufficient. One of the patients underwent sphenoidotomy due to meningitis. One patient required surgical intervention after the failure of medical therapy.
Conclusions: Acute isolated sphenoid sinusitis presents as difficult to diagnose. It is crucial to be aware of acute sphenoid sinusitis in the setting of new-onset severe headache when imaging studies are unrevealing for intracranial pathology. Medical therapy focused on infection, inflammation, and obstruction may be adequate for resolution, but surgical intervention may be required in certain situations.
Key words: pediatrics, children, isolated acute sphenoid sinusitis, sequela

Extremely preterm new-born with a congenital anomaly: oesophageal duplication

Magdalēna Mudule
Rīga Stradiņš University, Faculty of Medicine

Trustee: Renāte Zariņa MD – Neonatal Intensive Care Unit, Children's Clinical University Hospital, Riga, Latvia

Background: About 5% of all live births in Latvia are preterm, of which 4.5% occur until 27 gestational weeks. Extremely premature new-born care is associated with multiple complications and a multifaceted complex approach. Often preterm new-borns have congenital anomalies. Oesophageal duplication is found in 1 in 8'000 live births.
Case report: An extremely premature new-born girl (22 /23 gestational week, birth weight 600 grams, APGAR 3/4) was transferred to the Children's Clinical University Hospital on the second day of life for further investigations and treatment. At the Maternity hospital pneumoperitoneum and right sided

pneumothorax had been found, abdomen had been drained. On admission the patient's condition was critical, but with no signs of an acute surgical pathology. Because of signs of respiratory distress high-frequency ventilation was started. Patient was treated with antibiotics and had total parenteral nutrition. Two days later the patient required resuscitation, after which an oesophageal perforation was discovered. A right sided thoracotomy with closure of the oesophageal defect and drainage of the mediastinum was performed. A nasogastric tube for decompression was placed, but it showed an atypical location on imaging. An X-ray with contrast revealed a possible oesophageal duplication. The nasogastric tube was then placed correctly, five days later enteral feeding was started. Using echocardiography patent ductus arteriosus was diagnosed. Treatment with Ibuprofen was initiated. On the fifteenth day of life due to the disfunction of a peripheral central line the patient went into hypovolemic shock but was stabilised. On the seventeenth day of life the patient's condition radically deteriorated due to decompensated metabolic acidosis and hypotension, with cardiopulmonary resuscitation resulting in death.

Conclusions: When dealing with an extremely preterm new-born, challenges brought up by the underdevelopment, congenital anomalies, and iatrogenic factors must be faced. Despite the efforts of a multidisciplinary team, there is a high possibility for a lethal outcome.

Key words: premature new-born, congenital defect, oesophageal duplication, complications of care

An infant after surgery of giant congenital immature teratoma – a case report

Natalia Gołuchowska
Clinical Department of Neonatology, Pediatric Hospital of the Medical University of Warsaw, Warszawa, Poland

Piotr Rzepniewski
Clinical Department of Neonatology, Pediatric Hospital of the Medical University of Warsaw, Warszawa, Poland

Trustee: Bożena Kociszewska-Najman Professor, MD, PhD

Background: Teratomas are rare congenital neoplasms. They account for 3% of all childhood tumors; 40% to 70% of them are located in the sacrococcygeal and presacral regions. Head and neck locations of the tumor are uncommon, account for only 2%.

Case report: In our clinic was born a male infant at 30 WG. The newborn's general condition was very severe, 5-2-2-2 points on Apgar scale. Birth weight was 2980g. (with the tumor). The infant was from the 3rd pregnancy, the first delivery by c-section. The pregnancy was complicated by PROM for seven days. Prenatal US and MR showed cystic-solid craniofacial tumor that destroyed the infratemporal fossa and right cranial face-immature teratoma. The infant was operated on on the 2-nd day of life. The tumor size was: 25-30cm After the surgery, birth weight decreased to 1600g. The patient remains under oncological observation. Regular tests don't show any dangerous changes, and the level of AFP gradually decreases. The newborn suffered from large craniofacial tumor. He was haemodynamically unstable due to tumor's high vascularity (from the external carotid artery). The newborn had very severe circulatory and respiratory failure, was artificially ventilated for 38 days and received four catecholamines. Due to tumor compression, intubation wasn't possible, therefore a tracheostomy was performed. Parenteral feeding via a central catheter was also used. Peripheral edema was treated with furosemide. The surgery was performed, which significantly improved the overall condition of the newborn.

Conclusions: Thanks to imaging tests, the teratoma can be prenatally diagnosed. This allows doctors to prepare the c-section, which facilitates delivery. Early surgical intervention and adequate provision of the newborn increase his chances of survival with the craniofacial teratoma.

Key words: newborn, congenital tumor, immature teratoma, congenital neoplasms,

Pachydermodactyly as a consequence of prolonged computer and video gaming in a 14 year old male – a case report

Michelle Dakowitz
Wroclaw Medical University Paediatric Research Circle for English Division Students at 3rd Department and Clinic of Paediatrics, Immunology and Rheumatology of Developmental Age, Wroclaw Medical University

Bouchra Derrough
Wroclaw Medical University Paediatric Research Circle for English Division Students at 3rd Department and Clinic of Paediatrics, Immunology and Rheumatology of Developmental Age, Wroclaw Medical University

Trustee: Daiva Gorczyca MD, PhD

Background: Pachydermodactyly (PDD) is a rare and benign superficial dermal fibromatosis, affecting the proximal interphalangeal joints of digits II-IV, occurring mainly in young adolescents. Exact etiology of the disease remains unknown. PDD is most likely the result of repetitive mechanical stimulation such as rubbing or interlacing fingers. Here we report a case of a 14-year-old boy with PDD.

Case report: A 14-year old adolescent was admitted to the hospital with history of asymptomatic, bilateral tissue swelling in digits II-IV lasting for 2–3 weeks. Family history of rheumatic diseases was negative. Joint examination revealed symmetrical swelling and thickening of soft tissues on PIP joints with no evidence of joint synovitis. Laboratory blood tests were unremarkable. Hand radiographs were normal. Ultrasonography of the hand joints showed edema within soft tissues around proximal interphalangeal joints with inflammatory arthritis excluded. A careful clinical interview showed a frequent habit of video gaming. The patient was advised to restrict from any video gaming and was referred to a psychologist for further evaluation.

Six- month follow-up showed a decrease in hypertrophy.

Conclusions: This case highlights that mechanical friction presented as video gaming could be a cause of development of PDD. This underlines the importance of educating young adolescents about the consequences of prolonged video gaming along with psychological support for patients with PDD.
Key words: joint swelling, pachydermodactyly, cutaneous neoplasm, dermatopathology, digits

Spinal intradural extramedullary schwannoma

Jedidiah Viswaz Solomon Prabahar
Rīga Stradiņš University / Faculty of Medicine

Trustee: Jānis Upenieks, Children's Clinical University Hospital, Latvia, Riga MD

Background: Although CNS tumors are quite common in childhood, primary spinal tumors constitute only 2–4% of total patients. It is a heterogeneous group of tumors, including nerve sheath tumors (NSTs), most of which are schwannomas (65%).
Case report: We present the case of a 13-year-old boy, who was diagnosed with and treated for spinal intradural extramedullary schwannoma (WHO grade I). The patient had a 6-month history of orthopedic and neurologic problems and was undergoing conservative treatment for thoracic spine scoliosis. The case is discussed since admission in the neurology department due to an acute exacerbation of neurological symptoms. He had complaints of tingling, weakness of leg muscles, inability to walk, tremor and loss of sensation in the toes. Neurological examination revealed symmetric hyperreflexia and superficial and deep sensory disturbances in the legs. The treatment tactics for scoliosis were strengthened, a tumor was yet unsuspected. A month later disease progression became clear with increasing signs of lower paraparesis. An urgent MRI revealed a benign extramedullary process in the spinal cord (Th5-6) causing spinal cord compression. A schwannoma was suspected. Laminoplasty (Th4-6) and tumor extirpation were performed. The obtained biopsy material confirmed the suspicion. Postsurgical physiotherapy and rehabilitation yielded good results. At follow-up 3 months later, the patient was without complaints and completely independent. Physiotherapy and rehabilitation continued to correct posture and regain strength in his back muscles.
Conclusions: Schwannomas are slow-growing and are insidious in onset. Only when a critical mass is reached causing compression, the signs and symptoms can progress overtly and rapidly. This case shows the need for high clinical suspicion for an early diagnosis, which was not the case here. The diagnosis can be challenging, but with proper identification and total surgical excision of tumor, outcomes are excellent.
Key words: primary spinal tumors, nerve sheath tumors, schwannoma

Multiple hemangiomas and hypothyroidism in a 6-month-old infant

Anna Griezite
University of Latvia

Trustee: Paulis Laizans MD, PhD

Background: Hepatic hemangiomas can occur in young children but this is very rare. Hepatic hemangiomas are benign tumors or growths of extra blood vessels. Between 6 to 18 months it starts involute which manifests with symptoms such as enlarged abdominal volume, but the liver function is not affected. This clinical case report represents an uncommon case with a successful outcome.
Case report: Female patient 4 months and 19 days old. During the examination, the baby girl had increased abdominal volume. Therefore a contrast-enhanced MRI scan was prescribed. Were diagnosed enlarged liver, the structure of various sizes, multiple hyperintensities and hypointensities, well-delimited formations, maximum 5.4 cm. The final diagnose is multiple hemangiomas. As a result, propranolol therapy has been initiated. The pediatric endocrinologist examined the patient and concluded that there were changes in the thyroid gland. The thyroid-stimulating hormone was elevated 64.05 mU/L. As a result, levothyroxine was prescribed. After one month was the next doctor visit where was adjusted prescribed drugs and examination. Hepatic hemangiomas were smaller in size. The palpation of the liver was less than 2 cm than before. Also, abdominal USG was done which said that the liver is still enlarged, right lobe of the liver 9cm (anterior-posterior). Tyroid stimulating hormone was decreased 30.53 mU/L. Continue therapy with propranolol and levothyroxine.
Conclusions: Hepatic hemangiomas start growing intra uterin and proliferate after birth. There is no specific gene that causes hemangiomas. Most often hemangiomas are diagnosed during physical examination like it was in this case. Large hemangiomas cause hypothyroidism and heart failure.
Key words: hepatic hemangiomas, hypothyroidism, benign tumor, pediatrics

Guillain-Barré syndrome possibly associated with Lyme disease

Emilė Tilindytė
Vilnius University Faculty of Medicine, Lithuania

Trustee: Rūta Samaitienė MD, PhD

Background: Many infections are associated with the etiology of Guillain-Barré syndrome (GBS), however a connection to Lyme disease is determined very rarely. Although the diagnosis of GBS in this case is definite, finding the cause was impeded by the absence of common etiological elements, and complicated diagnosis of Lyme disease.
Case report: An 8-year-old boy presenting with meningeal signs, progressive weakness in the extremities along with bilateral facial nerve paresis and areflexia was diagnosed with

GBS. During the differential diagnosis of GBS etiology, the only findings were the clinical signs and the ambiguous test results for Lyme disease. The serologic tests results were borderline and the interpretation of cerebrospinal fluid test results was complicated by insufficient cerebrospinal fluid sample. Considering that currently it is acceptable to start treatment for Lyme disease before acquiring test results if there is sufficient epidemiological and clinical data, the patient was additionally diagnosed with Lyme disease and received treatment respectively. The patient's symptoms gradually disappeared following the start of treatment with intravenous immunoglobulin and ceftriaxone.

Conclusions: In this particular case the link between Lyme disease and GBS is not completely clear. Laboratory evidence of Lyme disease was found and taking it and the clinical data into account we presume that our patient had early-stage disseminated Lyme disease. The diagnosis of GBS is entirely valid. It should be noted that we tested for and did not find evidence of another etiological factor that could have provoked this syndrome. In order to accurately substantiate the diagnosis of Lyme disease, it is important to take into account the sampling techniques for laboratory tests, to repeat immunological tests in a timely manner, and to carefully assess the patient's clinical symptoms.

Key words: Guillain-Barré syndrome, Lyme disease, diagnostic difficulties

A case report of spontaneous pneumocephalus in a 11-year-old boy

Aleksandra Jedlecka
Śląski Uniwersytet Medyczny w Katowicach

Trustee: Marek Mandera Professor, MD, PhD

Background: Pneumocephalus is defined as an air or a gas in a cranial cavity. It is usually a complication of a trauma, brain surgery, infections or brain tumors. I present an unusual case of spontaneous pneumocephalus not directly caused by a brain tumor or a neurosurgical treatment.

Case report: A 11-year-old boy was urgently admitted to the neurosurgical ward because of pneumocephalus. He was complaining of a weakness of lower limbs lasting seven days, dizziness and vomiting. Performed encephalic MRI showed great amount of air in frontal horns of lateral ventricles and in basal cisterns, especially in the area of an enlarged sphenoidal sinus. Almost one and a half year ago the patient had a surgery because of the tumor in the left lateral ventricle with a hydrocephalus. Before the surgical treatment, the ventriculoperitoneal shunt was implanted. Subsequently, the tumor was removed without complications. The histopathological examination showed it was choroid plexus carcinoma. During tumor surgery, the attention was paid to the significant thinning of the cranial bones. The surgical treatment was supported with a chemotherapy and a radiotherapy. A month ago, the oncological treatment was finished. A control MRI did not show a recurrence of a brain tumor but revealed pneumocephalus. In order of pneumocephalus, a transsphenoidal duraplasty was performed with using synthetic materials. There were no complications after the duraplasty. The patient was discharged from hospital in good condition with persistent right-sided paresis on day 10.

Conclusions: The most likely cause of pneumocephalus was a fistula (a cavity) in the sphenoidal bone. Increased intracranial pressure for a long time and the significant thinning of the cranial bones may have caused a spontaneous pneumocephalus.

Key words: spontaneous pneumocephalus, duraplasty, pediatric neurosurgery

Two cases of choroidal hemangioma in a child with similar treatment and different outcomes

Jurijs Kosnarevics
Univercity of Latvia faculty of medicine

Trustee: Sandra Valeina MD, PhD

Background: Choroidal hemangioma is a benign vascular tumor located in choroid. This case report is significant with comparison of two choroidal hemangioma cases in a child, the early detection with following diagnosis ant multidisciplinary treatment, involving experts ophthalmologists, ophthalmic oncologists and pediatricians.

Case report: A 7-year-old child complains about the blurred vision in left eye. In further examination detected anisomethropy with higher hypermethropia and astigmatismus in the left eye. For further examination fundus oculi, optic coherence tomography and ultrasonography is indicated, to exclude retinal pathology. Examinations confirms the secondary retinal detachment due to a solid choroidal mass and overlying subretinal fluid collection. Multidisciplinary approach consilium appointed the radiation therapy – brachytherapy course. After 6 years follow up Visus OS cc 0.8 stabilized.

The resembling case of a 11-year old child with blurred vision and suspicion of orbit mass presented alike symptoms. During physical examination, some red, round lesions around the eye was detected. Same further examination and treatment was preferred. But after 3 year follow up, secondary retinal detachment appeared what caused the vision loss. Second radiation therapy course was performed. Some positive dynamics in eye structures was observed, but unfortunately no visual acuity improvement was reached.

Conclusions: Brachytherapy shows a significant efficiency on choroidal hemangioma tumor mass reduction. The right radiation dosage needs to be performed to avoid the presentation of atrophic zones around the hemangioma. Choroidal hemangioma despite the status of benign tumor it can cause the vision loss through the collection of subretinal fluid and following retinal detachment. The treatment is only indicated when subretinal fluid collections are presented. The resembling cases described shows the importance of an early diagnostics and multidisciplinary approach, in order to preserve the vision.

Key words: choroidal hemangioma, retinal detachment, brachytherapy.

Late onset of Streptococcus agalactiae infection – a case report

Anna Ziółkowska
Medical University of Warsaw, Military Institute of Medicine, Department of Pediatrics, Nephrology and Paediatric Allergology

Trustee: Agata Wawrzyniak MD, PhD

Background: Late onset infections including late group B Streptococcus disease (GBS LOD) might be a cause of life-threatening sepsis in newborns. GBS LOD is defined as developed between 7 to 89 days postpartum and may lead to more severe complications than early form. This is especially worrisome considering the fact that up to 30% of pregnant women in Poland are GBS's carriers and transmission risk during delivery is estimated at 70%.
Case report: A 3-month-old boy was admitted to the Clinic due to fever up to 39 C, vomiting and increasing weakness for the last 24 hours. In the anamnesis mother reported being GBS positive while pregnant. During physical examination, the patient was in severe condition with throbbing elevated fontanel and present sunsetting sign.
Additional studies showed extremely increased serum inflammatory factors and features of pneumonia in chest X ray. Because of strong indication of neuroinfection, cerebrospinal fluid was taken, which revealed characteristic features of bacterial aetiology. Essential intervention was to implement antibiotic and anti oedema therapy as well as analgesics. Meanwhile the laboratory studies confirmed the presence of Streptococcus agalactiae sensitive to the treatment applied. The final diagnosis was generalised infection and meningitis of Streptococcus agalactiae aetiology and pneumonia. Due to the necessity to establish a central venous catheter for further therapy, the patient was transferred to the reference clinic.
Conclusions: Although group B Streptococcus is a common colonizer in adults, it is important to remember that GBS may be the cause of serious infection in infants, especially from GBS positive pregnancies. Therefore, including GBS in differential diagnosis of meningitis and general septicaemia seems to be necessary in paediatric patients.
Key words: S. agalactiae, late onset GBS infection, meningitidis

Left atrial isomerism in an Extremely Low Birth Weight premature neonate

Aurelija Martinonytė
Vilnius University Faculty of Medicine

Trustee: Ramunė Vankevičienė MD, PhD

Background: Every year, 5 to 6 percent of neonates in Lithuania are born prematurely (22–36 weeks of gestational age). Their already challenging functional and morphological development is complicated further in the presence of congenital pathologies, heart defects being one of the most common. Newborns at low birth weight are especially vulnerable, as it puts additional limitations on medical and surgical treatment options. Such cases require an exceptionally subtle and complicated balance between the benefits and harm of the treatment, which is not always achievable.
Case report: The report covers a case of an Extremely Low Birth Weight (ELBW) male, born at 26 weeks and 940 grams. A complex congenital heart defect was suspected prenatally and later confirmed. The anomaly was composed of a single ventricle with a common atrioventricular canal, L-transposition of the great vessels, pulmonary atresia, and open arterial duct. Cardiac repolarization abnormalities, mesocardia, as well as an inverse position of internal organs (situs inversus), and an interruption of the inferior vena cava were present, suggesting left atrial isomerism (heterotaxy syndrome). A continuous prostaglandin E1 (PGE1) infusion was warranted for 4 months to maintain an open arterial duct, necessary to compensate for compromised hemodynamics. Surgical correction of the common atrioventricular canal and bidirectional Glenn procedure was performed at 4 months of Chronological age (1 month Corrected age). Due to severe pulmonary hypertension, metabolic acidosis, and multiple organ failure, the patient passed away 2 days following the surgical procedure.
Conclusions: The case describes a variant of a rare genetic anomaly (left atrial isomerism), the exact incidence rate of which is still unknown. It provides an insight into the potential complications of an extremely prolonged PGE1 administration, possibly causing an iatrogenic Pseudo-Bartter syndrome, which is yet scarcely described in the literature. Furthermore, the case illustrates common complications following the bidirectional Glenn procedure.
Key words: congenital heart defects, left atrial isomerism, Extremely Low Birth Weight, preterm birth, PGE1, Pseudo-Bartter syndrome

Fetal and neonatal alloimmune thrombocytopenia – case report

Milda Grigonytė
Vilnius University, Faculty of Medicine, Vilnius, Lithuania

Trustee: Nijolė Drazdienė Professor, MD, PhD

Background: Fetal and neonatal alloimmune thrombocytopenia (FNAIT) is not a common but severe perinatal complication causing weighty primary fetal hemorrhagic morbidity and mortality. The etiology can vary from prematurity, congenital infections, chronic fetal hypoxia to maternal immune thrombocytopenic purpura. Incompatibility for human platelet antigens (HPA) can predispose antibody formation against fetal platelets, causing FNAIT. Here we present unusual case of the patient who was intricately diagnosed with FNAIT.

Case report: In January 2019 a newborn female (Apgar 9/9) developed a hemorrhagic rash all over her body surface (during first 5 minutes after birth). Intramuscular Vitamin K 0,1ml was administered right away. The lab blood tests were performed and showed platelet count of 14 × 109/l. Additionally, tests were taken for Herpes Simplex, Varicella zoster and Toxoplasma gondii, which all of them resulted negative. Head brain US revealed hydrocephalus, ventriculomegaly and intraparenchymal hemorrhage on both sides of the nucleus. Later on, Etamsylate 25mg was given intravenously 3 times per day. The neonate also underwent platelet mass transfusion. After one week the patient was discharged due to improved overall health.
Conclusions: Current case reveals considerable knowledge gaps about FNAIT management not only during pregnancy but later on after birth. While there are no FNAIT antenatal screening program, the diagnosis is made after birth when the neonate already establishes symptoms. Introduction of antenatal screening program and finer management of a symptomatic neonate should be considerable to prevent significant complications.
Key words: fetal and neonatal alloimmune thrombocytopenia, hemorrhagic rash, intraparenchymal hemorrhage

Biofeedback treatment of patient with dyssynergic defecation

Justyna Konys
Medical University of Warsaw/ Department of Pediatric Gastroenterology and Nutrition

Trustee: Marcin Banasiuk MD, PhD

Background: Functional constipation (FC) is a significant problem in the pediatric population that concerns about 14% of children.
One of the most important causes of constipation is dyssynergic defecation (DD). The most effective tool to diagnose DD is three-dimensional high resolution anorectal manometry (3DHRAM). This disorder is defined as inappropriate propulsive force (measured as intrarectal pressure) and/or inadequate relaxation of the anal canal (measured as percent of anal relaxation) observed during defecation manoeuver.
Case report: An 8-years-old boy was electively admitted to hospital in good condition due to functional constipation started in 3–4 months of age. The first episode occured after discontinuation of breastfeeding. The patient was prematurely born in 29th week of gestational age on account of perinatal asphyxia (5pt Apgar, 1100g). Repeatedly hospitalized in the past because of diagnosis and treatment of constipation. Hirschsprung's disease was excluded. Previous medical procedures hadn't brought long-term improvement. The patient also reported side effect, such as abdominal pain after treatment with lactulose. During the hospitalization, an examination with 3DHRAM was performed, which showed absence of abdominal prelum and squeeze during manoeuver of defecation. Dyssynergic defecation was diagnosed and biofeedback treatment was proposed. Special exercises were prepared, which the patient performed during anorectal manometry. After first two sessions, significant progress was noted. In repeated examination, all parameters were improved. Other sessions two months later were scheduled. Since then he was under constant care of the Gastroenterology Department. The applied treatment reduced the problem of constipation and stool incontinence.
Conclusions: Individual approach to each patient is the foundation of modern medicine. In this particular case the patient was exposed to many, often painful, medical procedures, like intestine biopsy. Biofeedback, despite not being a popular method of treatment, is an effective alternative to drugs and a way to avoid typical side effects.
Key words: constipation, biofeedback, paediatrics, dyssynergic defecation

Vomiting and abdominal pain during menstruation in 12-year-old girl as symptoms of Herlyn-Werner-Wunderlich syndrome

Jakub Kucharski
Medical University of Warsaw/Department of Pediatric Gastroenterology and Nutrition

Justyna Konys
Medical University of Warsaw/Department of Pediatric Gastroenterology and Nutrition

Trustee: Marcin Banasiuk MD, PhD

Background: Herlyn-Werner-Wunderlich syndrome also known as OHVIRA (Obstructed hemivagina and ipsilateral renal anomaly) is an extremely rare abnormality of the Müllerian ducts characterized by the presence of double uterus, unilateral cervico-vaginal obstruction and renal agenesis and/or other urinary tract anomalies. Most cases are diagnosed after menarche through a radioimaging. There are no specific symptoms of this syndrome. Patients reported fever and vomiting during menstruation, intermenstrual bleeding and palpable abdominal, pelvic or vaginal mass. Common problem is hematometrocolpos located in not communicant uterus. It is located on the same side as renal agenesis.
Case report: A 12-year-old girl was admitted to the Department of Pediatric Gastroenterology and Nutrition with a suspicion of constipation and dehydration. The Patient reported abdominal pain, vomiting and loss of appetite for 2 days. She also reported three-days lasting menstruation. Physical examination revealed palpable mass in left iliac area and diffuse pain. Her medical history documented surgery of myelomeningocele, hydrocephalus, ovarian cysts, neurogenic bladder, defects of skeletal system. USG and CT showed multiple fluid spaces, ovarian cysts, agenesis of left kidney, double uterus left with hematometrocolpos and multiple skeletal deformations. Patient was consulted by gynecologist and, based on the clinical picture, OHVIRA syndrome was diagnosed and surgery in gynecology clinic was scheduled. After 6 days of therapy, symptoms of constipation and pain improved and the patient was sent home.

After about 2 weeks she was readmitted to the hospital due to recurrence of abdominal pain and vomiting, increasing inflammation parameters (CRP about 6 [0–1 norm], leukocytosis). Date of the surgery was accelerated and the patient was transferred to the recommended clinic.
Conclusions: The presented case highlights importance of history taking, even if we evaluate patient with common pediatric symptoms like constipation, abdominal pain and vomiting. The key information for the diagnosis was recurrence of symptoms during menstrual bleeding.
Key words: OHVIRA syndrome, paediatrics, menstruation, abdominal pain, gastroenterology

Case study in pediatric cardiology: the treatment of complex, congenital heart defect

Agata Mormul
Medical University of Warsaw

Piotr Sikorski
Medical University of Warsaw

Trustee: Ewa Płodzień MD

Background: Three reconstructive operations, known as "Staged Reconstruction" enable the creation of a new functional systemic circuit in patients with hypoplastic left heart syndrome or other complex heart defects with single ventricle physiology.
Case report: A 2-day-old newborn, prenatally diagnosed with multiple congenital heart defects in the form of double inlet left ventricle (DI LV), transposition of the great arteries (TGA), hypoplastic aortic arch (HAA) and ventricular septal defect (VSD), was referred to the cardiology department in The Children's Memorial Health Institute. On the 15th day of the patient's life the infant underwent first surgery – the Norwood procedure with a modified Blalock-Taussig Shunt and removal of the interatrial septum. During this procedure the pulmonary trunk has been connected to the ascending aorta and the aorta has been connected to the right pulmonary artery using a Gore-Tex conduit. Later, the 1-year old patient underwent the second operation – the Glenn Procedure with angioplasty of the right pulmonary artery using an allogeneic pericardium patch. The superior vena cava (SVC) was disconnected from the heart and connected directly to the pulmonary artery and the previous Blalock-Taussig shunt was removed. Recently (last year) the 3-year old patient has been qualified for the Fontan procedure that was supposed to take place in the 2020. However, as a result of the COVID-19 pandemic the procedure had been postponed. Following this third palliative operation, all the venous blood from superior vena cava (SVC) and inferior vena cava (IVC) will be redirected to the lungs, without passing through a ventricle.
Conclusions: This case shows that even severe, complex cases with multiple congenital heart defects can be successfully treated, when a carefully thought out plan consisting of cardiological and cardiosurgical care is at hand. In consequence, a normal or near-normal growth, development and good quality of life can result.
Key words: congenital heart defect, palliative operation, staged reconstruction

Cardiac fibroma presenting as ventricular tachycardia- a case of 5-year-old patient with dysmorphic features

Adrianna Góźdź
Medical University of Warsaw

Alicja Skrobucha
Medical University of Warsaw

Trustee: Ewa Płodzień MD

Background: Primary cardiac tumours in paediatric population are rare and mainly benign. Cardiac fibroma is the second most common primary heart tumour after rhabdomyoma in children. Cardiac tumours affecting children are often associated with genetic disorders, for example about 3% of patients with Gorlin-Goltz syndrome have a cardiac fibroma. Cardiac fibroma may be associated with ventricular arrythmia, as presented in our case of 5-year-old boy.
Case report: From birth, a patient had a noticeable dysmorphic features and then the developmental delay was observed. In the fifth year of life he was hospitalised for several episodes of ventricular tachycardia. The heart rate of one of them reached 270 bmp. The patient also had a polymorphic ventricular arrhythmia throughout the observation period. The episodes of ventricular tachycardia were unresponsive to pharmacological treatment. Tachycardias subsided only after electrical cardioversions. Despite treatment escalation, the polymorphic ventricular arrhythmia could not be reduced. Echocardiography revealed an arrhythmogenic tumour, located in the left ventricle. The patient was operated on and a partial resection of the tumour was performed. After excision of the tumour, ventricular tachycardia subsided and a polymorphic ventricular arrythmia was significantly diminished. Histopathological examination confirmed the diagnosis of cardiac fibroma. Some of patient's abnormalities like syndactyly correlated with the diagnosis of cardiac fibroma and with his mother's oncological history gave rise to the suspicion of Gorlin- Goltz syndrome. Genetic tests initially confirmed this diagnosis.
Conclusions: Cardiac tumours are not common in paediatric population but their clinical consequences may be severe. Dysmorphic features correlated with a heart defect are an indication for genetic counselling.
Key words: ventricular tachycardia, cardiac fibroma, Gorlin-Goltz syndrome

Usefulness of imaging examinations in the diagnosis of Recklinghausen's disease

Katarzyna Drelich
Students' Scientific Society at the Department of Pediatric Radiology, Medical University of Lublin

Olga Pustelniak
Students' Scientific Society at the Department of Pediatric Radiology, Medical University of Lublin

Trustee: Magdalena Woźniak MD, PhD

Background: Recklinghausen's disease is also called neurofibromatosis type 1. It is a genetically determined disease, inherited autosomal dominantly. It is caused by a mutation in the NF1 gene. Due to the inborn nature of this pathology, it is a disease diagnosed in children. The symptoms of this disease include skin lesions such as café au lait spots, small pigmented lesions of the skin in the axillary and inguinal areas, neurofibromas and Lisch nodules. Patients have predisposition to develop both benign and malignant neoplasms of the nervous system. Tumours that are commonly associated with the disorder include glioma of the optic pathway, glioblastoma, malignant peripheral nerve sheath tumour, gastrointestinal stromal tumour, breast cancer, leukaemia, phaeochromocytoma, duodenal carcinoid tumour, and rhabdomyosarcoma.
Case report: A 2-year-old patient with suspected Recklinghausen's disease had an MRI examination of the head and orbits in order to exclude the presence of lesions in the central nervous system. Scattered, weakly demarked foci with increased signal intensity on T2-weighted images, typical for neurofibromatosis type I, are visible in the MR images. These foci are located: in the white matter of the cerebellar hemispheres, in the pons, brain limbs, pale globules, within the enlarged hypothalamus, within the vault and smaller ticks. There is a noticeable thickening of the left optic nerve in the junction area to approx. 8mm and a thickening of the optic junction with features of glioblastoma. After intravenous administration of the paramagnet no foci of pathological contrast enhancement were found.
Conclusions: MRI has a decisive importance in the diagnosis of changes in the central nervous system in the course of neurofibromatosis type 1. It has a particular importance in the diagnosis of changes in the brainstem, diencephalon, cerebellum and optic nerve where gliomas most often occur in Recklinghausen's disease.
Key words: neurofibromatosis, MRI examination, Recklinghausen's disease, imaging diagnosis

The alphabet of cardiological qualification for sports. Epsilon. The epsilon wave, incomplete right bundle branch block and ventricular extrasystole in a volleyball player

Maria Komisarz
Students' Scientific Group at the Ist Department of Cardiology, Interventional Electrocardiology and Hypertension, Jagiellonian University Medical College, Krakow, Poland

Trustee: Agnieszka Olszanecka MD, PhD

Background: The epsilon wave is a small positive deflection observed between the end of the QRS complex and the beginning of T wave constituting a hallmark of arrhythmogenic right ventricular cardiomyopathy (ARVC). ARVC is the second most frequent cause of sudden cardiac death (SCD) in young athletes.
Case report: A 17-year-old female was referred to cardiology clinic by her sports doctor because of an irregular heart rate and the presence of a ventricular arrhythmia depicted as premature ventricular contractions on the electrocardiogram (ECG). The patient was in a good general condition, her exercise tolerance was good, never experienced any symptoms related to physical exertion and had no prior medical history. On physical examination, no abnormalities were detected. The ECG examination revealed a "wiggle wave" on the ascending arm of the R wave in V1 lead, resembling an epsilon wave, moreover, an incomplete right bundle branch block (IRBBB), which raised the suspicion of ARVC. The echocardiographic result was normal, no additional beats were observed in the cardiac stress test. To complete the diagnosis, a 12-lead Holter ECG was performed revealing the presence of over 11,000 additional single ventricular beats associated with origins from the right ventricular outflow tract. Cardiac Magnetic Resonance imaging was also performed – finally excluding structural heart disease. Considering the diagnostic criteria of ARVC the patient met criteria for possible ARVC. She remained asymptomatic, without indications for arrhythmia ablation, pharmacological treatment, and essentially without contraindications to do athletics. However regular follow-ups were recommended.
Conclusions: This case emphasizes the importance of conducting pre-participation cardiovascular screening aimed at the detection of disorders associated with SCD in athletes. Considering serious sequels of ARVC – in case of its suspicion a detailed diagnosis is immediately necessary. Regular follow-ups should be performed not only in patients with definite diagnosis but also in those with borderline ARVC.
Key words: case report, arrhythmogenic right ventricular cardiomyopathy, epsilon wave

Early treatment and management of the Chiari II malformation: series of case reports

Sylwia Lefek
Jagiellonian University Medical College/medical department

Anna Gabrys
Jagiellonian University Medical College/medical department

Trustee: Olga Milczarek MD

Background: Chiari II malformation (CM-II) is a relatively common congenital malformation characterized by beaked midbrain, downward displacement of the tonsils, and cerebellar vermis, and spinal myelomeningocele (MMC). As there are no guidelines for CM-II treatment further studies are required to assess safety and efficacy of different management schemes.
Case report: Seven children (1 female) postnatally were admitted to the Department of Pediatric Neurosurgery with MMC. Level of the MMC differed and ranged from thoracic to sacral. All of them were surgically treated for MMC. After MMC surgery five of them had escalating respiratory failure and remained ventilated. Post MMC surgery transcranial ultrasound results were an indication for three patients to implant subcutaneous reservoir (SCR), and in two patients for valve implantation. All infants with SCR implantation required implantation of the ventriculoperitoneal shunt (VPS). All were qualified to posterior fossa decompression (PFD). The procedure was performed on 5th to 25th day after delivery. Three patients operated had additionally an occipital plastic surgery. Those with respiratory failure could be extubated 5 to 7 days after PFD. One patient with opisthotonus had significant improvement after PFD. Two patients needed revision of an implanted valve. Syringomyelia occurred in two patients at the thoracic level and at the lumbar level.
Conclusions: Despite the great risk of mortality of posterior fossa decompression procedure in early infancy, our patients achieved noticeable improvement of their condition and two of them in recent follow-up exam was not found with hydrocephalus and didn't need the implantation of VPS which is essential for their life quality. Operation in the first weeks after birth is challenging but for our patients turned out to be live-saving and inhibit short and long-term consequences.
Key words: Chiari II, early treatment, neurosurgery, infants, pediatrics