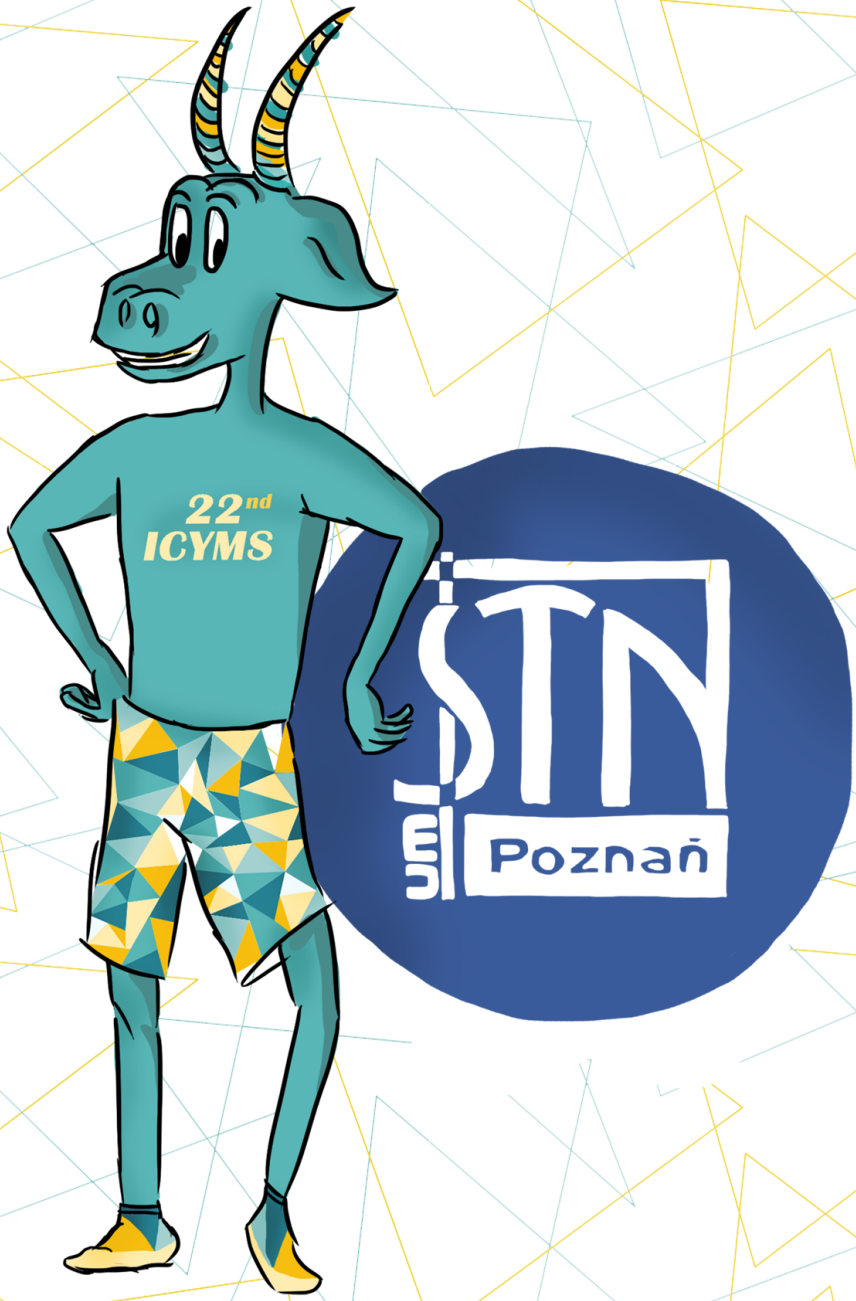
22nd International Congress of Young Medical Scientists



ABSTRACT BOOK

22nd ICYMS

International Congress Young Medical Scientists

2-4.06.2022

e-ISBN: 978-83-965593-0-2

Congress Internet Service
Website: https://icyms.ump.edu.pl
Facebook: 22nd International Congress of Young Medical Scientists
Instagram: @stn.ump
poznan.congress@gmail.com

Contact
PUMS Students' Scientific Association
Karolek Dormitory
ul. Rokietnicka 5, room 2.15
60-806 Poznań, Poland
stn.ump@gmail.com

Honorary Patronage

Ministerstwo Zdrowia

Patronat Honorowy Ministra Zdrowia

MARSZAŁEK WOJEWÓDZTWA
WIELKOPOLSKIEGO
MAREK WOŹNIAK

POZnań

Honorary Patronage
of the Mayor of Poznań

WIELKOPOLSKA
IZBA
LEKARSKA

Honorary Patronage

JM prof. dr hab. n. med. Andrzej Tykarski
RECTOR of Poznan University of Medical Sciences

dr hab. n. med. Maciej Cymerys
DEAN of Faculty of Medicine

prof. dr hab. n. med. Anna Jelińska
DEAN of Faculty of Pharmacy

prof. UM dr hab. n. med. Wiesław Markwitz
DEAN of Faculty of Medical Sciences

prof. dr hab. n. med. Ryszard Marciniak
DEAN of Faculty of Health Sciences

Partner Conferences

YES MEETING

JUVENES PRO MEDICINA

BIMC Chernivtsi

Bukovinian International Medical Congress

WIMC

WARSAW INTERNATIONAL MEDICAL CONGRESS

AIMS MEETING

Media Patronage

Konsylium24.pl
LEKARZE DLA LEKARZY

BORGIS
Wydawnictwo z tradycją od 1990 roku

PULS
GAZETA STUDENTÓW

MEDtube
sharing
medical
knowledge™

PULS Medycyny
pulsmedycyny.pl

RADIO AFERA
POLITECHNIKA POZNAŃSKA
98,6 FM

General Sponsors

HEINE QUALITY
MADE IN GERMANY

BIOFARM®
Człowiek jest w centrum naszych starań

Sessions' sponsors

TERMEDIA
NOWE TRENDY W MEDYCYNIE
WWW.TERMEDIA.PL

MEDUSES

STANDARDY MEDYCZNE
pediatria

Medcases

SKINPAD.PRO

WYDZ FARM WUM

SYLVECO

Pharmaceris

Fundacja pomocy dzieciom z chorobą nowotworową
Warszawa

CLOCHEE®

egzaminLDEK.pl

Fundacja MOCNI NA STARCIE

moodsy

KWIAT KOBIECOŚCI
OGÓLNOPOLSKA ORGANIZACJA

FUNDACJA ORCHIdea

proyou

Fundacja Rozwoju Kardiochirurgii im. prof. Zbigniewa Religi

Sponsors

USG TRENER

corpus mind

PZWL

AMBOSS

MedPharm Polska
WIEDZA • NAUKA • PASJA

POZycja pierwsza

edra
URBAN & PARTNER

medycyna praktyczna

eldan

lecturio

więcej niż LEK

www.relaksyna.pl

NaMedycyne shop

elmex meridol Colgate PROFESSIONAL ORAL HEALTH

F. ARMY

Organizing Committee

Aleksandra Kurowska
Marta Andrzejewska
Szymon Rzepczyk
Bartosz Nowak
Julia Dzierla
Agnieszka Mariowska
Joanna Służewska
Marta Lubarska
Karolina Mizera
Patrycja Rusin
Anna Małkiewicz
Dawid Woszczyk
Julia Janecka
Dominika Galli
Marta Szczygieł
Wojciech Firlej
Małgorzata Dąbrowska
Julia Chęcińska
Natalie Górna
Jakub Klamecki
Martyna Hirsch
Antoni Białek
Anna Popczyk

Magdalena Dimmich
Aleksandra Grześkowiak
Camilla Wegrzynowska
Bartosz Lastowiecki
Weronika Szkudlarek
Piotr Kupidłowski
Łukasz Świątek
Paulina Kukla
Zofia Radek
Klara Dyczkowska
Aneta Adamiak
Anna Klocek
Karolina Nitschke
Marcelina Marek
Filip Lorek
Maria Piotrowiak
Zofia Borowczyk
Anna Kochanek
Weronika Kośmider
Wojciech Szkudlarek
Marcelina Dul
Marika Młynarczyk

Basic Life Sciences

Scientific Committee

prof. dr hab. Paweł Jagodziński
prof. dr hab. Błażej Rubiś
dr n. med. Katarzyna Wołyńska
dr hab. n. med. Mariusz Kaczmarek

Coordinator

Małgorzata Dąbrowska

Session Partner

WYDZ FARM WUM

The MEK/ERK pathway is involved in entosis in pancreatic cancer BxPC3 cells

Authors: Paweł Tyrna, Monika Olszanecka, Julia Kostro, Piotr Szukało
Affiliation: Department of Histology and Embryology, Medical University of Warsaw
Tutor: Izabela Młynarczyk- Biały, Assoc. Prof., MD, PhD

Introduction: Entosis is a phenomenon in which one epithelial cell actively enters another cell's cytoplasm. Since its discovery, great progress has been made in understanding the regulation and clinical significance of entosis.
Entosis has been proven to be initiated by cell-to-cell adhesion via E-cadherin, activation of the ROCK/Rho pathway and actinomyosin filament remodeling. The search for other regulating factors continues.

The aim of the study: We analyzed the involvement of the MEK/ERK pathway in regulation of entosis in cell culture.
Methods: We used two cell lines: BxPC3 (pancreatic cancer) and MCF7 (breast cancer), and MEK inhibitors: BI-847325, cobimetinib and u0126. Monocultures: cells were seeded and incubated with various concentrations of MEK inhibitors. After 24 hours, the cells were fixed and stained with haematoxylin/eosin.
Co-cultures: cells were labeled either red or green with fluorescent CellTracker™ dyes. One population was treated with a MEK inhibitor, whereas the other was not. After 24 hours, both populations were mixed and co-cultured for another 24 hours, fixed and stained with Hoechst. We calculated the inner, outer and total entotic index, defined as the percentage of inner, outer and overall cells in entosis. We performed Kruskal-Wallis and Conover-Iman tests using R software for statistical analysis.

Results: BxPC3: all inhibitors caused a significant reduction of the total entotic index in monocultures. In co-cultures, the cells pretreated with MEK inhibitors had a significantly lower inner entotic index than control cells. We observed no differences in the outer entotic index.
MCF7: we detected no statistically significant differences in the entotic indexes between cells treated with inhibitors and control cells, both in monocultures and co-cultures.

Conclusions: In BxPC3 cells, the MEK/ERK pathway activity is required specifically in the inner entotic cells. We observed no such relationship in MCF7 cells, which might indicate a distinct regulation mechanism in this cell line.

Acknowledgments: grant no. 1M15/4/M/MG/N/21, Medical University of Warsaw.

Novel pathogenic variants and clinical features of syndromes associated with the GLI3 gene

Authors: Filip Glista, Ewa Hordyjewska- Kowalczyk, Przemko Tylżanowski, Aleksander Jamsheer, Ewelina Bukowska- Olech
Affiliation: Department of Medical Genetics, Poznan University of Medical Sciences,
Department of Biomedical Sciences, Medical University of Lublin

---

Introduction: Deleterious variants in the *GLI3* gene result in various phenotypes, depending on their location - these located within the first and last third of the *GLI3* cause Greig cephalopolysyndactyly (GCPS) (MIM: 146510), whereas in the middle third of *GLI3* cause Pallister-Hall syndrome (PHS) (MIM: 175700). The clinical features of GCPS comprise craniofacial abnormalities such as craniosynostosis (scaphocephaly), hypertelorism and prominent forehead, accompanied by preaxial polydactyly type IV. PHS phenotype spectrum may include hypothalamic hamartoma, impairment of pituitary gland, visceral malformations, and postaxial polydactyly (type A or B).

The aim of the study: We aimed to reveal the molecular background of clinical features observed in a group of patients who presented with symptoms suggestive of GCPS or PHS. Moreover we aimed to reconstruct GCPS/PHS phenotypes resulting from pathogenic variants in the *Danio rerio* model.

Methods: We examined eleven families with affected members. Genomic DNA was extracted from the peripheral blood lymphocytes using the MagCore® HF16 Automated Nucleic Acid Extractor. Next, we have applied either PCR followed by Sanger sequencing of the entire *GLI3* coding sequence or targeted next-generation sequencing. We selected one pathogenic variant and performed successful mutagenesis and cloning (using plasmids pCS2Dest/pENTR-GLI3 and E.coli). Obtained mRNA was injected into *Danio rerio* eggs.

Results: We have detected eleven variants in the *GLI3* gene causative either of GCPS or PHS. Four variants have not been reported in the medical literature so far. We also reconstructed wild type *gli3-Danio rerio* and c.2255C>G p.Ser752* mutant.

Conclusions. We have described the unreported additional clinical features in GCPS and PHS, detected novel *GLI3* variants and shown successful mutagenesis, cloning and mRNA injections into *Danio rerio* eggs. In future we aim to obtain *gli3* mutants with unpublished pathogenic variants in which we will analyze the expression levels of selected Hh pathway genes.

The effect of *Aronia melanocarpa* fruit extract on the lipid peroxidation process in the brain of rats exposed to cadmium via diet

Authors: Justyna Prokopiuk, Joanna Rogalska
Affiliation: Students' Research Group at the Department of Toxicology, Medical University of Bialystok, Department of Toxicology, Medical University of Bialystok
Tutor: Prof. Małgorzata Michalina Brzóska, PhD

Introduction: It has been revealed that even low-level chronic exposure to cadmium may induce oxidative stress and enhance lipid peroxidation in various organs, including the brain which is especially susceptible to the damaging impact of prooxidants. Therefore, there is an urgent need to look for substances that could reduce the harmful effects of exposure to this xenobiotic. A promising agent is *Aronia melanocarpa* fruit extract, which is abundant in substances with strong antioxidative potential.

The aim of the study: The study aimed to evaluate whether the repeated administration of *A. melanocarpa* fruit extract can influence the concentration of malondialdehyde (MDA), as a lipid peroxidation biomarker, in the brain of rats subjected to low and moderate chronic exposure to cadmium.

Methods: One hundred and ninety-two young (3 - 4 weeks old) female Wistar rats were divided into 6 experimental groups. The animals from five groups were exposed to cadmium via diet at the concentration of 1 or 5 mg/kg or/and received a 0.1% aqueous solution of *A. melanocarpa* fruit extract as the only drinking fluid. The last group constituted the control. After 3, 10, 17, and 24 months 8 animals from each group were sacrificed. The concentration of MDA was determined spectrophotometrically in the supernatants of 10% brain homogenates.

Results: The brain concentration of MDA was increased due to the 10 - 24-month exposure to the 1 mg Cd/kg (by 36 - 63%) and 5 mg Cd/kg of feed (by 54 - 94%). The concentration of MDA in the brain of the rats administered *A. melanocarpa* fruit extract during the 10-, 17-, and 24-month exposure to cadmium did not differ compared to the control group.

Conclusions: The administration of *A. melanocarpa* fruit extract during chronic dietary exposure to cadmium may completely protect against this toxic metal-induced lipid peroxidation in the brain tissue.

Optimization of a 3D model of neoplastic invasion for analysis of metalloproteinase-dependent degradation of silk spheres

Authors: Alicja Kamińska, Natalia Guźniczak, Anna Florczak, Kamil Kucharczyk, Hanna Dams- Kozłowska
Affiliation: Department of Biotechnology, Poznan University of Medical Sciences

---

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

The aim of the study: We aim to create a 3D model of the tumor microenvironment for targeted drug delivery systems using biodegradable and bioengineered spider silk proteins functionalized to recognize metalloproteinases, which overexpression is observed in the vast types of cancers.

Methods: We used two breast cancer cell lines (MCF7 and MDA-MB-231) to optimize a method of forming a 3D model of tumor microenvironment. Live cell analysis instrument was implemented to control the formation of spheroids, invasion test and spheres incorporation. Drug nanocarrier system is based on bioengineered spider silk proteins MS2MMP2.9MS2.Their morphology was assessed using scanning electron microscopy (SEM).

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

Conclusions: We optimized a 3D model of the tumor microenvironment and designed a nanosystem from biodegradable silk spheres, recognizable and cut by metalloproteinases 2 and 9. By using two breast cancer cell lines, we were able to develop the spheroid models that incorporated the biodegradable silk spheres. We plan to use them for studying the controlled drug release. The application of the MMP-sensitive silk-based drug delivery system should eliminate the systemic toxicity of chemotherapy and enhance its local effectiveness.

Acknowledgments:The study was supported by Student Scientific Society Grant 36/2020.

Can the genotype be related to the effectiveness of technologically assisted rehabilitation of children with Cerebral Palsy?

Authors: Bartosz Bagrowski
Affiliation: Laboratory of Neurobiology, Department of Neurology, Poznan University of Medical Sciences
Tutor: Prof. Jolanta Doroszewska, DCc, PhD

Introduction: Cerebral palsy (CP) is a nonprogressive damage to the central nervous system associated with motor and functional deficits. In the rehabilitation of patients with CP, the main emphasis is on improving motor skills as an important element of a child's development. The effectiveness of functional improvement as a result of rehabilitation depends on the plasticity of the nervous system, which is genetically determined.

Aim of the study: The aim of the study was to check the relationship between the BDNF, COMT and MTHFR genotypes and functional improvement in people with cerebral palsy.

Material and methods: The study involved 50 people with CP (6-19 years), whose genotypes BDNF, COMT and MTHFR were analyzed, and their progress in technologically assisted rehabilitation in terms of improving gait function was examined.

Results: It has been shown that certain genotypes may predispose to increased functional improvement and maintenance of its effects.

Conclusions: The results correlate with numerous studies on the relationship of the BDNF, COMT and MTHFR genotypes with the process of neuroplasticity, learning motor functions or cognitive flexibility. The presented research may constitute an important step towards the identification of non-invasive markers of functional improvement in people with CP, which in turn may lead to the development of personalized medicine.

Neurology, Psychiatry, Neurosurgery

Scientific Committee

prof. dr hab. n. med. Janusz Rybakowski
dr hab. n. med. Anna-Maria Barciszewska
dr hab. n. med. Wojciech Ambrosius

Coordinator

Julia Chęcińska

Session Partner

Molecular factors related to exosomes physiology in patients with Alzheimer's disease.

Authors: Mikołaj Hurła, Natalia Banaszek, Agata Cieślińska, Prof. Wojciech Kozubski, Prof. Jolanta Dorszewska
Affiliation:Laboratory of Neurobiology, Department of Neurology, Poznan University of Medical Sciences, Poznan, Poland

---

Introduction: Neurodegenerative disorders are one of the most pressing concerns in modern medical science. As of today the average life span increases which changes the population structure leading to much higher rate of elderly people. Aging society is especially subjected to higher risk of neurodegenerative disorders. One of them being Alzheimer's disease (AD) which presents one of the highest susceptibility rates in patients worldwide. Current research might point to the exosomes as a key to unravel the possible pathology mechanism underlying AD.

The aim of the study: Alteration in genes such as APOE and exosome related RAB11A or TSG101 might be essential in AD neuropathology. Our research involves analyzing genetic variants of APOE (E2/E3/E4), RAB11A (exon 2) and TSG101 (exons 8 and 9) as well as RAB11A protein plasma levels.

Methods: Blood and plasma samples have been acquired: 50 samples from AD patients, 55 samples from patients that have AD history in the family, 51 samples from the control group. APOE (E2/E3/E4) analysis has been conducted using mismatch primer qPCR method. Genetic variants of RAB11A (exon 2) and TSG101 (exons 8 and 9) have been analysed with HRM and confirmed by sequencing. RAB11A protein levels have been established using ELISA kit.

Results: Analysis of RAB11A and TSG101 have shown no sign of genetic variation. APOE E4 variant has been identified in AD patients at a much higher frequency than in the control group. Furthermore a RAB11A protein level median has shown a higher trend in AD patients and even more so in ones presenting APOE E4 variant.

Conclusions: RAB11A protein is responsible for exosome physiology and might become one of the future exosomal failure biomarkers. Although the relation between RAB11A and APOE in AD needs to be further studied.

Migraine - just a headache?

Authors: Patryk Wawrzonkowski, Magdalena Michna,Przemysław Witek, Aleksandra Gładyś
Affiliation: Medical University of Silesia in Katowice, SUM, Department of Neurology
Tutor: Agnieszka Gorzkowska MD, PhD

Introduction: Migraine is one of the most prevalent headache disorders and has a significant impact on many aspects of the everyday life of patients. It is estimated that over 8 million people in Poland suffer from migraine or probable migraine - twice as many women as men.

The aim of the study: The aim of the study was to assess the personal, family, professional and social aspects of the functioning of migraine-affected women.

Methods: 182 women diagnosed with migraine according to the ICHD-3 criteria (age 18-66, mean 35,5 ± 9,7 years) participated in our study. The diagnosis of a depressive episode was based on the DSM-5 Criteria for Major Depressive Disorder. The study included authorial demographic, medical history and daily functioning questionnaire.

Results: 180 (99.4%) of the surveyed women experienced difficulties in achieving life goals. 173 (95.6%) indicated a feeling of weakness and lack of strength. The group of patients with features of chronic migraine significantly more often modified their lifestyle in terms of their sports and diet to be less favorable in their opinion (61.9% vs 33.12%; chi2 test, p = 0.01). A depressive episode was diagnosed in 89 (50.3%) of women. Depression was more common in the group with delayed action of analgesics (30% vs 60.18%; chi2 test, p = 0.0002). 165 (91.2%) of respondents reported a reduction in libido associated with migraine.Furthermore, the average cost of migraine medications was PLN 164.20 per month. In addition, 172 (95%) believed that public knowledge about migraine and its effects was insufficient, and 163 (90%) said that this knowledge was also insufficient for healthcare professionals.

Conclusions: Most women with migraine experience adverse effects of the disease on their daily functioning. Understanding the differences resulting from sex, including the specificity of somatic, psychological and social consequences, should contribute to a more appropriate selection of interventions and improvement of care for sick people.

The analysis of the CSF and serum changes of transthyretin following subarachnoid haemmorhage.

Authors: Labarre Jean-Pierre, Karbowski Łukasz, Wąsik Norbert
Affiliation: Poznan University of Medical Sciences
Tutor: Bartosz Sokół

Aim of the study: This preliminary study aims to analyze and describe the changes of transthyretin (TTR) in cerebrospinal fluid (CSF) and serum samples collected from patients who underwent a subarachnoid hemorrhage (SAH).

Materials and methods: CSF samples were obtained from twenty-three control subjects, six good outcome, and seventeen poor outcome SAH patients. CSF samples were collected at specific time intervals after SAH (between the first three days of hospitalization and next up to the sixth day). Our control group for CSF samples is formed from neurological patients with no brain injury and for serum samples we compared healthy blood donors.
Transthyretin concentrations were measured using the commercially available ELISA kit

Results: Our study confirms the positive correlation between brain damage and higher TTR levels in CSF samples regardless of the patients' final outcomes. Patients with fortunate outcome had lower TTR concentration in days 4-6 compared to the control group that patients with unfortunate outcome.

We observed no correlation between TTR levels in serum and clinical state of the patient. There no statistically significant differences between both clinical groups and control group except for the samples gathered in days 4-6.

We found a significant change of TTR concentration in time only for the serum samples gathered from patients with unfavorable outcome in days 0-3 and 4-6.

Conclusions: Understanding the small nuances and fluctuations in TTR levels can enhance monitoring and predicting the recovery process and time intervals of patients.

Postoperative cerebral venous sinus thrombosis following retrosigmoid approach – radiological and clinical analysis

Authors: Jankowski Jan, Camlet Katarzyna, Przepiórka Łukasz, Kunert Przemysław, Wójtowicz Katarzyna, Grabowska–Derlatka Laretta, Marchel Andrzej
Affiliation:Department of Neurosurgery, Medical University of Warsaw, Warsaw, Poland

---

Introduction: Symptomatic postoperative cerebral venous sinus thrombosis (CVST) is a rare but known complication following the retrosigmoid approach (RSA). However, the literature regarding CVST is still lacking.

The aim of the study: The aim of this study was to evaluate radiologic features of CVST (rCVST), whether occurrence of rCVST was related to the extent of craniotomy and the frequency of clinical manifestation.

Methods: We retrospectively evaluated 128 contrast enhanced computed tomography scans performed routinely after elective RSAs. In addition to rCVST, the extent of the bony opening relative to the venous sinuses was quantified by expressing the shortest distance of the craniotomy margin from the transverse sinus (TS) and sigmoid sinus (SS) in positive values, and the overlap of the craniotomy with the sinus in negative values. Medical charts were evaluated for clinical diagnosis of CVST.

Results: rCVST were found in 59 patients (46.1%), of which 38 (64.4%) in the TS, 37 (62.7%) in the SS, and 31 (52.5%) in the TS and SS junction. The mean ranges of sinus exposures in patients with and without rCVST were for SS: -3.13 and -1.90 mm (for the whole group: -2.47 mm); for TS: -7.20 and -5.04 mm (for the whole group: -6.04 mm).

Exposure of SS or TS was found in 110 patients, of which 55 (50%) had rCVST. In 18 patients, neither SS nor TS was exposed, of which only 4 (22.2%) had rCVST (p=0.04). rCVST rates for exposed and unexposed SS were not significantly different (50.6% vs 38.8%, p=0.21); similarly for TS (50.5% vs 31.0%, p=0.09).

Three patients (5%) had clinical manifestations of CVST, of which 1 involved superior sagittal sinus and 2 ipsilateral TS and SS.

Conclusions: rCVST are common sequelae of RSA, but occur less frequently when neither of sinuses is exposed. Approximately 5% of patients with rCVST present with clinical symptoms.

Bypass surgery for complex brain aneurysms.

Authors: Novickis Artjoms, Auslands Kaspars
Affiliation: Department of Neurology and Neurosurgery, Riga Stradins University

---

Introduction: Complex intracranial aneurysms (CIAs) and their management are one of the challenges of the modern neurosurgery. Despite the development of commonly used methods such as endovascular coiling, the management of aneurysms of this type is still problematic. Cerebral bypass surgery is a potential method which could solve these problems.

The aim of the study: To review and systematize information available about the cerebral bypass in context of complex intracranial aneurysm treatment.

Methods:Different types of sources were selected. The main sources were as recent available research papers with as big number of cases or relevant procedures as possible. For issues such as classification methods or description of surgical procedures, information from books, journal articles or other review articles was used.

Results: Although cerebral bypass surgery for treatment of complex intracranial aneurysms seems to be a promising technique, there is still a lot to be studied, which limits the possibilities to make definite conclusions. For most of the techniques, such as direct extracranial-intracranial bypass or excimer laser-assisted nonocclusive anastomosis, studies show promising results with acceptable levels of potency and complication rates. The issues, which must be solved, are complexity of procedure, rate of complications and high costs.

Conclusions: It is a useful method in cases when other treatment options are applicable. Further development of the technique would be beneficial, and there is a need to solve current issues.

Sixth sense in neurosurgeon's hands. Intraoperative Neuromonitoring in tumor surgery: a single-center retrospective study.

Authors: Nehring Antoni, Podolak Marcin, Piecek Jakub, Kowalczewska Justyna
Affiliation: Student Research Group of Neurosurgery, Poznan University of Medical Sciences
Tutor: Jeremi Kościński, M.D., Ph.D., Department of Neurosurgery and Neurotraumatology at the Clinical Hospital of Heliodor Święcicki, Poznan University of Medical Sciences, Poland

---

Introduction: Central Nervous System tumor resection is a surgical procedure performed within a particularly delicate and limited space. The surgery has to be controlled based on anatomical imaging and functional evaluation to reduce the risk of surgery-related neurological deficits. Intraoperative Neurophysiological Monitoring (IONM) is a relatively novel method of monitoring. IONM monitors changes in nerve conduction, informing a multidisciplinary surgical team about the risk of nerve or brainstem damage and providing crucial real-time information about the nervous system's function. The method considerably reduces iatrogenic neurological impairments, provides guidance to neurosurgeons, and improves the postoperative quality of life.

The aim of the study: The study intended to evaluate the usage of IONM at the Neurosurgery Department of Heliodor Święcicki Clinical Hospital in Poznań and compare the characteristics of the surgeries depending on the utilization of IONM.

Methods: The study retrospectively reviewed the data gathered from the Central Nervous System tumor resections performed from the 1st of July, 2021, until the 31st of March, 2022.used.

Results: Three hundred forty-seven tumor resections were performed in the studied timeframe. The study revealed that 71 of the 347 were carried out using IONM, providing the neurosurgeon with guidance and improving the safety of the surgery. The surgeries included in the study were performed on tumors located in the brain and the spinal cord.

Conclusions: Resection of Central Nervous System tumors aims to maximize resection with minimal or no postoperative neurological impairments. Usage of IONM improves the postoperative quality of life and provides neurosurgeons with guidance during operation. The procedure ensures maximal possible resection diminishing the risk of damage to the neurological system. The method may be applied to surgeries on tumors of varying locations, including eloquent brain and spinal cord areas.

Correlations between serum BDNF, proBDNF, EGF, MIF levels and impulsive behavior as potential predictors of diagnosis conversion towards bipolar disorder among youth with a mood disorders.

Authors: Grabarczyk Maksymilian
Affiliation: Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu

---

Introduction: Bipolar Disorder is a chronic illness that affects approximately 1% of the entire population. Up to 50% of adolescent patients diagnosed initially with major depressive disorder (MDD) end up developing Bipolar Disorder (BD). There is still a lack of studies concerning clinical and biological markers of diagnosis conversion to BD.

The aim of the study: Based on the neurodevelopmental and neuroimmunological hypotheses of affective disorders we investigated serum levels of Brain-Derived Neurotrophic Factor (BDNF), its precursor (proBDNF), Epidermal Growth Factor (EGF) and Migration Inhibitory Factor (MIF). The behavioral impulsivity construct was analyzed as a clinical marker using Barratt Impulsiveness Scale (BIS-11). The aim of the study was to find correlations between protein and clinical markers with diagnosis conversion to BD in young patients with mood disorders.

Methods:We assembled a group of 76 adolescents patients (22 males and 54 females, mean age 18.51(±3,32)), with exacerbation of either MDD or BD, and a control group of 34 patients (29 females and 5 males, mean age 21.06 (±2.57)).

At baseline severity of depressive or manic symptoms was evaluated with the Hamilton Depression Rating Scale (HDRS-17) or Young Mania Rating Scale (YMRS), respectively. Impulsivity was measured using Barratt Impulsiveness Scale (BIS-11). Serum levels of BDNF, pro-BDNF, EGF and MIF were determined by ELISA method.

In a prospective 2-years follow-up study patients have undergone clinical reevaluation. Diagnosis conversion from MDD to BD was investigated.

Spearman's Rank Correlation Coefficient was applied in the statistical analyses.

Results: In the course of two years of clinical observation 15 patients experienced diagnosis conversion from MDD to BD. We found positive correlation between BDNF serum levels and "Non planning" component of the BIS-11 (p= 0,03).

Conclusions: Demonstrated results signal the possibility of incorporating clinical and biological components in predicting diagnosis conversion in affective disorders.

Funding: UMO-2011/03/D/NZ5/06146

AUTISM SPECTRUM DISORDER AND COMORBIDITIES IN INFANCY

Authors: Vaitkeviciute Marija, Krzconaviciute Saule, Velaviciene Dalia
Tutor: Medical Doctor Dalia Velaviciene, Child and adolescent psychiatry, Hospital of Lithuanian University of Health Sciences Kauno Klinikos, Lithuania
Affiliation: Faculty of Medicine, Lithuanian University of Health Sciences
Child and adolescent psychiatry, Hospital of Lithuanian University of Health Sciences Kauno Klinikos

---

Introduction: Autism Spectrum Disorder (ASD) patients are noticed to be more commonly associated with wide range of comorbidities, including infectious, gastrointestinal, and neurological disorders.

The aim of the study: To determine comorbidities associated with ASD during infancy.

Methods: The retrospective analysis consisted of 261 children (133 with at least one ASD risk factor, 128 – with no ASD risk factors) with diagnosed ASD and registered in Lithuanian University of Health Sciences (LUHS) Kaunas Clinic database in 2015-2020. The following selection criteria were applied: 1. Elimination of duplicates. 2. If several different diagnoses of the ASD are made for one person only the latest is included in the study. Statistical analysis was performed with IBM SPSS 22.0 software. The study was authorized by the Ethics Committee of LUHS.

Results: Of all analysed cases (n = 261), at least one comorbidity was detected in 17,2% during the neonatal and infant periods. Infectious diseases were detected in 5%, allergic diseases – 3,4%, sexual dysfunction (cryptorchism, hidrocele, etc.) – 2,8%, other diseases (hydrocephalus, cerebral dysplasia, etc.) and genetic diseases – 6%. The statistical analysis compared the incidence of comorbidities between cases with at least one ASD risk factor (n = 133) and another group with none (n = 128). Comorbidities were more common in children with at least one risk factor (16,5%) than in those without risk factors (8%) ($p>0,05$). The most common diseases with at least one ASD risk factor were: infectious diseases (4,5%), sexual dysfunction (3,8%) and allergies (3%). Boys with at least one risk factor had a comorbidity of 19,3%, while girls of the same group had no comorbidity during the neonatal and infancy periods ($p <0,05$).

Conclusions: The study showed that comorbidities were more common in children with at least one ASD risk factor. The most common disease as comorbidity was infectious disease.

Brain atrophy correlation with neuropsychological examination as markers of cognitive decline in PD DBS STN patients.

Authors: Szałata Karolina, Romaniuk Patryk, Karolak Magdalena, Milanowski Łukasz
Tutor: Stanisław Szlufik, MD, PhD
Affiliation: Department of Neurology, Medical University of Warsaw

---

Introduction: Deep Brain Stimulation (DBS) is a surgical intervention used in advanced Parkinson's disease. It can significantly improve the motor symptoms of people with Parkinson's disease and thus function and quality of life. Despite careful qualification for surgery, there is a risk of postoperative complications including cognitive decline. Magnetic resonance imaging (MRI) of the brain may be helpful in assessing cognitive decline.

The aim of the study:The aim of the study is to identify markers indicating a high probability of cognitive decline after DBS implantation based on MRI and preoperative psychological testing.

Methods: One hundred and thirty candidates for DBS surgery were included. Fifty-three patients with Parkinson's disease undergoing DBS surgery had brain MRI and psychological testing before surgery. Statistical analysis of MRI parameters and psychological test scores was performed. Of the selected patients, 26 patients underwent psychological testing after DBS surgery. The results of psychological tests after DBS surgery have be analyzed to evaluate cognitive decline after surgery.

Results: The statistical analysis conducted showed statistically significant correlations between some indicators of cognitive abilities from psychological tests and dimensions of various brain structures. The dimensions measured on brain MRI images of superior frontal gyrus, amygdala, lateral ventricular body, thalamus, caudate nucleus, midbrain, gyrus cinguli, and brightness of substantia nigra and amygdala were correlated with the most cognitive decline parameters ($p<0.05$).

Conclusions: Selected MRI parameters correlate with patients' psychological findings. This data may suggest that the correlation of brain atrophy and neuropsychological examination might be a possible biomarker of cognitive decline after DBS implantation in patients with Parkinson's disease.

Gynecology and Obstetrics

Scientific Committee

prof. dr hab. n. med. Ewa Wender-Ożegowska
dr hab. n. med. Marcin Mardas
dr hab. n. med. Rafał Moszyński

Coordinator

Weronika Szkudlarek

Session Partner

Kwiat Kobiecości
Ogólnopolska Organizacja

Extracellular matrix protein, laminin g1 expression in ovarian cancer tissue before and after chemotherapy.

Authors: Marta Rezler, Elżbieta Dziabaszewska , Piotr Jasiński, Ewa Nowak-Markwitz, Mikołaj Piotr Zaborowski

Affiliations: Poznan University of Medical Sciences, Poland

Tutor: Mikołaj Piotr Zaborowski, MD, PhD

Introduction: Ovarian cancer (OC) is a heterogeneous malignancy being one of the leading causes of cancer-related deaths in women around the world. OC is formed of outgrowths that extend from the outer surface of the affected organs into the peritoneum. OC outgrowth formation is poorly understood. One of the likely factors is extracellular matrix (ECM) - molecular scaffold rich in numerous glycosylated proteins including laminin g1, a major component of the basement membrane.

Aim of the study: The aim of the study was to evaluate expression of laminin g1 in 1) tumors of high- and low-grade and 2) paired pre-treatment and chemotherapy-recovered OC tissues.

Material and methods: The immunohistochemical staining intensity was assessed by a pathologist using H-score. This scoring system was applied both to cytoplasm and basement membrane staining.

Results: We found that laminin in basement membrane is more intense after chemotherapy than before treatment ($p = 0.037$). Laminin might show greater cytoplasmic expression in high-grade than in low-grade tumors ($p = 0.075$).

Conclusions: These results highlight the importance of ECM microenvironment in modulating OC growth and indicate that laminin g1 is associated with OC response to chemotherapy.

Pathomorphological characteristics of cervical ectopia of dyshormonal origin.

Authors: Jakub Skóra, Robert Siwek, Olga Zhurakivska

Affiliations: Ivano-Frankivsk National Medical University, Ukraine; Poznan University of Medical Sciences, Poznań, Poland

Introduction: Cervical ectopia (CE) - main background of cervix diseases, occurring especially in early reproductive age. 70% of cases is hormonally conditioned and combined with fibrocystic mastopathy (FCM).

Aim of study: Arrangement the features of estrogen receptor expression in cervix in CE on the background of FCM.

Research methods: A morphological study of cervix tissue performed on 30 non-parous women (21-25 y.o.). 1st group - women with CE on background of FCM, 2nd - with CE without breast pathology, 3rd - without above pathology. In work used: hematoxylin-eosin staining & immunohistochemical examination (IHE). Primary monoclonal antibodies to estrogen (ER), progesterone (PR) receptors were used for IHE.

Results: In whole 1st group, positive expression of ER of the multilayered squamous non-keratinized epithelium (MSnKE) of cervix were established. At CE the features of expression of ER, PR the MSnKE of cervix, depending on existence of FCM are noted. In 1st group a negative expression of ER is observed in 66.67%, PR - in 58.33%. In 2nd group, ER-positive cells concerns 84.62%, PR - in 76.93%. In CE, except MSnKE, > 10% ER and PR are detected in areas of CE. In some cases, expression of ER is in the proper layer of the mucous membrane (PLMM) of cervix, positive expression of PR isn't only in PLMM, also in MSnKE of cervix. There's a high intensity (3+) of ER & PR reactions, respectively in 1st group - 58.33% and 60.67%, in 2nd group - 53.84% and 61.54%, in 3rd - 80% and 100% .

Conclusions: In non-parous women aged 21-25 with CE the background of FCM decreased. Women with a negative type of ER expression and a positive PR reaction in the MSnKE of cervix are at risk for development of cervical dysplasia and the formation of cervical infertilit factors.

Analysis of cancer stem cell markers in high-grade serous ovarian cancer tumors based on TCGA datasets.

Authors: Kamila Jaz, Aneta Synakiewicz, Kinga Piątek-Bajan, Marta Rezler, Natalia Iżycka

Affiliations: Poznan University of Medical Sciences, Poland - Department of Gynecology, Obstetrics and Gynecologic Oncology, Division of Gynecologic Oncology; Department of Cell Biology

Tutor: PhD Sebastian Szubert, Prof., MD, PhD Anna Jankowska, PhD Mikołaj Zaborowski

Introduction: High-grade serous ovarian cancer (HGSOC) is considered to be the leading cause of death in patients with gynecological tumors. Despite cytoreductive treatment, the tumor recurs in 70% of patients. Cancer stem cells (CSCs) are believed to contribute to high risk of recurrence in ovarian cancer. Exploration of associations between CSCs markers may indicate new treatment targets.

Aim of the study: To investigate levels of the CSCs markers in tumor tissue and determine their influence on clinical presentation, outcome and risk of recurrence in HGSOC. To evaluate whether CSCs markers could act as potential new treatment targets.

Material & Methods: 551 ovarian cancer tumors deposited in The Cancer Genome Atlas (TCGA) were analyzed in terms of 14 CSCs markers expression. We evaluated CSCs levels as assessed by mass spectrometry. The analysis included correlation to clinical (overall survival – OS; disease-free survival – DFS) and pathological data (grade, stage, vascular invasion) retrieved from TCGA.

Results: OS was longer in patients with higher CD44 and EPCAM expression (HR=0.88 95%, 0.79-1.00; p=0.043; HR=0.89 95%, 0.80-0.99; p= 0.039, respectively). THY1 expression was associated with poorer OS (HR=1.14 95%, 1.02-1.28; p=0.019). EPCAM, LGR5, CD44 prognose significantly longer DFS (HR=0.87, 0.86, 0,86; p=0.004; 0.018; 0.012; respectively). Tumors with higher THY1 and NES proteins expression showed reduced DFS (HR=1.32 95%, 1.09-1.58 p=0.004; HR=1.19 95%, 1.01-1.41 p=0.039, respectively). Expression of proteins LGR5 and NOTCH3 was increased in tumors with no vascular invasion. Conversely, higher CD44 and THY1 proteins expression was associated with vascular invasion. MKI67, a marker of proliferation, significantly correlates with PTTG1 ($r=0.51$, $p<0.05$).

Conclusions: CSCs markers (CD44, EPCAM, THY1, LGR5) expression in ovarian cancer can be used as prognostic factors for primary outcome. The associations between CSC markers expression and vascular invasion might indicate new treatment strategies.

The impact of physical activity before and during pregnancy on the course of pregnancy and newborn well-being.

Authors: Paulina Przybysz, Adrian Kruszewski

Affiliations: Medical University of Warsaw, Poland - 2nd Department of Obstetrics and Gynecology

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

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

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

Results: The results show that the major impact on the course of pregnancy and newborn well-being has physical activity during the 6 months before pregnancy. Among the women who participated in the study, 73% were less physically active (< 90 minutes per week) and 27% were physically active (> 90 minutes per week) 6 months before conception. The results show that gestational diabetes occurred in 14,1% of less physically active and in 6,9% of physically active (p=0,0025). Moreover, 38% of less physically active women gained too much weight during pregnancy compared to 30,9% of physically active (p=0,0413).
Physical activity in the first trimester reduced the risk of Cesarean Section. 37,6% of less physically active during the first trimester and 29,4% of physically active had CC due to medical indications (p=0,0306).

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

Births from Polna Street in the historical perspective.

Authors: Kamila Pietrzak, Antonina Biela

Affiliations: Poznan University of Medical Sciences, Poland

Tutor: M.D. Katarzyna Kawka- Paciorkowska

Over the years, the history of medicine has become increasingly important as a subject of research interest due to the conclusions that can be drawn when analyzing changes in trends in therapeutic activities. The aim of our work is to determine degrees of improvement in obstetric care based on perinatal mortality. Based on the information contained in the documents from the archives of the Gynecological Hospital at Polna street in Poznan, we analyzed statistically the following parameters: age of female patients, gestational age during childbirth, number of fetuses, method of delivery, weight of born children and their condition (alive / dead).

In 1953, 4,042 children were born in the described hospital, 87.6% of them were natural deliveries, and 12.4% by the surgical method. Among natural deliveries, 93.9% spontaneous deliveries, 5.2% pelvic deliveries, 0.8% manual deliveries, 0.03% cranioclasts and 1.3 % births were by embryotomy. Among the operative deliveries, 48.8% of birth were performed with the use of obstetric forceps and 51.2% of cesarean sections. The stillbirth rate was 3.2%. The mean age of women giving birth was 27.7 years, while the mean age of first labor was 24.8 years.

Comparing the year 1953 and the current norms, we can observe a significantly lower percentage of surgical deliveries, and among them a much higher percentage of childbirth by obstetric forceps. The visible difference is also the higher percentage of stillbirth. On the basis of these and many other differences, the reasons can be found in constantly changing scientific guidelines, influenced by new premises and clinical trials. An additional variable is also other social and economic standards of both the healthcare system and patients.

Oncology, Hematology and Radiotherapy

Scientific Committee

prof. dr hab. n. med. Lidia Gil
dr hab. n. med. Dominik Dytfeld
dr hab. Joanna Rupa-Matysek
dr n. med. Marek Konkol
dr n. med. Bartosz Urbański
prof. dr hab. Tomasz Piotrowski

Coordinator

Paulina Kukla

Session Partner

Fundacja pomocy dzieciom z chorobą nowotworową
Warszawa

Bone marrow toxicity induced by PARP inhibitors in patients with ovarian cancer

Authors: Lipka A.1, Gładych A.2, Miedziarek C.2, Zaborowski M.3

Affiliation:

[1] Students' Research Group of Perinatology and Gynecology, Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu, Poland

[2] Students' Research Group of Gynecologic Oncology, Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu, Poland

[3] Department of Gynecology Obstetrics and Gynecologic Oncology, Poznan University of Medical Sciences, Poland

Tutor: lek. Mikołaj P. Zaborowski

Introduction: Inhibitors of Poly ADP-ribose polymerase (PARP) complex, such as niraparib and olaparib are used in the maintenance therapy of ovarian cancer, following the first and second line of platinum-based treatment. Though PARP inhibitors significantly improve prognosis, they may induce severe adverse effects.

The aim of the study: We aimed to analyze the bone marrow toxicity in patients treated with olaparib and niraparib as a maintenance therapy of ovarian cancer.

Material and methods: The complete blood count was assessed in 18 patients treated with PARP inhibitors. Patients receiving niraparib (*n*=13) were evaluated weekly for a month and then once every month, whereas those treated with olaparib (*n*=5) were monitored monthly. The following parameters were analyzed: white blood cells count (WBC), neutrophils count, red blood cells count (RBC), medium corpuscular volume (MCV), hematocrit (Hct), hemoglobin (Hb), platelet count (PLT) and mean platelet volume (MPV). The anemia was defined as Hb < 7.5 mmol/l and the thrombocytopenia as PLT<150,000/μL.

Results: Thrombocytopenia occurred in 10 (76.9%) patients in niraparib group and 1 (20.0%) patient treated with olaparib. The lowest PLT values were observed after 3 weeks of treatment with niraparib (mean±SD = 116±83 k/μL) as compared to initial PLT count (232±84 k/μL). The lowest PLT level reached 2 k/μL. Two patients treated with niraparib

required platelet transfusion. PLT count after a month was lower following niraparib (170±112 k/μL) than olaparib (204±107 k/μL) therapy. Anemia occurred in 8 (61.5%) patients receiving niraparib and in 4 (80.0%) within olaparib group. The lowest mean hemoglobin was observed after 2 months of treatment with niraparib (7.09±0.89 mmol/l) and after a month of olaparib treatment (6.00±1.78 mmol/l).

Conclusion: PARP inhibitors are associated with bone marrow toxicity. Niraparib predominantly causes thrombocytopenia, while olaparib more often induces anemia. Patients treated with PARP inhibitors should be carefully monitored during the therapy.

B7 family, a new insight into immune evasion in colorectal cancer.

Authors: Dawidowicz M, Kula A., Mielcarska S., Kiczmer P., Skiba H.

Affiliation: Department of Medical and Molecular Biology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice, Department of Pathomorphology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice

Tutor: Elżbieta Świętochowska PhD, prof. SUM, Dariusz Waniczek PhD, prof. SUM

Introduction: Colorectal cancer (CRC) is one of the most common malignancies. Immunotherapy has opened a new field of cancer treatment in recent years. Nowadays, immunotherapies are effective in only 15% of CRC patients. Therefore, searching for potential immune targets is crucial for the development of new CRC therapies. B7H3, B7H4, and HHLA2 are members of the B7- immune checkpoints family. Our study aimed to assess B7H3, B7H4, and HHLA2 levels in tumor and margin tissues of CRC in relation to the clinicopathological parameters of patients.

Materials and methods: The study used 95 samples of tumor and margin tissues derived from CRC patients. To determine the concentration of B7H3, B7H4, and HHLA2, we used the commercially available enzyme-linked immunosorbent assay kit. The expression of CD8 was detected by the immunohistochemistry method.

Results: We found a significantly higher level of B7H3 in the tumor in comparison with the margin. On the contrary, the concentration of B7H4 was significantly higher in margin tissue than in tumor tissue. There were no significant differences in HHLA2 levels between tumor and margin. The tumor level of B7H3 correlated significantly with the tumor concentration of B7H4. Tumor levels of all investigated proteins (B7H3, B7H4, HHLA2) were positively associated with their corresponding margin levels. The tumor level of B7H3 was positively correlated with the T feature, while the tumor concentration of B7H4 was negatively correlated with this parameter. The tumor level of B7H4 was negatively associated with the number of CD8 cells in a tumor.

Conclusion: We assessed B7H3, B7H4, and HHLA2 levels in tumor and margin tissues of CRC to clinicopathological parameters of patients. This study provides valuable insight into the role of the B7- immune checkpoints family in CRC. Further studies are required to elucidate the mechanisms and therapeutic values of the B7 family.

Preoperative axillary lymph node status by radiological imaging in breast cancer patients

Authors: Evele A.[1]

Affiliation:

[1] Faculty of medicine, University of Latvia, Latvia

Tutor: Dr.med. Ilze Eņģele

Abstract text

Regional lymph node ultrasound followed by CORE biopsy are frequently used methods for preoperative identification of axillary lymph node status in breast cancer patients.Pathological lymph nodes also can detect on mammography,magnetic resonance,lymphoscintigraphy,computer tomography and other imaging modalities.Specific feature (positive) axillary lymph node is an indication for lymph node dissection,but non-specific feature (negative) nodal status is for sentinel lymph node biopsy.Axillary lymph node status is an important diagnostic and prognostic factor.

Retrospectively compare preoperative axillary lymph node radiological imaging modalities in breast cancer patients with postoperative histological evidence of axillary metastases.

Retrospective cross-sectional study.Data analysed for the year 2021.A total of 964 breast cancer patient data were reviewed,excluding patients whose first-line therapy was not surgery.Therefore only 291 patients data were collected- results from preoperative ultrasound and other radiological imaging modalities with described regional lymph nodes and postoperative histopathological report.

Out of 964 women who had undergone breast,regional lymph node ultrasound and CORE biopsy,291 (30.9%) patients primary treatment was surgery and had postoperative lymph node histopathology report.The median age for primary surgery patients was 64.Out of 291,there were only 71 (24.4%) patients with specific lymph node findings in preoperative ultrasound and 220 (75.6%) patients with normal axillary ultrasound results.Specific axillary lymph node features among 71 cases– a size more than 1cm (62.0%),cortical layer thickening more than 3mm (53.5%),irregular cortical layer (22.5%),round shape (12.7%),loss of fatty hilum (4.2%).As confirmed on postoperative histopathology 87 patients (29.9%) had positive pathological axillary lymph node involvement but 204 (70.1%) had no lymph node involvement.Comparing preoperative

ultrasound with postoperative histopathology results 23 cases were false positive (FP) meaning no metastatic lymph node was discovered,181 true negative (TN), 40 false negative (FN) and 47 true positive (TP).From the same data calculated positive predictive value (67%), negative predictive value (82%),specificity (89%),sensitivity (54%) and accuracy (47%).Comparing other preoperative radiological modalities (MRI, mammography,lymphoscintigraphy, CT) with ultrasound in 21 cases results from different imaging were also positive,but in 15 cases ultrasound findings were negative and other imaging results positive for lymph node changes.

The results of preoperative axillary ultrasound alone are not as accurate to identify or exclude axillary lymph node metastasis. Negative ultrasound results do not exclude axillary lymph node metastasis.

Obesity as a risk factor to GIST

Authors: Sztaba K.
Affiliation: University of Warmia and Mazury in Olsztyn
Tutor: dr n.med. Natalia Dowgiałło

Introduction: Gastrointestinal stromal tumors (GISTs) are rare mesenchymal neoplasms located along the entire length of the gastrointestinal wall. The tumors are most often located in the stomach (60-70%), in the duodenum and small intestine (20-25%). The rarest places are on the rectum (5%), the esophagus and colon (<5%).

Aim of study: The aim of the study was to conduct an objective analysis of the incidence of GIST in morbidly obese patients undergoing bariatric surgery compared to the general population.

Material and methods: A literature review with a comparative analysis with a retrospective study of 2,300 patients who underwent LSG bariatric surgery at the Municipital Hospital in Olsztyn in 2013-2021.

Results: The tumors were present in various locations in the stomach, but their size did not exceed 1 cm. All results in the histopathological examination were CD117 and CD34 positive and Ki-67 positive <2% of cells. In most cases tumors were diagnosed as gastric GIST in the low-risk category - pT1 Nx Mx - according to the TNM scale.

Conclusions: Obesity is a known risk factor for their development. Surgical resection with tumor margins (R0) is the only potentially therapeutic option for GIST. GIST should be considered in patients with non-specific gastrointestinal symptoms who are not diagnosed. Recent literature suggests that the risk of GIST is higher in the obese population, and therefore surgeons should be aware of the risk of incidental GIST during LSG.

'Biochemical and nanomechanical analysis of normal and cancer cells of the human gastrointestinal tract supplemented with antioxidant and treated with ROS by Raman and AFM imaging

Authors: Beton K
Affiliation: Politechnika Łódzka

In recognition of importance of cancer in Poland and in the World to public health we conducted the research on medical diagnostics of cancer by Raman spectroscopy and imaging and AFM and on influence of reactive oxygen species (ROS) on cancer transformation based on nanomechanical and biochemical properties of human tissues and cells.

Tumor transformation is associated with activation of proto-oncogenes and/or inactivation of suppressor genes or abnormal cell differentiation. More and more data indicate that one of the most important factors responsible for the induction of tumor transformation are ROS. At the same time, ROS production is a natural part of oxygen metabolism. The balance between the production of ROS and the efficiency of antioxidant systems prevent oxidative stress and subsequent damage to important macromolecules such as DNA, proteins and lipids. Oxidative stress in cancer cells also includes inflammation and cytokine effects, intense metabolism, dysfunctions in the respiratory chain. ROS generation is generally a cascade of reactions which starts with the production of superoxide.

Spectroscopic and microscopic methods allow the fast, precise and unambiguous differentiation of healthy and cancerous biological samples. Moreover, a very important advantage of Raman spectroscopy is ability to identify many individual components of biological samples in one measurement that help in their differentiation. Based on Raman spectra cell structures such as the nucleus, mitochondria or cell membranescan also be visualized.
Statistically assisted analysis of Raman spectra and AFM data such as: stiffness, Young modulus shows that normal and cancerous human cells can be distinguished based on their unique vibrational and nanomechanical properties.

Pharmacy

Scientific Committee

dr hab. n. farm. Jarosław Paluszczak
prof. dr hab. n. farm. Tomasz Gośliński
dr hab. n. farm. Andrzej Czyrski
dr hab. n. farm. Jacek Kujawski
prof. dr hab. Jan Matysiak

Coordinator

Marta Lubarska

Session Partner

BIOFARM®

Człowiek jest w centrum naszych starań

SYNTHESIS AND PHYSICOCHEMICAL CHARACTERIZATION OF NEW DIAZEPINE-CONTAINING DERIVATIVES OF CURCUMIN

Authors: Magdalena Stachowiak, Lukasz Popenda, Stefan Jurga, Dariusz T. Mlynarczyk

Affiliation: Poznan University of Medical Sciences

Tutor: Tomasz Koczorowski, PhD

Introduction: Curcumin is a naturally derived compound with well-established biological activity. These properties, among others, include anticancer activity. However, due to unfavourable physicochemical properties, curcumin expresses significant disadvantages for its clinical use, such as low bioavailability, poor solubility and chemical instability.

The aim of the study: The aim of the study was to improve the physicochemical properties of curcumin by obtaining diazepine-containing derivatives of curcumin, which would possibly be characterized by better pharmacodynamics/pharmacokinetic properties which would improve the biological activity.

Material and metods: The derivatives were synthesized by applying Knoevenagel condensation between appropriate aldehydes and a diazepine derivative as substrates. New compounds were characterized using Nuclear Magnetic Resonance, UV-Vis spectroscopy and mass spectrometry, as well as they were subjected to Microtox acute toxicity assessment.

Results: Performed syntheses resulted in obtaining a series of mono- and disubstituted diazepine-containing derivatives of curcumin. UV-Vis analysis shown that monosubstituted derivatives have one absorption maximum around 400 nm while the disubstituted derivatives have two absorption peaks: around 440 nm and around 370 nm. Additionally, the molar extinction coefficient was higher in case of the disubstituted compounds, as compared to the monosubstituted, as well as to curcumin. Stability experiments in alkaline medium confirmed the higher stability of the new derivatives. The Microtox test showed high activity of all the derivatives in concentrations up to 10 μM.

Conclusion: The results obtained in the study indicate that the physicochemical properties of the curcumin can be improved by protecting its β-diketone group and introducing a diazepine ring to the curcumin structure. The initial antimicrobial evaluation showed the high potential of the novel molecules.

Acknowledgments: This study was founded by National Science Centre, Poland, under grant number 2019/35/B/NZ7/01165.

THE INFLUENCE OF $P2Y_{12}$ GENE POLYMORPHISMS ON CLOPIDOGREL PHARMACODYNAMICS IN PATIENTS AFTER CORONARY ARTERY ANGIOPLASTY

Authors: Pawlak K., Danielak D., Burchardt P., Kruszyna

Affiliation: Poznan University of Medical Sciences

Tutor: Karaźniewicz-Łada M.

Introduction: $P2Y_{12}$ receptor plays a crucial role in blood coagulation and is the molecular target for antiplatelet drugs. However, the responsiveness to the therapy varies significantly between individuals. The possible reasons for this variability could be $P2Y_{12}$ gene polymorphisms: rs6801273, rs2046934 (T774C), and rs6809699 (G52T).

Aim of the study: The main goal of this research was to define the influence of the selected polymorphisms on clopidogrel therapy in patients undergoing coronary artery angioplasty (CAA).

Materials and methods: Blood samples were collected from 58 patients treated with clopidogrel on a day of CAA and after six months. For genotyping, RFLP-PCR and ASO-PCR methods were used. Subsequently, the influence of the polymorphisms and haplotypes on the response to clopidogrel therapy was investigated. The therapy effectiveness was defined by platelet reactivity units (PRU), estimated with the VerifyNow method. The final step was the statistical assessment of analyzed polymorphisms influence on the phenotypes (high, normal, or low platelet reactivity) observed in the study group.

Results: The frequencies for minor alleles, C for T744C, and T for G52T, were 0.1293, while for the minor C allele in rs6801273 was 0.4052 and were similar to the ones observed in European, Asian, and African populations. Studied polymorphisms were in complete linkage disequilibrium, and the following haplotypes were distinguished: H1 and H2 (for T744C and G52T) and A, B, C (for all investigated polymorphisms). Statistical analysis showed no influence of the investigated polymorphisms nor the haplotypes on platelet reactivity before CAA and after six month therapy. Also, none of the polymorphisms and the haplotypes were significantly associated with the high platelet reactivity phenotype.

Conclusions: Summarizing, rs6801273, T744C, and G52T have no statistically significant influence on PRU values at the beginning and after six months of antiplatelet therapy. There was also no significant influence of the studied polymorphisms on platelet reactivity changes during therapy and on the observed phenotypes.

DEVELOPMENT AND VALIDATION OF UPLC-MS/MS METHOD FOR DETERMINATION OF RIVAROXABAN IN BLOOD PLASMA

Authors: Marta Miecznikowska, Sołtysiak Zuzanna, Pawlak Kornel, Kerner Julia, Smuszkiewicz Michał, Banasiak Joanna, Kruszyna Łukasz

Affiliation: Poznan University of Medical Sciences

Tutor: Marta Karaźniewicz-Łada

Introduction: Rivaroxaban is a novel non-vitamin-K oral anticoagulant direct, selective inhibitor of active factor X. Due to the lack of a direct specific method for assessing rivaroxaban's pharmacodynamics, monitoring drug concentrations would be useful for prediction of its efficacy and safety.

Aim of the study: The aim of this study was to develop and validate a fast and simple UPLC-MS/MS method for the determination of rivaroxaban in human plasma.

Materials and methods: Rivaroxaban and rivaroxaban-d4 used as an internal standard were extracted from 200 µl plasma samples using a simple protein precipitation with acetonitrile. The analytes were separated on Zorbax Plus C18 column via isocratic elution with a mixture of acetonitrile and water (50:50, v/v), both containing 0.1% formic acid. Detection of the analytes were performed on a triple-quadrupole mass spectrometry detector with electrospray ionization. The method was validated according to the FDA requirements. The utility of the assay was assessed in determination of rivaroxaban concentrations in 11 patients treated with the drug.

Results: The overall run time of the method was about 4 min with elution times of rivaroxaban and its internal standard at around 2 min. Calibration curve of rivaroxaban was linear in the range of 2-500 ng/ml. The lower limit of quantification was 2 ng/ml. Inter- and intra-day precision, expressed as relative standard deviation, was ≤10.5 % Inter- and intra-day accuracy of the method, expressed as relative error, was ≤13.2 %. Extraction recovery of the analyte from plasma samples was approximately 63%. In patients, the determined rivaroxaban concentrations were in the range of 130-460 ng/ml.

Conclusions: The UPLC-MS/MS method was simple and fast and fulfills the validation requirements for quantitative analysis of drugs in biological matrices. The method was successfully applied for analysis of the drug concentrations in plasma samples of patients undergoing anticoagulant treatment.

FORMULATION DEVELOPMENT, IN VITRO EVALUATION OF MICROEMULSION-BASED GEL LOADED WITH KETOPROFEN AND TITANIUM DIOXIDE.

Authors: Gackowski M., Napierała O., Otto F., Radel N., Osmałek T.

Affiliation: Poznan University of Medical Sciences

Tutor: Froelich A.

Introduction: In this study, an emulgel based on bicontinous microemulsion was studied as a potential carrier for the topical delivery of ketoprofen, poorly water-soluble drug. Microemulsions are transparent, thermodynamically stable mixtures composed of oil, water, emulsifiers and co-surfactants, that have been extensively researched as drug delivery systems. As the topical application of ketoprofen is connected with the risk of photosensitization resulting from its decomposition under irradiation with ultraviolet light, the investigated formulation was enriched with titanium dioxide known for its photoprotective properties.

The aim of the study: The main goal of the study was to obtain novel semi-solid microemulsion-based formulation and to define the parameters affecting its physicochemical properties. Moreover, the efficacy of TiO_2 as an additive decreasing the photolysis of the active ingredient upon UV irradiation was evaluated.

Materials and methods: Initially, ketoprofen was solubilized into microemulsion containing triacetin, Tween® 20, Transcutol®, and deionized water. The mixtures were transformed into gels and enriched with TiO_2. The obtained systems were evaluated for their physical appearance, rheological and textural properties, drug content, in vitro drug release and drug content after irradiation with UV and VIS light.

Results: Microemulsions had shown good transparency and globular size below 3 nm which are typical properties of these systems.

The rheological and textural properties of the investigated samples depended on TiO_2 content and ketoprofen presence. Drug content was 88% and 91% for gels with 4% and 2% TiO_2, respectively. TiO_2 in a concentration of 4% significantly decreased the UV-caused photodegradation of ketoprofen.

The release studies indicate that novel microemulsion-based gels displayed lower drug release rates compared to the marketed products.

Conclusion: The investigated microemulsion-based gels are promising in terms of effective and safe topical ketoprofen delivery.

GOLD NANOPARTICLES/IRON(II) PORPHYRAZINE HYBRID ELECTROCHEMICAL SENSORS OF BIOLOGICALLY ACTIVE SUBSTANCES

Authors: Filar K.

Affiliation: Poznan University of Medical Sciences

INTRODUCTION: Porphyrazines (Pzs) belong to porphyrinoid-like macrocyclic compounds. Pz macrocycle consists of four pyrollyl rings linked together by meso nitrogen atoms in place of methine bridges which are present in the porphyrin macrocyclic ring. For many years of research on porphyrazines, their cores have been equipped with various transition metal cations i.e., iron, cobalt, and manganese which impacted their electrochemical properties and allowed to use in various redox reactions.

THE AIM OF THE STUDY: The aim of the study was to obtain the chemically modified glassy carbon electrode as a new electrochemical sensor of biologically active substances including drugs.

MATERIAL AND METHODS: The novel unsymmetrical iron(II) tribenzopyrazinoporphyrazine with peripheral 4-hydrooxyphenyl substituents was synthesized and characterized by UV-vis, mass spectrometry, and NMR techniques. The electrochemical measurements, involving the CV and DPV voltammetry, were performed to assess the electroactivity of obtained macrocyclic compound. Next, the porphyrazine was embedded on the gold nanoparticles and deposited on the surface of glassy carbon working electrode. Then, the electrocatalytic studies were performed to evaluate the sensing properties of modified elecrode towards L-cysteine and diclofenac.

RESULTS: The obtained results revealed better sensing activity of obtained modified electrode in comparison to bare glassy carbon electrode in various concentration range of each analyte.

CONCLUSIONS: This study showed the potential of this class of compounds in electrocatalytic and sensing applications, and therefore the obtained hybrid material will be further evaluated in the amperometric determination of diverse substances. Moreover, the presence of 4-hydroxyphenyl groups in the periphery enables further structural development with other moieties and possible covalent attachment to various functionalized nanomaterials.

CATIONIC MAGNESIUM PORPHYRAZINE EMBEDDED ON GOLD NANOPARTICLES AS A NEW TYPE OF PHOTOSENSITIZER WITH POTENTIAL USE IN MEDICINE AND PHARMACY

Author: Patury M.

Affiliation: Poznan University of Medical Sciences

Tutor: Koczorowski T.

INTRODUCTION: Porphyrazines (Pzs) are aza-analogs of porphyrins. Their physicochemical properties can be tuned by the exchange of central metal cation or by peripheral substitution. Substituted porphyrazines reveal high absorption in the UV-Vis region and good effectiveness for singlet oxygen generation. Thus, they could be considered as photosensitizers for photodynamic therapy (PDT). Pzs are often highly hydrophobic, and therefore insoluble in water. Diverse methods have been employed to allow porphyrazines to form stable suspensions in aqueous solutions. One of the most interesting is gold nanoparticles. Gold nanocarriers coated with photoactive compounds, when irradiated with light, can absorb it and take part in an energy transfer in photochemical reactions.

THE AIM OF THE STUDY: The main aim of this study was to obtain novel photosensitizing material consisting of porphyrazine and gold nanoparticles with potential use in photodynamic therapy.

MATERIAL AND METHODS: The previously synthesized Pz was embedded on the surface of non-functionalized gold nanoparticles by physical deposition. The obtained material was subjected to photocatalytic studies with 1,3-diphenylisobenzofuran (DPBF), known singlet oxygen quencher to assess its potential activity in PDT. The mixture of and nanosystem was irradiated with red lamp light and decrease of UV absorbance of DPBF was measured.

RESULTS: The significant decrease of absorbance of DPBF, indicating efficient production of singlet oxygen and other reactive oxygen species (ROS), revealed high photodynamic activity of synthesized hybrid nanosystems in comparison to bare gold nanoparticles or magnesium(II) porphyrazine.

CONCLUSIONS: The synergic effect of gold nanoparticles and porphyrinoid-type photosensitizer in generation of singlet oxygen and other ROS was obtained. *In vitro* cytotoxicity tests should be performed to evaluate the potential use of obtained system in PDT.

Conjugates of gold nanoparticles and active substances as potential drug delivery systems - the synthesis and physicochemical characterization

Author: Patrycja Wróbel

Affiliation: Poznan University of Medical Sciences

Tutor: Tomasz Koczorowski

INTRODUCTION: Gold nanoparticles are considered as potential modern carriers of active substances. Due to their known ability to improve the solubility of drugs, increase stability and improve their distribution in the body, nanogold is an attractive material from the point of view of modern pharmaceutical technology. An example is the combination of nanogold with doxorubicin, an anti-cancer drug [1].

THE AIM OF THE STUDY: The aim of the research is to obtain and characterize, using various analytical techniques, gold nanoparticles functionalized with L-glutathione (GSH) and other thiol ligands (L-cysteine, mercaptothiol acids), and then their covalent connection with selected pharmaceutically active substances.

MATERIAL AND METHODS: The research studies were divided into several stages: (i) "bottom-up" synthesis of homogeneous gold nanoparticles, (ii) surface functionalization of gold nanoparticles using L-glutathione, L-cysteine and 3-mercaptopropionic acid, (iii) physicochemical, spectrometric and electrochemical measurements of the obtained nanoparticles, and (iv) preliminary attempts to covalently attach selected pharmaceutically active substances - kynurenic acid and its derivatives, as well as polyphenolic derivatives to the functionalized gold nanoparticles.

RESULTS: The peripheral functionalization of gold nanoparticles with the use of sulphur-containing moieties led to three types of nanomaterials differentiated in terms of their particle size and UV-Vis spectra. The obtained NMR studies confirmed the peripheral functionalization as well as obtaining stable conjugation between gold nanoparticles and kynurenic acid and curcumin.

CONCLUSIONS: The peripherally functionalized gold nanoparticles are prospective material from the point of view of new potential drug carriers (drug delivery systems, DDSs)

RADIOSTABILITY OF SELECTED TETRACYCLINE ANTIBIOTICS

Authors: Dominiak K., Bartkiewicz J., Kowalska A., Lewandowska M.

Affiliation: Poznan University of Medical Sciences, Poland

Tutor: Stawny M.

Introduction: Tetracyclines are a group of broad-spectrum antibiotics that have been used since 1950. They are widely clinically applicated and still being developed in many areas of medicine. In the 1980s, studies were carried out to determine the impact of ionizing radiation on the stability of drug substances. Nevertheless, the newest group of tetracyclines was not examined.

Aim of the study: The designed experiments aimed to determine if ionizing radiation can be used to sterilize tetracyclines antibiotics.

Materials and methods: Minocycline, oxytetracycline, and doxycycline have been irradiated in a standard dose of 25 kGy and higher from 50 to 400 kGy. Samples were examined by spectral methods (UV, FT-IR, XRD) and chromatographic methods (TLC, HPLC). Tests also included color differences using the CIELAB system and visual change evaluated by microscope.

Results: Research results indicate that a standard dose of ionizing radiation causes color change and changes in the crystal structure. Other changes were not observed by spectral methods and chromatographic methods. It has also been observed that higher doses of radiation caused the reduction of API from 2% to 3,5%.

Conclusion: Obtained results indicated that the standard radiation dose (25 kGy) should not be used for sterilization of the investigated drugs. Color and crystal structure changes disqualify radiation sterilization method.

Acknowledgments: This research was supported by the Poznan University of Medical Sciences (Grant SBN No. 4127/2020).

CLINICAL SIGNIFICANCE OF 10,11-DIHYDRO-10-HYDROXY-CARBAZEPINE DETERMINATION IN THERAPEUTIC DRUG MONITORING

Authors: Sikorska A., Sommerfeld-Klatta K.

Affiliation: Poznan University of Medical Sciences, Poland

Tutor: Sommerfeld-Klatta K.

Introduction Therapeutic drug monitoring is the clinical practice of measuring drugs with narrow therapeutic ranges and is known to cause therapeutic and adverse effects to maintain a constant concentration in a patient's blood, optimizing individual dosage regimens. Oxcarbazepine is an analogue of carbamazepine, used for the treatment of partial seizure with or without secondary generalization and rapidly reduced to 10,11-dihydro-10-hydroxy-carbazepine (monohydroxy derivative, MHD), its clinically relevant metabolite.

Aim of the study This work develops an analytical method based on liquid chromatography with diode array detection for MHD blood levels identification in therapeutic drug monitoring. The procedure involved collecting a group of patients, qualifying them for the study, and preserving biological material allowed to prepare the metabolite determination.

Material and methods The drug isolation technique and determination method of MHD were based on the available literature. Firstly, blood from patients treated for epilepsy was secured for research and relevant data on the oxcarbazepine dosage and the occurrence of adverse effects (incl. dizziness, drowsiness, fatigue, trouble sleeping) were analysed. The second stage of the research concerned the MHD quantification, individually adjusted for each patient to achieve the desired therapeutic response.

Results During the experiment, twenty patients were qualified (9 men and 11 women). On average, patients were tested after 12 hours from the last dosage ranging from 600 to 1800 mg/day. Preliminary studies made it possible to determine the level of MHD in blood in the range from 3.8 to 12.6 μg/ml.

Conclusions: With average MHD blood levels of 4.2 μg/ml and 10.7 μg/ml and with OXC dosages of 600 mg/day and 1800 mg/day, 35% and 65% of patients, respectively, experienced at least one adverse effect. The adverse effects were significantly dependent on MHD blood level, however, it would be required to enlarge the research group and to continue presented analysis.

INFLAMMATION AS AN EFFECT OF EXPOSURE TO QUETIAPINE AND RISPERIDONE IN THE COURSE OF INTOXICATION

Authors: Stodolska A., Sommerfeld-Klatta K.

Affiliation: Poznan University of Medical Sciences, Poland
Tutor: Prof. Zielińska-Psuja B.

Introduction Quetiapine (QT) belongs to the second generation of antipsychotics. It is most often used in the treatment of depression, bipolar disorders and schizophrenia. Risperidone (RIS) is usually defined as an atypical antipsychotic drug, approved in the treatment of many disorders due to its lower extra-pyramidal side effects. Inflammation in the body can have a significant effect on the metabolism of both, overdosed drugs. The most often used marker for assessing inflammation in the body is CRP (an acute phase protein) levels and myeloperoxidase (MPO) activity.

Aim of the study Presented studies aimed to assess the correlation between toxic QT and RIS blood levels and MPO and CRP markers in the groups of poisoned patients and overdose effects. Both, CRP and MPO markers were used to assess the occurrence of inflammation.

Material and methods Thirty-five patients intoxicated with QT and five poisoned with RIS were confirmed by blood drug level and its toxic concentrations using high pressure liquid chromatography. The Oxi SelectTM Myeloperoxidase Activity Assay Kit from Cell Biolabs, Inc. was used for myeloperoxidase (MPO) determinations and Roche Cobas c501 using the immunoturbidimetric method for CRP analysis.

Results Finally, toxicological test results confirmed QT poisonings with the average blood level which was 2.65 μg/mL and RIS toxic levels equal to 1.05 μg/mL. The mean CRP level was 78.9 ± 21.3 mg/L in QT group and 55.2 ± 28.0 mg/L in RIS group. The mean MPO activity was 17.12 ± 4.3 mU/ml in QT group and 5.18 ± 1.11 mU/ml in RIS group. Both markers were measured in control groups.

Conclusions: In the groups of patients poisoned with QT and RIS, the CRP levels were significantly higher compared to the control group. There was also statistically significant correlation between the MPO activity and the QT toxic level. There was also no correlation between MPO concentration and RIS blood level.

NEUROPROTECTIVE POTENTIAL OF EXTRACTS FROM LICHEN EVERNIA PRUNASTRI

Authors: Bulicz M., Gomuła M., Adamczyk A., Wardęga J., Zapur M., Studzińska-Sroka E.

Affiliation: Poznan University of Medical Sciences, Poland

Tutor: Studzińska-Sroka E.

Introduction: Neurodegenerative illnesses are a significant global health problem. Thus, the neuroprotective activity of lichens started to interest scientists. Because the results on lichen neuroprotective activity are promising, new studies are needed to expand knowledge of these organisms' potential.

The aim of the study: This study aimed to discover the neuroprotective potential of lichen *Evernia prunastri* by using *in vitro* methods. For this purpose, we evaluated the inhibitory effect of different extracts on enzymes that play an important role in neuroprotection. The antioxidant activity and the ability to chelate the metals ions were also determined. We also determined the content of evernic acid in extract using the HPLC method.

Material and methods: The extraction of lichen thallus was carried out using an ultrasonic bath with hexane, dichloromethane, acetone, methanol, methanol-water, and water as solvents. Subsequently, the ability to inhibit enzymes: acetylcholinesterase (AChE), butyrylcholinesterase (BChE), and hyaluronidase was evaluated using *in vitro* spectrophotometric assays. The antioxidant activity was examined using CUPRAC and DPPH analysis. In addition, the iron and copper ion chelating capacity was assessed. The total polyphenols content was determined by the Folin-Ciocalteu method. The content of the main compound – evernic acid using the HPLC method were evaluated.

Results: Our results showed that all extracts exert the cholinesterases inhibitory activities – stronger to BChE and weaker to AChE. We also proved the weak inhibitory activity against the hyaluronidase enzyme. Moreover, the examined extracts exhibit antioxidant activity and the potent ability to chelate metal ions (Fe2+ and Cu2+). The activity depended on the concentration, polarity, and chemical profile of examined extracts.

Conclusions: Our research confirmed that *Evernia prunastri* could be a source of substances with neuroprotective activity. Nevertheless, to fully confirm their usefulness, more in vitro and in vivo studies are needed.

Acknowledgments: The study was supported by a grant from STN PUMS (no. 90)

PFKFB3 AS A TARGET OF ACETYLSALICYLIC ACID IN ANTICANCER THERAPY

Author: Sauer N.

Affiliation: Wroclaw Medical University, Wroclaw, Poland, Poland

Tutor: Karłowicz-Bodalska K.

Introduction. Amelanotic melanoma is one of the most aggressive tumor. The problem with its diagnosis raises from the lack of pigment in the cancer lesions. Thus, this type of melanoma is often detected at late stages ofthe disease. PFKFB3 is a kinase widely expressed in melanoma cells, responsible for its growth and metastatic properties of the cells. Novel small-molecule inhibitors such as 3PO are currently under evaluation for their potential use as the anti-neoplastic agents. In the current work, we investigated the biochemical toxicity of acetylsalicylic acid in human amelanotic melanoma cell lines using PFKFB3 kinase as a molecular cancer therapeutic target.

Aim of the study. We aimed to investigate the role of acetylsalicylic acid, as an inhibitor of PFKFB3, on human amelanotic melanoma cells (C32).

Materials and methods. Acetylsalicylic acid and 3PO (selective inhibitor) were docked to PFKFB3 structure obtained from Protein Data Bank and MMGBSA values were calculated accordingly. Molecular docking studies were performed in Maestro (Schrödinger). C32 cells were treated with different concentrations of acetylsalicylic acid. Treatment effects were assessed by measuring mitochondrial activity using the MTT assay. Caspase-3 Activity Assay was used to examine apoptotic activity. The studies were validated on 3D cell culture models.

Results. Our docking studies revealed that acetylsalicylic acid interacts in the same binding cavity of the protein as the selective inhibitors of the PFKFB# enzyme. The drug inhibits the kinase, hence the C32 cells undergo necrosis. Our studies show that acetylsalicylic acid induce a cytotoxic effect and promotes necrotic cell death. The same effects is also observed in 3D cell culture models as well.

Conclusion. Acetylsalicylic acid induces melanoma cell necrosis and promotes the reorganization of N-cadherin, thus may affect the epithelial to mesenchymal transition of the cell, simultaneously preventing from metastasis of the tumor. Our study suggests that acetylsalicylic acid exhibits anti-tumour properties by binding to the PFKFB3 inhibitory site and may be applicable as a promising therapeutic strategy.

CHAENOMELES JAPONICA AND VACCINUM MACROCARPON AS VALUABLE RAW MATERIALS WITH HYPOGLYCAEMIC EFFECTS

Authors: Szklanny D., Szustowski P., Szeląg M.

Affiliation: Poznan University of Medical Sciences, Poland

Tutor: Assoc. prof. Przemysław Zalewski, PhD, prof. Judyta Cielecka-Piontek, PhD

Introduction Japanese quince (Chaenomeles japonica) and cranberry (Vaccinum macrocarpon) fruit have been used in folk medicine for years. Due to their high content of polyphenolic compounds, it has been suggested that the use of these raw materials may prevent the progression of the initial stages of diabetes. In addition, large-fruited cranberries reduce the risk of bacterial infections by inhibiting bladder colonisation, which argues in favour of combining both raw materials.

The aim The aim of this study was to confirm the antioxidant and hypoglycaemic effects of fruit extracts of Japanese quince and large-fruited cranberry.

Methods & Materials DPPH, ABTS, CUPRAC and FRAP were used to evaluate the antioxidant activity of the extracts obtained by aqueous extraction. In vitro inhibition of α-glucosidase and α-amylase, enzymes responsible for polysaccharide degradation, was used to evaluate the antidiabetic potential.

Results The antioxidant activity of cranberries (CUPRAC $IC_{0.5}$ = 0.922 ± 0.059 µg/ml, FRAP $IC_{0.5}$ = 0.568 ± 0.012 µg/ml, DPPH IC_{50} = 2.191 ± 0.193 µg/ml, ABTS IC_{50} = 0.729 ± 0.055 µg/ml) and japanese quince (CUPRAC $IC_{0.5}$ = 0.556 ± 0.028 µg/ml, FRAP $IC_{0.5}$ = 0.077 ± 0.001 µg/ml, DPPH IC_{50} = 0.398 ± 0.004 µg/ml, ABTS IC_{50} = 0.214 ± 0.014 µg/ml) was compared with the standard – ascorbic acid (CUPRAC $IC_{0.5}$ = 18.153 ± 0.773 µg/ml, FRAP $IC_{0.5}$ = 9.179 ± 0.290 µg/ml, DPPH IC_{50} = 8.500 ± 0.591 µg/ml, ABTS IC_{50} = 4.266 ± 0.131 µg/ml). The inhibitory activity on α-glucosidase and α-amylase was also demonstrated (for cranberry: IC_{50} = 4.142 ± 0.316 mg/ml, IC_{50} = 2.78 ± 0.28 mg/ml; for japanese quince: IC_{50} = 0.139 ± 0,011 mg/ml, IC_{50} = 2.247 ± 0.238 mg/ml, respectively) and compared with results for inhibitory activity of acarbose (for α-glucosidase: IC_{50} = 3.435 ± 0,406 mg/ml, for α-amylase: IC_{50} = 0.020 ± 0.001 mg/ml).

Conclusions or Introduction On the basis of the results obtained, it can be concluded that both extracts can support the treatment of the initial symptoms of diabetes and their combination will carry additional health effects.

Acknowledgments Study was supported by a grant from Student Research Studies of Poznań University Of Medical Sciences (no. 074/2021)

DEVELOPMENT AND OPTIMIZATION OF MAGNOLOL-LOADED LIPID EMULSION FOR PARENTERAL NUTRITION

Author: Brzozowski J.

Affiliation: Poznan University of Medical Sciences, Poland

Tutor: Gostyńska A. PhD

Introduction: Magnolol is a polyphenolic active compound of Magnolia officinalis that possesses pleiotropic properties including anti-inflammatory, antioxidant, and anti-cancer. It is also known to act as a hepatoprotective agent in alcohol- and high-fat-diet-induced liver damage. Therefore, it is a promising active compound for the treatment of intestinal failure-associated liver disease in patients receiving parenteral nutrition.

Aim of the study: The study aims to develop and optimize magnolol-loaded lipid emulsion for parenteral nutrition.

Materials and methods: Magnolol in three different doses of 10, 20, and 30 mg was added to commercial intravenous lipid emulsion (Smoflipid) and horizontally shaken to incorporate it into the oil-in-water system and obtain sufficient loading efficiency (LE%). The design of experiments Box-Behnken model was used to optimize this process and investigate the influence of three independent variables (magnolol dose, shaking speed, and time of shaking) on the response variable namely, the mean droplet diameter of lipid emulsion and LE% of magnolol.

Results: Using the response surface model the optimum conditions of the incorporation process were selected. Under this conditions the magnolol-loaded intravenous lipid emulsion was characterized by the mean droplet diameter below 310 nm and LE% above 95%. The optimized formulation was characterized by sufficient stability and appropriate pH and osmolarity for intravenous administration.

Conclusion: The results indicated that magnolol can be incorporated into commercial intravenous lipid emulsion and administered intravenously as a component of parenteral nutrition. Such formulation can be a subject for further proof of concept studies including *in vitro* and *in vivo* investigations of its pharmacological properties.

SYNTHESIS OF DIBROMO- AND TETRABROMO- DERIVATIVES OF CURCUMIN WITH POTENTIAL APPLICATION IN ANTICANCER THERAPY

Authors: Potapskyi E., Łażewski D., Kuźmińska J.

Affiliation: Poznan University of Medical Sciences, Poland

Introduction: Curcumin is the main component of curcuminoid content in turmeric – a spice widely used in Asia made from ground rhizomes of *Curcuma longa* and is widely used in Ayurvedic medicine. Curcumin is nontoxic and exhibits a variety of therapeutic properties, including anti-inflammatory, antioxidant, analgesic, antiseptic and anticancer activity.

Aim of the study: The main part of this work is focused on design, development of the methods of synthesis, and study of physicochemical properties of new derivatives of curcumin. The structural modifications rely on introduction of bromine atoms into curcumin structure (beneficial in antibacterial activity and photodynamic activity), methoxy- and hydroxyethyl- groups (improvement of curcumin's poor solubility). Finally, the obtaining of curcumin-BF_2 complexes of proven anticancer activity.

Material and methods: The new compounds were synthesised by utilizing condensation of acetylacetone difluoroborinate complex with appropriate aldehyde, resulting in BF_2-curcumin complexes, in toluene and catalytic amounts of butylamine with reaction yield between 22 to 98%. In the next step free curcumins were obtained by decomposition of BF_2-curcumin complexes by microwave reaction with sodium oxalate in water-alcoholic solution with yield in range 25 to 46%.

Results: Ten new curcuminoid derivatives were obtained, of which 5 are free curcuminoids and 5 are their complexes with BF_2. Structure, purity and physicochemical properties of new compounds were examined by techniques including: 1D and 2D NMR (^{1}H, ^{13}C, ^{1}H-^{1}H COSY, ^{1}H-^{13}C HSQC, ^{1}H-^{13}C HMBC), mass spectrometry (Electrospray and MALDI ToF), UV-vis spectroscopy and high-performance liquid chromatography. Authors propose a theoretical mechanism forcondensation reaction resulting in BF_2-curcumin complexes.

Conclusions: The condensation reaction of appropriate aldehydes and acetylacetone difluoroborinate is a good and efficient way to synthesise new curcuminoids. These new compounds can be further studied for their biological activity.

INFLUENCE OF OBESITY ON HEMATOLOGICAL PARAMETERS AND THE VALUE OF PLASMA TROUGH CONCENTRATION OF OLAPARIB AT STEADY STATE (CTROUGH) IN PATIENTS WITH OVARIAN CANCER

Authors: Adamiak A., Szałek E., Stanisławiak-Rudowicz J., Urjasz H.

Affiliation: Poznan University of Medical Sciences, Poland

Tutor: prof. UM dr hab. n. farm. Edyta Szałek

Introduction: Olaparib belongs to an innovative group of anticancer drugs called poly ADP-ribose polymerase (PARP) inhibitors. In obesity, the pharmacokinetics of drugs often changes. What matters, the study of drug pharmacokinetics provides much information necessary for the ability to individualize a patient's pharmacotherapy, leading to a safer therapy, which is highly important in the treatment of oncology patients.

Aim of study: A study of the influence of obesity on hematological parameters and the value of plasma trough concentration of olaparib at steady state (C_{trough}) in patients with ovarian cancer. Samples were collected after the first cycle of pharmacotherapy (1 month).

Material and methods: 24 patients (S±SD: age 61.29 [10.96] years, BMI 27.32 [4.69] kg/m^2) with ovarian cancer participated in the study, treated with olaparib 2x300mg/24h tablets. Patients were divided into 3 groups: normal weight (n=8), overweight (n=9) and obesity (n=7) using the standard BMI index. Concentrations of olaparib in plasma were determined by HPLC-UV method; flow rate: 1mL/min, λ=254 nm. Neutrophil [/L] and hemoglobin [g/dL] levels were considered in the study. The severity of adverse effects was classified with the Common Terminology Criteria for Adverse Events (CTCAE) v5.0 scale. Potential drug interactions information was based on the drugs.com database.

Results: The method was validated showing good linearity (r= 0.9913), precision (CV%<13.3) and accuracy (90.3%-106.5%) in the concentration range of 100-5000 ng/mL. Mean values of olaparib C_{trough} were as follows [±SD]: normal weight 896.47 [±861.07] ng/mL; overweight 1248.21 [±902.54] ng/mL; obesity 1730.63 [±949.54] ng/mL (p=0.1258). Observed hematological side effects include: neutropenia (grade 1): normal weight (25%), overweight (33.3%), obesity (28.6%); anemia (grade 1 and 3): normal weight (37.5%), overweight (44.4%), obesity (57.1%). The effect of other drugs on olaparib concentrations was excluded.

Conclusions: No statistically significant differences in C_{trough} in patients with ovarian cancer were proved, but higher concentrations of drug were observed in obese patients. The association was noted between olaparib plasma trough concentrations in obese patients and frequency of hematological adverse reactions. Grade 3 of anemia was observed only in the group with obesity.

Acknowledgments This research was supported by the Poznan University of Medical Sciences (Grant SBN No.75/2021).

Ophthalmology, Laryngology and Dentistry

Scientific Committee

dr hab. Anna Bartochowska
dr n. med. Anna Chmielarz-Czarnocińska
lek. dent. Maciej Okła
lek. dent. Partyk Bober

Coordinator

Natalie Górna

Session Partner

proyou

Influence of selected restorative materials on environmental pH - in vitro study

Authors: Nowakowska Michalina, Misiaszek Maria, Woś Patryk, Lehmann Anna, Nijakowski Kacper, Surdacka Anna
Affiliation: Department of Conservative Dentistry and Endodontics, Poznan University of Medical Sciences

---

Background: In dental caries treatment, it is worth using such restorative materials that may limit plaque accumulation. The pH of the filling seems to be an important factor affecting the potential bacterial colonisation.

The aim of the study: To assess how selected restorative materials influence the environmental pH.

Materials and Methods: A total of 150 specimens (30 of each: Ketac Molar, Riva LC, Riva SC, Filtek Bulk Fill, and Evetric) were placed in 100 sterile hermetic polyethene containers with saline and stored in 37 °C. The pH of each sample was measured using the electrode Halo HI13302 (Hanna Instruments, Poland) at specific points in time for 15 days.

Results: The initial pH levels were significantly lower for glass ionomer cements (3.9–4.7) compared to composites (5.9–6.0). With time, the pH increased for samples with glass ionomer cements (by nearly 1.5), whereas it decreased for samples with composites (maximally by 0.8). In the end, all materials were in the pH range between 5.3 and 6.0. The highest final pH was obtained with Ketac Molar at about 5.9. Double samples had lower pH values than single samples, irrespective of the type of material.

Conclusions: Immediately after application, restorative materials decreased the environmental pH, especially light-cured glass ionomer cements. For glass ionomers, within two weeks, the pH increased to levels comparable with composites.

Direct Pulp Capping factors affecting the Polish dentist's decision – a questionnaire study

Authors: Zdrojewski Jakub, Nowak Monika, Nijakowski Kacper, Surdacka Anna
Affiliation:Department of Conservative Dentistry and Endodontics, Poznan University of Medical Sciences
Tutor: Prof. dr hab. n. med. Anna Surdacka

Background: Direct pulp-capping procedure is a treatment of exposed vital pulp with dental material to stimulate a reparative dentin and to maintain vital pulp.

The aim of the study: To assess the factors that affect the decision-making of direct pulp capping procedures amongst Polish dentists.

Materials and Methods: The survey involved 176 dentists, including 132 females and 44 males. The questionnaire was composed of three sections. The first part described the demographic features of the surveyed participants. The second part comprised questions on how treatment plans change according to the factors such as pulp perforation position, number, size, aetiology and patient's age. The third part concerned the common materials and techniques used in pulp capping treatment.

Results: The majority of respondents preferred DPC when the perforation size was under 1 mm. In carious pulp exposure, most of the participants chose invasive treatment. The most preferred material and technique in direct pulp capping treatment were MTA and definitive restoration-total caries removal.

Conclusions: Polish dentists prefer invasive methods in cases when the risk of failure is more probable. The decision of direct pulp capping is multifactorial - size, type of pulp exposure and the dentist's experience are the most important factors.

Myopic women's awareness of the ophthalmological indications of childbirth by caesarean section - analysis

Authors: Chryn Jakub, Skoczek-Wojciechowska Anna, Zalewska Natalia
Tutor: Ciszewska Joanna MD PhD

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

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

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

Results: In the study 409 women with myopia were included. Participants were asked if they agree that refractive error - mostly myopia is a contraindication of natural labour - 304 respondents (74,33%) agreed at least at some point with this sentence. Myopia was regarded as the most popular contraindication (160 answers - 52,63%), supposedly worsening the visual acuity irreversibly. Only 6 respondents (1,47 %) gave answers corresponding to the official indications. 139 (34,15%) respondents claimed that it had been suggested to them (by family, friends, Internet and 53 women (12,96%) advised by a physician) that there might be possible complications in the future. Only 12 women (out of 247 who previously gave birth) underwent a caesarean section due to ophthalmologic indications, of whom 7 due to myopia.

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

Advanced image analysis of digitized pathology slides in BAP1-mutant and BAP1-wildtype Uveal Melanomas

Authors: Steinbergs Korina, Dryden Ian, Bhaskhar Nandita, Alam Minhaj, Lin Jonathan H.
Affiliation: Biomedical Data Science, Stanford University, Electrical Engineering, Stanford University, Pathology & Ophthalmology , Stanford University

---

Introduction: Uveal melanomas (UMs) are categorized as low or high-risk tumors. High-risk metastatic UMs frequently harbor a BAP1 gene mutation, leading to nuclear BAP1 expression loss. High-risk UMs can show pronounced cytologic changes such as enlarged "cherry-red" nucleoli. Digital pathology tools can correlate cytologic and molecular changes.

Aim of the Study: To employ machine learning algorithms to investigate relationships between nucleolar features and BAP-1 expression on digitized UMs.

Materials and Methods: 5 digitized BAP1-mutant and 5 BAP1-wildtype UM H&E slides were measured using 2 methods:

1. Manual: Longest nucleolar diameter (LND) and number of nucleolar organizing regions (NOR#) was determined for 2000 tumor nuclei. A student *t*-test was performed to determine possible statistical differences between LND and NOR#.
2. Automated: The 10 UM slides were extracted as PNG files. Two algorithmic based deep learning techniques, defined as adaptive and custom thresholding, counted NOR# and calculated pixel areas. A student's t-test was performed to determine potential statistical difference between BAP1 status and the maximum NOR pixel area and NOR#.

Results:

1. Manual: Mean LND was 2.43 µm in BAP1-mutant and 2.15 µm in BAP1-wildtype. Mean NOR# was 1.4 in BAP1-mutant and 2 in BAP1-wildtype. Statistical differences between mean LND (P=7.65E-24) and mean NOR# (P=4.68E-47) was observed between the two groups.
2. Automated: In the adaptive thresholding technique, statistical differences between mean maximum NOR pixel area (P=1.01E-09) was observed between the two groups. Conversely, custom thresholding yielded strong statistical significance only between the mean NOR# in the two groups (P=6.76E-24).

Conclusions: The manual method demonstrated that BAP1-mutant UMs have larger nucleoli and fewer NORs than BAP1-positive UMs. Automated deep learning algorithms found

significant differences in nucleolar size as determined by NOR pixel area and NOR#. Refinement and incorporation of advanced image analyses on digital slides may allow for prediction of BAP1 status in UMs.

Application of microspectroscopy in analysis of the cornea in bullous keratopathy

Authors: Paweł Oszczędłowski [1], Przemysław Raczkiewicz [1], Piotr Więsyk [1], Arkadiusz Grunwald [1], MD Abdelrahman Nassasra [2]
1. Students 'Scientific Association at the Chair and Department of General and Pediatric Ophthalmology, 2. Chair and Department of General and Pediatric Ophthalmology
Tutor: Post-doctoral degree, PhD, MD Tomasz Chorągiewicz [2]

Introduction: Bullous keratopathy is a disease in which loss of endothelial cells of the cornea results in an excess fluid absorption. This leads to a creation of blisters that affect vision and results in a pain sensation. Infrared spectroscopy is a procedure in which material is tested for its absorption of different wavelengths of light. FTIR is a variant of the technique, in which using interference between waves and interpreting it with linear operator named Fourier transform is applied to obtain more accurate results in a shorter time. The technique can be used to analyse biochemical changes in the material.

Aim of the study: To find specific marker spectral ranges of electromagnetic wave that can be applied in diagnostics of bullous keratopathy

Material and Methods: Corneal sections from multiple radical keratectomies were collected, formalin-fixed and paraffin embedded and then cut into 9 μm thick slides. Corneal tissue not affected by the disease process served as a control group. Slides were analysed with microspectrometer FTIR Vertex 70 with focal plane array detector. The spectra were recorded in the range from 4000 cm^{-1} to 850 cm^{-1}, with 4 cm^{-1} resolution, 64 sample scans and 64 background scans.

Results: The performed spectral analyses allowed for the identification of the frequency ranges characterizing the spectral differences between the cornea in the course of bullous keratopathy and the normal cornea.

Discussion: Biochemical profile of the cornea changes in the course of bullous keratopathy. Therefore, identified spectral ranges of electromagnetic wave can be possibly used to develop a rapid diagnostic test based on Fourier Transform Infrared Micro Absorption Spectroscopy (FTIR)

Comparison of the profile of hospitalizations in the Department of Oral and Maxillofacial Surgery during the current restrictions related to the SARS-CoV-2 pandemic from October 24, 2020 to January 24, 2021 and during the corresponding period of 2019/2020

Authors: Kuśnierek Weronika Jacieczko Anna, Okła Maciej
Affiliation: Department of Oral and Maxillofacial Surgery, Poznan University of Medical Sciences

---

Introduction: The hospitalization profile in the Department of Oral and Maxillofacial Surgery in Poznań during restrictions related to the SARS-CoV-2 pandemic in comparision to the corresponding period in the year without restrictions.

Metarials and Methods: For our study, we collected data from the Department of Maxillofacial Surgery of the Poznan University of Medical Sciences at the Heliodor Święcicki Clinical Hospital from a period of 3 months from October 24, 2020, Because during that time all of Poland was in the so-called red zone i.e. new restrictions were imposed until January 24, 2021. We compared them with the same period at the turn of 2019/2020.
During data collection we took into account: the age of the patient, the diagnosis, the duration of surgery. We did not record data of surgeries that were not entirely completed and those that did not take place. We assigned each diagnosis to one of 8 surgery categories.

Aim of the study: The announcement of the COVID-19 pandemic by WHO took place on March 11, 2020. The vast majority of people in the world did not know how it would affect the functioning of the world around us. However, it is arguable that the medical community, was one of the communities that was mostly affected by the consequences of the new epidemiological situation. In our study, we investigated what impact the viral pandemic and its associated restrictions had on the hospitalization profile.

Results: In our study, we compared the collected data and based on this data we would like to present and answer the question whether there was a difference in the hospitalization profile due to the restrictions or not.

Conclusions: Through our work we were able to better understand and show the impact of pandemic and restrictions with it in medicine.

Internal Medicine with Cardiology

Scientific Committee

prof. dr hab. n. med. Dorota Zozulińska-Ziółkiewicz
dr hab. n. med. Bogna Grygiel-Górniak
dr hab. n. med. Nadia Sawicka-Gutaj
dr hab. Maciej Cymerys
dr n. med. Rafał Dankowski
dr n. med. Aleksandra Ciepłucha

Coordinators:

Julia Dzierla
Jakub Klamecki

Session Partners

FUNDACJA ROZWOJU KARDIOCHIRURGII
im. prof. Zbigniewa Religi

TERMEDIA
NOWE TRENDY W MEDYCYNIE
WWW.TERMEDIA.PL

Cell free DNA in COVID-19 diagnostics

Authors: Wacka E, Murkos M, Zgoła D, Stolińska M, Nowak P, Noga A, Wawrzyniak-Gramacka E, Kudliński B.

Affilation: Department of Anaesthesiology, Intensive Care and Emergency Medicine, University in Zielona Gora, Department of Applied and Clinical Physiology, University in Zielona Gora, Collegium Medicum, University in Zielona Gora

Tutor: dr hab. Agnieszka Zembron-Lacny, prof. UZ

Introduction. Neutrophils are the main cells of the innate immunity system. One of the mechanisms of neutrophils action is the formation of neutrophil extracellular traps (NETs). NETs are composed of nuclear chromatin, associated with nuclear histones and granular antimicrobial proteins. The main function of NETs is trapping and killing pathogens, such as viruses. The trapping within cell free DNA (cfDNA) prevents the spread of pathogens and facilitates the concentration of antimicrobial factors at the infection site [Tromb Res 2020]. The aim our study was to measure cfDNA in COVID-19 patients compared with non-infected individuals.

Material and methods. Clinical data of 40 non-vaccinated COVID-19 patients aged 55.1±17.6 yrs. and 40 vaccinated COVID-19 patients aged 67.3±13.4yrs. were collected from October 2021 to January 2022. Routine blood tests and clinical characteristics were recorded within the 1st hour of admission to hospital. The COVID-19 patients were compared to 40 non-infected and non-vaccinated individuals (69.1±3.0yrs.). The diagnosis of SARS-CoV-2 infection was confirmed by RT-PCR of a nasopharyngeal swab. The study protocol was approved by the Bioethics Commission at Regional Medical Chamber Zielona Gora, Poland (No. 01/163/2022), in accordance with the Helsinki Declaration.

Results. Non-vaccinated COVID-19 patients demonstrated a high concentration of cfDNA 1186±725ng/mL compared to vaccinated COVID-19 patients (917±331ng/mL) and healthy individuals (843±108ng/mL), which may aggravate immunoinflammatory reactivity according to Jylhävä et al. [Aging Cell 2013]. The other inflammatory variables such as NLR and SII exceeded the reference values in all patients and were significantly higher in COVID-19 compared to healthy individuals.

Conclusions. In the first Polish study including COVID-19 patients, we demonstrated that cfDNA derived from activated neutrophils may have a diagnostic value in the monitoring of COVID-19, being able to identify the patients at a higher risk of inflammatory state.

The relationship of cathepsin D with insulin resistance in type 1 diabetes mellitus

Authors: Konopacka K., Kaja M., Łukomska M., Wagner A.

Affilation: Department of Internal Medicine and Diabetology, Poznan University of Medical Sciences, Poland

Tutors: Grzelka-Woźniak A. MD, PhD, Uruska A. MD, PhD, DSc, prof. Zozulińska-Ziółkiewicz D. MD, PhD, DSc

---

Introduction: Type 1 diabetes mellitus (T1DM) is an autoimmune disease that leads to destruction of pancreatic beta cells, and thus insulin deficiency. Cathepsin D is a lysosomal aspartyl protease which fragments intracellular and extracellular proteins. Several studies have shown a positive correlation between increased concentration of circulating cathepsin D and indicators of insulin resistance (IR) among newly diagnosed people with type 2 diabetes (T2DM). Although IR is mainly associated with T2DM, it has been also shown to occur in T1DM.

The aim of the study: The aim of the study was to determine the association between cathepsin D concentration and decreased insulin sensitivity in T1DM.

Material and methods: The study group consisted of 39 adults with median (IQR): 13 (8-16) year history of T1DM aged (IQR): 32 (25-38) years and 23 healthy adults aged (IQR): 27 (23-34) years in the control group. To estimate decreased insulin sensitivity we used: estimated glucose disposal rate (eGDR) for T1DM and HOMA-IR for the control group. The level of cathepsin D we assessed with ELISA.

Results: In the T1DM group, eGDR median value was 9,43 (8,55-10,72) mgkg(-1)min(-1) and in the control group HOMA-IR median value was 1,99 (1,55- 2,48). The level of cathepsin D was significantly lower in T1DM than in the control group: 0,85 (0,47-1,52) ng/ml and 2,99 (1,67-4,22) ng/ml, $p<0,001$ respectively. In T1DM cathepsin D showed no correlation with indirect markers of IR like eGDR, WHR, BMI and DDI ($Rs<0,001$, $p=1,00$; $Rs=-0,02$, $p=0,89$; $Rs=0,05$, $p=0,79$; $Rs=-0,18$, $p=0,28$ respectively). Also when we divided the T1DM group into 2 subgroups according to median eGDR value, cathepsin D levels were not statistically significantly different: 1,03 (0,47-1,60) vs 0,67 (0,36-1,52) ng/ml ($p=0,93$).

Conclusions: In our study in T1DM, in contrast to the results of studies in T2DM, no correlation was found between the rates of IR or insulin sensitivity and the concentration of cathepsin D.

Relation between symptoms of insomnia, depression, sleep quality and disrupted circadian clock genes' expressions in inflammatory bowel disease

Authors: Ditmer M, Gabryelska A., Binienda A., Turkiewicz S., Małecka-Wojciesko E., Białasiewicz P., Fichna J., Talar-Wojnarowska R,. Sochal M.

Affilation: Department of Biochemistry, Uniwersytet Medyczny w Łodzi, Department of Sleep Medicine and Metabolic Disorders, Uniwersytet Medyczny w Łodzi, Department of Digestive Tract Diseases, Uniwersytet Medyczny w Łodzi

---

Introduction: Inflammatory bowel disease (IBD) patients often complain of low sleep quality and insomnia. Such sleep impairments might originate in disruption of circadian rhythm, regulated by expression of genes, such as CLOCK, NPAS2, NR1D1. Proinflammatory cytokines might disturb transcription of mentioned genes, contributing to sleep disorders.

Aim of the study: The study aimed to compare expressions of chosen circadian clock gens: CLOCK, NPAS2, NR1D1 between IBD patients with exacerbation and healthy controls in peripheral blood leukocytes (PBLs) and assess the association between levels of selected genes' expressions and disease severity, sleep quality, insomnia, depression.

Materials and methods: The study group consisted of 44 IBD patients (13 ulcerative colitis (UC), 31 Crohn's disease (CD)) and 19 healthy controls. Participants filled following questionnaires: Athens Insomnia Scale (AIS), Harvey-Bradshaw index, partial Mayo score (disease activity assessment), Beck's Depression Inventory (BDI), Visual Analogue Scale (VAS) and had venous blood drawn. Expression of studied genes was determined by qRT-PCR, following RNA isolation and cDNA synthesis. Genes' amplification was compared to the reference gene β-actin. Relative expression was calculated using ΔΔCt method.

Results: IBD group showed a decreased expression of CLOCK mRNA ($p<0{,}001$), NPAS2 mRNA ($p=0.001$), NR1D1 mRNA ($p<0.001$). CLOCK mRNA was negatively correlated with BDI ($p=0.006$, $r=-0.34$), AIS ($p=0.019$ $r=-0.32$), VAS ($p=0.005$, $r=-0.35$) and positively with TNF mRNA ($p<001$, $r=0.58$). NPAS2 mRNA was negatively correlated with BDI ($p=0.007$, $r=-0.34$), AIS ($p=0.007$, $r=-0.34$), however not with VAS or TNF mRNA. NR1D1 mRNA was negatively correlated with BDI ($p=0.002$, $r=-0.38$), AIS ($p=0.022$, $r=-0.28$), VAS ($p=0.005$, $r=-0.40$) and positively with TNF mRNA ($p<0.001$, $r=0.60$).

Conclusions: IBD might be associated with decreased expression of clock genes which might be associated with pain, insomnia and depressive symptoms. Reduced clock genes' expression can be related to severity of inflammation.

The use of GLP-1 receptor agonists and SGLT2 inhibitors as adjuvant therapy to insulin in type 1 diabetes mellitus- patients' experience

Authors: Primke M., Konopacka K.

Affilation: Department of Internal Medicine and Diabetology, Poznan University of Medical Sciences

Tutors: Duda-Sobczak A. MD, PhD, Uruska A. MD, PhD, DSc, prof. Zozulińska-Ziółkiewicz D. MD, PhD,DSc

---

Introduction: Use of adjuvant therapies with GLP-1 receptor agonists (GLP-1RA) and SGLT2 inhibitors (SGLT2i) in type 1 diabetes mellitus (T1DM) continues to increase.

The aim of the study: The aim of the study was to explore users' perspectives on perceived benefits and side effects of these therapies.

Material and methods: We conducted a structured telephone interview of adult patients with T1DM who were ever treated with a GLP-1RA or SGLT2i for >3 months. Patients were identified via query of personal data with manual confirmation of T1DM diagnosis. Interview questions were open-ended with responses grouped within predefined categories.

Results: We interviewed 43 people with T1DM who used SGLT2i and 6 who used GLP-1RA. 50% of GLP-1RA and 79,1% of SGLT2i users were on therapy at time of interview. We asked about reasons for treatment initiation- most common were improved glycemic control [5/6 (83,3%) vs 37/43 (86%) for GLP-1RA and SGLT2i users] and weight loss [2/6 (50%) vs. 15/43 (34,9%)]. 100% GLP-1RA and 97,7% SGLT2i users achieved ≥1 benefit attributed to these therapies. Most commonly patients reported improved glycemic control [5/6 (83,3%) vs. 39/43 (90,7%), for GLP-1RA and SGLT2i users] and weight loss [3/6 (50%) vs. 18/43 (41,9%)]. Side effects perceived to be related to the therapy were more commonly reported by GLP-1RA vs SGLT2i users (66,7% vs. 39,5%); 50% of GLP-1RA users experienced gastrointestinal side effects while 18,6% of SGLT2i users reported urinary tract and/or mycotic infections. DKA was reported by 2 (4.7%) SGLT2i users and no GLP-1RA users. Of all GLP-1RA users, 2/6 (33,3%) discontinued therapy due to side effects vs 3/43 (6,7%) of SGLT2i users.

Conclusions: Most patients with T1DM treated with adjuvant therapy with GLP-1RA or SGLT2i report benefits and are willing to continue such treatment. DKA remains a clinical concern in SGLT2i users and they should be closely monitored.

Effect of exogenous insulin on thyroid volume in adults with type 1 diabetes

Authors: Jaz K., Zawalna N., Rogowicz-Frontczak A., Zozulińska-Ziółkiewicz D., Uruska A.
Affilation: Scientific Group of Diabetology, Poznan University of Medical Sciences
Department of Internal Medicine and Diabetology, Poznan University of Medical Sciences

Introduction: Insulin is a hormone known for its anabolic activity. It has been widely reported in the literature that insulin stimulates the proliferation of a wide variety of cells including thyrocytes. Several studies have shown that thyroid volume is usually larger in type 1 diabetes compared with healthy controls. Less is known about the etiology of this observation.

The aim of the study: To investigate the association between exogenous dose of insulin and thyroid volume in type 1 diabetes.

Methods: 85 adult participants with type 1 diabetes's course longer than 1 year were enrolled into a prospective, cohort study. The primary outcome was to measure the correlation between dose of exogenous insulin on thyroid volume. All participants were treated with intensive insulin therapy regimen and used a continuous subcutaneous infusion pump. During 3-month observation period, we obtained a mean daily dose of insulin from every participant. We also collected the blood samples and tested for: TSH, fT3, fT4, HbA1c, anti-TPO and anti-Tg. We performed ultrasound examination of the thyroid gland and measured thyroid volume based on three-dimensional measurements. We also divided the participants to two groups: the longer (>11 years) and the shorter diabetes duration.

Results: The was no statistically significant correlation between mean daily dose of insulin and thyroid volume (rho=0.003,p=0.98).Despite a weak positive correlation between daily dose of insulin and TSH (rho=0.23,p=0.03), no other significant correlations were found. After excluding patients with positive thyroid antibodies, no relationship was found between the daily insulin dose and thyroid volume. We did not find a relationship between the daily dose of insulin per kilogram of body weight and the thyroid volume. There was no association between thyroid volume and duration of type 1 diabetes.

Conclusions: Daily dose of insulin is not associated with thyroid volume in adult participants with type 1 diabetes.

This research was supported by the Poznan University of Medical Sciences (Grant SBN No. 79/2021).

The link between sst2 peptide levels and prognosis in hospitalized patients diagnosed with heart failure with reduced ejection fraction

Authors: Waśniewski F., Sawczak F., Kukfisz A., Szczechla M., Krysztofiak H., Przytarska K.

Affiliation: I Department of Cardiology, Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu, Poland

Tutors: Marta Kałużna-Oleksy MD PhD, Magdalena Dudek MD PhD

Introduction: Heart failure with reduced ejection fraction (HFrEF) remains a difficult problem in everyday practice. With its still poor prognosis new ways of controlling need to be developed. In recent years the multimarker approach is gaining importance. One of the most promising candidates seems to be the soluble receptor for interleukin-33 (IL-33) - sST2 peptide.

The aim of the study: The aim of the study was to find connections between serum sST2 level and prognosis in patients with chronic HFrEF.

Methods: 33 consecutive patients hospitalized due to HFrEF were included in the study. The chosen clinical, biochemical and echocardiographic parameters were analyzed. Additionally the sST2 level was assessed with a commercially available rapid ST2 test.

Results: The Study group consisted of 9.1% women, mean age was 55.3 ± 10.0 years, sST2 level - 49.84 ± 37.02 ng/ml. The patients were divided into two groups according to the sST2 level with a cutoff point of 40 ng/ml. During median follow-up of 332 days (interquartile range 217-387, maximum 410 days) 10 (30%) patients reached the composite endpoint (all-cause death or hospitalization due to HF exacerbation), 3 (9%) died. Prognosis in group 1 (with sST2 > 40 ng/ml, n=15) was worse (Log rank test p=0.017) than in group 2 (with sST2 < 40 ng/ml, n=18), endpoint reached 53% in group 1 and 11% in group 2. Group 1 had a higher level of NT-proBNP than group 2 (5954 ± 5168 pg/ml and 878 ± 727 pg/ml respectively, p<0.001). Two significant correlations were found: between sST2 and NT-proBNP and between sST2 and the distance in the 6 Minute Walk Test (Spearman's Rank Correlation, R=0.573, p=0.0006 and R=-0.517, p=0.0165 respectively).

Conclusions: sST2 seems to be a promising predictor of long-term prognosis in hospitalized patients with HFrEF.

Retrospective trial comparing intrahospital outcomes after true coronary bifurcation

Authors: Bolsteina E.
Affiliation: Faculty of Medicine, University of Latvia, Latvia

---

Introduction: PCI for bifurcation disease is known to be technically challenging and has historically been associated with lower procedural success rates and worse clinical outcomes than non-bifurcation lesions.

The aim of the study: The aim of the study was to evaluate procedural complications of patients who underwent PCI for bifurcation lesions involving main vessel and side branch with diameter more or equal 2.5 mm.

Methods: A retrospective analysis of the ongoing Coronary Bifurcation Treatment registry in Latvia Centre of Cardiology (PCI performed from 01.01.2017. to 31.08.2021.). Study population was divided into two groups: provisional single – stenting and systematic double – stenting. Intrahospital outcomes were compared between groups.

Results: A total 569 patients with true bifurcation were included in this study. 464 patients in 1 stent group and 105 in 2 stent group. Procedural complications were perforation (1 stent 0% (n=0) vs 2 stent 1% (n=1), p=0.185), side branch occlusion (1 stent 2.6 % (n=12) vs 2 stent 1 % (n=1), p=0.479), no reflow phenomenon (1 stent 0.2% (n=1) vs 2 stent 0% (n=0), p=0.797). Intrahospital complications were cardiogenic shock (1 stent 0% (n=0) vs 2 stent 1% (n=1), p=0.185), early stent thrombosis (1 stent 0% (n=0) vs 2 stent 1% (n=1), p=0.185, periprocedural myocardial infarction (1 stent 4.1 % (n=19) vs 2 stent 5.7 % (n=6), p=0.436). Creatine kinase-MB levels 24h after PCI were measured in 179 patients. Creatine kinase-MB levels more than 3 times above upper normal limit (1 stent 5.3 % (n=7) vs 2 stent 12 % (n=3), p=0.487). Creatine kinase-MB levels more than 5 times above upper normal limit (1 stent 8.3 % (n=11) vs 2 stent 4 % (n=1), p=0.726.

Conclusions: Procedural complication rate in the treatment of true coronary bifurcation lesions was low. There was one case of early stent thrombosis in systematic double stenting technique group.

Assessment of virtual reality in morphometric analysis of tetralogy of Fallot

Authors: Helman M., Ludew A., Topuzov N.
Affiliation: Department of Descriptive and Clinical Anatomy, Medical University of Warsaw, Poland
Tutor: Adam Koleśnik MD

Introduction: Tetralogy of Fallot (ToF) is a common cardiac malformation resulting in changes in right ventricle proportions and geometry. Most studies regarding the morphometry rely on fixed specimens or CT scans. More complex studies have been analysed using 3D reconstructions, 3D-printing and more recently virtual reality.

The aim of the study: The aim of our study was to assess the value of direct virtual reality volume rendering in morphological measurements in patients with ToF.

Methods: The study involved 10 CT scans of paediatric patients with ToF performed prior to treatment which were rendered directly in virtual reality using VMersive software. The patients' age at the time of the CT scan ranged from 0 to 294 days (median=34). The measurements involved: width of outlet septum (OS), length of the right ventricle, diameters of RVOT, pulmonary trunk (PT), the aorta at the level of outlet septum and sinotubular junction (STJ) and the length of the PT. Subsequently following proportions were calculated: RVOT diameter to the whole infundibulum, RVOT length to the total length of the RV and PT to RVOT length.

Results: All measurements were possible to be performed in VR reconstructions, the mean time of analysis being 36 min. Results of the measurements were as follows: mean OS width – 3.9 mm, mean RVOT diameter – 6.69 mm, RVOT length – 12.33 mm, right ventricle length – 43.13 mm, subaortic diameter – 12.76 mm. RVOT diameter comprised 0.28 of the infundibulum, RVOT length comprised 0.26 of the total RV length and PT to RVOT length proportion was 1.42.

Conclusions: Volume rendering of DICOM files in virtual reality can be used for morphological assessment of ToF and possibly other congenital heart defects. The authors consider the method of virtual rendering to be more intuitive and easier to learn. The method also allows for analysis of three-dimensional anatomy without time consuming 3D-modeling and 3D-printing.

Public Health

Scientific Committee

prof. dr hab. n. med. Jacek Wysocki
dr n. med. Ewelina Chawłowska
dr n. o zdr. Barbara Czech-Szczapa

Coordinator

Zofia Radek

Session Partner

SYLVECO

DOES CHANGING THE MODE OF STUDY OR WORK TO REMOTE, CHANGE EATING BEHAVIOR AND THE LEVEL OF PHYSICAL ACTIVITY?

Authors: Górska Paulina, Górna Ilona, Miechowicz Izabela, Przysławski Juliusz
Affiliation: Chair and Department of Bromatology, Poznan University of Medical Sciences
Department of Computer Science and Statistics , Poznan University of Medical Sciences

Introduction: In order to control the spread of the SARS-CoV-2 virus, preventive measures were taken, including the change of the work and learning mode to remote. As a consequence, the lifestyle of many people has changed. Does changing the mode of study or work to remote, change eating behavior and the level of physical activity?

Aim of the study: The aim of the study was to show whether there is a correlation between changing the mode of study or work to remote and eating behavior and the level of physical activity.

Material and Methods: From April to July 2020, an online survey was conducted in which 921 people took part. As a research tool, the proprietary questionnaire was used, which consisted of a part concerning sociodemographic data, eating behavior, physical activity, changes in the life situation during a pandemic.

Results: In the group of students, snacking between meals was observed more often - 51.13% (p= 0.0019) and higher consumption of sweets - 45.11% (p =0.0001), salty snacks - 30.83% (p = 0.0019) and fried dishes - 18.8% (p = 0.0001). At the same time, an increase in the level of physical activity was observed (32.33%, p = 0.0035). In the case of people who changed their working mode to remote work, an improvement in the regularity of eating meals was noted (38.86%, p =0.0015) and greater ease of compliance with nutritional recommendations (due to weight loss and / or disease) implemented before the pandemic - 11.75% (p=0.0283).

Conclusions: It can be assumed that the changes introduced during the pandemic affect young people more. Comparing them with the results in the group of people who changed the mode of work, it can be concluded that in young people there are additional factors that determine this state of affairs.

THE DIAGNOSIS OF CONGENITAL ANOMALIES IN POLAND IN THE XXI CENTURY BASED ON THE DATA FROM THE POLISH REGISTRY OF CONGENITAL MALFORMATIONS (PRCM)

Authors: , Marta Andrzejewska, Bartosz Nowak, Jakub Czarny, Mateusz Zawileński, Julia Dzierla
Affiliation: Student Research Group of Medical Genetics, Chair and Department of Medical Genetics, Poznan University of Medical Sciences, Poznan University of Medical Sciences
Tutors: prof. Anna Latos-Bieleńska, MD, PhD; Katarzyna Wołyńska PhD

Introduction: Genetic diagnostics is one of the clue elements of congenital malformations counseling. According to the National Health Fund protocol, karyotype examination is the first and recommended method. Other accessible methods are MLPA (multiplex ligation-dependent probe amplification), Sanger sequencing and next-generation sequencing panels. From autumn 2022 onwards, aCGH (array comparative genomic hybridization) and next-generation sequencing will be reimbursed. It can change the involvement of molecular techniques application in congenital malformations diagnostics compared to the situation before their reimbursement.

Aim: The study aims to analyze methods used to diagnose congenital anomalies in Greater Poland in 2019.

Materials and Methods: The data on the patients with congenital malformations registered in Greater Poland in 2019 were extracted from the PRCM and Medical Genetics Centre GENESIS. The statistical analyses were performed using R programming language.

Results: Out of 1209 children born with congenital malformations, 115 were under genetic care. In total, genetic diagnostics was performed in 59 patients, out of which 52 had karyotype examination, 1 - FISH, 1 - MLPA, 1 - aCGH prenatally and 5 were diagnosed with another molecular method. In multiple malformations subgroup, 11 cases were diagnosed with karyotype examination and 1 with MLPA. In 4 Turner syndrome cases, karyotype examination was sufficient in 2 cases. 1 child was still undergoing genetic testing, while the other was diagnosed with complete sex reversal (46,XY). Concerning Down syndrome, 36 patients were diagnosed with karyotype examination, while 3 needed in-depth analysis (FISH, CGH, cffDNA). 4 children with other chromosomal aberrations were genetically tested, 3 of them had a karyotype examination and 1 was performed an unknown test.

Conclusions: Despite the vast development of genetic diagnostic methods, karyotype examination remains the primary method used to diagnose congenital malformations. However, we observe the application of other molecular techniques. It allows suspecting their increasing importance in the future.

GENDER DISCRIMINATION AMONG FEMALE STUDENTS OF MEDICAL PROFESSIONS

Authors: Gładyś Aleksandra, Danel Justyna, Gugała Katarzyna, Gutowska Klaudia, Kozłowska Hanna, Osmola Małgorzata
Affiliation: Polki w medycynie, Medical University of Warsaw; Będąc Młodym Lekarzem, Medical University of Warsaw; Będąc Młodym Lekarzem, Medical University of Silesia; Polki w medycynie, Medical University of Silesia

Introduction: Although women represent the majority of medical professionals in Poland, gender discrimination against them is a common issue. We present the first study on discrimination against females in Polish healthcare.

Aim of the study: To estimate the scale of discrimination against Polish female students at medical universities and to determine its impact on their career plans.

Material and methods: 1340 female healthcare professionals including 491 students (mostly studying medicine [73.5%], nursing [8.5%] and midwifery [4.5%]) answered our online questionnaire consisting of 42 questions regarding the experiences of gender discrimination.

Results: 85.5% of surveyed students considered gender discrimination a common problem among medical communities in Poland, and 65.6% experienced it themselves. The main forms of discrimination included: stereotypical jokes (99.1%), comments on female physiology (94.1%) and sexual allusions (90.3%). 61.1% of discriminated students experienced unwanted physical contact, 23.3% received a sexual offer in work/study place. Participants were principally victims of abusive behavior of male lecturers (84.2%, more often at medical faculties, $p=0.001$) and male patients (70.8%). Female medical students experienced discrimination more often compared to other students in healthcare ($p=0.001$), more frequently declared changing institution ($p=0.04$) or career plans ($p=0.03$) due to their experiences. Nursing/midwifery students were more often discriminated by female supervisors ($p=0.02$), experienced questions regarding family planning ($p=0.02$), different requirements regarding male and female outfits ($p=0.02$), and were asked for distinct tasks because of their gender ($p=0.003$) compared to other students.

Conclusions: Discrimination against women in medicine is a major issue among Polish students. The verbal form of discrimination is the most prevalent. Medical students experience sexism at universities, whereas among nursing/midwifery students discrimination occurs frequently at their workplace compared to other students in healthcare.

CONNECTION BETWEEN THE QUALITY OF LIFE IN UNIVERSITY AND MENTAL HEALTH OF MEDICAL STUDENTS IN POLAND

Authors: Kuca Julia, Limanówka Piotr , Szczuraszyk Aleksandra, Łacwik Julia , Laska Julia
Affiliation: Department of Environmental Medicine and Epidemiology, Medical University of Silesia, Faculty of Medical Sciences in Zabrze
Tutor: Janusz Kasperczyk, PhD, DSc

Introduction: Students' mental health disorders are widespread, but it seems the issue is not researched enough.

Aim of the study: The aim of the study was to identify possible causes of depressive and anxiety disorders and the level of drowsiness among medical students in Poland.

Materials and methods: The online questionnaire was used to gather data. 2339 completed questionnaires were collected. The original questionnaire contained 4 parts: student's life, Beck's depression test, GAD-7 general anxiety questionnaire and Epworth Slippiness Scale.

Results: 65% of respondents reported a lack of free time for any non-university activity. Out of which, 70.56% achieved a moderate or severe depression result and 55.14% a moderate or severe anxiety. 43.6% of students spend more than 4 hours per day on studying and the learning effects are satisfactory for only 10.5% students. Only 11.1% of participants were satisfied with their university lives, although 50.4% of subjects have an average score between 4,01 and 5,00. Out of those who were not satisfied with their lives at university, as many as 94.03% showed signs of moderate or severe depression. Subjects with an average score of <3.00 in 82% had worse results in Beck's test and 68% had moderate or severe anxiety.Students who were satisfied with their lives at university have more often declared non-university activities and achieved better results in ESS, Beck's test and GAD-7.

Conclusions: Overload of responsibilities often caused problems with non-university activities. According to our research, those aspects have a significant impact on well-being and students' mental health. It would therefore be useful to learn time management and revision of the teaching overload.

DENTAL HEALTH LITERACY AMONG PREGNANT WOMEN

Authors: Gawłowska Barbara, Giernaś Bogusz
Affiliation: Department of Preventive Medicine, Poznan University of Medical Sciences
Tutor: Ewelina Chawłowska, PhD

Introduction: Health literacy (HL) is not a well-known and commonly raised term in Poland. It includes knowledge and ability to find, understand and apply health information to make decisions improving health. Health literacy studies are not conducted very often but it is an issue of a great importance as well as health education and health promotion.

The aim of the study: The aim of the study was to asess dental health literacy level of pregnant women and identify their health behaviours in oral hygiene and knowledge of dental health issues.

Material and methods: The study was conducted in 32 maternity wards in the Wielkopolska's Region. It consisted of 400 pregnant women (mean age 29.51, median age 29). The research method was a face to face interview conducted by the trained interviewer. The study was based on self-developed questionnaire on health literacy and oral hygiene health behaviours of adults and children. It included 29 health literacy, knowledge and behaviour questions and questions about demographic data. The survey results associations were examined by the Chi-squared test with a p=0.05 significance level using the TIBCO STATISTICA 13.3.121.0.

Results: Over 86% of women know that brushing teeth prevents dental caries but only 5,5% do it after every meal and 76% of women brush their teeth twice a day regularly. The association between education level and the sum of the knowledge scores of the health literacy is statistically significant (p=0,00).

Conclusions: Most pregnant women which participated in the study have intermediate level of health literacy, knowledge and behaviours. Having children and high education level increase knowledge about oral hygiene. However, examining health literacy and promoting oral hygiene is needed.

OCCUPATIONAL BURNOUT AMONG PARAMEDICS IN POLAND THROUGHOUT THE COVID-19 PANDEMIC - DEMOGRAPHIC DIFFERENCES AND COVID-RELATED CONTRIBUTING FACTORS

Authors: Zyzańska Julia, Liu Wei-Ling, Bhagat Srishti
Affiliation: Medical Psychology and Medical Communication, Medical University of Warsaw
Tutor: Magdalena Łazarewicz, MA, PhD

Introduction: The COVID-19 pandemic has significantly increased workload for all frontline healthcare workers, particularly the often-overlooked paramedics. This unprecedented situation brought with it many factors that affect burnout and mental fatigue, which in turn affect the quality of care given by workers.

Aim of study: The aim of this study was to explore the factors affecting occupational burnout amongst Polish paramedics, and to determine which individuals were most significantly affected through a socio-demographic lens.

Materials and Methods: Self-reported data from a web-based sample of Polish paramedics (N=80, 69% male) was collected during the fourth wave of the COVID-19 pandemic. The questionnaire consists of various socio-demographic (gender, age, years worked, financial situation and living situation) and burnout-assessing questions, including the Oldenburg Burnout Inventory (OLBI) and a set of original questions tailored specifically to the pandemic. Data was analyzed using SPSS Statistics 28.0.

Results: The only socio-demographic factor that was positively correlated with the level of occupational burnout was the participants' dissatisfaction with their financial situation ($r=.21$, $p=.05$); otherwise, paramedics showed a similar level of burnout regardless of their demographic differences. The COVID-related risk factors that did significantly correlate with occupational burnout were lack of compensation ($r=.36$, $p=.001$), increased workload ($r=.29$, $p=.01$), discrimination ($r=.24$, $p=.05$) and conflicts at work ($r=.24$, $p=.03$), stress stemming from patient interactions ($r=.22$, $p=.05$), new worker turnover ($r=.23$, $p=.04$), and the lack of information at the beginning of the COVID-19 pandemic ($r=.26$, $p=.02$).

Conclusions: While the prevalence of burnout amongst Polish paramedics is high, the only socio-demographic factor to correlate with increased burnout throughout the pandemic is the self-reported financial situation. Workers from all ages and backgrounds were equally affected by the new conditions that the pandemic brought to work. Rather than any socio-demographic factors, it is the situation itself that has had a significant effect in the incident of burnout in paramedics.

MISINFORMATION, FEARS AND ADHERENCE TO PREVENTIVE MEASURES DURING THE EARLY PHASE OF COVID-19 PANDEMIC IN POLAND

Authors: Nowak Bartosz, Miedziarek Cezary, Pełczyński Szymon, Rzymski Piotr
Affiliation: Department of Environmental Medicine, Poznan University of Medical Sciences; Student Research Group of Anaesthesiology and Intensive Therapy, Department of Anaesthesiology and Intensive Therapy, Poznan University of Medical Sciences; Student Research Group of Paediatric Surgery, Department of Paediatric Surgery, Traumatology and Urology, Poznan University of Medical Sciences; Student Scientific Club of Clinical Immunology, Department of Pathomorphology and Clinical Immunology, Poznan University of Medical Sciences
Tutor: prof. Piotr Rzymski, MD, PhD

Introduction: The COVID-19 pandemic has caused major economic and social disruptions and has overwhelmed the healthcare systems. It has also been accompanied by the unprecedented scale of misinformation and flood of false news — the phenomenon for which the World Health Organization (WHO) has coined the term "infodemic".

Aim of the study: The aim of the study was to assess the awareness of COVID-19 preventive measures, the level of fears related to the COVID-19 pandemic and beliefs in conspiracy theories associated with COVID-19 in the sample of adult Poles.

Material and methods: Online cross-sectional study of adult Poles (n=1337) assessed the frequency of COVID-19 preventive behaviours, fears related to the COVID-19 pandemic and beliefs in COVID-19-related conspiracy theories during the early phase of the COVID-19 pandemic when the nationwide lockdown was imposed (April 2020).

Results: Results show that 22% of surveyed admitted not to wash their hands frequently, while 12% did not use disinfectants. On the opposite, these two behaviours were more frequent in individuals with medical education. The highest levels of pandemic-related fears were associated with health loss in relatives, pandemic-induced economic crisis and the government using a pandemic to control citizens by the state. A significant share of surveyed individuals believed that the pandemic was an intentional action to weaken non-Chinese economies (32%) or was deliberately induced for profits from selling vaccines (27%). Men, individuals with no children and subjects with lower education were significantly less likely to adhere to sanitary measures and were less concerned over self and relatives' health. At the same time, men were less prone than women to the conspiracy theories related to the COVID-19 pandemic.

Conclusions: The results indicate that adherence to sanitary measures during the pandemic can be a challenge in developed countries, while misinformation campaigns (also concerning

vaccines) have already affected the general public during the early phase of the epidemiological outbreak.

BODY COMPOSITION PHENOTYPES (SARCOPENIA, OBESITY, SARCOPENIC OBESITY) - ASSOCIATIONS BETWEEN NUTRITIONAL STATUS AND DIETARY NUTRIENT INTAKE IN COMMUNITY-DWELLING OLDER ADULTS IN POLAND - PRELIMINARY RESULTS

Authors: Murawiak Marika, Szymczak Weronika, Korytowska Wiktoria, Krzymińska-Siemaszko Roma
Affiliation: Department of Palliative Medicine, Poznan University of Medical Sciences; Medical Department, Poznan University of Medical Sciences

Introduction: Some evidence shows a link between the nutritional status, dietary nutrient intake and the progression of body composition changes associated with aging (loss of muscle mass and strength, accumulation and redistribution of adipose tissue). These changes promotes the development of pathological phenotypes of body composition, which are a health burden in the elderly.

The aim of the study: Analysis of the relationship between the nutritional status, dietary nutrient intake and the body composition phenotypes in elderly.

Material and methods: 86 community-dwelling older adults (≥60years) were included to this analysis. The participants were divided into 4 groups according to body composition phenotype. Sarcopenia was identified according to the EWGSOP2 guidelines (polish cut-off points for low muscle mass), obesity as BMI≥30kg/m2, and SO as a combination of obesity with low muscle mass (ALM/BMI: women<0.512; men<0.789) and low muscle strength. Lack of sarcopenia and obesity were defined as "normal" phenotype. Nutritional status was assessed by MNA-full questionnaire and the dietary nutrient intake by analysis of current consumption (minimum 3 days), using the Diet6.0 program. Consumption of nutrients was compared with the RDA (Food and Nutrition Institute recommendation; 10% deviation was considered the norm).

Results: Sarcopenia, obesity, SO and "normal" phenotype were diagnosed in 10.5%, 23.2%, 8.6% and 54.7% of participants, respectively. Nutritional status was different between phenotypes(p=0.0018), with the lowest MNA results in sarcopenia. Differences were also noted in the consumption of protein per kg of body weight (the highest for sarcopenic participants;p=0.001) and calcium intake (the lowest for obese subjects;p=0,04). Participants with sarcopenia had more frequent deficiencies in i.a.: iron, zinc, vitamin E, C, B12 (statistically non-significant).

Conclusions: Sarcopenia was associated with the worst nutritional status. Consumption of some nutrients differed among phenotypic groups, however, the development of specific nutritional interventions requires further research.

IMPACT OF POLICIES IN NUTRITION AND PHYSICAL ACTIVITY ON DIABETES AND ITS RISK FACTORS IN THE 28 MEMBER STATES OF THE EUROPEAN UNION

Authors: Nellamkuzhi Noel Johny
Affiliation: Public Health, Faculty of Medicine, University of Debrecen
Tutor: Dr Orsolya Varga, MD, ML, PhD

Introduction: In 2019, Diabetes mellitus (DM) has been estimated to be the ninth leading cause of death, by the World Health Organisation, with DM directly causing approximately 1.5 million deaths worldwide. Government policies facilitating lifestyle changes are among several different interventions implemented, in order to prevent the prevalence of DM. Since the implementation of these policies, there is limited evidence supporting the correlation between the rate of prevalence in DM and the beneficial impact of these policies. Factors such as lifestyle choices, demographic and socioeconomic status, within the member states of the EU are considered.

Aim of the study: To investigate the effectiveness of policies in nutrition and physical activity, national diabetes plans and national diabetes registers on DM prevalence.

Materials and methods: World Cancer Research Fund International's NOURISHING and MOVING policy databases and the European Coalition for Diabetes report "Diabetes in Europe policy puzzle: the state we are in", were the databases used for collecting information in this study. Using the European Health Interview Survey 2014, data on individuals with DM, socioeconomic status and healthy behaviour were retrieved. Analytical methods used include point-biserial correlation to measure the strength of association and multilevel logistic regression to estimate the rate of DM prevalence.

Results: Within the 28 European member states, many different types and numbers of policies were enforced, with varying results. Due to EU legislation (Regulation (EU) No 1169/2011), all EU member states enforce nutritional label standards. In this study, the correlation between the preventive policies and DM prevalence was weak. Even with a high number of preventative policies implemented, the rate of occurrence for DM did not show a significant reduction.

Conclusion: The presently implemented policies did not show a significant reduction in the rate of DM incidence. More aggressive policy measures need to be implemented in many different areas to achieve this goal.

THE ASSESSMENT OF EFFECTIVENESS OF FOOD IMAGES AS DIETARY INTAKE RECORDS IN TELE-DIETETICS – PRELIMINARY RESULTS.

Authors: Gawrońska Martyna, Dąbrowska Dominika , Lewandowicz Marta
Affiliation: Palliative Medicine, Poznan University of Medical Sciences

Introduction: The method of patient's regular food diary is helpful for dietetics. However, patients while describing their food during the day, do not always know specific measures and can make mistakes. In case of some products these anomalies might be significant and have a huge impact upon the ultimate supply of calories.

The aim of the study: The aim of the study was to check if taking photos of food products may play a complementary role to the ongoing method of keeping a food diary and be useful for professionals assessing nutrition of their patients. In Poland there is still not enough research on this topic. It was assumed that people connected to the nutrition sector can assess the food grammage more precisely than people not connected to this sector.

Material and methods: Respondents were asked to assess the grammage of products presented in 60 pictures. Preliminary results was based on replies from 153 people, out of whom 76 were not linked to the nutrition sector. For the sake of the analysis 16 products were chosen: a big apple, a pepper, olive oil, an avocado, salmon, crisps, peanut butter, jam, a tomato, nuts, candies, rice, wafer (candy bar), tuna, yoghurt, mashed potatoes, burger sauce.

Results: As for the group of dieticians the best results were achieved in case of peanut butter, olive oil and salmon. The worst results were achieved with a big apple, avocado and crisps. As for the group of people not linked to dietetics the best results were achieved with yoghurt, mashed potatoes, and olive oil. The worst results, however, in case of a big apple, avocado and tuna.

Conclusions: Preliminary results showed that the method of taking pictures of food products may be complementary to keeping a regular diary method. Still, however, further studies in this field are needed.

METHODS OF UNPROVED OR UNCERTAIN EFFECTIVENESS USED BY PATIENTS WITH ATOPIC DERMATITIS-ANONYMOUS ONLINE SURVEY

Authors: Mesjasz Alicja, Trzeciak Magdalena
Affiliation: Dermatological Students Scientific Association, Department of Dermatology, Venereology and Allergology, Faculty of Medicine, Medical University of Gdansk; Department of Dermatology, Venereology and Allergology, Faculty of Medicine, Medical University of Gdansk
Tutor: Magdalena Trzeciak, MD, PhD, Associate Professor

Introduction: Atopic dermatitis (AD) is a common, chronic, recurrent dermatosis. It often decreases the quality of life and leads to frustration of both patients and their families. Patients with AD look for various therapeutic options, including nonconventional ones.

The aim of the study: The aim of the study was to identify the most common practices of unproved or uncertain effectiveness which are commonly used by patients with AD.

Material and methods: 94 patients completed an anonymous survey created in Google Forms. The average age of a patient was 7,4 year-old. The questionnaire was divided into 3 parts; demography, level of trust to the sources of information about AD and the most common practices of unproved or uncertain effectiveness selected via publications and online support groups for patients.

Results: After professional medical advice, the internet is the most common data source about AD among patients. 79,6% of those surveyed look for information about AD in online support groups, 61,8% on blogs. 76,8% of respondents assess the reliability of their information resource about AD as 7 or more in 10 points scale. Vegetable oils are very popular, 32,3% of those surveyed use black seed oil, 23,7% coconut oil. 28,4% of patients use various bee products, 34,4% cannabinoids and 80,4% probiotics for easing skin manifestations of AD. 18,9% of respondents have homeopathic consultations. 39,7% assess the effectiveness of conventional medicine as a 7 in 10-points scale, in comparison to 37,4% of those believing in the effectiveness of home methods in easing symptoms of AD.

Conclusions: This research shows a multitude of practices of unproved or uncertain effectiveness which are used by patients with AD. Dissemination of reliable sources of information and insightful conversations in doctor's offices about using methods, seem to be important.

PERCEPTION OF ACNE VULGARIS IN SECONDARY SCHOOL ADOLESCENTS – A SURVEY STUDY

Authors: Kobus Urszula, Nizgorska Julia, Trzeciak Magdalena
Affiliation: Dermatological Students Scientific Association, Department of Dermatology, Venereology and Allergology, Medical University of Gdansk; Department of Dermatology, Venereology and Allergology, Medical University of Gdansk
Tutor: Magdalena Trzeciak, MD, PhD, Associate Professor

Introduction: Acne vulgaris is one of the most common inflammatory skin diseases. Despite its widespread prevalence among teenagers it may be a reason for social and psychological problems.

Aim of the study: The aim of the study was to assess the perception of skin lesions which occur in the course of acne vulgaris in the group of secondary school adolescents.

Material and methods: An anonymous survey was conducted using Google Forms. A total of 113 secondary school students, of both genders, unaffected and acne-affected individuals participated in the study. Statistical analysis was performed using the chi-square test, assuming a statistical significance level of $p<0,05$.

Results: 113 respondents participated in the study – 83 women (73,5%) and 30 men (26,5%). The median age was 17 years. At the time of the study, 63 patients (55,8%) had acne vulgaris and 19 patients (16,8%) could not say whether they had this disease. 66,4% of respondents claimed that people affected with acne are considered less attractive than other people. 23% of participants believed that acne-affected teenagers can be less accepted by their peers and 57,5% thought that acne can make it difficult to make new acquaintances. The face was considered the most unfavorable localization of acne vulgaris (86,7%). 26,5% of surveyed teenagers retouched their photos before posting on the Internet. 80,7% of secondary school adolescents claimed that condition of their skin affects their well-being. 77,9% of respondents believed that additional education on skin diseases is required and 79,6% thought that it could help to accept their appearance. In the scale 1-10 average importance given to acne vulgaris was scored 6,81.

Conclusions: Acne vulgaris affects the self-esteem of secondary school adolescents. Better education on the subject of skin diseases could help young people struggling with acne vulgaris to accept their appearance and may contribute to a better understanding among their peers.

CLINICAL AND BIOMECHANICAL RECOVERY AFTER ANTERIOR SHOULDER INSTABILITY TREATED WITH OPEN LATARJET PROCEDURE - PROSPECTIVE STUDY

Authors: Rauhut Sebastian, Niziński Jan , Partyka Alicja , Duda Cezary , Ślężak Marta , Wałecka Joanna, Cisowski Paweł, Kaszyński Jakub, Lubiatowski Przemysław
Affiliation: Department of Traumatology, Orthopaedics and Hand Surgery University of Medical Sciences in Poznan, Poznan University of Medical Sciences, Rehasport Clinic
Tutor: prof. Przemysław Lubiatowski, MD, PhD

Introduction: In Open Latarjet (OL) surgical technique the coracoid process is transferred to the front of the glenoid. The indication for this procedure is a critical glenoid bone loss.

Aim: The aim of this study was to evaluate clinical and functional recovery of patients after OL procedure.

Material and Methods: The group of 22 patients, who underwent OL procedure, was evaluated by the range of motion (ROM) and shoulder function using scales: UCLA and WOSI. The isokinetic profile of the shoulder was tested in external rotation (ER) and internal rotation in 4 months (m) and 6m after procedure. Data was collected prior to the operation and in one year follow-up (FU) in 2m, 4m, 6m and 12m.

Results: The deterioration of ROM was observed between preoperative examination and 2m FU by 14,34-64,55% ($p<0,001$). There was a significant improvement in ROM by 17,82-111,18% ($p<0,007$) between 2m and 4m FU and no further progress after 4m. UCLA and WOSI scales presented gain between preoperative and 4m by 29,27-47,48% ($p<0,021$), albeit there were no significant changes in further examinations. There was a minor, nevertheless significant improvement in isokinetic profile between 4m and 6m ($p<0,0043$) in ER peak torque-to-body-weight (PT/BW) at 360°/s . There was no significant improvement in other examined isokinetic parameters.

Conclusion: After OL procedure patients present worsening of function in 2m after the operation. The crucial progression of ROM and function appears between 2m and 4m, without any following significant upgrade. The isokinetic progress was slow and partial. Significant strength deficit remained also after 6m.

WHICH METHOD OF THE RADIOLOGICAL MEASUREMENT OF THE ANGLE OF CURVATURE IN IDIOPATHIC SCOLIOSIS IS THE MOST RELIABLE FOR AN INEXPERIENCED RESEARCHER?

Authors: Wiliński Patryk, Zawieja Wojciech, Piekutin Aleksandra, Dmowska Klementyna, Zglinicki Hubert, Janusz Piotr
Affiliation: Department of Spine Disorders and Pediatric Orthopedics, Poznan University of Medical Sciences

Introduction: Idiopathic scoliosis is a three-dimensional spinal deformity. It occurs in patients during development. The severity of deformity is assessed on anteroposterior radiographs based on the measurement of the angle of curvature. There are several measurement methods of the angle of curvature. Among them, the Cobb method is considered the standard. However, when the patient has severe deformation, this measurement seems to be difficult for inexperienced researchers.

Aim: The aim of the examination was to determine which of the three measurement methods Cobb (CB), Ferguson (FR), and Centroid (CN) has the best repeatability and reliability when the measurements are made by inexperienced researchers.

Methods: Three researchers (from the student research group) measured the angle of spine curvature on x-rays of the entire spine in standing anteroposterior view in 50 patients with severe idiopathic scoliosis qualified for surgery. Cobb, Ferguson, and Centroid methods were used. One of the researchers repeated all examinations twice at 3-week intervals. The measurements were compared with each other using the intra-class correlation coefficient (ICC) method. Values less than 0.5 are indicative of poor reliability, values between 0.5 and 0.75 indicate moderate reliability, values between 0.75 and 0.9 indicate good reliability and values greater than 0.90 indicate excellent reliability.

Results: The ICC (interrater) between the researchers' measurements was 0.9387 for CB, 0.9169 for FR, and 0.9061 for CR. Whereas the ICC (intrarater) between measurements taken by a single researcher was 0.9824 for CB, 0.9088 for FR, and 0.9546 for CR.

Conclusions: The above results show that Cobb angle measurement method is the most reliable for measuring the curvature angle of the spine for novice researchers. Although it seems to be difficult to measure, it provides the most repeatable results.

KNOWLEDGE AND ATTITUDES OF PREGNANT WOMEN TOWARDS NUTRITION DURING PREGNANCY

Authors: Woźniak Dagmara
Affiliation: Department of Bromatology, Poznan University of Medical Sciences

Introduction: Mother's nutrition during pregnancy, eating behaviors, and the knowledge of healthy eating habits significantly impact the proper child's development. Pregnant women's diets should be well-balanced and adjusted to individual needs. An optimal supply of macronutrients, micronutrients, and vitamins during the pre-contraceptive period, pregnancy, and lactation positively affect intrauterine growth and the mother's health.

Aim of the study: The study aimed to evaluate pregnant women's awareness and attitudes towards proper nutrition in pregnancy and its impact on the child's development. The study was conducted through a questionnaire.

Material and Methods: The questionnaire was available online on various Facebook groups, forums, and websites concerning nutrition during pregnancy. Three hundred sixty-three women, 20-43 years old, participated in this study. The survey was conducted in Poland from 2019 to 2021.

Results: The most popular source of information on nutrition during pregnancy was the Internet (73%). Other popular sources included physicians, dietitians, and nurses (17%). 16% of women did not search for information on nutrition during pregnancy. 37% of future mothers claimed to constantly search for new information on nutrition. 89% of women paid attention to their nutrition during pregnancy. The vast majority of them motivated it by concern for the proper development of their child and the belief that nutrition has a significant impact on it. 87% of mothers modified their diet during pregnancy mainly by eating more vegetables and fruits or excluding potentially unsafe foods from their diets. Dietary supplementation was also popular - 93% of women took supplements.

Conclusions: The knowledge of healthy eating during pregnancy of the women in this study was satisfactory. The verification of the ability to apply theoretical knowledge in practice may constitute the basis for future research.

Surgical Case Report

Scientific Committee

dr hab. n. med. Joanna Jackowska
dr hab. n. med. Małgorzata Leszczyńska
dr n. med. Magdalena Richter
dr n. med. Mateusz Wichtowski
dr n. med. Patrycja Sosnowska-Sienkiewicz
dr n. med. Krzysztof Szmyt

Coordinator

Camilla Wegrzynowska
Bartosz Lastowiecki

Session Partners

moodsy

MEDUSES

Foreign body retrieval in the anatomically complex region of the pterygopalatine fossa

Authors: Sandoval Jessica, Tan Yu Fung Nigel
Affiliation: ESRA Maxillofacial Surgery Research Group, Poznan University of Medical Sciences
Clinical Department of Maxillofacial Surgery, Poznan University of Medical Sciences
Tutors: Aleksy Nowak MD, Łukasz Słowik DDS, and Chairman Dr hab. Krzysztof Osmola, DDS, MD, PhD

Background: The pterygopalatine fossa is a cone-shaped connection from the infratemporal fossa to the nasal cavity, located posteriorly to the maxillary sinus, containing the maxillary nerve. Due to the complex anatomy, surgical access and removal of foreign bodies are difficult. Access to the pterygopalatine fossa can be achieved by multiple methods; open approach, through the orbit, endoscopic endonasal approach, and the Caldwell-Luc method. The Caldwell-Luc method involves entry to the maxillary sinus through the frontal wall. This method can be followed by removal of the posterior wall of the maxillary sinus to gain access to the pterygopalatine fossa.

Case Report: A man presented with a fragmented right eyeball and metallic foreign body in the pterygopalatine fossa from a recreational explosion. The resulting injury left the patient with no vision and abnormal sensation in the maxillary nerve innervated region. The foreign body measured RL12mm, AP4mm, CC17mm on CT imaging. Entry to the fossa was accomplished using the Caldwell-Luc method followed by removal the posterior wall of the maxillary sinus. The first retrieval surgery was unsuccessful, leading to the surgeons placing a titanium screw as a visual marker for further imaging. The next day, during a second surgery, the foreign body was located based on the level of the screw and subsequently removed.

Conclusions: There were many considerations to determine the appropriate surgical approach and access point for removal. An objective was to minimize damage to branches of the facial nerve as seen with open access surgeries. Removal of the injured eye would have allowed for an orbital approach. The removal was not preformed despite the eye injury being an indication for enucleation to avoid sympathetic ophthalmia of the healthy eye. Finally, the surgeons decided on the Caldwell-Luc method for entry to the fossa based on their experience, equipment, and risks of alternative surgical access methods.

Upper gastrointestinal bleeding as an unusual manifestation of localized menetrier disease with underlying lipoma

Authors: Kmiecik Michal
Affiliation: Central Endoscopy Unit, Heliodor Swiecicki Clinical Hospital, Poznan University of Medical Sciences
Tutor: Pawel Samborski MD, PhD

Background: Menetrier disease is a rare condition, reported in a few hundred cases. It manifests itself through enlarged gastric folds, gastrointestinal symptoms (abdominal pain, nausea, vomiting) and protein loss, but asymptomatic disease can also occur. Diagnosis is confirmed by histopathological examination of a biopsy taken from the affected mucosa. This report presents an unusual case of localized Menetrier disease, elevated by submucosal lipoma and thus looking like a polypoid mass, which caused an episode of upper gastrointestinal bleeding.

Case Report: Esophagogastroduodenoscopy was performed in a 76-year-old male patient after an episode of upper gastrointestinal bleeding, manifesting as fatigue and melaena. A large polypoid mass (7x5 cm) with enlarged mucosal folds was found in the body of the stomach, localized between lesser curvature and posterior wall. Small ulcer on the distal end of the mass was diagnosed as the source of bleeding. Biopsy was negative for neoplasia. CT scan showed a submucosal lesion, most likely a lipoma, beneath the affected mucosa. The mass was removed en bloc with endoscopic submucosal dissection. Final pathology determined that the mass included Menetrier disease and submucosal lipoma. This coexistence could be the reason why the lesion was more bulky and thus more exposed to mechanical damage. The patient remains under observation.

Conclusions: In Menetrier disease, mucosal folds are typically enlarged in the whole body and fundus of the stomach, with spared antrum. However, several cases of localized disease have been reported. Gastrointestinal bleeding has also been reported as a very rare manifestation of Menetrier disease. Therefore, it should be considered in differential diagnosis of gastric tumors and upper gastrointestinal bleeding.

A rare case of intenstinal malrotation in a 17-year-old female

Authors: Labrzycka Anita, Czech M
Affiliation: Department of Pediatric Surgery, Poznan University of Medical Sciences, Student Research Group of Pediatric Surgery, Poznan University of Medical Sciences
Tutor: Patrycja Sosnowska- Sienkiewicz, MD, PhD

Background: Intestinal malrotation is a congenital aberrancy of midgut rotation during development. The estimated frequency of the defect is 1 in 500 live births. It is usually diagnosed in the neonatal period. Thick bands of peritoneum - Ladd's bands- are the main cause of duodenal obstruction. Malrotation in adults may present in an acute way due to midgut volvulus or may have a chronic course with recurrent vomiting and abdominal pain. Contrast-enhanced CT is the investigation of choice.

Case Report: 17-year old female was admitted to the hospital emergency department with continuous abdominal pain and vomiting. The patient was sent home with suspected gastritis. The pain persisted. After four days, the patient returned to the hospital. The ultrasound revealed accumulated food content in the stomach and unspecified changes of the intestines. The patient was transferred to a children's hospital. Due to the diagnostic concerns and suspicion of an embolism of the superior mesenteric artery in computed tomography angiography, an exploratory laparotomy was performed. Almost a complete necrosis of the small intestine was confirmed. The entire small intestine and 1/3 of the large intestine were removed. The small intestine was anastomosed to the thick end to the side using the Bishop-Koop method and a stoma in the left epigastric region was established.

Conclusions: Traditional teaching suggests that as many as 75% of patients with malrotation present within the first year of life. However, more recent investigations have shown that malrotation is increasingly identified in adults. Mortality rates in adults and children range from 0-14%. Higher rates are seen in cases with acute onset of midgut volvulus, delayed diagnosis, or the presence of intestinal necrosis. In addition, the parenteral nutrition required in this case has negative consequences. Therefore, this differential should be kept in mind not only in infants.

Boerhaave syndrome complicated by subsequent esophageal stenosis and esophageal fistula

Authors: Kwiatkowska Natalia, Kamińska Alicja, Kasprzyk M, Sielewicz M
Affiliation: Department of Thoracic Surgery, Poznan University of Medical Sciences

---

Background: Spontaneous rupture of the esophagus, known as Boerhaave syndrome, is an uncommon disease with a high mortality rate. The underlying cause of this condition is most commonly increased intraluminal pressure during vomiting. It has a nonspecific presentation, with abdominal or chest pain often as the only symptom, delaying diagnosis and treatment. Here we report a case of Boerhaave syndrome complicated by subsequent esophageal stenosis and esophageal fistula.

Case Report: A 32-year-old male was admitted to the Intensive Care Unit due to acute respiratory distress syndrome. He was diagnosed with esophageal perforation and transferred to the Thoracic Surgery Department. Moreover, the patient presented with diabetic ketoacidosis and esophageal candidiasis. His medical history revealed pancreatitis, alcohol abuse, methamphetamine and marijuana use. The patient underwent esophageal repair with omental pedicle flap transplantation via right-sided thoracotomy. Additionally, a gastrostomy and jejunostomy were performed. Postoperative computed tomography with oral contrast detected no esophageal leakage. Follow-up gastroscopy after a month revealed esophageal stenosis below the perforation suturing. Therefore, a self-expanding esophageal stent was implanted. Later, due to esophageal fistula, the stent was removed via laparotomy and endoluminal vacuum therapy was applied. The postoperative course was further complicated by Clostridium difficile infection.

Conclusions: Alcohol abuse is a well-known risk factor for Boerhaave syndrome. In that case, uncompensated diabetes also could have been the underlying cause. Presumably, acute candidiasis and likely methamphetamine-induced esophagitis aggravated his condition. Since the nonspecific presentation, it is crucial to determine patients with risk factors and add Boerhaave syndrome to differential diagnosis early on. Due to rare occurrences and various manifestations, the management of Boerhaave syndrome is not standardized. Considering the complexity of the disease and many possible complications, the patients always require multidisciplinary care.

Unusual presentation of Early stage squamous cell carcinoma of the tonsil along with massive malignant infiltration of the supraglottis

Authors: Kamińska Alicja, Kwiatkowska Natalia,
Affiliation: Department of Otolaryngology - Head and Neck Surgery, Poznan University of Medical Sciences
Tutor: Leszczyńska Małgorzata, MD, Dr. Hab

Background: Tonsil cancer represents the leading form of oropharyngeal tumors with the following risk factors: smoking, alcohol consumption and HPV infection. These patients are at high risk of developing a second primary tumor occurring in head and neck regions and the lungs. Here, we present a case of tonsil and supraglottic cancer with massive malignant infiltration to all three sections of the larynx.

Case Report: A 68-year-old female underwent the resection of left palatine tonsil cancer and subsequent chemo and radiotherapy due to squamous cell cancer. Two years later she was admitted to the Department of Otolaryngology - Head and Neck Surgery for laryngeal mass, difficulty swallowing and edema. Her past medical history included leukoplakia of right buccal mucosa. Moreover, the patient presented with pericardial tamponade, psoriasis, thyroid insufficiency and hypertension.
The microlaryngoscopy was performed under general anesthesia. The lesion extended from the supraglottis to the lateral pharyngeal wall. Due to the recurrence, total laryngectomy and resection of the hypopharynx and cervical esophagus was performed – the operation proved non-radical. Reconstruction in the form of flap surgery was performed. The histopathological examination revealed p16 + laryngeal squamous cell carcinoma. Taking into account the clinical data of the patient it is most likely a neoplastic spread from the left palatine tonsil.

Conclusions: The clinical differentiation between a second primary tumor and a local recurrence in the nearby anatomical region is based on the distance and the time interval. There are two mechanisms describing this phenomenon: minimal residual disease and the field cancerization concept. The first relates to unnoticed tumor cells which may have stayed behind the surgical margins, and the second points to premalignant mucosal changes, also coined as ‘fields’ often surrounding the primary tumors. Field cancerization may be a potential reason for this unusual presentation of massive malignant infiltration in a patient which previously had good prognostic factors.

Pneumomediastinum Resultant of Isolated Oral-Maxillofacial Trauma- Case Report

Authors: Olesya Marushko HBSc, Olena Marushko RDH, and Sylvia Wyzga BSc
Affiliation: Chair and Department of Maxillofacial Surgery Poznan University of Medical Sciences Doctoral School of Poznan University of Medical Sciences, Poznan University of Medical Sciences, Poland
Tutors: Aleksy Nowak MD, Łukasz Słowik DDS and Chairman Krzysztof Osmola, DDS, MD, PhD

Background: The clinical manifestation of visceral injury pneumomediastinum is rarely attributed secondary to facial trauma. Limited surgical literature has documented this correlation. Herein, we present an atypical case of pneumomediastinum consequent to oral maxillofacial trauma.

Case Report: This case study documents a 23-year-old male admitted to the emergency department of Szpital Kliniczny im. Heliodora Święcickiego in Poznan, due to a beating. The panoramic radiograph determined a fracture of the ramus of the mandible from the angle to the coronoid process without displacement. In addition, neck and craniofacial CT showed a fracture of the posterior wall of the left maxillary sinus with small invagination to the lumen of the sinus and confirmed large emphysema of soft tissue of left mesenteric space, left infratemporal fossa and both parapharyngeal spaces to the mediastinum. Furthermore, the chest CT scans demonstrated the presence of a small pneumomediastinum in the upper and lower mediastinum to the level of trachea furcation. Pneumomediastinum was treated with amoxicillin and clavulanic acid as prophylaxis. Two days after, no sign of pneumomediastinum was detected, and intermaxillary fixation was placed. The follow-up appointment and recovery were uneventful.

Conclusions: This patient's identifying findings and scans alluded to post oral-maxillofacial trauma air spread, causing subcutaneous emphysema and pneumomediastinum. The entrance route was postulated as the fracture of the posterior wall of the left maxillary sinus. Forced air through isolated facial injury can disseminate into the prevertebral potential space and fascial planes, causing emphysema in the face and mediastinum. A complete diagnostic examination is required to detect pneumomediastinum. Common symptoms upon physical examination may appear inconclusive; for instance, frequent pneumomediastinum indication, Hamman's sign, was not reported. Despite the atypicality of pneumomediastinum in oral maxillofacial isolated traumas, they are present and require vigilant diagnosis and proper treatment modalities as presented in this case.

Ultrasound-guided percutaneous cryoablation for treatment of phantom limb pain – a case report

Authors: Zuzanna Nogaj, Martyna Kania, Dawid Woszczyk
Affiliation: Student Research Group of Neurosurgery, Poznan University of Medical Sciences, Poland
Tutor: Jeremi Kościński, MD, PhD

Background: Phantom limb pain (PLP) is a distinct type of pain occurring in patients who underwent amputation, predominantly involving the lower extremity. Its exact pathophysiology remains unclear. Pain management is growing in importance in Poland, inter alia due to the systematically increasing number of people with diabetes and its complications. Typical treatment options include pharmacotherapy, surgical intervention, psychotherapy, neurostymulation, but here we present cryoablation as a rarely reported but effective method.

Case report: A 58-year-old male was referred to a neurosurgery department due to PLP coexisting with residual limb pain (RLP) in the stump after a right-sided below-the-knee amputation (performed in 2003). On admission, he reported unbearable pain (VAS 10). His medical history was significant for diabetes, hypertension, alcohol dependence and nicotinism. Thus, he developed intermittent claudication. He underwent angioplasty twice. Due to iatrogenic thrombosis of the right lower limb, amputation was performed. Directly afterwards he reported increasing PLP. Pain management pharmacotherapy was based on tramadol (a dose of up to 600 milligrams). After using a prosthesis for 8 years, he gave it up due to increasing PLP and subsequently RLP with hyperalgesia. A surgical revision of the stump was performed, with no pain reduction. An MRI revealed a tibial nerve neuroma, on which ultrasound-guided percutaneous cryoablation was performed under local anesthesia, with no complications. Immediately after the procedure, the patient reported only mild pain (VAS 3), no adverse events, and his daily dose of tramadol was reduced. At a 6-years follow-up, the patient consequently reports a decreased level of pain (VAS 6) with a lowered daily dose of tramadol.

Conclusions: This study indicates that ultrasound-guided percutaneous cryoablation is a safe, effective, and economical approach for PLP treatment, associated with a low complication rate. Nevertheless, randomized clinical trials are needed to evaluate further the method's efficacy.

Vulvar melanoma in a patient with a history of dysgerminoma – diagnostic challenge

Authors: Kamila Jaz, Mikołaj Zaborowski PhD
Affiliation: Scientific group of gynecologic oncology, Poznan University of Medical Sciences, Poland
Department of Gynecology, Obstetrics and Gynecologic Oncology, Division of Gynecologic Oncology, Poznan University of Medical Sciences, Poland
Tutor: Mikołaj Zaborowski PhD

Background: Vulvar melanoma is an aggressive malignancy that develops in a hardly noticeable location that results in a poor prognosis. The distinct biology of this tumor and its low differentiation makes it difficult to distinguish from other tumors, especially in patients with a history of another gynecological cancer.

Case Report: 44-year old female was admitted to the hospital because of the excessive vaginal bleeding. She also complained of dyspareunia and difficulty passing stool for 3 months. During her first pregnancy in 1997, the patient was diagnosed with FIGO stage III dysgerminoma of the ovary and was treated with a right adnexectomy, resection of left adnexal tumor and omentectomy at thirteen weeks gestation, followed by a 7 cycles of chemotherapy (regimen: cisplatin, vinblastine, bleomycin) after delivery. She achieved complete remission in 1998. Due to the current symptoms, we performed a vaginal examination that revealed 8 cm pathological mass arising from the posterior vaginal wall. Magnetic resonance imaging showed a pathological mass located between a vulva and a rectum and no signs of enlarged lymph nodes. The biopsy was performed and immunohistochemistry analysis revealed immunoreactivity of Melan-A, vimentin, CD117 and a partial reaction of HMB-45 and S-100 in the cancer cells, which confirmed the diagnosis of melanoma. During hospitalization, the patient complained of paresthesias of the right extremities. Chest computed tomography revealed a solitary pulmonary nodule. The head magnetic resonance imaging was negative for metastases but revealed a lesion on the scalp that underwent contrast enhancement suggestive of primary focus of melanoma.

Conclusions: Primary or metastatic melanoma should be included in the differential diagnosis of vulvar tumors.

Repeated horse kicks to the face with similar fractures

Authors: Olena Senyk, Nicholas Alejski, Anastasiya Hajduk
Affiliation: ESRA Maxillofacial Surgery Research Group, Poznan University of Medical Sciences, Poland
Clinical Department of Maxillofacial Surgery, Poznan University of Medical Sciences, Poland
Tutor: Aleksandra Nowak MD., Łukasz Słowik DDS., Krzysztof Osmola, DDS. MD. PhD

Background: Mandibular fractures account for a large portion of maxillofacial injuries and the forms of treatment are still a subject of discussion among physicians. The objective of this clinical case report is to highlight the unique case of repeated fractures of the mandibular body and the condyles sustained under comparable circumstances.

Case Report: An 18 year old female was admitted with facial asymmetry, edema and pain upon palpation of the condylar processes and the mandibular corpus. Her injuries were a result of a kick to the face by a horse. A craniofacial CT showed a fracture of the right and left condylar processes with displacement, a fracture of the anterior wall of the external acoustic canal, and a midline fracture of the mandibular corpus. Osteosynthesis of the mandibular corpus and the repositioning and osteosynthesis of the right and left condylar processes were performed. Mandibular plates were removed six months post surgery against medical advice, but the condylar plates remained in place. 14 months after the first admission, the patient suffered another kick to the face by the horse. She was readmitted with a fractured mandibular corpus and the left condylar process in the same location as before. Osteosynthesis of the mandibular corpus and right condylar process was performed. Upon the first follow up, there was no damage to the facial nerve function and the patient had normal occlusion. Additionally, feeling sensation to the V3 nerve was normal.

Conclusion: This case was particularly distinct because the mechanism of injury was identical in both instances. As a result, the types of fractures and surgical intervention were also comparable. Analysis of this case provides valuable information for future treatment and management of similar injuries.

Multiple ovarian tumors in an adolescent girl with the clinical manifestation of hirsutism and obesity

Authors: Hanna Michalak, Alicja Kamińska, Patrycja Sosnowska-Sienkiewicz PhD
Affiliation: Department of Paediatric Surgery, Traumatology and Urology, Poznan University of Medical Sciences, Poznań, Poland., Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu, Poland
Tutor: Patrycja Sosnowska-Sienkiewicz PhD

Background: Non-epithelial ovarian cancers (NEOC) are very rare ovarian tumors which represent only 10-15% of all ovarian cancers and occur in all age groups. Two most frequently occuring NEOC are germ cell tumours (GCTs) and sex cord-stromal cell tumours (SCSTs). Less than half of these NOEC secrete hormones which produce either estrogenic or androgenic manifestations. Hyperandrogenic manifestations include hirsutism, menstrual irregularity and abnormalities, deepening of voice and loss of female body contours.

Case report: A 13 years old female patient was admitted to the Department of Pediatric Surgery due to a right ovarian cyst. Girl from fraternal twin pregnancy, born in 40 week of pregnancy with a birth weight 3000g. The patient already underwent the resection of a right ovarian benign tumor. The new cyst on the left ovary was noticed in the follow-up ultrasound. Laparoscopic surgery under general anesthesia was performed. Access to the operated site was difficult because of the girl's obesity. The cyst was fenestrated and during the procedure on the bottom of the first cyst, a second cyst was discovered. Fluid was collected from the cysts and then both of them were resected. Within the greater omentum, one solid lesion 4-5 cm was found and removed. The histopathological examination showed benign non-epithelial lesions. CA125 marker test was negative. After the operation, due to hirsutism and being overweight, an endocrine consultation was performed. Girl achieved 24 points in Ferriman–Gallwey score.

Conclusions: The clinical manifestation of the patient indicates hyperandrogenism and polycystic ovarian syndrome. The patient underwent the laparoscopic resection of the left ovary due to ovarian cancer and subsequently two more cyst on the right ovary and fallopian tubes were found and removed. Some types of ovarian tumors can be correlated with either abnormal hormonal activity or abnormal sexual development. Evaluation of serum tumor markers and karyotyping can assist in differential diagnosis.

Mediastinal carcinoma of a 24-year-old female patient- a surprising histopathological diagnosis- case report

Authors: Jan Błaszczyk, Oliwia Burdan, Mikołaj Margas, Monika Żybowska, Katarzyna Szklener MD
Affiliation: Student Scientific Association by Department of Clinical Oncology and Chemotherapy, Medical University in Lublin, Lublin, Poland, Medical University in Lublin, Poland
Student Research Group at the Clinic of Lung Diseases and Paediatric Rheumatology, Medical University of Lublin, Lublin, Poland, Medical University in Lublin, Poland
Department of Clinical Oncology and Chemotherapy, Medical University in Lublin, 8 Jaczewski Street 20-090 Lublin, Poland, Medical University in Lublin, Poland
Tutor: Katarzyna Szklener MD

Introduction: Mediastinal tumors are growing in the area of the chest that separates the lungs. NUT carcinoma (NC), also known as (NMC) midline carcinoma, is a type of very rare squamous cell cancer that can grow anywhere in the body, usually found in the head, neck, and lungs. It mostly occurs in the ages 17-23 years and has got unknown origin. During the early stage of mediastinal cancer, there are no perspicuous symptoms but later many symptoms emerge in the infected individual such as insomnia, headache, loss of appetite and fatigue. We would like to present a case report about a female patient, which presented unspecific symptoms and the histopathologic diagnosis was problematic for the clinical management.

Case report: The patient presented to the Emergency Room of progressive weakness, fever, feeling of dyspnea and tachycardia that had been present for about a week. The diagnostic stay in the Thoracic Surgery Department unit ended with isolation in the COVID unit. Mediastinotomy was performed from lesions and the first histopathological result was commissioned. The patient was transferred to the Institute of Oncology in Lublin and performed another biopsy and examination. Preliminary result showed: atypical Ewing sarcoma of mediastinum with suspicion of lymphoma. The final test result is under review with numerous consultations, however everything points to NUT carcinoma. Treatment methods, consequences and possibility of survival will depend on the patient's condition.

Conclusions: NUT carcinoma is a very rare, hard to diagnose disease. It is also very resistant to standard chemotherapy treatment and very aggressive. Due to uncommon symptoms and so few NC patients the 2-year survival rate is about 30%. Mediastinal cancers can be diagnosed in many ways, such as history, physical examination, chest X-rays and biopsy. Overall there is a mean survival of 6-9 months.

Gastric perforation after intragastric balloon extraction

Authors: Żelazo Daniel, Wiśniewska Monika
Affiliation: University of Warmia and Mazury in Olsztyn, Studenckie Koło Naukowe Chirurgii Ogólnej, Małoinwazyjnej i Wieku Podeszłego

---

Background: The intragastric balloon system is one of the available options for the treatment of morbid obesity. The procedure is generally considered to be safe and efficacious for short-term weight loss, however major complications have been described. We report a case of a gastric perforation following endoscopic removal of an intragastric balloon.

Case Report: A 67-year-old patient admitted to Department of General, Minimally Invasive and Elderly Surgery in Olsztyn for the removal of an intragastric balloon that had been inserted 5 months earlier. Since the insertion of the intragastric balloon, the patient has lost 22 kg (before the surgery, he weighed 145 kg). On admission, the patient was in good general condition. The day after admission the endoscopic removal of the gastric balloon was performed. The patient's stomach contained a large amount of food scraps which was aspirated intraoperatively and the stomach was lavaged. The intragastric balloon was completely removed. About 6 hours after the procedure, the patient's condition has worsened and he reported pain localized in the epigastrium. An X-ray examination of the abdomen was performed, which showed the air under the diaphragm domes and the excessively aerated intestinal loops. The patient was qualified for urgent surgery, suspecting gastric perforation. Exploratory laparotomy was performed and 3 cm long perforation of the lesser curvature of the stomach was found. The inside of the abdomen was cleaned and the damaged stomach wall was sutured. The patient was discharged in good general condition with good tolerance of oral nutrition 6 days after surgery.

Conclusion: Treatment of morbid obesity with an intragastric balloon use is safe procedure, however serious complications may rarely occur with this device. However, in the great majority of cases the benefits of this procedure outweigh the risks of complications.

Interdisciplinary management of giant omphalocele - a rare case report

Authors: Stróżyk Zuzanna, Forycka Joanna
Affiliation: Department of Pediatric Surgery, Universidad de Malaga, Department of Pediatric Surgery, Maternal and Child Hospital

---

Background: Giant omphalocele is a rare congenital defect of the abdominal wall with the size of the opening exceeding 5 cm and/or containing more than 50% liver herniation within the sac. The severity and prognosis of this multi-etiological defect depends on its size and associated anomalies. Despite having a mortality rate of more than 25%, a standardized treatment protocol has not yet been developed.

Case Report: The female patient was the first born child of a woman with a history of two previous spontaneous abortions. The diagnosis of giant omphalocele was established at the 20-week screening scan. The pregnancy was therefore terminated at 38 weeks of gestation by cesarean section. The APGAR scores were 6/8/9. The newborn was intubated, the defect was covered in a sterile, transparent dressing and the patient was transferred to the Neonatal Intensive Care Unit. On the next day the silo with an adhesive hydrocolloid dressing was collocated. Subsequently, the patient was managed under muscle relaxation, ventilatory support, intra-abdominal pressure (IAP) monitoring and received antibiotic prophylaxis. During the following days the wooden tongue depressors at the free edge of the silo were used to gently reduce the contents under the IAP monitoring. The lowering of the depressors by 1.5-2 cm was performed every day with the objective of complete return of the herniated organs to the abdominal cavity followed by definite surgical closure.

Conclusions: Despite the recent advances, the management of giant omphalocele remains an interdisciplinary challenge. Emphasys should be given to the early prenatal diagnosis that allows the establishment of a prognosis and delivery plan in a tertiary referral hospital. The decision about the treatment should be individual. The staged silo management is considered to be an effective, simple and low cost solution that shortens the time to closure and reduces potential morbidity and mortality.

Non-Surgical Case Report I

Scientific Committee

prof. dr hab. n. med. Ewelina Szczepanek-Parulska
dr n. med. Paweł Niedźwiecki
dr hab. n. med. Aldona Woźniak

Coordinator

Magdalena Dimmich

Session Partner

Medcases

Rare case of cardiac metastases in course of anaplastic thyroid cancer

Authors: Domin Remigiusz, Zwanzig Marcin, Łasińska Izabela, Mackiewicz Jacek, Ruchała Marek
Affiliation: Department of Medical and Experimental Oncology, Poznan University of Medical Sciences,Department of Endocrinology, Metabolism and Internal Diseases, Poznan University of Medical Sciences, Department of Cardiology - Intensive Therapy, Poznan University of Medical Sciences
Tutor: -

Background: Anaplastic Thyroid Cancer (ATC) is the rarest and most aggressive cancer among thyroid neoplasms. It is characterised by a poor prognosis and short median survival time, ranging from 1 to 6 months. It is frequently metastatic and classified as stage IV thyroid carcinoma at the initial presentation. The most frequent sites of ATC metastasis are the lung and brain. On the opposite, metastases to the heart are very rare and they occur with a frequency of 0-2% of autopsied patients.

Case Report: A 56-year-old patient with diagnosed ATC (T4N1M1, Ki 67 - 80%), after debulking surgery, was treated with doxorubicin monotherapy (60 mg/m² iv every 3 weeks) proceeded by a course of palliative radiotherapy (20 Gy) resulting with initial stabilisation and regression of lesions in CT scans and then followed by chemotherapy with carboplatin (2 AUC iv) and paclitaxel because of further progression and distant metastases. After 14 months she referred to the cardiologist because of dyspnea, fainting and low blood pressure with subacute onset. ECHO revealed there was a tumorous, hyperechogenic lesion in the basal and middle anteroseptal segments of the left ventricle and mitral valve prolapse. In order to clarify the nature of the lesion, a PET examination was performed to confirm the nature of the meta-described lesions - metastasis to the interventricular septum and to the wall of the left ventricle was confirmed. Soon after Patient died.

Conclusions: ATC is an aggressive neoplasm characterised by a short overall survival time and a high incidence of multiple distant metastases. With the development of new treatment strategies resulting in prolonged overall survival, the finding of cardiac metastases may increase. The new onset of heart-related symptoms in cancer patients should be indicative of performing echocardiography to screen for metastases.

The importance of accurate diagnosis and its verification - a case report of a 51 year old patient with type 3 diabetes mellitus

Authors: Przybylska Aleksandra, Primke Marta
Affiliation: Department of Internal Medicine and Diabetology, Poznan University of Medical Sciences, Poland
Tutor: Aleksandra Uruska MD, PhD, DSc

Background: Diabetes Mellitus is deemed to be a simple diagnosis. Contrary to this popular belief, this case study aims to show the complexity and diagnostic problems connected with the initial diagnosis and its further confirmation. Type 3 diabetes mellitus (T3DM) arises imitatively to a disease of the exocrine part of the pancreas. The most common causes are: chronic pancreatitis, pancreatic ductal adenocarcinoma, haemochromatosis, cystic fibrosis, and previous pancreatic surgery.

Case Report: The case of a 51 year old male with primary diagnosis of type 2 diabetes who presented to the emergency room with ketoacidosis and acute pancreatitis is presented here. He was diagnosed with hyperglycemia 2 years prior to the incident and prescribed metformin. Even though he suffered from polyuria, polydipsia and massive weight loss since the initial diagnosis his medication scheme did not change. The patient was admitted to the Emergency Room with loss of consciousness, nausea, retrosternal pain and presence of ketones in urine. The patient was aggravated and had a history of anxiety and panic attacks. He complained about numbness and fornication in his right foot and erectile dysfunction. Computer Tomography was performed which showed an enlarged pancreatic duct. Based on symptoms (character of pain) and lipase results (363 IU/L) acute pancreatitis was diagnosed.

Conclusions: This case report highlights the importance of accurate diabetes type diagnosis and its verification. Accurate type diagnosis ensures correct treatment options. Due to improper treatment the patient suffered from a life threatening condition which might have been avoided. Type 3 diabetes is often underdiagnosed and may subsequently lead to worse quality of patient care and further complications.

Advanced dental caries as a cause of infective endocarditis in a young patient with newly diagnosed bicuspid aortic valve

Authors: Tomasz Cader
Affiliation: Department of Internal Medicine and Cardiology, Medical University of Warsaw, Warsaw, Poland, Medical University of Warsaw
Tutor: Katarzyna Kurnicka MD, PhD

Background: Infective endocarditis (IE) can lead to life-threatening complications. The coexistence of the bicuspid aortic valve (BAV) and poor oral hygiene as a source of bacteremia may increase the risk of IE in young adults.

Case Report: A 27-year-old patient, with no medical history, was admitted due to recurrent fever, worsening exercise tolerance for 2 months, and loud diastolic heart murmur.

On admission to ER, he presented with RR 120/70 mmHg, HR 110/min, SpO2 97%, and no signs of overt heart failure. CRP and NT-proBNP levels were elevated. Pneumonia and Covid-19 were excluded. Blood cultures were ordered, and antibiotic therapy was started immediately.

The first echocardiographic examination in the patient's life revealed BAV with an irregular, mobile echo (18 x 11mm) corresponding to bacterial vegetation and severe aortic regurgitation with dilated and hyperkinetic left ventricle. No changes in other valves were visualized.

The source of infection was confirmed by craniofacial CT, where extensive caries was found. On the same day, two teeth in a state of gangrene decay were removed. Due to high risk of systemic embolism, extensive valve destruction, and heart failure exacerbation patient was urgently transferred to cardiac surgery.

The Infected valve was removed, and a mechanical prosthesis was implanted followed by anticoagulation therapy with warfarin. Complex antibiotic therapy (gentamycin, vancomycin, rifampicin) was continued. Six weeks after diagnosis, the patient was discharged home with recommendations of IE prophylaxis, further dental treatment, and no trauma sports.

Conclusion: The coexistence of BAV, which is the most often congenital valve disease in adults, and advanced dental caries may result in serious cardiac complications. IE is still a diagnostic challenge, especially in cases with no cardiac history. Proper oral hygiene is mandatory, while routine echocardiography is reasonable even in young and potentially healthy individuals.

Squamous cell carcinoma of the tongue base in a 39-year-old woman

Authors: Bratt Cheyanna
Affiliation: Poznan University of Medical Sciences
Tutor: -

Introduction: Squamous cell carcinoma (SCC) is the most common neoplasm of the oral cavity and is associated with poor prognosis specific to the base of tongue. This neoplasm typically occurs in men in their sixth or seventh decade with a history of smoking and alcohol use. It rarely occurs in patients under 40 years of age, thus these cases are often misdiagnosed or inappropriately treated.

Case Report: We present a 39-year-old woman with no significant past medical history or risk factors who developed SCC of the tongue base within a 5-month period. She first presented to the clinic in August 2021 with left-sided tongue pain. Biopsy revealed leukoplakia and magnetic resonance imaging in October 2021 showed changes along the middle-posterior shaft on the left side, suspicious for an underlying malignant process. No further medical intervention was taken at this time. A few months later, the patient retuned to the clinic with worsening dysphagia and articulation of the tongue. She was noted to have a large 4.0 x 2.5 cm tumor of the base of tongue, prompting another biopsy and the subsequent diagnosis of SCC. She is now scheduled for a total glossectomy with reconstruction and left radical neck dissection.

Conclusions: This case exemplifies the repercussions of medical mismanagement. The significant delay in diagnosis resulted in the worsening of symptoms, leading to more invasive and quality of life-altering treatment for the patient. Physicians must be more aware and alert with regards to key diagnostic information to prevent the mismanagement of rapidly-progressing head and neck neoplasia.

Case of synchronous skin melanoma and gallbladder carcinoma

Authors: Witek Marcin, Lasek Aleksandra
Affiliation: Kolegium Nauk Medycznych, Uniwersytet Rzeszowski
Tutor: -

Background: Multiple primary tumors are defined as tumors arise in other organs as independent primaries which may occur as synchronous or metachronous primaries. The purpose of our report is to present the case of synchronous primary tumors as skin melanoma and gallbladder carcinoma.

Case Report: May 2021 74-year-old woman was diagnosed due to pigmentary skin lesion localized on left foot. In June 2021 at Department of Oncological Surgery in Rzeszów she has performed surgical resection of the skin lesion. The histopathological examination confirmed the diagnosis of skin malignant melanoma with nodular subtype in stage pT3b. Histopatological examination showed blood vessels invasion but without invasion of nerves.

July 2021 the ultrasonography of abdomen showed that in region of gallbladder that was almost fully filled with heterogenous central vascularization.

August 2021 was performed resection of gallbladder and sentinel lymph node - no metastasis present. The histopathological examination showed the Mixed Neuroendocrine Non-Neuroendocrine Neoplasm (MiNEN) – Large Cell Neuroendocrine Carcinoma G3 (LCNEC) and gallbladder adenocarcinoma.

October 2021 patient was directed to computer tomography examination - there is no neoplasm spreading. In another hospital was additional surgery - resection nearby to gallbladder part of hepatis and nearby lymph nodes - one of them with metastasis from gallbladder cancer (cT2N1M0, stage 3B). Patient was qualified to complementary treatment gallbladder cancer - gemcitabine. Patient had not indications to complementary treatment of melanoma (second stage of melanoma).

Patient is during chemiotherapy. According to interview patient has not any risk factors of this neoplasms.

Conclusions: The question is whether there is a connection between presentation of those two neoplasms of different genesis.
If neoplasm is metachronous necessary differentiation between the second cancer spread - it affects treatment. If synchronic and treated radically - then the problematic choice of adjuvant therapy. If spreading occurs - verification is important which neoplasm has spread.

Disastrous effects of performance-enhancing drugs abuse in young bodybuilder

Authors: Skorupska Katarzyna, Kałużna-Oleksy Marta
Affiliation: Poznan University of Medical Sciences
Tutor: -

Background: The use of anabolic-androgenic steroids (AAS) by athletes is a recurring problem in the media. We present a rare case of 32-year-old bodybuilder with AAS-induced heart failure (HF) and toxic hepatitis.

Case Report: A previously healthy 32-year-old bodybuilder referred to cardiology clinic with symptoms of acute HF. The patient has been intensively training weightlifting 4-5 times a week for over five years. He had a history of AAS abuse over the last 4 years. The first symptoms appeared a year earlier, ambulatory echocardiography(ECHO) showed left ventricle end diastolic diameter(LVEDD) of 63mm and ejection fraction(EF) of 49%. Despite the consultation, the patient did not stop intensive weightlifting and taking AAS.

At admission ECHO showed EF of 25% and LVEDD of 78mm. Laboratory tests revealed significantly elevated troponin levels(42,2pg/ml), NT-proBNP(2288pg/ml) creatine kinase(583,8U/l) and serum transaminases Aspat(45,80U/l), Alat(106,90U/l). Sex hormones analysis showed elevated levels of testosterone(>15ng/ml), prolactin(29,73ng/ml) and estradiol(522pg/ml). After pharmacological therapy, clinical improvement was achieved and he was discharged home.

Six months later, the patient was admitted to the hospital with jaundice, liver enlargement and heart failure deterioration. Laboratory tests revealed significantly elevated Alat 211U/l, Aspat 77U/l and bilirubin 12,36umol/l. AAS-induced toxic hepatitis was diagnosed. ECHO showed LVEDD enlargement(83mm) and EF of 15% with global hypokinesis. Coronary angio-CT was normal. CMR confirmed diagnosis of dilated cardiomyopathy, presented LVEDD of 90mm, EF of 10% with signs of myocardial fibrosis. Successful ICD implantation was performed. The patient was discharged in stable clinical condition. At 3 months of follow-up ECHO showed LVEDD of 87mm and EF of 15%. The patient was qualified for the Poltransplant list. After 7 months, a reduction in HF symptoms, increase in the EF(30%) and a decrease in the LVEDD(63 mm), were observed.

Conclusions: This case is indicative of the potential catastrophic effects of AAS and reinforces the warning against use of these drugs.

On the tip of my tongue. Carcinoma of the root of the tongue in a pregnant woman. The ethical dilemma of when to start treatment to cure the illness and not harm the baby.

Authors: Donderska Marta, Czudy Zuzanna, Polatowska Marika, Wardęga Z, Kaszuba Aleksandra
Affiliation: Faculty of Medicine and Health Sciences, Uniwersytet Zielonogórski
Tutor: -

Background: Pregnancy is a unique state in a woman's life when radiodiagnostic and therapeutic methods are limited to a minimum in order not to harm the baby. However, this does not relieve us from the obligation to take action leading to the diagnosis of cancer and then to carry out appropriate treatment. The safety of the fetus must always be kept in mind.

Case Report: A 34-year-old female patient, never a smoker or alcohol abuser, reported soreness of the right half of her tongue while at the dentist in the first weeks of pregnancy. She was initially treated with anti-inflammatory therapy. When enlarged lymph nodes appeared on the right side of her neck, she was diagnosed as having Keratinizing-Type Squamous Cell Carcinoma. Due to the very high growth rate of the tumor, surgery with neurosurgical flap reconstruction and lymphadenectomy of the neck lymph nodes was performed at 23 weeks' gestation. The histopathological examination revealed a tumor extent of pT3N2a, and for this reason, as well as because of narrow surgical margins, the patient was qualified for complementary chemoradiotherapy. At the first visit, the patient was 27 weeks pregnant, 3 weeks after surgery, and after analyzing the situation, it was decided to wait 4 more weeks to terminate the pregnancy by cesarean section at 31 weeks and to perform radiochemotherapy immediately. After successful delivery, the patient started irradiation within a week. Treatment was combined with Cisplatin-based chemotherapy.

Conclusions: A multidisciplinary approach including both clinical oncology, radiotherapy, surgery and obstetrics is recommended. It is intended to evaluate the gains and losses of the actions taken. The therapeutic decision should be made in consultation with the patient, especially when the preservation of the pregnancy is also at stake.

Playing hide and seek with multiple primary cancers

Authors: Czudy Zuzanna, Donderska Marta, Matuszczak Milena, Kaszuba Aleksandra, Polatowska Marika
Affiliation: Faculty of Medicine and Health Sciences, Uniwersytet Zielonogórski
Tutor: -

Background: Coexistence of more than one primary cancer in a single patient was first reported more than 100 years ago. Due to the increased life expectancy of cancer patients, as well as the use of more comprehensive screening procedures these comorbidities are nowadays being observed in an increasing number of patients.

Case Report: A 71-year-old patient with a history of hemoptysis and cough was admitted to the clinical pulmonary department. During his admission, a chest CT was performed and a right lung hilar tumor was visualized. The result of histopathological examination confirmed the presence of Squamous cell carcinoma. Due to the inoperable nature of the lesion the patient was referred to the radiotherapy department for palliative radiotherapy. Prior to therapy, a PET-CT scan was performed, which in addition to the previously detected cancer, showed an area of increased fluorodeoxyglucose metabolism in the gallbladder fundus. Laparoscopic cholecystectomy was performed. Histopathological examination of the gallbladder confirmed the presence of intracystic papillary neoplasm with associated invasive carcinoma.

Conclusions: In the heat of the battle for life and health of the patient, the importance of imaging studies and their careful analysis should not be forgotten. Clinical vigilance is necessary to reduce the rate of missed Multiple Primary Cancers (MPM) occurring simultaneously in the same patient. Greater awareness of the possibility of MPM among both cancer patients and the physicians treating them is needed.

Myocardial infarction with multi-vessel thrombosis – is COVID-19 to blame?

Authors: Komorowski-Roszkiewicz Jakub, Krajewska Natalia, Fojt Anna
Affiliation: 1st Department of Cardiology, Medical University of Warsaw
Tutor: -

Background: SARS-CoV-2 increases risk of thrombotic complications which may indicate myocardial infarction (MI) and is connected with worse prognosis. Type 1 MI is caused by atherosclerotic plaque disruption, while type 2 is a result of an imbalance between oxygen supply and demand, which potentially arises from embolism to the coronary arteries, respiratory failure or others.
The aim of the study

Case report: A 52-year-old man with a history of hypertension was admitted to the cardiac intensive care unit due to pulmonary oedema. He reported crushing retrosternal pain and severe dyspnea that occured during strenuous physical activity. Auscultation revealed fine crackles in the inferior lobe of the left lung and diminished sound of the right.
The laboratory findings indicated elevated troponin levels (>250 ng/ml).
In ECG there were negative T waves in II, III, aVF and V5-V6, decreased ST segments in leads V2-V4. Echocardiography revealed akinesis of lateral and inferolateral walls with EF=25%. Chest X-ray disclosed interstitial infiltration in both lungs. The patient was diagnosed with NSTEMI complicated by acute heart failure. Due to hypercapnic pulmonary failure (pCO_2=71mmHg, pO_2=53mmHg, pH=7,11) a respiratorotherapy was implemented. Despite, his arterial blood gas did not improve.
In coronarography multivessel disease was present with massive thrombus in all main coronary arteries. Angioplasty of circumflex branch and balloon catheterization were attempted, which did not restore epicardial blood flow and it ended with asystolic cardiac arrest. RT-PCR test detected gene N2 of SARS-CoV-2, but gene E was not. Taking into account respiratory failure and the described radiological changes, it was consistent with COVID-19 infection.

Conclusions: COVID-19 has both influence on the pulmonary and cardiovascular system. In literature a connection between COVID-19 and higher risk of cardiovascular disease with thromboembolism has been established. MI in COVID-19 patients usually occur with massive thrombosis, most often in more than one coronary artery and is connected with poorer outcome.

Lightning never strikes (the same place) twice - about recurrent takotsubo syndrome

Authors: Bączalska Justyna,
Affiliation: Students' Scientific Group at the Ist Department of Cardiology, Interventional Electrocardiology and Hypertension,, Jagiellonian University Medical College
Tutor: Prof Agnieszka Olszanecka MD

Background: Takotsubo syndrome (TTS) is a transient left ventricular systolic and diastolic dysfunction which manifests with acute chest pain, electrocardiographic features and troponin elevation characteristic to acute myocardial infarction (MI), although without presence of coronary artery occlusion. TTS usually occurs in females in relation to a stressful event, for this reason it is also called 'broken heart syndrome'. I herein report a case of a patient with a recurrent TTS before planned surgery.

Case Report: A 76-years old female with a history of hypertension, spondyloarthritis and an episode of takotsubo cardiomyopathy 3 years ago, was admitted to a surgical ward to undergo rectum resection due to colon diverticular disease with colovesical fistula. On arrival the patient was in good condition, presenting persistent abdominal pain and weight loss. On the following day the patient was disqualified from operation due to clinical symptoms of fatigue and severe hypotension (blood pressure 70/40 mmHg).. Electrocardiography (ECG) revealed diffused, mild ST elevations and QT prolongation. Echocardiography revealed left ventricular contractility disturbance with apical and mid ventricular akinesis and ejection fraction (LVEF) 30%. Markers of cardiac necrosis and NT-pro-BNP were elevated. Coronary angiography did not reveal any narrowing in coronary arteries. Finally, after excluding ischemia and pheochromocytoma the diagnosis of recurrent TTS was most likely. As expected, in the following days patient condition improved, blood pressure normalized, ECG showed typical evolution and control echocardiography revealed recovery of contractile function of apical segments with elevation of LVEF to 59%. Patient was moved back to the surgical ward to perform a delayed operation.

Conclusions: Symptoms of TTS can mimic acute myocardial infarction. One of the stressors triggering the TTS is the perioperative period. The case illustrates recurrent TTS in the context of complex clinical decisions about treatment and timing of surgical intervention (causative for episode of TTS but imperative).

Atypical presentation of heart failure in patient with repaired congenital heart disease

Authors: Stanisz Zofia, Hsu Chueh Lin
Affiliation: Faculty of Medicine, Poznan University of Medical Sciences
Tutor: Aleksandra Ciepłucha, MD., PhD.

Background: Transposition of the great arteries (TGA) is a congenital heart defect, in which aorta arises from the right ventricle (RV) and pulmonary trunk from the left ventricle (LV). After atrial switch operation (AtrSO), a surgically created tunnel redirects the oxygenated blood from pulmonary veins to the RV, whereas deoxygenated blood from the caval veins is tunneled to the LV. Hence, RV becomes a systemic pumping chamber (systRV). An inevitable complication is progressive heart failure of systRV, which is morphologically not designed to lifelong work under systemic pressures.

Case Report: A 36-year-old male presented himself to the cardiology ward with dyspnea on mild exertion, ascites and massive oedema of lower extremities. Medical history included TGA corrected by AtrSO and COVID-19 four weeks prior to admission. Subpulmonary LV (subpulmLV) failure was suspected, which is considered atypical complication of AtrSO-corrected TGA. Echocardiography revealed enlarged subpulmLV and significantly decreased ejection fraction of both ventricles. Cardiac magnetic resonance confirmed a reduced contractility, and ruled out post-COVID-19 myocarditis. A parietal thrombus in the apex of subpulmLV, along with the elevated D-dimers, prompted the decision on anticoagulative therapy. A novel drug levosimendan was introduced to increase the contractility, which improved patient's clinical status allowing a discharge home. During the outpatient follow-up a novel drug sacubitril/valsartan was introduced. Gradual improvement in echocardiography without episodes of decompensation during the next 14 months was observed.

Conclusions: Progressive failure of subpulm LV is atypical among patients with TGA operated with atrial switch method. Fortunately, novel treatment of heart failure – levosimendan and sacubitril/valsartan may become efficient options for patients with congenital heart disease.

Glioblastoma multiforme of the right brain hemisphere- Case Report

Authors: Dominika Dunder, Katarzyna Wieczorek, Karolina Bagińska, Dawid Kacprzyk
Affiliation: Lazarski University in Warsaw, Medical Faculty, Warsaw, Poland
Tutor: Dr n.med. Tomasz Sarosiek

Background: Glioblastoma multiforme (GBM) is the most common primary brain tumor of grade IV histological malignancy according to the WHO classification. Diagnosis based on imaging studies such as computed tomography and magnetic resonance imaging, glioblastoma multiforme is a malignant brain tumor without specific risk factors and with a poor prognosis. Standard treatment of the tumor consists of surgical resection and adjuvant chemo-radiotherapy.

Case Report: A clinical case of a 36-year-old man who was diagnosed with a 14x25x33 mm tumor in the right parietal lobe on MRI in October 2016, which underwent subtotal resection in November 2016. The histological picture indicated a GIV glioblastoma according to the WHO classification. Symptoms of the disease were progressive paresthesia's in the left hand since January 2016 and motor seizures (focal seizures) since September 2016. The patient was treated with "standard" chemotherapy followed by 5 cycles of maintenance TMZ. Since early 2018, clinical and radiological progression of the tumor was observed, with increasing contrast enhancement and significant peritumoral edema. In February 2018, the patient began salvage treatment with Pembrolizumab (immunotherapy) due to a terminal mutation in the POLE gene, which causes deficiencies in DNA mismatch repair and accumulation of mutations in cells as evidenced by a high TMB- Tumor Mutational Burden. Avastin was added to Pembrolizumab in July, resulting in partial regression seen on MRI performed in August 2018 until brain stabilization maintained as of January 2019.

Conclusions: Glioblastoma multiforme is an incurable disease with a median survival of 12-15 months, which is why early diagnosis and implementation of appropriate treatment is so important.

Heart failure due to the SARS-CoV-2 infection – is the increase in left ventricular ejection fraction possible?

Authors: Justyna Matusiak, Izabella Bartkowiak
Affiliation: Student Research Group of Cardiology I, First Department of Cardiology, Poznan University of Medical Sciences
Tutor: Marta Kałużna-Oleksy, MD, PhD

Background: Heart failure (HF) is a serious condition which remains therapeutic challenge in cardiology. It has been estimated that there are approximately 26 million cases worldwide. Current mortality rate is estimated to be 17% to 45% within one year from diagnosis. The SARS-CoV-2 infection can damage the heart through a number of different pathomechanisms. On the ground of COVID-19 pandemic, we observe many new diagnoses of HF. What is the optimal therapeutic approach in those patients? oduction

Case Presentation: A 31-year-old male was admitted to the hospital in January 2021 for heart failure evaluation, due to diagnosis made during hospitalization because of COVID-19 (December 2020). The patient did not have any known past medical history. The echocardiographic examination showed reduced left ventricular ejection fraction (LVEF) - 20%, enlargement of left ventricular end-diastolic diameter (LVEDD). The diagnosis of a dilated cardiomyopathy (DCM) was established, and then confirmed in cardiac magnetic resonance imaging. Laboratory tests revealed elevated NT-proBNP level (1132,0 pg/mL). The patient gradually received treatment for HFrEF patients according to the latest ESC 2021 guidelines: ARNI, B-blocker, loop diuretic, dapagliflozin and MRA. The patient was also qualified for ICD implantation in primary prevention of sudden cardiac death (SCD). After 9 months, the follow-up evaluation of HF showed a significant improvement in clinical state and additional examination results. The LVEF increased to 35% and NT-proBNP was in normal range (<35pg/mL).

Conclusions: It is still not certain if SARS-CoV-2 is the main factor inducing HF or it is just the trigger factor accelerating or revealing comorbid heart damage. As the case illustrates, with accurate EBM treatment, it is possible to improve the objective results which reflects in the patient's condition.

Non-Surgical Case Report II

Scientific Committee

dr n. med. Iwona Zaporowska-Stachowiak
lek. Tomasz Szczepaniak
lek. Kamila Miętkiewska-Szwacka

Coordinator

Aleksandra Grześkowiak

Session Partner

Severe neurological complication in eosinophilic granulomatosis with polyangiitis (EGPA)

Authors: Suchecki P., Lizurej W.
Affiliation: Department of Rheumatology, Rehabilitation and Internal Diseases, Poznan University of Medical Sciences
Tutor: Assoc. Prof. Bogna Grygiel-Górniak

Background: EGPA is classified as small-vessel vasculitis associated with antineutrophil cytoplasmic antibodies (ANCA). Characteristically it is associated with asthma and eosinophilia. It may affect every organ, but typically involves: lungs, skin, and peripheral nerves. The etiology Of EGPA is still unknown. However, dysregulation of the immune system plays a crucial role in its pathogenesis.

Case report: A 64-year-old woman with EGPA was admitted to the Rheumatology Clinic. The patient had suffered from rhinitis of unknown etiology and shortness of breath for 20 years and was treated with montelukast for asthma for the last ten years. At 55 years old, the patient was diagnosed with motor-sensual axonal polyneuropathy. At the same time, EGPA was diagnosed and treated with methylprednisolone. Improvement in inflammatory parameters has been achieved. In 2016 the patient complained about general fatigue, sensory disorders in the left upper limb, and right foot drop. In 2017 she lost hearing in the left ear. The methylprednisolone implementation was adequate, and the hearing problems disappeared. In 2020, physical examination revealed muscle loss in upper and lower limbs and foot drop. Elevated OB, increased levels of CRP, peripheral blood eosinophilia was found. ANCA antibodies in titer 1/40 were detected. After the treatment with methylprednisolone and azathioprine, the patient was discharged home in good condition.

Conclusion: The diagnosis of EGPA remains challenging due to its comorbidity with asthma. Treatment with glucocorticosteroids may mask the primary symptoms of the disease. However, peripheral neuropathy affects 50-75% of patients with EGPA. Neurological symptoms, especially paresthesia, sensory disorders, abnormal sensations in distal extremities, may indicate a flare of the disease. Attention should be paid to asthmatic patients treated with leukotriene-receptor antagonists (e.g., montelukast) or anti-IgE antibodies (e.g., omalizumab), which are considered to be considered be potential triggers of EGPA.

A patient with highly metabolically active neuroendocrine tumour of the small intestine.

Authors: Witczak M, Łukomski Ł, Żmuda K, Szczepanek-Parulska E
Affiliation: Department of Endocrinology, Metabolism and Internal Diseases, University of Medical Sciences, Poznan
Institute of Medical Sciences, University of Zielona Góra
Department of Internal Diseases, Diabetology and Endocrinology, Institute of Medical Sciences, University of Zielona Góra
Tutor: Assoc. Prof. Bogna Grygiel-Górniak

Background: The paper presents a case of a 48-year-old patient with a highly metabolically active neuroendocrine tumour (NET) of the small intestine with metastases to the liver and lungs. In the course of the disease, the patient developed full-blown carcinoid syndrome (CS) and carcinoid heart disease (CHD).

Case report: In June 2016, due to severe abdominal pain and diarrhoea, the patient underwent a colonoscopy, which revealed chronic active colitis. Inflammatory bowel disease was an initial diagnosis. Nevertheless due to worsening of symptoms in November 2016, a CT scan was performed, which revealed a disseminated neoplastic process of the liver, lungs and small intestine. The histopathological examination revealed a neuroendocrine tumour (NET-G2, T3N1M1, Ki-67 10%). Despite the applied therapeutic methods including hemicolectomy, PRRT, administration of somatostatin analogues, liver embolization and chemotherapy, no permanent metabolic and macroscopic regression of NET was realized.
The described case is exceptional due to very highly metabolically active tumour and precise analysis focused on the use of chromogranin A for the tumour volume, serotonin and 5-HIAA for the metabolic activity of NETs and the degree of liver involvement, and D-dimers concentration as an additional value in determination of patient's condition.

Conclusions: Some endocrine diseases pose a diagnostic challenge, as they may manifest themselves atypically, concealing the complete clinical picture. Examples of masking symptoms in the context of NET are persistent diarrhoea and flush. Correct diagnosis is often made incidentally - incidentalomas. The simultaneous occurrence of severe diarrhoea and flush attacks requires consideration of NETs in the differential diagnosis and determination of parameters, e.g. chromogranin A and 5-HIAA.

A case report of a 46-year-old, immunocompetent male, in whom the first and only clinical symptom of syphilis was binocular visual deterioration.

Authors: Krasińska A, Wichrowska M, Mamczur J
Affiliation: Department of Ophthalmology, Poznań University of Medical Sciences
Tutor: Assoc. Prof. Jarosław Kocięcki

Background: Syphilis, caused by Treponema pallidum, is a sexually transmitted infection known for centuries. The disease may affect every structure of the eye and it can mimic different ocular diseases, which leads to diagnostic problems and delay in proper treatment.

Case report: A 46-year-old immunocompetent male presented to the Ophthalmology Department because of binocular visual deterioration. It was the only reported by him symptom. On admission, visual acuity was 0.4 in the right eye and 0.1 in the left eye. Intraocular pressure in both eyes was normal. Slit-lamp examination showed signs of panuveitis in both eyes and disc oedema in the left eye. During the hospitalization, lab and imaging tests were performed, confirming the infection with T.pallidum. Blood tests were positive for syphilis. He was administered intravenous procaine penicillin, oral and topical steroids. Reconstitution of vision occurred within 4 weeks, BCVA was 0.9 in the right eye and 0.8 in the left eye. Fundus examination showed complete resolution of the lesions.

Conclusions: Ocular manifestations are not common; therefore, Treponema pallidum infection should always be considered as a differential diagnosis in patients with uveitis. The role of ophthalmologists might be crucial in diagnosis, as it may be the one and only sign of the disease. Delay in diagnosis and causal treatment may result in permanent visual impairment.

Breast Implant-Associated Anaplastic Large Cell Lymphoma (BIA-ALCL) Current Treatment Guidelines and Recommendations: A Case Study

Authors: Dalia Karkar, B.Sc., Joanna Rupa-Matysek, dr hab. n.med.
Affiliation: Department of Hematology and Transplantation, Poznań University of Medical Sciences

---

Introduction: Breast Implant associated anaplastic large cell lymphoma is a rare type of lymphoma first listed as a separate entity in the WHO Classification of Tumors of Haematopoietic and Lymphoid tissues in 2017. The emergence of the disease is linked to the presence of breast implants. Current therapeutic guidelines are proposed by the United States National Comprehensive Cancer Network (NCNN), the UK Medicines Healthcare products Regulatory Agency (MHRA) Plastic and Reconstructive and Aesthetic Surgery Expert Advisory Group (PRASEAG) after previous report series indicated the absence of treatment standardization. While ALCL is usually correlated with a worse prognosis, according to the data currently available, BIA-ALCL is linked with a potential excellent prognosis when adequately diagnosed, and suitable treatment is given.

Case presentation: We present a case of a 37 years old female who underwent a breast implant procedure in 2013.
In September 2018, she noticed left breast swelling. A diagnosis of BIA-ALCL limited to the left breast was established in early 2019 based on histopathological findings and PET scan examination. The patient underwent a bilateral surgical resection of implants. In 2021, PET scans and histopathology indicated BIA-ALCL as a left supraclavicular node, and metabolically active infiltrates in the lymph nodes on both sides of the diaphragm were found. Following the diagnosis, the patient was admitted for CHOEP therapy.

Discussion: This case depicts the risk of developing BIA-ALCL following a breast implants procedure and demonstrates the current proposed diagnostic and therapeutic measures to manage a localized and recurrent distant disease.

Significance of adequate treatment of Graves' orbitopathy

Authors: Różewicz N
Affiliation: Department of Ophthalmology, Poznań University of Medical Sciences
Tutors: dr hab. n. med. Anna Gotz- Więckowska prof.UMP, dr n. med. Anna Chmielarz- Czarnocińska

Background: The objective of this clinical case report is to highlight the significance of an adequate treatment of patients suffering from Graves' orbitopathy in order to prevent them from irreversible eye-related complications like optic neuropathy. Graves' orbitopathy is an autoimmune orbital disease, which treatment depends on clinical condition of the patient and is based on pharmacotherapy, radiotherapy and orbital decompression surgery.

Case report: A 26 years woman presented in an ophthalmological clinic with double vision, myopia, astigmatism and hypertropia of the right eye. Her medical history included type 1 diabetes from the age of 13. At a first visit the patient had already been diagnosed with Graves-Basedow disease and was perscribed with levothyroxine 75mcg and thiamazole 15mg, but the orbitopathy was progressing. Two months after diagnosis she started to suffer from exacerbating double vision. The patient developed vertical strabismus and restriction of the both eyes motility. The thickening of the muscles of the both eyes was observed in ultrasonography. The patient received a recommendation to expand diagnostics with orbit MRI and urgent orbitopathy treatment, at first at an endocrinology department, subsequently at the ophthalmological clinic. The patient didn't follow the recommendations. Two months later she visited the clinic presenting eye pain, decrease of vision and purulent discharge in both eyes. Visual evoked potentials (VEP) showed a delayed P100 latency after stimulation of the right eye, which indicates right optic neuropathy. At the same time the patient received a referral for strumectomy.

Conclusion: This case study proves that complications of Graves' orbitopathy might be very severe including even vision loss, that is why the start of adequate treatment is crucial for patient's eyesight. Also the cooperation of different specialists, in this situation ophthalmologists and endocrinologists, and the patient is significant for good treatment effects.

Lipomatous hypertrophy of the interatrial septum – a differential diagnosis to keep in mind

Authors: Ruszecka A, Mokrzycka N
Affiliation: Students' Scientific Group at the 1st Department of Cardiology, Interventional Electrocardiology and Hypertension, Jagiellonian University Medical College, Cracow, Poland
Tutors: Agnieszka Olszanecka, MD, PhD

Lipomatous hypertrophy of the interatrial septum (LHIS) can be described as an excessive fat deposition in the interatrial region of the heart. Since the clinical features often remain asymptomatic, it is usually an incidental finding on cardiac imagining. Clinical presentations may include supraventricular arrhythmias or even sudden cardiac death. Further diagnostic process may be required, especially if a suspicion of malignancy occurs.

A 63-year old woman with an exacerbation of the unipolar depression was admitted to the hospital due to lithium toxicity. The patient was further diagnosed with pulmonary embolism (PE) and acute kidney injury, while also suffering from arterial hypertension and hypothyroidism. Whilst the dialysis treatment was successful, the hospitalisation enabled the physicians to discover paroxysmal atrial fibrillation. Transthoracic echocardiogram performed due to leg oedema showed two hyperechoic, globular masses within the interatrial septum (diameters:15 and 25mm, respectively). Subsequently performed transesophageal echocardiogram revealed the changes to be a massive lesion with the thickness reaching 4cm, the appearance of which resembled LHIS. However, due to the previous occurence of PE, further imaging was necessary to differentiate the suspected diagnosis from a malignant cardiac tumour. Cardiac MRI with characteristic findings (signal hyperintensity on T1WI and T2WI, hypointensity on fat-suppressed T2WI) confirmed the LHIS speculations.

While LHIS itself is a benign condition, the discovery of lesions resembling it may require the exclusion of much more dangerous diseases, such as malignant cardiac tumours (especially cardiac lipoma). A previous occurrence of PE, which may be associated with malignant masses within the heart, should lead to further imaging, such as cardiac MRI. A correct diagnosis of LHIS may spare many patients the pain and stress of a surgical resection.

Even the thyroid gland has its own secrets and can surprise you: immensely rare concomitance – aberrant right subclavian artery and retrosternal goitre

Authors: Leśniak T
Affiliation: Faculty of Medicine, Medical University of Warsaw, Poland
Tutors: Magdalena Góralska, MD, PhD

Background: Aberrant right subclavian artery (ARSA) is a scarce vascular anatomical variation. ARSA frequently arises from a dilated segment of the proximal descending aorta - Kommerell's diverticulum. The abnormal artery courses behind the oesophagus (80%), between the oesophagus and trachea (15%) or anterior to trachea (5%). Such position may cause a number of disorders, e.g. dysphagia, dyspnoea, stridor or chest pain. Similar symptoms can be related to a condition of different nature but better known – retrosternal goitre. Coincidence of the two entities appears to be extremely uncommon. However, it should be remembered that their combined constrictive effect on trachea could be fateful.

Case report: 84-year-old man presented to the Endocrinology Department complaining of shortness of breath. On admission stridor was auscultated and peripheral blood oxygen saturation was decreased. Chest and neck ultrasound and CT scan revealed anatomical variation in the form of ARSA coursing posterior to the trachea and enlarged thyroid gland descending to the mediastinum, measuring 70 x 43 mm and constricting lumen of the trachea to 8 mm. During thoracic surgical consultation, aimed at procedure qualification, the patient experienced respiratory collapse and syncope. Soon he resumed spontaneous breathing, yet he required non-invasive ventilation from that point forward. Bronchoscopy confirmed presence of significant tracheal stenosis due to its posterior wall invagination. On the fifth day of hospitalisation the patient underwent thyroidectomy. Despite the low cancer-risk in recent ultrasound assessment, microscopic examination confirmed presence of multifocal micropapillary thyroid cancer. After all, he was discharged in improved and stabilised condition.

Conclusions: As it turns out, goitre may not be the only cause of dyspnoea in a patient with an enlarged thyroid gland. It should be remembered that oncological awareness in nodular goitre is also important and that some anatomical differences, while rare, may in fact coexist and present challenges even for experienced clinicians.

Severe thrombocytopenia induced by PARP inhibitor niraparib in a patient with ovarian cancer – a case report

Authors: Lipka A, Gładych A, Miedziarek C, Zaborowski M
Affiliation: Students' Research Group of Gynecologic Oncology, Poznań University of Medical Sciences
Students' Research Group of Perinatology and Gynecology, Poznań University of Medical Sciences
Department of Gynecology Obstetrics and Gynecologic Oncology, Poznań University of Medical Sciences

---

Background: Niraparib is an inhibitor of Poly ADP-ribose polymerase (PARP) complex used in the maintenance therapy of ovarian cancer, following response to platinum-based treatment. Though niraparib significantly improves prognosis, it is associated with several adverse effects, predominantly bone marrow toxicities, nausea, fatigue, vomiting, headache, constipation, and insomnia. Here, we present a case report of a patient with severe thrombocytopenia induced by niraparib.

Case report: A 65-year-old female patient was diagnosed with high-grade serous ovarian cancer, classified at the exploratory laparoscopy as IIIC in FIGO system. The genetic testing revealed neither germline nor somatic mutation in BRCA1/2 genes. The patient responded well to neoadjuvant platinum-based chemotherapy and underwent cytoreductive surgery. Afterward, the patient was qualified for the maintenance treatment with niraparib at a dose 200 mg once daily. The initial platelet count (PLT) was 307 k/μL. A week later, the PLT decreased to 156 k/μL. On day 15, the patient complained of disseminated rush and nose bleeding. On the physical examination, the patient had petechiae on the whole body. The PLT count dropped to the level of 2 k/μL. Upon admission to the hospital, the niraparib treatment was discontinued and 10 units of platelets was transfused. The PLT count gradually raised and 27 days after the drug discontinuation it reached 256 k/μL. The niraparib therapy was resumed at a reduced dose (100 mg once daily) and no thrombocytopenia was observed in the weekly follow-up. The patient remains in disease remission after 1 year of niraparib treatment.

Conclusion: Severe thrombocytopenia may develop within days during niraparib therapy. It is not necessarily an indication for permanent discontinuation of the treatment. The right strategy is to transfuse platelets and resume treatment with niraparib at a reduced dose.

Many faces of purpura

Authors: Sak N, Hałasiński P
Affiliation: Students' Scientific Association of Dermatology and Aesthetic Dermatology of the Department of Dermatology, Poznan University of Medical Sciences
Tutors: Katarzyna Waligóra-Dziwak MD

Background: Lesions resulting from the penetration of erythrocytes through the vessel walls into the dermis are classified as purpura. These lesions may be caused by hematologic disorders, increased venous pressure, or vascular damage due to vasculitis. Lesions are five times more common in men than in women. Most cases are reported in adults between 40 and 60 years old. Purpura lesions are only a symptom, not a disease. A rare cause of their occurrence may also be neoplasms, including multiple myeloma, in which there is an excessive proliferation and accumulation of plasma cells. It accounts for 1% of all malignancies. It occurs slightly more often in men, and the peak incidence is in the 7th decade of life. Typical symptoms include anemia and immune dysfunction, progressive renal failure, increased predisposition to thrombosis, and gradual bone destruction.

Case report: A 72-year-old male patient admitted to the dermatology clinic with suspected vasculitis for treatment of skin lesions in the form of purpura. The lesions were present in the lower extremities, upper extremities and trunk. The patient had coexisting diseases: hypertension and mixed hypercholesterolemia. In 2004 the patient had radical prostatectomy and radiotherapy for prostate cancer. The patient has undergone a broad consultation. Chest X-ray, abdominal ultrasound, Doppler ultrasound, skull X-ray were performed. A 5 mm osteolytic focus was detected in the skull X-ray. Laboratory tests revealed the presence of monoclonal protein, paraprotein IgG lambda chains. Blood smear was performed for cytological evaluation. A flow cytometry study was performed, based on which a suspicion of plasmocytic myeloma was made.

Conclusion: Purpura is a common symptom seen in dermatology outpatients. Purpura lesions present a diagnostic difficulty because of the many possible etiologies. Attention should be paid to interdisciplinary cooperation of specialists in order to make a correct diagnosis and determine an appropriate treatment regimen.

Complications in the course of LADA diabetes

Authors: Wiecanowska J, Mariowska A
Affiliation: Department of Internal Medicine and Diabetology, Poznan University of Medical Sciences
Tutors: Uruska Aleksandra MD, PhD, DSc

Background: Latent autoimmune diabetes in adults (LADA) connects the characteristics features of both type 1 and type 2 diabetes and stands out because of the older-age onset. Patients are usually misdiagnosed as type 2 and later progress to an insulin dependent stage of the disease; they present a various range of antibodies and clinical features. Poor glycemic control in these patients leads to higher risk of complications that demands accurate clinical actions.

Case report: A 62-year-old patient was admitted to the hospital to correct the glycemic control (Hba1c=8,9%) before qualification for vascular surgery (femoral bypass). He was diagnosed with LADA 28 years ago and treated with insulin. Doppler ultrasound and angiography confirmed critical constriction and blockage of the right leg arterial system. The patient underwent an unsuccessful angioplasty in the past. Due to extensive atherosclerosis, diabetic foot syndrome (that led to amputation of V toe on the right foot) and ischaemia of the right leg the patient needed to be re-qualified for the operation. During hospitalization indicators of severe kidney failure were found and changes in the clinical approach were demanded, while correcting the glycemia level at the same time. The patient was provided with furosemide, fluid therapy, antibiotic treatment (due to ulcerations on the right foot) and the insulin therapy with modified doses of insulin analogues. The main goal was to improve the patient's condition to accurate glycemia level so the urgent angioplasty may be conducted.

Conclusion: This case reminds us of the complicity of severe diabetic complications like neuropathy, macroangiopathy and diabetic kidney disease that require adequate clinical actions while preparing a patient for surgical intervention. On this account the glycemic control in LADA patients seems to be even more significant.

Rare presentation of pediatric-onset granulomatosis with polyangiitis exhibiting potential genetic susceptibility

Authors: Frau T, Martinkosky A
Affiliation: Department of Immunology, Poznan University of Medical Sciences
Tutors: dr n. med. Małgorzata Łagiedo-Żelazowska

Background: Despite generation of new insight into pathogenic processes and advancement in diagnostics over the last decade, the etiology of Granulomatosis with Polyangiitis (GPA) remains unclear. Formerly called Wegener's Granulomatosis, GPA is an autoimmune disease influenced by complex genetic and environmental factors.

Case Report: A 29-year-old female was diagnosed with pediatric-onset GPA at 19-years old, subsequent to exhibiting rare symptoms that were associated with disease progression. An uncommon initial presentation involved hemorrhagic acneiform papules on the face which were resistant to conventional therapies. Further evaluation ensued when the patient started to experience chronic sinusitis with circumferential mucous thickening, ear pain, and dyspnea. Imagining of the lungs displayed multiple pulmonary nodules with cavitations. The idea of infectious etiology was continuously entertained, possibly due to an insufficient amount of research regarding GPA at the time. Consequently, treatment with antibiotics was frequently administered to the patient, though no infectious origin was identified. Supplemental serological antibody testing revealed elevated anti-neutrophil cytoplasmic antibodies (ANCA) with specificity for anti-proteinase 3 antibodies (c-ANCA), supporting the diagnosis of GPA. Maintenance therapy with prednisone and azathioprine was effective until the patient experienced a relapse 5 years later, resorting to management with mycophenolate. Rituximab treatment has been used to intermittently mitigate her recurrent bouts of inflammation. Regardless of treatment, development of subglottic stenosis and persistent hearing loss due to constant fluid in the middle ear still transpired. Rapid progression of the disease was exemplified by a recent decline in her glomerular filtration rate, prompting a renal biopsy revealing necrotizing lesions and crescent cell formation consistent with ANCA-associated glomerulonephritis.

Conclusion: The purpose of this case report is to expose rare symptoms manifested by pediatric-onset GPA to ensure its use as a differential diagnosis. Investigation of an underlying genetic causation will be explored to propose gene therapy as long-term treatment for this specific case of GPA.

Systemic aspergillosis mimicking cryptogenic organizing pneumonia in a patient with diffuse large B-cell lymphoma

Authors: Grycuk W
Affiliation: Department of Hematology, Transplantation and Internal Medicine, Medical University of Warsaw
Tutors: Joanna Drozd-Sokołowska, MD PhD

Background: Patients receiving intensive chemotherapy are at high risk for severe infections. Fungal infections, including Aspergillus are among the most prevalent in the setting of long-lasting neutropenia. High clinical suspicion and timely recognition are of key importance to provide early therapeutic coverage.

Case report: A 69-year-old male was referred to the department of hematology after diagnosis of diffuse large B-cell lymphoma (DLBCL). The PET-CT scan performed on admission revealed an extensive lymph node involvement accompanied by bilateral pulmonary lesions. The HRCT of the lungs was remarkable for bilateral patchy consolidations, ground-glass opacities and thickening of interlobular septa. The bronchoscopy with bronchoalveolar lavage was performed, which yielded positive culture for ESBL-producing Klebsiella pneumoniae and HSV-1. After administration of the broad-spectrum antibiotic therapy and antiviral treatment, the patient recovered from pneumonia. Standard systemic chemoimmunotherapy R-CHOP was initiated. Due to progressive disease after the second cycle of R-CHOP, salvage treatment with alternating R-CODOX-M/R-IVAC was administered. It was complicated by pancytopenia and sepsis. Despite the broad-spectrum antibiotic therapy, the patient's condition deteriorated, with dyspnea and high fever, while laboratory tests showed persistent CRP elevation. The radiologic findings on the HRCT scan were consistent with cryptogenic organizing pneumonia, however samples obtained during bronchoscopy were positive for Aspergillus spp. A serum Aspergillus antigen test was positive. A diagnosis of confirmed invasive aspergillosis was made. The subsequent treatment included salvage chemotherapy, antibiotics, antifungal cover, and supportive care. Despite treatment, the patient's condition continued to deteriorate, and he died 7 months from the primary refractory DLBCL and COVID-19 infection.

Conclusions: A clinical presentation and radiologic appearance of invasive aspergillosis may overlap with other conditions, including cryptogenic organizing pneumonia. To differentiate between different entities, it is vital to perform an appropriate diagnostic evaluation. Early diagnosis and initiation of treatment for invasive aspergillosis in immunocompromised patients are essential to allow survival of these patients.

Non-Surgical Case Report III

Scientific Committee

prof. dr hab. n. med. Mariola Pawlaczyk
dr n. med. Mikołaj Pawlak
dr hab. n. med. Dorota Sikorska
lek. Małgorzata Schlabs

Coordinator

Łukasz Świątek

Session Partner

Fundacja MOCNI NA STARCIE

Various complications after aesthetic medicine procedures - case report

Authors: Welc N, Jałowska M
Affiliation: Poznan University of Medical Sciences Department of Dermatology, Poznan University of Medical Sciences

---

Background: Aesthetic medicine is a rapidly developing field of medicine. The aim is to improve one's appearance and slow down the aging process. Patients can choose from a range of non-invasive procedures, for instance, dermal fillers, skin injections, and mesotherapy with active ingredients. However, the treatment might leave patients dissatisfied, worse yet resulting in many complications, from mild to severe. This case report presents how various side effects of these procedures can be, even in a single patient.

Case report: A 45-year-old woman presented with episcleritis of the left eye four weeks after the use of hyaluronic acid as a dermal filler in the cheeks and temporal areas of the face. The patient suffered from eye redness and eyesore. Ophthalmological examination showed no pathology in the eye fundus and normal vision. Orthopantomography and X-ray of sinuses revealed no anomaly. The patient was also reviewed by a laryngologist. Full blood exam, OB, and CRP levels were normal. Eye drops with hydrocortisone and pranoprofene were prescribed, but they did not provide the expected results. The effect of following treatment with eye drops and eye ointment with dexamethasone and diclofenac capsules was satisfactory. Medical history revealed complications from previous non-invasive aesthetic procedures - strong allergic reaction to mesotherapy with biomimetic peptides six years earlier and ischemia of lower lip after lip injection with hyaluronic acid, treated with hyaluronidase two years earlier.

Conclusions: The growing interest in aesthetic medicine is inevitably connected with a number of side effects. It is crucial to be aware of them as a physician of any specialty. This case proves, how persistent patients are sometimes in improving their appearance, no matter the risk. They should be very well informed and the physicians performing aesthetic procedures must have appropriate experience in order to avoid as many complications as possible.

Massive necrotic skin ulceration in severe leukocytoclastic vasculitis

Authors: Huang S, Chen M
Affiliation: Department of Rheumatology, Rehabilitation and Internal Medicine, Poznan University of Medical Sciences
Tutor: dr hab. n. med. Bogna Grygiel-Górniak

Background: Leukocytoclastic vasculitis (LCV) is classified as a single-organ vasculitis with a broad spectrum of manifestations, from isolated cutaneous symptoms to severe systemic involvement such as arthralgias, especially of joints with proximity to skin lesions. LCV is most commonly idiopathic; however, it may be present secondary to medications, infections, malignancy, and autoimmune connective diseases.

Case report: A 46-year-old Caucasian male was admitted with newly formed and sparse ulcerations of the hands and feet, initially not exceeding 5 mm. Skin biopsy indicated leukocytoclastic vasculitis. On the second day of hospitalization, the ulcerations expanded rapidly to the thigh, hips, and buttocks with aggressive development of skin necrosis. The patient then suffered from recurrent loss of consciousness, myoclonus, and neurologic deficits. Intravenous methylprednisolone and five cycles of plasmapheresis were implemented, along with linezolid, imipenem, and clomethiazole due to positive bacterial blood culture. Laboratory tests showed anemia, thrombocytopenia, elevated erythrocyte sedimentation rate, and C-reactive protein. Anti-nuclear antibodies, anti-neutrophil cytoplasmic antibodies, anti-B2 glycoprotein I antibodies, and cryoglobulin test were negative. The patient then underwent eight surgical debridement sessions. IV immunoglobulin was given twice every four weeks, and methylprednisolone was implemented orally with good clinical effect. After ulcerations healed, physical examination revealed scars and contractures in the joints of the left knee and fingers of the hands. The X-ray also showed destructive changes in the proximal interphalangeal joints with erosions caused by deep ulceration reaching the bone and joint area. Furthermore, the patient developed symptoms of hypercortisolism following the methylprednisolone treatment.

Conclusion: Fatal complications following progressive LCV are rare, but their appearance requires effective treatment strategies. A careful evaluation of the patient's medical history and the clinical, serological, and histological findings is essential for a prompt diagnosis. An improved prognosis derives from a successful therapeutic regimen with minimal adverse effects in individual patients.

Hyaluronic acid filler migration as possible complication of lip augmentation - case report and radiologic point of view

Authors: Kozeriew M, Nowicki T, Sokołowska-Wojdyło MAffiliation:
Affiliation: Department of Dermatology, Venereology and Allergology, Faculty of Medicine, Medical University of Gdańsk, Gdańsk, Poland
2nd Department of Radiology, Faculty of Health Sciences, Medical University of Gdańsk, Gdańsk, Poland
Medical University of Gdańsk
Tutor: Sokołowska-Wojdyło

Background: Soft tissue fillers' injections in 2013 were the second most common non-surgical procedures, and with increasing popularity number of complications is rising. Patients must be aware of all risks as those easy access procedures can cause long-term complications. This study aims to describe the case of hyaluronic acid filler displacement as a complication of lip augmentation from a radiologic point of view.

Case-report description: A 45-year-old woman came to the dermatological clinic with a half-year history of a cyst on the border of the left peristomal lateral zone of the upper lip and mucous membrane. Three years ago, she had her upper lip augmented with Juvederm Ultra Smile (hyaluronic acid filler) by a dermatologist. According to the patient, the primary effect was satisfactory. Ultrasound examination was ordered and revealed a homogeneous area of swelling under the upper lip, more extensive on the left. In MRI, superficially from the marginal layer of the circular muscle of the mouth, a limited area of high signal in T2-weighted images was visible. Near the border between lips and the mucous membrane of the oral vestibule, another, less delineated area of the high signal was visible and reported as displaced material from the original location. A positive result of the hyaluronidase skin test excluded the patient from the planned injection, and surgical removal of the incorrectly located acid was ordered. The surgery proceeded without complications.

Conclusion: One of the complications of hyaluronic acid lip augmentation can be filler migration. Even if rare, in nonspecific locations, it can cause diagnostic challenges, especially in patients with an oncologic history. Fillers can either mimic neoplastic disease or mask malignancy in radiologic examinations. Knowledge of typical locations, facial fat compartments and characteristic radiologic features is essential to avoid misdiagnosis and misinterpretation.

Patient with multiple sclerosis and other autoimmune diseases – a case report

Authors: Sokołowska A, Iwański M
Affiliation: Student Scientific Association at Department of Human Immunology, Faculty of Medicine, University of Rzeszow
Tutor: Małgorzata Popiel M.D., prof. Jacek Tabarkiewicz M.D., Ph.D.

Background: Multiple sclerosis (MS) is an autoimmune, chronic, progressive disease of the central nervous system characterized by demyelination and axonal degeneration. There is heterogeneity in the symptoms and course of MS, and some patients may have coexisting autoimmune diseases as well. Polyglandular autoimmune syndrome (PGAS), caused by autoimmunity in multiple endocrine glands, is classified as type I (characterized by hypoparathyroidism), type II (adrenal insufficiency and thyroid disease) or type III (thyroid gland impairment without adrenal insufficiency but with insulin-dependent diabetes and/or organ-specific autoimmune diseases).

Case description: We present a case report of a 28-year-old woman with relapsing-remitting multiple sclerosis (RRMS) with coexisting type 1 diabetes, Hashimoto's disease, and celiac disease. Type 1 diabetes was diagnosed in the second year of life. On the basis of the clinical picture and presence of an oligoclonal protein of the IgG class in her cerebrospinal fluid and characteristic MR images, in which various foci of increased signal intensity were noted in the periventricular white matter of both brain hemispheres and in the model body, cerebellum, and brainstem when she was 18 years old RRMS was diagnosed. These diagnoses preceded celiac disease and Hashimoto's disease. Presently, it is noted that there is fine-wave nystagmus when looking to the left, a weak grip in the left hand, a considerable loss of reflexes in the lower limbs, discrete quadriplegia ataxia, and generalized lability in the Romberg test. Currently, the patient is participating in the natalizumab drug program.

Conclusions: Based on available clinical data our patient was diagnosed with RRMS. Furthermore, the presence of type I diabetes, Hashimoto's disease, and celiac disease indicate she has type III APS. More research is required to understand how autoimmune diseases affect the development and progression of MS.

Tumefactive multiple sclerosis: a case of a young male patient - an unexpected finding

Authors: Łukasiewicz M, Kozak O
Affiliation: Zakład Radiologii GUMed, Gdański Uniwersytet Medyczny

---

Introduction: Tumefactive multiple sclerosis is a rare form of multiple sclerosis (MS), in which demyelinating lesions are similar in characteristics to tumors and cause a mass effect. Because of that, the presenting symptoms and radiological imaging may mimic malignant brain tumors and pose a difficulty in differential diagnosis. The treatment of malignant brain tumors and tumefactive multiple sclerosis is vastly different and misdiagnosis may worsen the outcome**.**

Case report: A 26-year-old male, diagnosed with relapsing-remitting multiple sclerosis in 2010, was presented to the emergency department with a severe tetraparesis, bilateral decrease in vision and slurred speech. Magnetic Resonance scan of head and spine was performed. It revealed multiple lesions, hyperintense in T2, FLAIR, enhancing after contrast media administration. In comparison with the previous examination performed in September 2021, the lesions in the brain progressed in size and presented an oedema ring around them. To differentiate between progressive multifocal leukoencephalopathy and multiple sclerosis changes, the JC virus test was done, which turned out negative. During the hospitalization, he went through five cycles of plasmapheresis. Meanwhile, he also had antibiotic and antithrombotic therapy. The patient tested positive for COVID-19, which extended the stay on the ward. Before discharge, the neurologic examination revealed the regression of the symptoms, albeit he still suffered from the weakening of the lower limbs. After discharge in good condition, he was directed to a rehabilitation clinic**.**

Conclusions: Differentiating tumefactive lesions in radiological imaging may prove many difficulties. It is important to take into consideration the whole clinical presentation regarding various origins of the lesions. Proper diagnosis can prevent unnecessary pharmacological treatment or surgical intervention**.**

Ankylosing spondylitis- common syndromes of an uncommon disease

Authors: Kędzia G, Lubarska M
Affiliation: Poznan University of Medical Sciences
Tutor:. Assoc. Prof. Bogna Grygiel-Górniak Department of Rheumatology, Rehabilitation and Internal Diseases, Poznan University of Medical Sciences

Introduction: Ankylosing spondylitis is a rare cause of back pain, mostly in young men. This disease is easily misdiagnosed because of its nonspecific clinical manifestation. Moreover, rheumatological causes of back pain are often incorrectly ruled out. The possible reasons are negative indicators of acute inflammation and the absence of crucial antibodies.

Case Report: The symptoms of the disease began seventeen years ago - pain in the lumbar and thoracic spine, intensifying at rest. The patient was previously treated with NSAIDs. The rheumatological disease was considered unlikely on the basis of low ESR and CRP, and a negative HLA B27 result.

Recently, there has been an increase in symptoms: pain in the thoracic and lumbar spine, difficulties falling asleep, lying down, and morning stiffness. In addition, pain in the small joints of the hands, and elbow joints for several years, and a feeling of limited bending in the knee joints was observed. Physical examination revealed positive Patrick symptom on both sides, limited mobility in all parts of the spine, especially in the lumbar section, and slight tenderness in the right iliac fossa. MRI of the sacroiliac joints and MRI of the lumbar and thoracic spine revealed oedema and erosive changes. X-ray of the sacroiliac joints revealed changes typical for period III and partial ankylosis, and an X-ray of the spine revealed numerous syndesmophytes and ossification of the ligaments of the spine. Due to the course and current activity of the disease, the patient was selected for treatment with adalimumab.

Conclusion: Back pain is one of the most common reasons for contacting the GP. It is important to differentiate the aetiology of such frequent symptoms. The physician should be critical and holistic about the causes of back pain. A common symptom does not necessarily mean a common cause.

Multi-image manifestation of ear pain

Authors: Lubarska M, Kędzia G
Affiliation: Department of Rheumatology, Rehabilitation and Internal Diseases, Poznan University of Medical Sciences, Poznan University of Medical Sciences
Tutor:. Assoc. Prof. Bogna Grygiel- Górniak

Introduction: Relapsing Polychondritis (RPC) is a rare disease that disturbs cartilaginous tissue and causes fibrosis. When parts of connective tissue of the trachea or heart are affected, it can even lead to death, whereas a nose or ear is involved patient feel mainly discomfort. We characterized two patients with different outcomes of RPC diagnosis.

Describe of cases: First patient complained of pain, swelling and burning in both auricles in 2017. Moreover, the patient history included: adverse effects after NSAIDs and diclofenac, arterial hypertension and cardiology intervention due to NSTEMI infarction and Crohn disease. A cauliflower-like ear was revealed during last admission in 2020 as well as accelerated ESR, anemia, hyperglycemia, bacteriuria, leukocyturia, hypertriglyceridemia in laboratory findings. There was no presence of ANA and ANCA antibodies (both titer and profile). Based on the overall clinical picture RPC was diagnosed, and methylprednisolone with azathioprine was implemented.

In 2010 the 32-year-old women complained of increasing hoarseness, dyspnea, polyarticular inflammation, and high inflammatory parameters. MRI of the neck showed narrowing of the larynx in the subglottic region, so tracheotomy was implemented. Histopathological examination excluded neoplasm. In 2011, she was diagnosed with RPC. The patient was hospitalized many times and had tracheal dilatation with injections with methylprednisolone performed repeatedly. In 2021 the patient reported worsening symptoms, mainly increased pain in the anterior chest wall. Laboratory tests showed leukocytosis, increased CRP, accelerated ESR. The treatment was intensified (increased dose of GCS and IVIG, the patient did not agree for CF treatment – planned conception).

Conclusions: The presented cases showed wide range of symptoms caused by RPC. It could lead to serious complications especially if not treated correctly. The cartilaginous background of this disease means that any specialist may be dealing with RPC so our aim was to emphasize the characteristic symptoms**.**

Fluoroquinolone-induced Achilles tendinopathy – A case report and management recommendations

Authors: Feeney K
Affiliation: University of Limerick School of Medicine
Tutor:

Background: Fluoroquinolone's have long been used in the management of infection. While the fluoroquinolone class of antibiotics are generally well-tolerated, they have been associated with complications including tendon injury. At present, there is a paucity of evidence regarding how best to manage tendon injury in this population**.**

Case Report: A 69-year-old male presented to the outpatient clinic with a 7-year history of bilateral Achilles tendon pain. The patient gave a history of a sudden onset of bilateral Achilles tendon pain following two exposures to ciprofloxacin. At presentation, the patient was unable to do any significant exercise and had made no progress over the following 6 years despite conservative care.

Physical examination showed thickening of the midportion of the Achilles tendon bilaterally with pain on palpation. MRI showed gross thickening of the Achilles tendon consistent with chronic tendinosis. The patient had a VAS score of 7/10 and a Roles and Maudsley (R&M) score of 4. The patient was commenced on Alfredson's protocol and treated with three sessions of extracorporeal shockwave therapy (ESWT). ESWT consisted of treatment with 2,500 impulses at a frequency of 10Hz on three occasions spaced one week apart. At the 6-month follow up, the patient had a VAS score of 2/10 and a R&M score of 2. The patient's pain had improved significantly suggesting that treatment with eccentric loading exercises following Alfredson's protocol combined with ESWT may be beneficial in reducing pain and improving function in patients with fluoroquinolone-induced Achilles tendinopathy.

Conclusion: Clinicians should be aware that fluoroquinolone's can cause Achilles tendinopathy. If Achilles tendinopathy is suspected during therapy, cessation of treatment and rest is imperative. If the condition fails to improve, eccentric loading following Alfredson's protocol combined with a course of ESWT may improve patient symptoms and allow a return to exercise.

Ganglion hypogastricus inferior block as an option for chronic pain treatment - a case report

Authors: Laukaitytė K, Žurauskaitė A
Affiliation: Faculty of Medicine, University of Health Sciences Kaunas, Lithuania
Tutor: Vytautas Mačiulis, MD, Anesthesiology Department, Lithuanian University of Health Sciences, Kaunas, Lithuania

Background: Endometriosis is a chronic estrogen-dependent disease in which pelvic pain is the dominant symptom. The main goals of medical therapy are to improve function and quality of life while minimizing adverse effects. General treatments include the following: Nonsteroidal anti-inflammatory drugs, Neuropathic agents, nerve block and neuromodulation.

Case report: 30-year old female patient complained about the recurrent dull, sometimes throbbing lower abdominal pain, spreading to the abdominal wall and back. According to chronic pain scale the patient described her pain 7 to 10 points. The first painful event started in 2014 and endometriosis was diagnosed. She was treated by her primary care physician for few years with conservative treatment including oral contraceptives and pain medications such as nonsteroidal anti-inflammatory drugs. The patient underwent 4 laparoscopic surgeries with insignificant effect. The patient is receiving Hormone replacement therapy, which gives a positive effect while used. However, the effect gradually diminishes. Treatment was adjusted: Etoricoxib 120mg x 2; Pregabalin 75mg 1 -2x per day. If pain gets worse, rescue treatment: Paracetamol/Codeine 500/30mg. After several years of struggling with this condition, the patient was referred to interventional pain management. An inferior hypogastric plexus block was performed under X-ray guidance with the use of dexamethasone and 3,6 ml of 0.5% bupivacaine. The patient reported significant improvement shortly after the procedure was performed. The patients pain changed from 7-10 to 5 points.

Conclusions: Several benign and malignant pain syndromes involving the lower pelvic organs may be effectively managed by a local anesthetic blockade of the inferior hypogastric plexus. Transsacral approach for blockade of the inferior hypogastric plexus is a useful technique for the diagnosis and treatment of chronic pain conditions.

Complicated subarachnoid hemorrhage – a case report

Authors: Žurauskaitė A, Laukaitytė K
Affiliation: Faculty of Medicine, University of Health Sciences Kaunas, Lithuania
Tutor: Doc. dr. Neringa Balčiūnienė, Department of Neurosurgery, Lithuanian University of Health Sciences, Kaunas, Lithuania

Background: Aneurysmal subarachnoid hemorrhage (SAH) usually occurs in the setting of a ruptured cerebral aneurysm and has a high rate of death and complications. The most common complications are: rebleeding, hydrocephalus, seizures, cardiac disfunction, vasospasm and delayed cerebral ischemia.

Case report: 31-year-old male patient was admitted to the Emergency Department because of severe occipital pain and nausea. The patient Glasgow Coma Scale (GCS) was 14 (E4, V4, M6). Urgent head computed tomography (CT) and computed tomography angiography was performed – SAH and ruptured anterior communicating artery aneurysm was found. The patient was admitted to the Neurointensive care unit and osteoplastic craniotomy, aneurysm clipping, and lumbar drain placement were performed. The patient's GCS deterioriated to 10 (E3, V2, M5) with anisocoria after the operation. CT showed that third ventricle was no longer differentiated and ischemic changes. An external ventricular drain together with intracranial pressure monitoring was inserted because of intracranial hypertension (ICH). ICH was treated according protocol for 9 days. The patient was stabilised and extubated. The plegia of the right hand was observed and transcranial doppler showed severe vasospasm. Induced hypertension had no effect and cerebral angiography was performed - severe vasospasm in both anterior cerebral arteries and lower middle cerebral artery was found. The intraarterial verapamil injection was administered and repeated for two more times untill the spasm was relieved. The patient's condition was stabilized, GCS was 14, mild paresis on the right side remained and patient was transferred to the Neurosurgery Unit.

Conclusions: Good functional outcomes after SAH are often dependent on early detection and treatment of cerebral vasospasm. The diagnosis of both, early and late complications after SAH and timely treatment improves the outcome of patient..

Vasculitis of the coronary arteries: a case report

Authors: Kybartaite G, Ziubryte G, Jarusevicius G, Unikas R, Gustiene O
Affiliation: Faculty of Medicine, Lithuanian University of Health Sciences, Academy of Medicine
Department of Cardiology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics
Tutor: MD. Greta Ziubryte, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Department of Cardiology; Lithuanian University of Health Sciences, Institute of Cardiology

Background: Vasculitis is an inflammation of blood vessel walls resulting in stenosis, occlusion, aneurysm, or rupture. In patients with systemic vasculitis, cardiac involvement predicts a poor prognosis. Coronary vasculitis (CV) should be considered in the differential diagnosis of younger patients with unexplained acute coronary syndrome or previously known vasculitis. We present a case with acute coronary syndrome (ACS) secondary to coronary artery vasculitis.

Case report: A 61-year-old man has been brought to the emergency department with a chief complaint of severe chest pain. Laboratory tests showed TnI 0,17g/l (normal range <0.04 g/l). There was ST depression in V3-V4. Due to unstable angina, he was transferred to the University hospital for a cardiologist evaluation. Seven years ago, he was diagnosed with ST-elevation myocardial infarction. In 2015 he was diagnosed with aortic aneurysm; in 2016, he was operated on for a ruptured abdominal aortic aneurysm. Computed tomography has been done to rule out aortic dissection. No signs of dissection or aneurysmatic dilatations were found. Troponin growth was assessed (TnI 1,27 g/l). Urgent coronary angiography revealed old right coronary artery occlusion compensated by good collateral blood flow and pouch aneurysms with turbulent blood flow in all coronary arteries. Vasculitis was suspected. He was consulted by a rheumatologist, who does not rule out vasculitis diagnosis but recommended further investigation. As vasculitis has not been confirmed yet, the standard treatment of acute coronary syndrome (ACS) has been started. The patient is referred for urgent outpatient consultation with a rheumatologist to clarify the diagnosis of vasculitis.

Conclusion: Coronary vasculitis is a rare disease with a poor prognosis, although early diagnosis and treatment improve survival rates. It is one of the most frequent causes of coronary artery disease in young patients; nevertheless, it can be an unexpected finding in older patients presenting with ACS.

Coronary subclavian steal from a left internal mammary artery coronary bypass graft due to ipsilateral subclavian artery stenosis

Authors: Kybartaite G, Ziubryte G, Morkunaite K, Unikas R, Gustiene O
Affiliation: Faculty of Medicine, Lithuanian University of Health Sciences, Academy of Medicine
Department of Cardiology, Hospital of Lithuanian University of Health Sciences Kaunas Clinics
Tutor: MD Greta Ziubryte, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Department of Cardiology; Lithuanian University of Health Sciences, Institute of Cardiology

Background: Coronary subclavian steal syndrome (CSSS) is a rare incidence in patients with prior coronary artery bypass grafting (CABG) and, specifically, a left internal mammary artery (LIMA) to the left anterior descending artery (LAD) graft and co-existent significant subclavian artery stenosis.

Case report: An 84-year-old woman with a history of coronary artery disease, status post triple vessel CABG with a LIMA-LAD, vein grafts to the right coronary artery, and a diagonal branch was admitted to department of Cardiology of our hospital. Her chief complain was intermittent chest pain radiating to the left arm exacerbating on moderate exercise; also, she noted different blood pressure (BP) between arms for a while. On physical examination, vitals were normal, except the difference of BP between arms; in the left arm it was 50 mmHg lower compared to right one. The 12-lead ECG revealed ST depression and negative T waves in left-sided leads. Cardiac biomarkers were normal. Echocardiography showed reduced left ventricle ejection fraction (LVEF). Coronary artery angiography (CA) revealed formerly occluded native coronary arteries. Both two vein grafts were patent. Retrograde blood flow from LIMA to the left subclavian artery and left subclavian artery stenosis were found. As the heart was fully revascularized, it was presumed that CSSS was the cause of her symptoms. Vascular surgeon recommended percutaneous transluminal angioplasty (PTA). Stenosis was ballooned and stented, which re-established blood flow. The patient was asymptomatic after the procedure and was discharged the following day. On 30-day follow up, her chest pain recovered and her physical capacity improved.

Conclusion: CSSS should be highly suspected in patients with differential blood pressure readings and angina symptoms after CABG. Retrograde flow through the LIMA graft in patients with significant left subclavian stenosis can foremost be diagnosed by invasive angiography.

THE TREATMENT OF MYASTHENIA GRAVIS - BETWEEN RISK AND BENEFIT

Authors: Popescu C
Affiliation: Faculty of Medicine, University of Medicine and Pharmacy Carol Davila Bucharest
Tutor: Petrescu Cristian University of Medicine and Pharmacy "Carol Davila" Bucharest, Clinical Psychiatric Hospital "Professor Doctor Alexandru Obregia" Bucharest

Background: Myasthenia gravis is a chronic autoimmune condition that affects the neuro-muscular system. Within this condition, antibodies against acetylcholine receptors are present. This prevents the transmission of the nerve impulse and implicitly of the muscle contraction. The reason for the appearance of autoantibodies is unknown. Current therapeutic options include anticholinesterases, corticotherapy or immunosuppressants.

Case report: This case describes a complex clinical picture in a female patient A.M., aged 85 years, known with myasthenia gravis, type 2 diabetes mellitus complicated with polyneuropathy and anxious-depressive disorder that presents for gait disorder, associated with lumbar rachialgia with irradiation on the right lower limb and with functional impotence, symptomatology onset of 2-3 weeks.

Clinical examination detects aggravation of rachialgia at mobilization, right crural monoparesis and bilateral distal crural paresthesia. During the hospitalization, the patient developed a psychopathological picture dominated by qualitative perception disorders.
The treatment is marked by a high degree of complexity due to the multiple associated comorbidities and possible drug interactions. Glucocorticoids and anticholinesterases were administered further. Throughout the hospitalization, the patient received psychiatric medication, nonsteroidal anti-inflammatory treatment and pain relievers.
The patient's evolution was slowly favourable, with partial relief of lumbar rachialgia. The patient requires constant supervision and care, with diabetic, psychiatric and neurologic directly observed therapy. A neurosurgical consultation was recommended.

Conclusions: The treatment of myasthenia gravis, although effective, is associated with a multisystemic impairment. Anticholinesterases have an increased risk of muscarinic side effects, symptoms present in this patient. Methylprednisolone, although administered in a low dose, in the long term, has the characteristic effects of corticotherapy, effects that have altered the patient's health. The choice of psychiatric treatment is a challenge being limited due to the specific contraindications of myasthenia gravis and type 2 diabetes mellitus. Consequently, it is

necessary to monitor patients with myasthenia gravis and have a close interdisciplinary collaboration.

Pediatric Case Report

Scientific Committee

dr hab. n. med. Ewelina Gowin
dr n. med. Patrycja Marciniak-Stępak
dr n. med. Paulina Sobkowiak

Coordinator

Julia Janecka

Session Partner

STANDARDY MEDYCZNE
pediatria

Can we afford misdiagnosis in the pandemic telemedicine era? A delayed diagnosis of olfactory neuroblastoma/biphenotypic sinonasal sarcoma in a 17-year old male.

Authors: Czarny Jakub, Andrzejewska Marta

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

Tutor: Prof. Katarzyna Derwich MD, PhD, Magdalena Samborska, PhD

Background: COVID-19 pandemic has led to a significant decline in oncological screening and new diagnoses, with more advanced cancer stages observed. A rapid diagnosis is required, specifically when it comes to pediatric oncology as most pediatric cancers develop turbulently.

Case report: We present a case of 17-year-old male complaining of a watery leak from the right nasal aperture since June 2020. The symptoms did not alleviate after the administration of antihistaminic drugs. In September 2020 he noticed nasal occlusion, followed by an online laryngological appointment during which nasal polyps were diagnosed. In October 2020, an unpleasant smell and pinkish color of the leak, enlarged right carotic lymph nodes and occlusion of the left nasal aperture were observed. The patient was then referred for nasal polyps removal. However, a CT scan showed a soft tissue mass filling the nasal cavity, destroying its bones, protruding into the nasal sinus and other adjacent anatomical structures. Due to such suspicion, a biopsy was taken. Preliminary histopathological diagnosis indicated olfactory neuroblastoma G3/G4. Due to the tumor progression manifesting with the further right cheek edema, right exophthalmos and left carotid lymph nodes enlargement, vincristine was administered. Finally, the diagnosis of olfactory neuroblastoma/biphenotypic sinonasal sarcoma was established, allowing for the implementation of treatment according to CWS Guidance 2014 Protocol - VAIA III group. The patient completed treatment in November 2021 and remains under the care of the outpatient children's oncology clinic.

Conclusions: The described case shows unacceptable delays in diagnosing an uncommon pediatric cancer with a potential for rapid progression. More advanced stage of the disease at the moment of diagnosis contributes to adverse prognosis, especially concerning soft-tissue sarcoma and older children. It emphasizes the need for onsite medical consultations to detect disturbance early and apply proper treatment.

The diagnosis of Marfan syndrome in children - a case report.

Authors: Konieczny Michał

Affiliation: Collegium Medicum, University of Warmia and Mazury in Olsztyn

Background: Marfan's syndrome (MFS) is the most common genetic disorder of connective tissue, which affects the structure of the protein - fibrillin. The incidence of this syndrome is 2: 10000 patients.

The diagnosis of MFS is based on clinical symptoms. However, they are not always obvious, as many appear at different times in patients and may be common in the general population (e.g. mitral valve leaflet prolapses, scoliosis).

Genetic testing may be helpful in making the diagnosis, but a negative test result does not rule out the diagnosis of Marfan's syndrome, as the effectiveness is at the level of 90%. However, it often happens that it is diagnosed as a result of autopsy or a diagnosis in a family member of the patient. The manifestation of Marfan's syndrome occurs mainly in the body structure, eyesight and circulatory system.

Case report: The described clinical case is a patient aged 14 years and 6 months, tall 200 cm (> 99 cm) and obese, weighing 134 kg (> 99 p). Additionally, he was diagnosed with Asperger's Syndrome. Intellectual development is normal. Bone age consistent with calendar age. Tall parents - mother 171.5 cm (95 p), father 188 cm (97 p). He was diagnosed with the e66/e34 + mutation. Father has a genetically confirmed Marfan syndrome.

Conclusions: The disease in the described patient manifests itself only in tall stature, so it confirms the difficulties in diagnosing this disease entity. Confirmed MFS in the patient's father definitely facilitates a correct diagnosis, because the boy was not diagnosed with any other organ disorders. During diagnostics, the phenotypic variability of this syndrome should be remembered first of all, as it very often gives an incomplete clinical picture.

Life-threatening complications of a central venous catheter in a haemophilic patient with inhibitor.

Authors: Tomaszewska Natalia, Strzemecka Joanna

Affiliation: Department of Pediatrics, Haemato-Oncology and Gastroenterology, Pomorski Uniwersytet Medyczny

Tutor: MD, PhD Tomasz Ociepa, MD Aleksandra Królak

Introduction: Haemophilia A is a genetic disorder caused by factor VIII deficiency, leading to an increased risk of bleeding. The prophylaxis is a compensatory supply of FVIII. In order to provide a systematic and exact amount of coagulation concentrate in pediatric patients, it may be necessary to implant a central venous catheter (port-a-cath). Complications associated with catheter implantation include: venous thrombosis, infections and bleeding after surgical intervention.

Case report: A 9-month-old child was diagnosed with severe factor VIII deficiency and has been under FVIII replacement therapy. After 3 months, he developed inhibitory antibodies. In order to eradicate the inhibitor, immune tolerance induction was implemented. Given the amount of FVIII injections required for inhibitor eradication, a port-a-cath was implanted. 10 months later the inhibitor was successfully eradicated. At 3 years of age he presented to the Clinic with fever, weight loss, cough and fatigue. On physical examination the patient was febrile with tachycardia, systolic murmur and hepatosplenomegaly. There was a skin tear at the site of the port. Laboratory findings showed thrombocytopenia and hyperleukocytosis with elevated inflammatory parameters. Concomitantly, blood cultures grew S. aureus MSSA. Despite antibiotic therapy and catheter removal, the patient's condition was still deteriorating. Echocardiography revealed hyperechoic mass on the tricuspid valve, indicating endocarditis. The patient was transferred to the Clinic in Warsaw, where the vegetation was surgically removed. After hospitalization on intensive therapy unit, he had a biological valve inserted. Since then, the patient's general condition has improved.

Conclusion: Nowadays, there are various strategies to manage haemophilia. In some cases, it is necessary to implant a port-a-cath. Interdisciplinary approach is the key to successful treatment of the disorder and complications that may arise.

Ansa pancreatica - a case report of paediatric patient with pancreatitis.

Authors: Jankowski Jan, Bałut Daniel

Affiliation: Students' Scientific Group GEKON, Department of Paediatric Gastroenterology and Nutrition, Medical University of Warsaw, Warsaw, Poland

Background: Ansa pancreatica (AP) is a rare anatomical variant of pancreatic ducts. The frequency of it is 0.25-1.1% among adults who had an imaging of bile ducts performed and 3-3.4% among children with recurrent pancreatitis.

We reviewed all 19 cases of AP using Medline and Embase. Only one case concern paediatric patient. We would like to present a case report of boy from our Department with AP.

Case report: 12-years-old male patient was admitted to the hospital in due to recurring episodes of pancreatitis. In magnetic retrograde cholangiopancreatography (MRCP) was described an anatomical variant - ansa pancreatica.

The other potential causes of chronic pancreatitis were excluded: no predisposing mutations of genes were found; the lipid panel, level of calcium and immunoglobulin G4 (IgG4) were correct; alpha-1 antitrypsin deficiency, cholelithiasis and coeliac disease were excluded; no medication and stimulants were noticed.

During endoscopic retrograde cholangiopancreatography (ERCP) sphincterotomy and stent positioning were performed.

During the 19-months observation, the stent was replaced in gradually increasing diameter every 3-4 months. The patient was still asymptomatic between hospitalizations. In follow-up no strictures of the main pancreatic were described in ERCP; the stents were removed. To date, the patient has had no recurrence of pancreatitis.

Conclusions: AP may be related to pancreatitis in children. MRCP is a diagnostic tool for AP. ERCP may be a diagnostic as well as therapeutic procedure in children suffered from pancreatis. Further research is needed.

Pancreatic pseudocysts as a rare complication of acute pancreatitis - a comparison of two patients.

Authors: Gudziewski Olivia, Mikus Zuzanna

Affiliation: Department of Paediatric Gastroenterology and Nutrition, Medical University of Warsaw

Background: Pancreatic pseudocysts are relatively uncommon in children. Treatment tends to be individualized, with some patients undergoing endoscopic methods and others needing surgical management. This case study aims to present two pediatric patients that presented to our hospital with pancreatic pseudocysts and compare their clinical presentations, management and outcomes.

Case Report: Both patients presented to the Department of Paediatric Gastroenterology and Nutrition at the Medical University of Warsaw with unremitting abdominal symptoms, loss of appetite and nausea as well as a history of acute pancreatitis. Patient A - 12 y.o female, and Patient B - 11 y.o female. Patient A - imaging tests revealed a giant cystic lesion over 20 cm in diameter. Due to the rapid deterioration of the patient's condition (deteriorated pain control, disturbed consciousness, high inflammatory markers, d-dimers, respiratory failure, hyperglycemia) the patient was admitted to the ICU, where she required intensive analgesic treatment. The patient suffered from ongoing hyperglycemia and was operated endoscopically to drain the cyst. After the procedure, the borders of the cyst reduced which allowed for the removal of the gastrostomy 2 months later. Patient B - MRI showed 2 cysts (60x52x26 mm and 154x98x127 mm). As no pressure of the cyst on the stomach wall was visualized during gastroscopy, ERCP was performed as an attempt to drain the cyst from the pancreatic ducts. The procedure failed due to scarring of the pancreatic duct and surgical removal was initiated which included removing the cyst along with the body and tail of the pancreas and the spleen.

Conclusions: Pancreatic pseudocysts, although rare in children, require an individualized approach and can be challenging to manage. The least invasive method is decompression using cystogastrostomy, however, surgery may be required in more complicated cases. Both patients presented in this case were treated using different approaches, but both had successful recoveries.

The use of blinatumomab and CAR-T cell therapy in recurrent acute lymphoblastic leukemia in a boy with Nijmegen syndrome - a case report.

Authors: Piotrowska Aleksandra

Affiliation: Collegium Medicum Uniwersytet Jana Kochanowskiego w Kielcach

Background: Nijmegen syndrome is a rare disease caused by a mutation in the NBS1 gene. Worldwide only 450 cases of the syndrome were recorded, mainly in Poland. The clinical picture is based on a characteristic phenotype with microcephaly, dysmorfic face, growth failure and antibody deficiency. Most children die in the first decade of life from cancers.

In relapsed and refractory B-cell precursor leukemias, blinatumomab can be used. It is a bispecyfic monoclonal antibody that mediates the connection of a blasts with a T cell, due to the ability to simultaneously bind to CD19 and CD3 antigens. As a result, T cells are attracted to blasts and eliminated them.

There is also a CAR-T immunotherapy, which involves the harvesting of T cells followed by their genetic modification to express antigen receptor that is normally not present, thus resulting in the creation of a chimeric molecule – a T cell with the combined specificity of an antibody. T cells armed with new receptors are able to recognize and destroy the blasts.

Case report: A boy with Nijmegen syndrome borned in 2005 was treated for ALL with CNS and testes involvement: first occurence 01.2010 to 06.2012, first recurrence 02.2013, second 11.2019 and third 02.2021. In December 2019, the boy received an allo-HSCT. In March 2021, after the appearance of the third recurrence, blasts were marked as CD19 and material for CAR-T therapy was collected. The boy underwent monthly treatment with blinatumomab. After recovery, in June 2021, the CAR-T cells was administered. Due to immunodeficiency he requires a monthly supply of immunoglobulins.

Conclusions: Thanks to genetic engineering modern treatment is customized, which gives better results and much less side effects. CAR-T therapy is described as the most promising direction in the development of medicine in blood cancer.

Guillain-Barre syndrome associated with COVID-19 in a child – case report.

Authors: Savkiv Diana

Affiliation: Department of Children's Diseases and Pediatric Surgery, I. Horbachevsky Ternopil National Medical University

Tutor: Oksana Boyarchuk, MD, PhD, DSc

Introduction: Guillain-Barre syndrome is a rare autoimmune condition witch affects the peripheral nervous system. Acute inflammatory demyelinating polyneuropathy(AIDP) is a classic form of the syndrome. Neurological manifestations after SARS-CoV-2 infection are well known in adults. At the same time, neurologic complications in children are reported mainly in association with multisystem inflammatory syndrome(MIS).

Case report: A 12-year-old girl was admitted to the hospital with progressive weakness of lower limbs, gait disorders, joint and muscle pain. The girl also presented with anxiety, depression and eating disorders. Two weeks before the girls had mild manifestations of respiratory disease. Neurological examination revealed decreased knee, Achilles and plantar reflexes, polyneuritic sensitivity disorders in the both arms and legs.

Complete blood count revealed leukocytosis (23,810/μL), neutrophilia (20,476/μL) and moderate thrombocytopenia (109,210/μL). CRP was normal and ANA titer was 1: 320 (reference range <1: 100). Electromyography and nerve conduction study confirmed diagnosis of polyneuropathy. IgG antibodies to SARS-CoV-2 were elevated. Instead, the results of tests for IgM antibodies to other viruses (CMV, HSV, EBV), as well as the detection of poliovirus in the feces were negative. Ultrasound of the knee joints showed signs of bursitis on both sides and synovitis on the left.

Patient received intravenous pulses of methylprednisolone and two cycles of IVIG with marked improvement.

Conclusions: Polyneuropathies along with other neurological manifestations may follow even mild course of SARS-CoV-2 infection in children.

Splenosis mimicking metastatic abdominal and pelvic tumors in a 12-years old female patient.

Authors: Olejarz Anna, Stobiecka Martyna, Stygar Patrycja, Dryjka Krzysztof

Affiliation: Faculty of Medicine with Division of Medicine and Dentistry in Zabrze, Medical University of Silesia in Katowice

Tutor: Prof., Szczepański Tomasz, MD, PhD, Pasierbek Michał, MD, PhD, Korlacki Wojciech, MD, PhD, Pobudejska-Pieniążek Aneta, MD, PhD

Background: Splenosis is heterotopic autotransplantation of splenic tissue after rupture of splenic capsule caused by injury or during selective splenectomy in management of hematological diseases eg. hereditary spherocytosis (HS). Splenosis sometimes cause nonspecific abdominal symptoms eg. abdominal pain but usually is asymptomatic and diagnosed accidentally as abdominal tumor. It is reported to be a common but rarely diagnosed condition, especially in the pediatric population.

Case report: Case report describes a 12-years old female patient with HS, history of selective splenectomy and cholecystectomy for HS 3-years ago and diagnosed irritable bowel syndrome, hospitalized for nonspecific general symptoms. During medical imaging (USG and CT) abdominal and pelvic tumors together with enlarged lymph nodes were found. Patient was transferred from the pediatric unit to the unit of pediatric oncology and hematology to undergo further diagnostics. After CT consultation and negative results of blood tumor markers there was a decision to perform laparoscopy and biopsy of lesions. During surgery many nodules similar to splenic tissue in the omentum, on the surface of small intestine, colon and peritoneum were found. Samples were taken for histopathology. There were no complications after the procedure, the patient recovered well and was discharged in good health. Results of histopathological examination confirmed splenosis.

Conclusions: Splenosis should be considered in differential diagnosis of abdominal tumors in pediatric patients with a history of selective splenectomy or spleen injury. This could help reduce risk of unnecessary pharmacological and surgical treatment.

The importance of genetic testing - Constitutional Mismatch Repair Deficiency Syndrome as a cause of numerous malignancies in a teenage patient - a case report.

Authors: Galli Dominika

Affiliation: Institute of Pediatrics, Department of Pediatric Oncology, Hematology and Transplantology, Poznan University of Medical Sciences

Tutor: Magdalena Samborska MD, PhD, Prof. Katarzyna Derwich MD, PhD

Background: Constitutional mismatch repair deficiency syndrome (CMMRD) is a genetically determined disease resulting from a biallelic mutation in one of genes: *MLH1, MSH2, MSH6 or PMS2.* Patients present higher predisposition for various types of malignancies, especially hematological neoplasms, brain and gastrointestinal tract tumors.

Case report: A 3-year-old boy was diagnosed with B common lymphoblastic leukemia (ALL). The patient completed treatment for the SR group in 2012. The first magnetic resonance imaging (MRI) of head, revealed hamartoma and astrocytoma lesions in the central nervous system (CNS). In 2014, the patient was admitted to the hospital due to a mediastinal tumor - a diagnosis of precursor T cell lymphoblastic lymphoma, accompanied by the vena cava syndrome,was established. The treatment of lymphoma was completed in 2016. Due to brain tumours, second hematological malignancy and numerous skin 'cafe au lait' lesions, genetic test including Sanger's sequencing was performed and the CMMRD syndrome was diagnosed. Since that time, patient had regular checkups: in the MRI of head astrocytoma and hamartoma were described ,in colonoscopy numerous polyps of the type of tubular adenomas were removed every year. At the age of 14, the diagnosis of isolated bone marrow relapse of ALL B-common was established. Due to the almost exceeded total dose of anthracyclines, after induction chemotherapy, one course of blinatumomab was administered and the patient was qualified for allogeneic haematopoietic cell transplantation. The patient remains in CR2 under the care of the transplant center.

Summary: The second case of a cancer in a pediatric patient requires a thorough analysis of all clinical data and a search for genetic causes of cancer predisposition. The diagnosis of CMMRD syndrome allowed for the extension of diagnostics and the prevention or detection of other neoplastic changes at an early stage.

When a rare disease does not respond to the treatment: A case of Diffuse Cutaneous Mastocytosis with mutation in KIT gene treated with cytostatics.

Authors: Zielińska Anna

Affiliation: Department of Neonatology, Pathology and Intensive Care - Children's Memorial Health Institute, Medical University of Warsaw

Introduction: Mastocytosis consists of a heterogeneous group of disorders characterized by a neoplastic proliferation, expansion and accumulation of abnormal mast cells (MC) in at least one organ system including the skin. Diffuse Cutaneous Mastocytosis (DCM) is a rare type of this disease. DCM accounts for 1-3% of all Cutaneous Mastocytosis cases. The clinical symptoms stem from the release of histamine along with other MC mediators. These mediator-related symptoms include pruritus, flushing, blistering, abdominal pain, diarrhoea, gastrointestinal haemorrhage, bone pain, hypotensive episodes. Symptoms range from moderate to severe and in some cases even life-threatening. The treatment includes symptomatic treatment and avoidance of triggering factors which usually completely alleviate symptoms. In most cases, the disease resolves by adolescence.

Case: A 3-day old neonatal male presenting with multiple hemorrhagic and serous-filled vesicles on the trunk, extremities and scalp was admitted to the neonatal ward.

The boy had recurring episodes of flushing with transient tachycardia of >200/min, oxygen saturation of 80% and a decrease in blood pressure. Treatment with steroids and antihistamines decreased flushing and tachycardia, however, it didn't alleviate skin symptoms. By virtue of no improvement, a skin biopsy was examined for a c-KIT mutation in codon 816. KIT D816V confers resistance to the kit-targeting drugs and hence the genetic testing came back positive, the patient couldn't be qualified for the biological therapy. Instead, the boy was treated with an antineoplastic drug: Vinblastine. Introduced treatment was inspired by the treatment of Mast Cell Leukemia. Chemotherapy alleviated both systemic and cutaneous symptoms.

Conclusions: This case highlights the importance of creativity in the treatment of rare diseases. Sometimes it is necessary to go beyond treatment algorithms and be inspired by the treatment of other diseases- just like in this case. Furthermore, this case reminds that genetic testing is crucial for adjusting the treatment.

A 16-year-old patient with ischemic stroke in the course of mitochondrial disease.

Authors: Mariowska Agnieszka, Rumiński Piotr

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

Tutor: Paweł Kemnitz, MD

Background: MELAS syndrome is one of the most common mitochondrial disorders. It appears in children and young adults as recurrent episodes of encephalopathy, myopathy, headache or focal neurological changes.

Case report: A 16-year-old boy was admitted to the Department of Pediatric Medicine due to a headache. A head MR examination was ordered, which confirmed an ischemic stroke involving the cortex in the left occipital region. Additionally, 4 days before admission, the patient developed left eye pain and headache in the left temporal region. The patient was transferred to the Department of Infectious Diseases and Child Neurology with the diagnosis of cerebral infarction and undefined hearing loss for further treatment and diagnostics. On admission the boy reported headache in the left parietal region and in the left eye, and blurred vision in the right eye. During hospitalization, the patient's neurological condition was stable. Initially, the patient reported intermittent color speckle vision in front of the right eye, which resolved during hospitalization. Although visual acuity improved, visual field loss continued. In addition, head MR checks showed progression of CNS lesions. An extensive differential diagnosis of ischemic CNS lesions was performed from the beginning. Genetic testing was ordered, and metabolic consultation was performed. The study showed elevated blood levels of lactic acid, so mitochondrial encephalopathy - MELAS was included in the differential diagnosis. After genetic consultation, blood was drawn for molecular testing for MELAS, the results finally confirmed this diagnosis.

Conclusions: The multiorgan complications of stroke-like lesions in lactic acidosis require multispecialty medical care, which the patient has also undergone. Regular monitoring is recommended for progression of the disease or emergence of new symptoms. Unfortunately, the course of the disease is usually unfavorable and treatment of patients is usually symptomatic.

Hemoadsorbtion by CytoSorb in patient with septic shock: a case of 12-year-old girl.

Authors: Wieczorek Olga

Affiliation: Faculty of Medicine, Medical University of Lodz

Tutor: Ewa Malinowska MD

Background: Septic shock is a potentially life-threatening organ disfunction. Despite broad-spectrum antibiotic administration septic shock remains associated with a high mortality rate. CytoSorb adsorber is a device contaning highly porous polymer which is able to bind cytokines from the blood. Cytokine reduction by hemoadsorption used as a supplement to standard pharmacological treatment in sepsis allows rapid hemodynamic stabilization.

Case report: A 12-year-old girl was admitted to the hospital because of rash and fever. On admission impaired consciousness, hypotension and tachycardia were also observed. The patient was transferred to the Intensive Care Unit (ICU). Blood tests showed significantly increased inflammatory factors, biochemical markers of kidney failure and coagulation disorders. In ICU the patient was intubated and because of progressive circulatory insufficiency, treated with catecholamines, fluids and blood components. Due to overall clinical picture and blood test results, the septic shock was diagnosed. Ceftriaxone and meropenem were administered as an empiric antimicrobial therapy. The patient was also treated with immunoglobulins. The blood culture was positive for *Streptococcus pyogenes*. On the second day of treatment continuous veno-venous hemodiafiltration with the use of an additional CytoSorb adsorber was started. The patient's condition began to improve so the doses of catecholamins were reduced and extubation was possible.

Conclusions: Treatment with the CytoSorb hemoadsorber resulted in a rapid improvement in the circulatory and respiratory capacity of the patient. This therapy brings multidirectional benefits for patients, including limiting the occurrence of complications related to long-term treatment in the Intensive Care Unit.

Dentistry Case Report

Scientific Committee

prof. dr hab. n. med. Anna Surdacka
dr hab. n. med. Karolina Gerreth
dr n. med. Wojciech Eliasz
lek. dent. Jakub Lipski

Coordinator

Piotr Kupidłowski

Session Partner

Odontoma of the left maxillary sinus: A rare incidental finding

Authors: Shania Kafi Keramati, BSc, MSc, Ali Hok, BSc

Affiliation: Maxillofacial Surgery , Poznan University of Medical Sciences

Tutors: Aleksy Nowak MD, Łukasz Słowik DDS, and Chairman Dr hab. Krzysztof Osmola, DDS, MD, PhD

Background: Odontomas are the most common type of benign odontogenic neoplasms of the jaw. They are mixed lesions consisting of both epithelial and mesenchymal cells, displaying dental tissue differentiation. Odontomas mainly occur in the anterior maxilla or in the posterior mandible. They are classified as either complex or compound variants and are reported mainly as incidental findings on radiographs taken due to other indications. Although the etiologic factors are unclear, these lesions are thought to be related to infection, trauma, and genetic mutation.

Case Report: We report a 41-year-old male who was admitted to the maxillofacial surgery department due to a rare odontoma in his left maxillary sinus. It was detected incidentally 6 months earlier. The lesion was revealed during a routine OPG, and diagnosis was extended to CBCT, which showed a polyp-like lesion in his left maxillary sinus. The patient reported no symptoms or discomfort. The operation was conducted by making an incision in the left part of the maxilla using Caldwell-Luc method. The full excision of the tumor was performed successfully, and no further complications were reported. Histopathological examinations confirmed the diagnosis of an odontoma in the left maxillary sinus. Minor swelling was reported post-surgery. No complaints were reported during the follow up appointment.

Conclusions: Generally, odontomas are asymptomatic unless they become a large mass which might lead to the eruption or displacement of teeth. If left untreated, odontomas involving the maxillary sinus can lead to complications such as orbital cellulitis, subdural emphysema, meningitis and brain abscesses resulting in death. Moreover, for a successful atraumatic removal of a maxillary lesion, careful procedures and principles must be followed. In conclusion, the procedure was successful using the Caldwell Luc method to open an incision in the maxilla, however, some precautions have been taken after the surgery to avoid post-surgical complications.

Cemento-ossifying fibroma of the mandible

Authors: Jakub Lewek, Jan Kotlarek, Natalie Górna, DDs Maciej Okła, PhD Krzysztof Osmola, DDs Łukasz Słowik

Affiliation: Medyczny, Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu Katedra i Zakład Chirurgii Szczękowo-twarzowej , Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu

Tutors: PhD Aleksy Nowak

Background: Cemento-ossyfing fibroma is a slow-growing benign neoplasm, occurring predominantly in head and neck areas, most often in the mandible. Radiological image presents an unilocular lesion containing varying amounts of radio-opaque mass. Most frequently, growth of the tumor does not cause any pain or symptoms. The diagnosis includes clinical, radiographic and histological evaluation. Correct surgical tratment is necessary to avoid further deformations.

Case Report: A 33-year old male reported to the Maxillofacial Surgery Department and was subject to comprehensive diagnosis and subsequent surgical treatment. The panoramic radiograph showed an osteolytic lesion on the left body of the mandible. The lesion was surgically resected. Histopathological image matches the diagnosis of cemento-ossifying fibroma.

Conclusions: The authors discuss the treatment, preceded by radiological, histopathological and clinical analysis. The treatment involved surgical enucleation. Patients genetic background was also a point of interest, as Gorlin-Goltz syndrome was reported among patient's relatives.

Multi-team treatment of craniofacial injuries after EV accidents - case report

Authors: Górna N, Nowak A, Sidorowicz K, Matusz K, Okła M

Affiliation: Katedra i Zakład Anatomii Prawidłowej, Poznan University of Medical Sciences

Katedra i Klinika Chirurgi Stomatologicznej i Periodontologii, Poznan University of Medical Sciences

Katedra i Klinika Chirurgi Szczękowo-Twarzowej, Poznan University of Medical Sciences

Poznan University of Medical Sciences

Case Report: An unconscious 50-year-old patient was brought to the Emergency Department after an accident on an electric unicycle. Despite the fact that the patient was wearing a helmet, he was diagnosed with a bilateral zygomatic-maxillo-orbital fracture. In the operating room, down fracture was performed to enable the correct positioning of bone fragments and osteosynthetic plates were placed. As a result of the accident, the patient has lost the first lower right incisor, which was removed and then replaced with an implant. However a few months after the procedure the patient was still reporting occlusal disturbances and trismus appeared. Half a year after the operation and after physiotherapeutic procedures, the patient is feeling well.

Compound odontoma in maxilla – case report

Authors: Woś P, Nijakowski K, Lehmann A, Surdacka A

Affiliation: Department of Conservative Dentistry and Endodontics, Poznan University of Medical Sciences, Poland

Tutors: Prof., DDs. Anna Surdacka

Background: The compound odontoma is one of the most common odontogenic tumours that consists of odontoids. The aetiology remains unknown, and there is no sex predilection.

Case Report: This case report presents a 27-year-old male patient with no significant medical history who complained of spontaneous pain on the left side of the maxilla. There were no clinical symptoms visible in the oral cavity. The tumour was first discovered on a panoramic radiograph. However, CT was needed to confirm the diagnosis. After a thorough analysis, three contrasting objects were described in the second quadrant – the area near teeth 22 and 23. The biggest was 19mm long and 5mm wide. No significant impact on the surrounding tissues, such as tooth resorption, was observed. The patient was informed about the recommended treatment – surgical excision. The prognosis is good in the majority of the cases.

Amelogenesis imperfecta - case report

Authors: Kolasińska J, Nowak M, Zdrojewski J, Nijakowski K, Lehmann A

Affiliation: Department of Conservative Dentistry and Endodontics, Poznan University of Medical Science, Poland

Tutors: Prof. MD PhD Anna Surdacka

Background: Amelogenesis imperfecta is a rare genetic disorder that is either X-linked inherited or autosomal relevant to enamel development in deciduous and permanent teeth. The affected teeth are characterized by reduced crowns, chalk-whiteish, yellowish or brownish tint, as well as thin and smooth enamel. The accompanying symptoms are hypersensitivity to thermal and chemical stimuli, delay of bone age, malocclusion and developmental abnormalities of tooth roots.

Case Report: The clinical case of the 22-year-old female patient presents the symptoms of amelogenesis imperfecta. The patient reported the frequent problem of the fall out of composite fillings and hypersensitivity to cold. The patient was diagnosed with the lack of enamel development in deciduous and permanent teeth, a delayed eruption of permanent teeth and open bite. In the patient's X-ray, there is a noticeable lack of contrast between enamel and dentin. Currently, the patient is under the care of genetic counselling due to the suspected occurrence of ectodermal dysplasia.

Conclusions: There is no clear pattern of the procedure for patients with amelogenesis imperfecta. This defect complicates the bonding systems adhesion with dental hard tissues. In order to recreate the proper functional and aesthetic features, these patients need multidisciplinary dental care.

PhD Basic Sciences

Scientific Committee

prof. dr hab. n. med. Maciej Krawczyński
dr hab. n. farm. Tomasz Osmałek
dr hab. n. farm. Violetta Krajka-Kuźniak, prof. UMP

Coordinator

Antoni Białek

Steroid metabolism in children and adolescents with obesity and insulin resistance: altered SRD5A and 20α/20βHSD activity.

Authors: Sumińska M, Podgórski R, Fichna M
Affiliation: Department of Endocrinology, Metabolism and Internal Medicine, Poznan University of Medical Sciences
Department of Biochemistry, University of Rzeszow
Department of Pediatric Diabetes and Obesity, Poznan University of Medical Sciences

---

Introduction: Alterations in glucocorticoid metabolism may contribute to the development of obesity and insulin resistance (IR). Obesity in turn affects the androgen balance. The peripheral metabolism of steroids is equally an important determinant of their bioavailability and activity.

The aim of the study: was to evaluate steroid metabolism in obese children and to define which enzyme alterations are associated with IR.

Methods: Clinical characteristics and anthropometric measurements were determined in 122 obese children and adolescents (72 girls, 50 boys) aged 8 – 18 years. 26 of them (21.3%) were diagnosed with IR (13 boys, 13 girls). Routine laboratory tests were performed and 24h urinary steroid excretion profiles were analyzed by gas chromatography/mass spectrometry.

Results: Positive relationship between SRD5A activity and IR was found. According to the An/Et ratio the activity of SRD5A was significantly increased in obese children with IR, but the difference remained insignificant once the 5αDHT/T ratio was considered. Furthermore, this relationship persisted in boys but was not observed in girls. The activity of 20αHSD and 20βHSD was reduced only in obese girls with IR.

Conclusions: In the context of obese children and adolescents with IR, we hypothesize that increased SRD5A represents a compensatory mechanism to reduce local glucocorticoid availability. This phenomenon is probably different in the liver (restriction) and in the adipose tissue (expected increase in activity). We show significant changes in 20αHSD and 20βHSD activity in obese girls with IR, but it is difficult to clearly determine whether the activity of these enzymes is an indicator of the function in their ovaries or adrenal glands.

The search for new marker genes involved in long-term culture and osteogenic differentiation of adipose-derived stem cells.

Authors: Jankowski M
Affiliation: Department of Anatomy/ Doctoral School, Poznan University of Medical Sciences
Tutor: Prof. Bartosz Kempisty

Introduction: Since their discovery, stem cells have been placed at the forefront of modern medicine development. Adult stem cells seem particularly promising as a therapeutic tools, due to their ready availability in the developed organism and extraordinary plasticity. While adipose-derived stem cells (ASCs) have been subjected to a significant number of studies in the last two decades, next-generation sequencing (RNAseq) analysis of gene expression changes during their long-term in vitro culture and osteogenic differentiation remains to be important, as it provides crucial clues about the molecular mechanisms directing these processes, which need to be fully discovered before widely employing stem cells as a therapeutic intervention.

The aim of the study: The study aimed to investigate the effects of long-term (14-day) culture and induced osteogenic differentiation on the transcriptome of ASCs.

Methods: ASCs were isolated from adipose tissue, obtained during routine surgical procedures, and subjected to 14-day in vitro culture and differentiation. Then, total mRNA was isolated from the samples and subjected to next generation sequencing analysis using the Illumina platform. The most differentially expressed genes (fold change >|2|, adjusted p value < 0.05 were extracted and subjected to bioinformatical analysis based on the R programming language.

Results: The RNAseq analysis resulted in the detection of 19,856 gene transcripts. Out of those, 3528 were differentially expressed after long-term in vitro cultures, while 3087 and 1484 genes exhibited significantly altered expression between differentiated osteoblasts and day 1 and 14 of the culture, respectively. The study focused on the most changed genes from each group, as their significant difference in expression could indicate them as strong markers of the molecular changes occurring during the long-term culture and osteogenic differentiation process.

Conclusions: The results of this study provide a molecular insight into the processes that occur during long-term in vitro culture and osteogenic differentiation of ASCs, allowing the re-evaluation of the roles of some genes in mesenchymal stem cell progression towards a range of lineages. This knowldege serves as an extensive point of reference for future in vivo and clinical studies aiming to widely apply these cells in the field of regenerative medicine.

Serum omentin-1 level and its impact on anthropometric and biochemical parameters in patients with Hashimoto's thyroiditis - a pilot study

Authors: Mikulska A, Karaźniewicz-Łada M, Filipowicz D, Ruchała M, Szczepanek-Parulska E, Główka F
Affiliation: Department of Endocrinology, Metabolism and Internal Medicine, Poznan University of Medical Sciences, Chair and Department of Physical Pharmacy and Pharmacokinetics, Poznan University of Medical Sciences

---

Introduction: Omentin-1 is an anti-inflammatory, antiatherogenic and antidiabetic adipokine. Thyroid autoimmune diseases may suppress omentin-1, similarly as it was observed in obesity and insulin resistance. The potential association of omentin-1 concentration with Hashimoto's thyroiditis (HT) has never been studied before.

The aim of the study: The aim of the study was to determine the concentration of omentin-1 in patients with HT and to establish its association with biochemical and anthropometric parameters.

Methods: Forty euthyroid patients with HT (positive anti-thyroid antibodies and typical ultrasound image) divided into two subgroups: 18 patients without treatment (HT-) and 22 with levothyroxine therapy (HT+) were enrolled to the study. Serum omentin-1 level was measured using immunoenzymatic test. Anti-thyroid peroxidase (TPO-Ab) and antithyroglobulin (TG-Ab) antibodies, free triiodothyronine (fT3), free thyroxine (fT4), thyroid stimulating hormone (TSH), glucose, insulin, triglycerides (TG), total cholesterol (TC), high-density lipoprotein (HDL) and low-density lipoprotein (LDL) cholesterol were measured by methods routinely used in the laboratory. Anthropometric measurements were recorded. The body composition analysis was made using the bioelectrical impedance technique.

Results: In the entire study population omentin-1 level correlated negatively with TPO-Ab titers (R=-0.44; p=0.004). The mean concentration of omentin-1 in HT+ group was slightly, but non-significantly, higher than in HT- (481.04±157.79 vs. 472.36±143.81 ng/mL). Interestingly, positive correlation was observed between omentin-1 concentration and fT4 level (R=0.33; p=0.005). Moreover, HDL cholesterol correlated positively with omentin-1 in overall population (R=0.36; p=0.02). There was no relationship between omentin-1 concentration and anthropometric parameters.

Conclusions: Our findings indicated interaction between omentin-1 level and autoimmunity, therefore omentin-1 concentration could be related to severity and treatment efficacy of Hashimoto's thyroiditis. Adequate levothyroxine treatment may be an essential factor in

restoring omentin-1 to the sufficient level. Moreover, omentin-1 may be beneficial in improving lipid profile in HT patients. Therefore, further studies will be continue.

Polydopamine combined with chemo- and phototherapy - oxidative stress in a mouse model of liver cancer

Authors: Witkowska M, Florek E, Grześkowiak B, Miechowicz I
Affiliation:NanoBioMedical Centre, Adam Mickiewicz University in Poznań
Laboratory of Environmental Research, Department of Toxicology, Poznan University of Medical Sciences. Faculty of Chemistry, Adam Mickiewicz University in Poznań
Department of Computer Science and Statistics , Poznan University of Medical Sciences

Tutor: Radosław Mrówczyński, Ph.D, D.Sc.

Introduction: Polydopamine (PDA) is a mussel-inspired polimer, which has found a wide application in many areas of material chemistry and nanomedicine. It is used for co-delivery of chemotherapeutics combined with photothermal therapy. Although the possibilities of polydopamine nanoparticles continue to increase, a complete assessment of their toxicological profile has not been carried out.

The aim of the study: The goal of the study is to determine the toxic effects of polydopamine nanoparticles with combined chemotherapy and photothermal therapy of hepatocellular carcinoma by evaluation of oxidative stress parameters in the liver, brain and kidney of BALB/c Nude mice.

Methods: Permission for the research was issued by the local Ethics Committee for Animal Experimentation in Poznan, Poland (Act No 20/2019). 30 female domestic BALB/c Nude mice from Charles River Laboratories, Germany (5-6 weeks) were enrolled in the study. They were subcutaneously implanted with 1 x 106 human liver tumor cells - HepG2. Mice were divided into 5 groups: vehicle, polydopmine nanoparticles (PDA-NPs), PDA-NPs with doxorubicine, PDA-NPs with phototherapy, PDA-NPs with doxorubicine and phototherapy. The animals were given the doses of 35 mg/kg mc of PDA-NPs and 15 mg/kg mc of doxorubicine by the tail-vain injections. Animals treated with photherapy were irradiated with the laser twenty-four hours after the injection. Mice were then sacrificed 10 days after the administration and the organs were subsequently obtained and frozen in -80°C for further analysis. The markers of oxidative stress and biochemical parameters TP, GSH, GST, TBARS, TEAC, NO, CAT, in liver, kidney, and brain were determined using spectrophotometric methods.

Results: Polydopamine may be a source of free radicals and induce oxidative stress as evidenced by statistically significant differences in the values of some determined parameters.

Conclusions: Differences in enzyme activity or concentrations of assayed oxidative stress parameters depending on the used therapy may be due to different intensification of detoxification processes in kidneys and liver..

Acknowledgments: The financial support under research grant number UMO-2018/31/B/ST8/02460 by The National Science Centre and Poznan University of Medical Sciences grant is kindly acknowledged.

The effect of exposure to selected endocrine disruptors on the viability of porcine ovarian granulosa cells and the expression of the connexin genes family

Authors: Józkowiak M
Affiliation: Department of Toxicology, Poznan University of Medical Sciences
Tutor: Prof. Hanna Piotrowska-Kempisty, PhD, DSc

Introduction: Polycystic ovary syndrome (PCOS) is the most common heterogeneous endocrine disorder among women of reproductive age. Although the pathogenesis of PCOS remains elusive, there is accumulating evidence suggesting the potential contribution of genetic interactions or predispositions combined with environmental impact. Among them, the exposure to endocrine disruptors (EDs) is certainly an important predisposing environmental factor. Granulosa cells (GCs) are known to cooperate with theca cells in the biosynthesis of ovarian hormones and maintaining ovarian functions. Any disturbance in this interaction can lead to endocrine disorders, such as PCOS. Due to the extensive occurrence of endocrine disruptors in the environment, this problem is an area of intensive investigation.

The aim of the study: The aim of the study was to investigate the effect of exposure to selected EDs (bisphenol A - BPA, mono-2-ethylhexyl phthalate – MEHP, and bis(2-ethylhexyl) phthalate - DEHP) on the viability of porcine ovarian GCs, as well as the expression profile of members of the connexin genes family (Cx30, Cx31, Cx37, Cx43, and Cx45).

Methods: GCs were isolated from the follicular fluid aspirated from porcine ovarian follicles and cultured with EDs in the concentration range of 400 μM-12.5 μM for seven days. To evaluate the activity of EDs on GCs, cell viability assay was performed. Based on the results, we selected several concentrations to analyze the transcriptomic pattern of GCs after exposure to EDs using qPCR.

Results and conclusions: Only one of the selected substances (BPA) was noted to have cytotoxic properties on GCs. Furthermore, we found significant changes in the gene expression pattern of the connexin genes family. Connexins are proteins that build up gap junctions, which are crucial for facilitating intracellular cell communication between GCs and oocytes. Since EDs were shown to alter the expression of connexins, the exposure to them might be suggested to impair folliculogenesis and oocyte maturation.

Solubility, permeability, and dissolution rate of Perindorpil arginine based on BCS criteria

Authors: Kuś M
Affiliation: Department of Toxicology, Poznan University of Medical Sciences
Tutor: dr hab. Hanna Piotrowska-Kempisty, prof. UMP; Dr Izabela Ibragimow

Introduction: The Biopharmaceutics Classification System (BCS) was conceived to classify drug substances by their in-vitro aqueous solubility and permeability properties. When combined with the dissolution rate of the final drug product (FDP), the BCS becomes a useful tool for determining the drug substance eligibility for the biowaiver procedure which allows in-vivo bioequivalence (BE) studies of the FDP being replaced by in-vitro pharmaceutical equivalence testing. Perindopril arginine (PA) as an angiotensin converting enzyme (ACE) inhibitor is widely used in cardiovascular diseases, especially in systemic hypertension and heart failure. Although pharmacokinetic of PA is well documented, there is no available detailed data on its permeation across the biological membranes. PA is likely considered to belong the group III of the BCS, and is characterized by low permeability.. However, detailed parameters determining its permeability in in vitro conditions such as apparent permeability coefficients (Papp) are not available.

The aim of the study: The aim of this study was to determine the classification of PA as a drug substance within the BCS framework. Furthermore, we assessed if PA in solid oral formulation, eg.. encapsulated one, could be classified as an immediate-release (IR) product.

Methods: The BCS classification of PA was based on the results of in vitro aqueous solubility testing combined with the in vitro Caco-2 cells permeability study (coupled with HPLC-UV detection). The classification of PA capsules as an IR product was based on the in vitro dissolution profiles of the FDP.

Results and conclusions: Since we demonstrated that PA is highly soluble and poorly permeable drug substance, it might be considered to belong to BCS class III. The encapsulated PA was also shown to be rapidly released from the FDP, and therefore it should be referred to as the IR product.

Nanocomposites of titanium dioxide and peripherally modified phthalocyanines for photocatalytic degradation of pharmaceutical contaminants

Authors: Musiał J, Młynarczyk D, Dąbek K, Gośliński T, Stanisz B
Affiliation: Chair and Department of Pharmaceutical Chemistry, Poznan University of Medical Sciences
Chair and Department of Chemical Technology of Drugs, Poznan University of Medical Sciences

---

Frequent use of pharmaceuticals and their improper disposal increasingly contribute to environmental pollution. Many commonly used active pharmaceutical ingredients, such as nonsteroidal anti-inflammatory drugs, antibiotics or antihypertensives, are usually not completely removed in the wastewater treatment process. To address this problem, we attempted to develop new photocatalytic materials for water remediation based on titanium dioxide and phthalocyanines. Phthalocyanines are photoactive compounds capable of absorbing ultraviolet and visible light, with main peaks around 350 and 670 nm. Although most phthalocyanines are insoluble in water, they can be used as photosensitizers, aiming to improve light-harvesting ability and reduce charge recombination of the photocatalysts, such as TiO2.

The present study aimed to obtain a series of phthalocyanine-grafted TiO2 materials and assess their photocatalytic activity. Different preparation methods were applied, including hydrothermal chemical deposition or microwave-assisted sol-gel synthesis. The obtained Pc-TiO2 composites were used in drug degradation tests carried out either using Photocube™ or in a reactor composed of three vessels containing an aqueous solution of the drug and the photocatalytic material. The mixtures were stirred and irradiated with either ultraviolet or visible irradiation. Drug concentration throughout the experiment was determined using HPLC-DAD. The physicochemical properties of the most active materials were determined, and the conditions of photodegradation experiments were optimized. It was found that the photocatalytic degradation rates strongly depend on a) the type of the peripheral groups and central metal of the phthalocyanine on the surface of TiO2, b) the photocatalytic composite preparation method, c) the type and power of the irradiation source, d) the chemical structure of the pharmaceutical contaminant.

Acknowledgments: The authors acknowledge the funding provided by Poznan University of Medical Sciences, Poznań, Poland (Grant No SDUM-GB30/03/21).

Nanoscale coordination polymers for triple-punch cancer therapy

Authors: Szukowska M, Ruiz-Molina D, Mrówczyński R
Affiliation: Chemistry Department, Adam Mickiewicz University
Catalan Institute of Nanoscience and Nanotechnology (ICN2)

Introduction: Currently, the greatest challenge in cancer therapy, including Hepatocellular carcinoma, is multi-drug resistance (MDR).[1] Resistance is demonstrated by cancer cells against any effective anticancer drug and may be triggered by several mechanisms which decrease the efficiency of cancer therapy. A promising category of nanomaterials emerging in nanomedicine are nanoscale coordination polymers (NCPs), usually prepared using rigid or flexible organic ligands as building units in combination with metals, resulting in the formation of metal-ligand particles. Moreover, NCPs have essential and unique characteristics as drug carriers, including high chemical tuneability, intrinsic biodegradation, and high drug loading capacity.[2]

The aim of the study: The study aims to obtain new NCPs that, due to the use of two drugs combined with photothermal therapy, will fight MDR and be effective in anti-cancer therapy.

Methods: Coordination polymers (NCP-1) consisting of iron (II) ion, 1,4-Bis((1H-imidazol-1-yl)methyl)benzene (bix), and the catechol derivative of doxorubicin were obtained. Subsequently, the NCP-1 were coated with a biocompatible layer of silica (NCP-2) to prevent nanoparticle degradation by releasing iron ions from their structure. In the next step, NCP-2 were coated with a layer of polydopamine (NCP-3) by oxidative oxidation of dopamine.

Results: Polydopamine coating onto NCP-3 provides photothermal properties and will allow the attachment of a second drug onto its surface. Obtained nanoparticles were characterized using the Scanning Electron Microscope (SEM) and infrared spectroscopy (IR). Also, their Zeta potential value and photothermal properties were investigated.

Conclusions: In this work NCP-1, NCP-2 and NCP-3 nanomaterials were obtained. In the following stages of the research, attempts will be made to attach a second drug - cisplatin, to the surface of NCPs to provide a triple approach (2 drugs + PTT) to fight liver cancer. Eventually, an antibody will be bind to the nanoparticles' surface to target hepatocellular carcinoma cells.

Acknowledgments: The research was financed by The National Science Centre (NCN), Poland, under project number,
UMO-2018/31/B/ST8/02460

New adipokine FAM19A5 in the serum of patients with metabolic syndrome

Authors: Wesołek A, Skoracka K, Skrypnik K, Suliburska J, Skrypnik D
Affiliation: Department of Human Nutrition and Dietetics, Faculty of Food Sciences and Nutrition, Poznań University of Life Sciences
Department of Gastroenterology, Dietetics and Internal Diseases, Poznan University of Medical Sciences
Department of Treatment of Obesity, Metabolic Disorders and Clinical Dietetics, Poznan University of Medical Sciences

---

Introduction: FAM19A5 protein, which is associated with various metabolic and cardiovascular risk factors in humans, such as fasting blood glucose, glycated haemoglobin and mean heart rate, is an adipokine with growing importance in the context of metabolic diseases. So far studies on FAM19A5 have been conducted in animal models. Ours is the first study to determine the concentration of FAM19A5 in people with metabolic syndrome (MS).

The aim of the study: The study aimed to assess the concentration of FAM19A5 proteinin the serum of patients with metabolic syndrome.

Methods: We determined the concentration of FAM19A5 in 45 people with MS (group A) and 35 people without MS (group B) with the use of ELISA test. In every patient, we also determined parameters that are crucial to diagnose MS due to actual diagnostic criteria: waist circumference (WC); serum triglycerides (TG); serum high density lipoprotein(HDL); systolic and diastolic blood pressure (SBP, DBP); fasting blood glucose.

Results: There were no significant differences in the serum level of FAM19A5 protein between study groups. The serum level of FAM19A5 was 163.16 ± 55.11pg/ml in group A and 197.57 ± 89 pg/ml in group B ($p=0.134$). The mean DBP in group A was higher than in group B ($p=0.028$). Also, mean serum glucose and TG concentrations were higher in group A than in group B ($p <0.001$ for both parameters). The mean serum HDL concentration in group B was higher than in group A ($p <0.001$). Statistically significant differences were found in the WC value: mean WC in group A was higher than in group B ($p <0.001$).

Conclusions: Patients with metabolic syndromeshow no differences compared to patients without metabolic syndrome in the range of FAM19A5 serum level.

Analysis of selected parameters of oxidative stress in pregnant patients with hypertension

Authors: Stopińska K, Marzec A, Mielcarska S
Affiliation: Medical University of Silesia
Tutor: Piotr Bodzek MD, PhD , Prof. Anita Olejek, MD, PhD

Introduction: Reactive oxygen species (ROS), under the conditions of homeostasis, play the role of mediators and regulators of many cellular processes.
Excessive activity of ROS, in particular of oxygen radicals, causes oxidative stress
The activity of oxidative enzymes and the products of lipid peroxidation may be associated with the occurrence of many pathologies of pregnancy. The increase in the above-mentioned parameters may be noticeable in patients with hypertension.
Gestational hypertension is an elevation of blood pressure ≥ 140/90, first detected after 20 weeks of gestation without associated proteinuria.

The aim of the study: Evaluation of the parameters associated with oxidative stress (LPH, SH and SH per gram of protein) in pregnant patients with hypertension.

Methods: Fasting blood was collected in the third trimester of pregnancy. Plasma was obtained after centrifuging the blood. In the blood serum, the activity of lipid peroxides (LPH), plasma thiol (SH) and plasma thiol per gram of protein were measured. The obtained results were presented using the basic parameters of descriptive statistics, such as the mean value and standard deviation. The compliance of the distribution of variables with the normal distribution was checked with the Shapiro-Wilk test.The existence of correlations between the parameters was searched using the Spearman's rank correlation test. The computer program STATISTICA for Windows 13.3 was used for the calculations.

Results: Elevated levels of the parameters tested were observed in the group of 117 pregnant women with hypertension.
In women with hypertension, LPH negatively correlates with SH and SH per gram of protein.

Conclusions: The determination of these parameters, as well as the entire panel defining the antioxidant profile of the organism and the correlation with the occurrence in specific pathologies, may be important in understanding the pathomechanisms of pregnancy complications, their impact on the oxidative balance, as well as the prediction of their occurrence and early detection.

The asociation between vitamin D receptor polymorphisms and echocardiogram markers

Authors: Abouzid M, Burchardt P, Główka F, Karaźniewicz-Łada M
Affiliation: Department of Physical Chemistry and Pharmacokinetics, Poznan University of Medical Sciences
Department of Hypertension, Angiology, and Internal Medicine, Poznan University of Medical Sciences;, Department of Cardiology, J. Struś Hospital, Poznan, Poland

---

Introduction: Vitamin D receptor (VDR) is part of the VDR complex that exerts its biological effects. Several studies suggest that VDR signaling system possesses direct, antihypertrophic activity in the heart.

The aim of the study: We aim to study the relationship between VDR polymorphisms and echocardiogram markers.

Methods: Thirty-seven cardiac patients were involved in the study. Identification of VDR polymorphisms: ApaI, TaqI, BsmI, and FokI was performed using the polymerase chain reaction-restriction fragment length polymorphism. Twenty-seven echocardiogram markers were determined with tissue Doppler techniques. We performed statistics using Statistica coupled with a Medical Bundle.

Results: Patients with ApaI-GG genotype had higher pulmonary acceleration time (AcT) than ApaI-TT (129.08±21.04 vs. 104.78±19.05, F=4.08, P=0.026). Higher odds for elevated Act was associated with ApaI-GG carriers (odds ratio (OR)=1.04, 95% confidence interval(CI)=1.00-1.08, P=0.039). AcT was also higher in TaqI-CC than TaqI-TT (131.4±18.15 vs. 99.43±16.28, F=7.78, P=0.002). TaqI-CC carriers had a higher tendency to increase AcT (OR=1.06, 95%CI=1.01-1.11, P=0.013). Right ventricle diameter was higher in TaqI-TC than TaqI-CC [0.15(0.11-0.17) vs. 0.11(0.09-0.12), H=7.26, P=0.026, Z=2.67). BsmI-GG carriers had higher AcT than BsmI-GA (128.27±17.58 vs. 96.2±16.91, F=5.16, P=0.008). They also had a higher trend for elevated AcT (OR=1.039, 95%CI=1.00-1.08, P=0.044). Carriers of FokI-TC had higher mitral inflow velocity (E) than FokI-CC (0.69±0.15 vs. 0.55±0.14, P=0.048, F=3.352). FokI-TC carriers had higher odds for elevated E (OR=411, 95%CI=2.03-83260, P=0.026). While, FokI-CC carriers had a 16% chance for high tricuspid annular plane systolic excursion (TAPSE) (OR=1.16, 95%CI=1.01-1.34, P=0.03). Finally, FokI-TT carriers had a higher E/e' ratio than FokI-CC (9.8±1.91 vs. 7.74±2.16, P=0.029, H=7.09, Z=2.46).

Conclusions: Pulmonary acceleration time was the most frequent echocardiogram marker associated with VDR polymorphisms, ApaI-GG, TaqI-CC, and BsmI-GG. Differences in mitral

inflow velocity were observed in carriers of FokI allele variants. We highlighted the importance of further research on the clinical significance of the observed associations on a larger group of patients with cardiovascular disease.

Acknowledgments: Mr Mohamed Abouzid is a participant of STER Internationalisation of Doctoral Schools Programme from NAWA Polish National Agency for Academic Exchange No. PPI/STE/2020/1/00014/DEC/02.

CLOCK and CRY1 concentrations and their relationship with biochemical and anthropometric parameters in hypertensive patients

Authors: Mikulska A, Grzelak T, Pelczyńska M, Bogdański P, Czyżewska K
Affiliation: Chair and Department of Treatment of Obesity, Metabolic Disorders and Clinical Dietetics, Poznan University of Medical Sciences
Chair and Department of Physical Pharmacy and Pharmacokinetics, Poznan University of Medical Sciences
Department of Nursing, Stanislaw Staszic State University of Applied Sciences in Pila

---

Introduction: Blood pressure presents a circadian variation profile. Therefore, disturbances in circadian rhythms may be associated with hypertension.

The aim of the study: The aim of the study was to evaluate the concentrations of cryptochrome 1 (CRY1) and circadian locomotor output cycles kaput (CLOCK) and to establish its relationship with biochemical and anthropometric parameters in hypertensive patients.

Methods: 86 Caucasian women were examined. They were divided into two groups: 31 patients with hypertension (HT) and 55 healthy volunteers (NHT). Biochemical measurements (lipid profile, fasting blood glucose-FBG) were performed using the enzymatic methods with standardized commercial tests. CLOCK and CRY1 serum concentrations were carried out using immunoenzymatic tests and Total Antioxidant Status (TAS) level – colorimetric method. Anthropometric measurements were taken, and anthropometric indexes were calculated. The body composition analysis was assessed using bioelectrical impedance technique. Blood pressure was measured according to standard European Society Guidelines.

Results: The concentration of CRY1 in HT was significantly lower than in NHT (0.67±0.32 vs. 1.07±0.89 ng/mL, $p<0.008$). No differences were observed in CLOCK concentration between groups (1.87±0.67 vs. 1.96±0.63 ng/mL). HT had significantly higher body mass index-BMI (by 24%; $p<0.0001$), total body fat mass (by 22%; $p<0.0000001$), levels of FBG (by 14%; $p<0.00002$) and triglycerides (by 60%; $p<0.00005$) as compared with NHT. Total cholesterol, low density lipoprotein cholesterol, and high density lipoprotein cholesterol concentrations were similar. There was no relationship between the concentrations of CRY1 or CLOCK and biochemical parameters in HT. However, the concentration of CRY1 was significantly negatively correlated with fat free mass index ($R=-0.45$, $p<0.041$). Moreover, in HT increased CLOCK or CRY1 levels were associated with high TAS level.

Conclusions: Hypertensive patients showed decreased serum CRY1 levels concomitantly to higher BMI and total body fat mass compared to controls. Therefore, the analysis of the serum CRY1 level may be considered in a detailed diagnostic of hypertension risk, especially in populations with abnormal anthropometric indices.

Zinc(II) sulfanyltribenzoporphyrazines with bulky peripheral substituents – synthesis, photophysical, and potential medical applications

Authors: Koza P, Koczorowski T, Goslinski T
Affiliation: Chair and Department of Chemical Technology of Drugs, Poznan University of Medical Sciences

---

Background: Synthetic analogues of naturally occurring porphyrins are porphyrazines (Pzs). These macrocycles reveal unique spectroscopic, photochemical, and electrochemical properties, which allows us to consider them as potential photosensitizers for photodynamic therapy (PDT). The main part of PDT is a photodynamic reaction. In this process, the photosensitizer irradiated with light of an appropriate wavelength interacts with oxygen, leading to the generation of reactive oxygen species, including singlet oxygen, and the subsequent tumor cell death.[1] The ideal photosensitizer for PDT has to meet several criteria, such as red light absorption and a high singlet oxygen quantum yield. Pzs with sulfanyl substituents have been studied for many years as potential photosensitizers due to good solubility in common organic solvents and efficient photocytotoxicity.[2]

Aim: The study's main aim was to synthesize new unsymmetrical sulfanyl zinc(II) porphyrazines that have proper photophysical and electrochemical properties and reveal high singlet oxygen generation quantum yields for potential applications in PDT.

Methods: Two novel unsymmetrical sulfanyl zinc(II) porphyrazines were synthesized starting from commercially available dimercaptomaleonitrile disodium salt and o-phthalonitrile. Macrocycles were purified by flash column chromatography and characterized using various photophysical methods, including MS spectrometry, as well as NMR and UV-Vis spectroscopy. Moreover, zinc(II) sulfanyltribenzoporphyrazines were subjected to electrochemical and photophysical studies. Furthermore, singlet oxygen quantum yield values were determined by an indirect method using 1,3-diphenylisobenzofuran as a reference singlet oxygen quencher, which allowed evaluation of the potential photosensitizing activities of both macrocycles.

Results: The new zinc(II) porphyrazines presented moderate quantum yields of singlet oxygen generation with 0.12 for the ester derivative and 0.31 for the hydroxymethyl derivative.

Conclusions: The photophysical and electrochemical properties of newly synthesized porphyrazines allow us to consider these molecules as potential photosensitizers for further biological study.

Acknowledgments: This study was supported by the National Science Centre Poland under Grant No. 2020/39/O/NZ7/00351

PhD Clinical Sciences

Scientific Committee

prof. dr hab. Przemysław Lisiński
prof. dr hab. n. med. Piotr Eder
dr hab. n. med Łukasz Gąsiorowski, prof. UMP

Coordinator

Martyna Hirsch

Clinical outcome of t-AML- single centre analysis over the past two decades.

Authors: Monika Adamska, Ewelina Kowal-Wiśniewska, Anna Przybyłowicz-Chalecka, Marta Barańska, Anna Łojko-Dankowska, Monika Joks, Zuzanna Kanduła, Małgorzata Jarmuż-Szymczak, Lidia Gil

Affiliations: Department of Hematology and Bone Marrow Transplantation, Poznan University of Medical Science 1 Department of Hematology and Bone Marrow Transplantation, Poznan University of Medical Sciences, Poland 2 Institute of Human Genetics, Polish Academy of Sciences, Poznan, Poland 1 Department of Hematology and Bone Marrow Transplantation, Poznan University of Medical Sciences, Poland

---

Introduction: Therapy-related acute myeloid leukemia (t-AML) represents emerging challenge of the modern oncology as a life-threatening complication of cytotoxic therapy. Disease characterises poor prognosis and presence of adverse cytogenetic and genetic abnormalities.

The aim of the study: Clinical outcome of t-AML patients with respect to genetic changes and treatment intensity.

Material and methods: Retrospective analysis of all consecutive AML patients treated between 2000-2021. Diagnosis of t-AML was established according to the WHO 2016 criteria. Overall survival (OS) and progression free survival (PFS) was defined to evaluate treatment outcomes.

Results: Among 743 AML patients 60 (8.1%) were diagnosed as t-AML. Solid tumors (ST) preceded t-AML in 63.4%, hematological neoplasms (HN) in 36.6%. Majority of t-AML was preceded by breast cancer (30.0%) and Hodgkin Lymphoma (11.7%). Median latency time for ST and HN subgroups was 5.0 vs 7.0 years respectively (p = .036). Cytogenetic abnormalities and complex karyotype occurred in 82.9% and 26.8%. *FLT3-ITD* and *NPM1* mutations occurred in 15.4% and 4.5% of patients. Three pathogenic *TP53* mutations were detected: c.711G>A, c.704A>G and c.989T>C (analysis performed on 20 patients). According ELN2017 majority of t-AML were classified as adverse category (46.3%). Intensive treatment was implemented in 48 patients including allogenic cell transplantation (alloHCT) in 23. Median OS and PFS was 15 and 8 months. Within t-AML undergoing intensive chemotherapy only versus alloHCT median OS was 9 versus 47 months (p = .011). Median OS was higher for t-AML patients younger than 64 years than older ones (p = .026). In multivariate Cox proportional hazard regression model alloHCT was the only factor significantly influencing OS (HR = 0.17, 95% CI = 0.05-0.56, p = .003).

Conslusions: Our study brings detailed analysis of clinical outcome of t-AML. Patients with t-AML undergoing intensive treatment, younger than 65 years and with t-APL have significantly higher OS rates. Treatment strategy in t-AML should rely on performing alloHCT possibly soon.

Impulsivity in Early-Onset Psychosis

Authors: Przemysław Zakowicz, Joanna Pawlak, Maria Skibińska

Affiliations: Department of Psychiatric Genetics, Poznan University of Medical Sciences

Tutor: -

Introduction: Early-onset of psychotic symptoms (schizophrenia spectrum) corresponds with the worsening of global prognosis for the patient including higher rate of drug-resistance and disability. Children and adolescent population deals also with the risk of suicidality following experienced symptomatology.

Aims: As it was evidenced previously, higher rates of impulsivity, may connect with the risk of suicide attempt and the proper assessment with the use of behavioural tests may be valuable clinical tool in managing the course of the disease.

Material and methods: Here we present a case-control study comparing early-onset psychosis patients (n=23) with healthy control adolescents (n=19) regarding the performance of behavioural tasks (PEBL battery): Iowa Gambling Task, Go/no-go task and simple response time (SRT).

Results: Main results were: significant differences in the performance in all behavioural tests between study group and HC as well as, moderate and strong correlation rates between PEBL tasks outcome and suicide attempts or suicidal thoughts.

Conclusions: Obtained results underline the role of impulsivity and decision making disturbances in the population of early-onset psychosis. Behavioural traits may be also the predictor of suicide risk among schizophrenia-spectrum patients in early age.

LONGITUDINAL ANALYSIS OF SERUM METABOLOMICS OF BARIATRIC SURGERY PATIENTS

Authors: Gladys Wojciechowska, Urszula Puchta, Paulina Konopka, Adam Paszko, Anna Citko, Sili Fan, Prof. Dr. Oliver Fiehn, Prof. dr hab. n. med. Hady R. Hady

Affiliations: UC Davis Genome Center - Metabolomics, University of California, Davis 1st Clinical Department of General and Endocrine Surgery, Uniwersytet Medyczny w Białymstoku Clinical Research Centre, Uniwersytet Medyczny w Białymstoku Department of Endocrinology, Diabetology and Internal Medicine, Uniwersytet Medyczny w Białymstoku

Tutor: dr n. med. Łukasz Szczerbiński and Prof. dr hab. n. med. Adam Jacek Krętowski

Introduction : Bariatric surgery is an effective treatment for weight loss, reserved for patients with severe obesity. Profiling the metabolite changes after surgery might give insights into the molecular mechanisms behind the significant weight loss.

Aim of the study: This longitudinal and preliminary study assesses the temporal effect of bariatric surgery on serum metabolic profiles.

Material and methods: Data was collected from 31 patients at five time points: pre-surgery, one, three, six, and twelve months post-surgery. Serum metabolites were profiled using three assays: gas chromatography-mass spectrometry, hydrophilic interaction liquid chromatography coupled to mass spectrometry, and lipidomics. Statistical analysis was done using the Friedman rank sum test and Kendall's W.

Results: Patients achieved a median excess BMI loss of 56.4% 12-months post-surgery ($p = 1.5e-47$). A total of 883 metabolites had significant differential trends post-surgery. Among these metabolites, 21 had effect sizes of more than 0.5. After surgery, a decline of glucose, tyrosine, glycerol, phosphatidylcholines, ceramides, and lysophosphatidylcholines was seen. In contrast, serum glucosylceramide, sphingomyelins, 1,4-cyclohexanedione, and coniferyl aldehyde were significantly increased after surgery. The metabolic changes were most pronounced one month after surgery and stabilized over time.

Conclusions: Significant changes in serum metabolites were observed after bariatric surgery, as early as one month post-surgery. These metabolites could be studied further to understand the mechanisms behind sustained weight loss.

Human Papillomavirus (HPV) - assessing the level of knowledge, sexual behaviours, awareness, attitude and vaccination status among dentistry students

Authors: Maciej Michalak, Tomasz Milecki, Jakub Milecki, Katarzyna Klimczak, Maciej Rembisz, Andrzej Antczak

Affiliations: Department and Clinic of Urology and Urologic Oncology, Poznan University of Medical Sciences

Tutor: -

Introduction: Persistent infection with oncogenic types of Human Papillomavirus (HPV) can cause cervical cancer in women, penile cancer in men, as well as anogenital and oropharyngeal cancers in both genders. It has been proven that the HPV vaccination, preferably before initiation of sexual life, is highly effective in preventing these cancers.

The aim of the study: The study aims to assess the level of knowledge, awareness and attitudes of dentistry students at Poznan University of Medical Science about HPV infection and HPV vaccinations.

Material and methods: The self-designed survey contained 32 questions regarding basic demographic data, sexual behaviour data, attitude to vaccines, knowledge about HPV infection and HPV vaccinations. The analysed group consisted of 270 students (213 females and 57 males).

Results: Among the respondents, 166 (61.48%) were younger dentistry students (1-3 years of study) and 104 (38.52%) were older dentistry students (4-5 years of study). Older students had the level of knowledge significantly higher than younger students ($p<0.0001$). The most of surveyed students (82.22%) had a sexual initiation. Students after sexual intercourse had the level of knowledge significantly higher compared with students before first sexual intercourse ($p<0.0001$). Moreover, students with a constant sexual partner (64.07%) had a level of knowledge significantly higher compared with students without a constant sexual partner ($p<0.0001$). Only 30% ($n=81$) of students had been vaccinated against HPV (35.21% females and 10.53% males; $p<0.0001$). Unvaccinated students had the level of knowledge significantly higher compared with vaccinated students ($p=0.0007$).

Conclusions: The results demonstrate that the awareness and knowledge about HPV, HPV vaccines and cancers associated with HPV depends, among other things, on the year of study and sexual activity. It is essential to increase the knowledge and awareness of health risks regarding HPV infection from the beginning of studies because dentistry students and dentists have to better educate the population about the risks associated with HPV infection.

FUNCTIONAL ASSESSMENT OF PATIENTS WITH LOW BACK PAIN TREATED WITH CRYOABLATION

Authors: Małgorzata Eliks, Jeremi Kościński, Przemysław Lisiński, Agnieszka Wareńczak-Pawlicka

Affiliations: Chair and Clinic of Developmental Neurology, PUMS Depatment of Neurosurgery and Neurotraumatology, PUMS Department of Rehabilitation, PUMS

Tutor: -

Introduction: Low back pain and comorbid afflictions negatively influence the quality of life, postural control and gait. Facet joint syndrome is one of the causes of low back pain. Cryoablation is a minimal invasive percutaneuous technique for zygapophysial joint syndrome.

Aim of the study: The aim of the study was to investigate the effectiveness of the cryoablation in patients with chronic low back pain related to facet joint syndrome on pain, disability and spatiotemporal gait parameters

Material and methods: The study included 19 patients (13 women, 7 men) with chronic low back and facet arthropathic changes in MRI, and with failure in conservative treatment. The evaluation was performed before and with one-month follow-up after cryoablation and included pain assessment (Numeric Rating Scale), the evaluation of functional state and disability (Revised Oswestry Low Back Pain Disability Index, Roland-Morris Disability Questionnaire) and analysis of spatiotemporal gait parameters (treadmill).

Results: A significant improvement in pain, functioning and spatiotemporal gait parameters such as distance and the number of steps were found. Conclusions Cryoablation is an effective method for pain reduction in facet joint syndrome, which improves functioning and gait. Cryoanalgesia is a safe procedure for the treatment of low back pain related to facet joint syndrome if earlier conservative management failed.

Diagnostic test accuracy of artificial intelligence in detecting periapical lesions on Two-dimensional radiographs

Authors: Julien Issa

Affiliations: Department of Diagnostics / Doctoral School , Poznan University of Medical Sciences
Department of Diagnostics / Anatomy , Poznan University of Medical Sciences

Tutor: Associate Professor. Marta Dyszkiewicz Konwinska, DDS, PhD

Introduction: Identifying and diagnosing periapical pathosis on periapical (PA) radiographs is a quotidian task for general dentists as well as specialists. Recently, the application of artificial intelligence (AI) as an assisting tool for dentists in reading and reporting dental radiography is increasing fast. Considering the novelty of AI in dentistry and its rapid growth, it is essential to investigate its diagnostic accuracy.

Aim of the study: This study aims to evaluate the diagnostic performance of AI in detecting periapical pathosis on PA radiographs

Material and methods: Twenty anonymized PA radiographs of 20 different patients presenting a total of 60 visible teeth were included in our study. One oral and maxillofacial specialist with more than ten years of experience (M.D.K) and one trainee in oral and maxillofacial radiology (J.I) evaluated the dataset and classified the teeth as healthy (no PA pathosis were detected) and as unhealthy (PA pathosis were present); this evaluation is considered as the ground-truth method. Then the same images were uploaded to Diagnocat (Diagnocat Inc, West Sacramento, USA), which is an online-based service for the storage and processing of dental images using artificial intelligence. Diagnocat algorithm evaluates the images and generates a report accordingly. The obtained results were recorded, and the accuracy, sensitivity, specificity, and diagnostic odds were calculated.

Results: According to the ground-truth classification, 13 unhealthy teeth were detected and 47 teeth were classified as healthy. At the same time, the Diagnocat algorithm identified 13 unhealthy teeth and 47 healthy teeth. AI misdiagnosed one unhealthy (false negative) and one healthy tooth (false positive) when compared to the ground-truth results. The AI algorithm correctly identified PA lesions with 92.30% sensitivity, 97.87% specificity, and 96.66% accuracy.

Conclusions: The evaluated AI algorithm demonstrated an optimum accuracy for PA lesions detection, enabling its potential use as a fast assisting diagnostic tool for dentists while reducing clinical workload and improving the quality of treatment.

Phenomenology & Psychopathology of voluntary movement: A study on functional gait disorder

Authors: Camilo Sanchez

Affiliations: Humanities & social sciences, Poznan University of Medical Sciences

Tutor: -

Introduction: Functional movement disorder (FMD) is a neuropsychiatric psychopathological manifestation consisting of disabling abnormal movements, inconsistent with any pattern of neurological disease, reported by patient as Involuntary while suspected as Voluntary by clinician (Pareés I. Physiopathology of Functional Movement Disorders. University College of London, 2014); additionally, clinical bibliography reports cases of patients not displaying any abnormal movement when by themselves.

Aim of the study: Thus, these phenomena demand to shed some light to what voluntary movement is, as the main issue, but also, to articulate an answer to ¿Are those abnormal movements (FMD) voluntary? as the research question. The hypothesis proposed states that FMD's abnormal movements are voluntary movements entailing a specific body-scheme disturbance.

Materials & methods: To address the research question, an experimental protocol was designed, consisting of three tasks: auto-identification, imitation & 'non-observers' condition, with the main goal of assessing self- & movement-awareness in those patients. The patients were paired by age & sex with two control groups: Parkinson disease (PD) & healthy individuals. The protocol was applied in the University's gait lab, two types of data resulted: kinematic & verbal reports.

Results: The former were analyzed through functional data analysis, the latter through multivariate analysis, and the two were integrated through a chi-square test. Nonetheless, there was no significant relation found, there were very revealing findings as: FMD patients made not one self-identification errors, their narratives revealed a clear self-movement disturbance and they referred constant bodily uncomfortability.

Conclusions: Based on the analysis of the experimental results and with the conceptual tools from phenomenological psychopathology, a hypothesis is proposed: FMD entails a lesion of the body scheme. The latter concept is used in an alternative way based on the concepts of Tactile-Kinesthetic Body (Sheets-Johnstone M. Animation: analyses, elaborations, & implications. Husserl studies, vol.30:247-268. 2014) & Body Image (O'Shaughnessy B. Proprioception & the body image. Cambridge: MIT press, 175-203, 1998). Complementarily, some disturbances of subjectivity's basal conditions are identified: Temporality, ipseity, alterity, underlying the symptoms from those patients.

The influence of artificial saliva on the wound healing process in buccal mucosa cells.

Authors: Blanka Borowiec

Affiliations: Histology and Embryology, Poznan Medical University

Tutor: Associate professor, PhD Joanna Budna-Tukan; Associate professor, MD, PhD Marta Dyszkiewicz-Konwińska

Introduction: Wound healing (WH) requires the interaction of, *inter alia*, many types of cells, cytokines and elements of extracellular matrix. Tissues located in the areas of the oral cavity occupy a special place in the research on WH due to their rapid regeneration. For research on WH process *in vitro*, scratch assay technique is commonly used. It is known that in vitro tests do not fully reflect the processes taking place in the organism, but adding saliva to culture media appears to be an important element of research on cells obtained from the areas of the oral cavity. Growth factors and histatins in its composition are responsible for stimulating the migration of keratinocytes and cell viability.

The aim of the study: The aim of the study was to evaluate the effect of the presence of artificial saliva (AS) in the culture medium on the intensity of the wound healing process in artificially wounded cell cultures of porcine buccal mucosa cells (PBMC).

Materials and methods: PBMC were isolated from cheek fragments collected after slaughter from commercially farmed gilts and cultured with and without the addition of artificial saliva in culture medium. Scratch assays were applied on the cultures. The wound closure was observed under the contrast microscope. The cells were collected at three time intervals. Transcriptomic changes were evaluated using RT-qPCR.

Results and conclusions: Cells subjected to scratch assay had a modified expression of genes associated with WH. Pattern of gene expression varied significantly during the study. The presence of AS influenced the healing intensity, which was confirmed by the level of gene expression. These observations may contribute to broadening the field of research on WH using cells by striving to bring the culture environment closer to the conditions of the oral cavity. It can also provide a wider understanding of the WH processes and creating new ideas for solutions in medical treatments.

Parafunctional habits of the stomatognathic system in people with hearing impairment

Authors: Karolina Szuflak

Affiliations: Department of Risk Group Dentistry at the Chair of Pediatric Dentistry, University of Medical Sciences in Poznan

Tutor: Assoc. prof. Karolina Gerreth, DDS, PhD

Introduction: Parafunctions are determined as repetitive behavior which target the oral structures, and include e.g. bruxism, lip biting or tongue thrusting. Such habits could lead to numerous dysfunctions. However, the majority of patients complain the problems in temporomandibular joint.

Aim of the study: The study aimed to assess the occurrence of parafunctional habits and complaints around head and neck region in adolescents and adults with hearing impairment.

Material and methods: Before the research the permission from the Bioethics Commission at the Poznan University of Medical Sciences (permission ref. No. 804/20, dated November 4th, 2020) was obtained. The study was carried out using a questionnaire distributed via the internet to five adolescents and twenty six adults (n= 31; twenty six females – 83.9% and five males – 16.1%), aged from 12 to 65 years (mean±SD = 30.08±14). The questions concerned the etiology, occurrence of parafunctional habits and ailments within the head and neck region. The respondents were also asked about their opinion concerning the need for masticatory organ diagnostics in patients with hearing impairment.

Results: The etiology of patients' hearing loss was congenital (58.1%), acquired (29.0%) or unknown (12.9%). The most common parafunctional habit was nails or cuticles biting (51.6%). The observation was a high frequency of clenching (35.5%), lip biting (29.0%), biting on objects, such as a pencil or pen (25.8%), and bruxism at night (25.8%). Almost 80.6% of the respondents complained at least one symptom of temporomandibular disorder. The most frequent complaint was dizziness (32.3%). As many as 74.2% of participants declared the need to implement detailed diagnostics of the masticatory system in hearing-impaired patients.

Conclusions: The present study showed that parafunctional habits are common in adolescents and adults with hearing impairment. Numerous respondents have more than one complaint because of such activities. It seems extremely important to consider temporomandibular disorder when diagnosing this population of patients.

Can the Visceral Adiposity Index predict Insulin Resistance and Arterial Hypertension in Metabolic Syndrome?

Authors: Anna Koperska, Agnieszka Wesołek, Małgorzata Moszak, Monika Szulińska

Affiliations: Department of Treatment of Obesity, Metabolic Disorders and Clinical Dietetics, Poznan University of Medical Sciences

Tutor: -

Introduction: The Visceral Adiposity Index (VAI) is a new valuable indicator in assessing visceral adipose tissue dysfunction and cardiometabolic risk. For VAI calculations, the results of the waist circumference (WC), serum concentration of triglycerides (TG), and high-density lipoprotein (HDL) cholesterol are needed. Metabolic Syndrome (MetS) is a cluster of metabolic conditions. MetS increases cardiovascular risk (CV). Therefore, new indicators based on standard measurements are sought to detect patients with MetS and high CV risk.

The aim of the study: The study determined whether VAI may predict Insulin Resistance (IR) and Arterial Hypertension in MetS patients.

Material and methods: The study was conducted on the 358 women > 55 years of age who were assigned to two groups: without MetS (n=157) and with MetS (n=201). Anthropometric tests were performed in both groups. The serum concentrations of TG, HDL, uric acid, and CRP were determined. The systolic blood pressure (SBP) and diastolic blood pressure (DBP) were also measured. VAI was calculated.

Results: The mean VAI in the group without MetS was 164.33±99.25, and in the group with MetS, 398.05±394.84. In the group without MetS, the significant correlations between VAI and BMI (0.43), WC (0.35), SBP (-0.23), uric acid (0.32), HDL (-0.69), TG (0.83) were observed, and between DBP there was no significant correlation. In the group with MetS, there were significant correlations between VAI and BMI (0.41), WC (0.34), CRP (0.16), uric acid (0.35), HDL (-0.76), TG (0.84), and between SBP and DBP, no significant correlations were observed.

Conclusions: VAI can be considered a valuable marker of IR in women >55 age with and without MetS at high risk of cardiometabolic complications. VAI correlates with uric acid, visceral obesity, and atherogenic dyslipidemia parameters. VAI is not a predictor of hypertension.

Adropin in pregnancy complicated by hyperglycemia and obesity.

Authors: Łukasz Adamczak, Paweł Gutaj, Ewa Wender-Ożegorwska

Affiliations: Reproductive Clinic, Poznan University of Medical Science

---

Introduction: Adropin is is the hormone that promotes glucose oxidation in relation to fatty acid oxidation in muscles and consequently reduces insulin resistance.

Aim: We aimed to assess the concentrations of adropin in the course of gestational diabetes (GDM) and their possible relationship with another metabolic parameters and obstetric complications.

We included 91 obese and overweight pregnancies (BMI> 27 kg/m2) with hyperglycemia diagnosed during pregnancy: GDM and diabetes in pregnancy (DIP) acc. to HAPO criteria. Blood samples we collected during two visits: V1- between 28 and 32 and V2- between 37 and 39 weeks of gestation. The adropin concentration was determined using ELISA. The study group was assessed in terms of anthropometric, metabolic control and obstetric effects. The results were compared with a control group of healthy pregnant women with normal body weight without the significant diference in an age. Blood samples were taken in the same time of pregnancy.

Results: At visit V1, the median level of adropin was 442.2 pg/ml and 453.1 pg/ml at V2 visit. The increase was significantly diferent ($p=0,05$). These values were significantly lower in patients from the control group (appropriately 57.0 pg/ml ($p<0,01$) at V1 and 107.9 pg/ml at V2 ($p<0,01$)).

Patients from the study group were divided into three groups according to the degree of obesity- first, second and third degrees. The highest concentrations of adropin and the highest increase of this chemokine during pregnancy were noted in patients with a lower degree of obesity, however, these differences were not statistically significant. In metabolic parameters such as pregnancy weight gain, glycated hemoglobin (HbA1c) and insulin resistance indicators (HOMA-IR) statistically significant differences were found between the groups with the first and third degree of obesity

Summary: Higher adropin in the third trimester was associated with lower body weight of patients and their better metabolic control. The adropin increase in the third trimester might have related to low weight gain and good dietary adherence and might have had a compensatory effect on increasing insulin resistance in obese patients. Higher levels of adropin in the maternal serum did not reduce the percentage of large for gestational age newborns (LGA), neonatal jaundice and neonatal hypoglycemia.

Comparison of methods used to measure physical activity in subjects with normal cognitive functions and mild cognitive impairments

Authors: Aleksandra Makarewicz, Maria Wasiewicz-Gajdzis, Anna Miśkiewicz-Chotnicka, Małgorzata Jamka

Affiliations: Department of Pediatric Gastroenterology and Metabolic Diseases, Poznan University of Medical Sciences

Tutor: Professor Jarosław Walkowiak MD, PhD

Introduction: There is a need for research that enable a selection of an appropriate method of measuring physical activity (PA) in subjects with mild cognitive impairment (MCI).

The aim of the study: This preliminary study aimed to assess the subjective and objective measurement of PA in subjects with normal cognitive functions (NCF) and MCI, and to evaluate the influence of PA monitoring awareness on the reliability of subjective PA assessment.

Material and methods: PA was objectively assessed with the ActiGraph GT9X accelerometer and subjectively by the International Physical Activity Questionnaire (IPAQ). A correlation between subjective and objective PA measurements was evaluated in 75 participants (NCF: $n = 48$, MCI: $n = 27$). To assess the impact of measurement awareness on the subjectively defined PA levels, 32 subjects (MCI: $n = 12$, NCF: $n = 20$) were randomly divided into two groups: group 1 - used mobile devices to assess PA, group 2 - used the same mobile devices, but was not aware that their PA was monitored. After a week, the study groups were rotated.

Results: A comparison of the IPAQ and the ActiGraph data revealed a significant correlation between these methods for total ($r = 0.3315$, $p < 0.01$) and moderate PA ($r = 0.3896$, $p < 0.01$) in the total population and moderate PA ($r = 0.2893$, $p < 0.05$) in the NCF group, without any associations between these methods within the MCI group. Moreover, subjectively assessed PA in the MCI group was higher when the participants were unaware of PA monitoring. Significant differences ($p < 0.05$) were found for total and moderate PA, and energy expenditure.

Conclusions: Subjective methods of measuring PA are less appropriate in subjects with MCI than NCF. Moreover, the awareness of PA monitoring negatively affected the MCI subjects' subjective self-assessment of PA. Therefore, for reliable evaluation in these subjects PA trackers should be used.

Keywords: physical activity, accelerometry, self-monitoring, cognition.

Is there a connection between the lipid metabolism and the cortisol levels in the children with autism spectrum disorder? – A pilot study.

Authors: Zuzanna Lewandowska, Bogda Skowrońska, Magdalena Figlerowicz, Katarzyna Mazur-Melewska

Affiliations: Department of Infectious Diseases and Child Neurology, Poznan University of Medical Sciences Department of Pediatric Obesity and Diabetes, Poznan University of Medical Sciences

---

Introduction: The cortisol levels in the patients with autism spectrum disorder have attracted the attention of researchers for several years. The results are equivocal, with some abnormalities in the basal cortisol level. The lipid metabolism is poorly studied in patients with autism, while the cortisol-cholesterol relationship in neurotypical patients is a long-researched phenomenon.

The aim of the study: The major objectives were the assessment of the relationship between the basal cortisol level and the lipid abnormalities, and their prevalence in Polish autistic children. We decided to utilize this study as a pilot research and the first step for the further investigation of the relationship between the lipid metabolism and the endocrine dysfunctions.

Material and methods: We retrospectively analysed the data collected from 1000 patients with autism spectrum disorder, hospitalised in Karol Jonscher University Hospital in Poznan from 2010 to 2021. We took into consideration the age, sex, comorbidities (including other hormonal disorders), weight, and the levels of basal cortisol, total cholesterol, low-density lipoproteins, high-density lipoproteins, free fatty acids and triglycerides. The data was statistically analysed using PQStat program.

Results: The group was heterogeneous according to age (from 2 to 18 years old) and sex (18% were girls and 82% were boys). The most common lipid metabolism abnormalities was hyperglicerydemia (40%). We observed a significant correlation between the basal cortisol level and the levels of triglycerides (p=0,048), high-density lipoproteins (p=0,03), low-density lipoproteins (p=0,02), free fatty acids (p=0,02), but not with the total cholesterol level.

Conclusions: The abnormalities in both cortisol and lipid parameters, with a visible correlation between those factors, indicate the need for further research of endocrine dysfunctions in the children with autism spectrum disorder. The results of the pilot study suggest that it would be highly advisable to further expand the base and include other related factors, which is planned by the authors.

‘Dr. Google, What Is That on My Skin?’—Internet Searches Related to Skin Problems: Google Trends Data from 2004 to 2019

Authors: Mikołaj Kamiński, Linda Tizek , Alexander Zink

Introduction: The Internet is a common source of health information as search engines propose websites that should answer users’ queries.

Aim of the study: The study aimed to investigate the search behavior of Google users related to skin clinical signs as well as to analyze their geographical, secular, and seasonal patterns.

Material and methods: The data of Google Trends (GT) was used to analyze the number of Google searches related to skin problems from January 2004 to December 2019. Thirty-four topics representing dermatologic complaints were identified. The interests of all topics were calculated in proportion to the Relative Search Volume (RSV) of ‘Scar’. Geographical patterns as well as secular and seasonal trends were analyzed. Countries with few users who searched for skin problems were excluded from the analysis.

Results: Globally, gaining the most attention were ‘Itch’ proportion to RSV of ‘Itch’ (2.21), ‘Hair loss’ (1.56), ‘Skin rash’ (1.38), ‘Perspiration’ (1.32), and ‘Scar’ (1.00). In 42 of the 65 analyzed countries, ‘Itch’ was the most popular topic, followed by ‘Hair loss’ (n = 7), and ‘Pustule’ (n = 6). The RSV of all topics increases over time, with ‘Comedo’ (5.15 RSV/year), ‘Itch’ (4.83 RSV/year), and ‘Dandruff’ (4.66 RSV/year) being the most dynamic ones. For 23 topics, the highest interest was noted during warm months.

Conclusions: Globally, Google users showed the highest interest in itch, hair loss, and skin rash. GT may be a feasible tool for the assessment of time and geographical patterns of different skin manifestation. Google is gaining popularity as a source to search for information on dermatological problems.

Golden Session

Scientific Committee

prof. dr hab. n. med. Ewa Wender-Ożegowska
prof dr hab. n. med. Michał Nowicki
prof. dr hab. n. med. Piotr Eder
prof. dr hab. n. med. Jarosław Walkowiak
dr hab. n. med. Michał Michalak

Coordinator

Aleksandra Kurowska

Session Partner

WIELKOPOLSKA
IZBA
LEKARSKA

List of papers

1. Anda Evele - Preoperative axillary lumph node status by radiological imaging in breast cancer patients
2. Maksymilian Grabarczyk - Correlations between serum BDNF, proBDNF, EGF, MIF levels and impulsive behavior as potential predictors of diagnosis conversion towrds bipolar disorder among youth with a mood disorders
3. Kamila Jaz - Analysis of stem cell markers in high-grade serous ovarian cancer tumors based on TCGA datasets
4. Korina Steinbergs - Advanced image analysis of digitized pathology slides in BAP-1 mutant and BAP1-wildtype Uveal Melanomas
5. Kamila Konopacka - The relationship of cathepsin D with insulin resistance in type 1 diabetes mellitus
6. Aleksandra Gładyś - Gender discrimination among female students of medical professions
7. Michał Gackowski - Formulation development, in vitro evaluation of microemulsion-based gel loaded with ketoprofen and titanium dioxide
8. Paweł Tyrna - The MEK/ERK pathway is involved in entosis in pancreatic cancer BXPC3 cells

22nd ICYMS Winners

1st place
Paweł Tyrna
The MEK/ERK pathway is involved in entosis in pancreatic cancer BXPC3 cells

2nd place
Kamila Jaz
Analysis of stem cell markers in high-grade serous ovarian cancer tumors based on TCGA datasets

3rd place
Korina Steinbergs
Advanced image analysis of digitized pathology slides in BAP-1 mutant and BAP1-wildtype Uveal Melanomas

Honorable Mention
Michał Gackowski
Formulation development, in vitro evaluation of microemulsion-based gel loaded with ketoprofen and titanium dioxide

23rd ICYMS

25-27 May 2023
Poznań, Poland


UMP
STN
Poznań