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ABSTRACT BOOK

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Dear Participants of the 20th International Congress of Young Medical Scientists!

Tempora mutantur et nos mutamur in illis – „Times change and we change with them”- Lothar I, the Roman Emperor and the King of Francs of the Carolingian Dynasty, is said to have spo-ken these words. And although since his death almost 1,200 years have passed, the true meaning of these words is only beginning to reach us today.

At the same time, a year ago, we were working on what the jubilee - 20th International Congress of Young Medical Scientists - will look like. We have adopted different scenarios, and each of them assumed that it will be an exceptional and unique congress.

And that's what happened; but it was nature that wrote the script which none of us expected.

We turned the lecture halls into virtual rooms; sessions for teleconferences; the podium and lec-tern for a place in front of a computer screen. Bustling and crowded university corridors for the binary code arranged in lines of messages in Internet connections.

But although the form of our Congress has changed, the idea remains the same.

Its main mission is still to encourage young scholars to follow the scientific path of development. Indicating that scientific truth is objective truth, a good for all and a natural source of our freedom. This Congress, like all the others, teaches us that even though the world has changed, contrary to the words of Lothar I, some things are unchanging. One of them, certainly, is the „universitas magi-strorum et scholarium”; community of teachers and scholars. No matter where or how they meet; the spirit of learning, cooperation and education will always present.

I wish you, dear participants, that this year's meeting, the conversations that are being held, and the new ones acquired the experience have served you for many years to come. After all, it's not us, but Friederich Nietzsche who noticed that what doesn't kill us will make us stronger.

With best regards,

Professor Michał Nowicki MD, PhD, DSc
Vice-Rector for Research and Development of the Poznan University of Medical Sciences

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Basic Life Science

Hypotensive drugs influence induction of humoral and cell-mediated immunity in mice fed with standard or high-salt diet

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Introduction: Nowadays, altered reactivity of immune cells is believed to be involved in the pathogenesis of hypertension. However, little is known about possible immune modulatory effects of clinically relevant hypotensive drugs, especially in individuals at risk of hypertension, e.g. due to high-salt-intake. Since hypertension is considered an inflammation-correlated disorder, hypotensive drugs could achieve additional positive effects through immune modulation.

Aim of the study: Our studies aimed to examine the effect of clinically relevant hypotensive drugs on humoral and contact sensitivity (CS) responses in mice fed with standard or high-salt diet.

Matherial and methods: Mice were constantly fed with either standard or high-salt diet, and treated with one of the following drugs: propranolol (10mg/kg), carvedilol, captopril, verapamil (5mg/kg), amlodipine (3mg/kg) or olmesartan (1mg/kg) for 8 days. On the third day of drug administration, mice were sensitized with hapten. Five days later mice were challenged with hapten to elicit CS ear swelling, measured 24 hours later. Otherwise, oil-induced peritoneal macrophages of drug-treated mice were pulsed with sheep erythrocytes (SRBC) and transferred intraperitoneally into naive recipients, from which spleens have been individually collected a week later for measurement of humoral immune response.

Results: Type of diet failed to impact both, humoral and CS reaction. However, treatment of mice with amlodipine, captopril or carvedilol significantly suppressed CS response in mice fed with high-salt diet. Interestingly, captopril and carvedilol exerted opposite effect in mice fed with standard chow. Administration of captopril and propranolol significantly increased the number of B cells releasing SRBC-specific antibodies, while verapamil-induced effect depended on the type of diet.

Conclusions: These studies demonstrate that hypotensive drugs differently modulate the immune response in healthy mice and in mice prone to hypertension. Further research should be conducted to examine the clinical effects of these changes.

Influence of Omiganan on Candida strains isolated from the vaginal candidiasis

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Introduction: Resistance to standard antifungal agents among Candida species is becoming more common. In clinical conditions, even if the antimicrobial susceptibility profile was determined, the eradication of this pathogen is relatively rare. It is related to the ability of Candida to form a biofilm. This issue is primarily associated with mucocutaneous candidiasis and recurrent vulvovaginal infections. Antimicrobial peptides (AMPs) seem to be an alternative compared to classic antifungal drugs as they exhibit greater activity against planktonic forms and biofilm. Omiganan is one of the most studied compound recently.

Aim of the study: This study is a continuation of the research on the antifungal activity of AMPs and its aim was to compare the effect of Omiganan and fluconazole on clinical isolates of Candida. The synergy between both compounds was evaluated.

Matherial and methods: Determination of antimicrobial activity was conducted on 32 strains isolated from the vagina and reference strains: C.albicans ATCC90028 and C.glabrata ATCC15126. To do this, the minimal inhibitory concentrations (MICs) and minimal biofilm eradication concentrations (MBECs) of fluconazole and Omiganan were evaluated. Experiments were carried out using the broth microdilution method in RPMI1640 accoriding to CLSI guidelines. The effect of combination of both compounds on the planktonic forms (FICindex) was determined using the checkerboard method.

Results: The findings of this study concur with previous reports showing the potential efficacy of Omiganan in the treatment of vulvovaginal candidiasis. Unlike the conventionally used fluconazole, Omiganan is active against the highly resistant Candida biofilm structure. The concentrations of peptide that eradicated the biofilm were at most 2 times higher than the corresponding MIC values. Synergy studies revealed that these compounds could be used to treat Candida spp. in concentrations up to 8 times lower than that of each compound alone.

Conclusions: Omiganan as a representative of antimicrobial peptides may be a new and promising tool to fight against vaginal fungal infections.

The ORMDL3 gene – polymorphisms and methylation analysis

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Introduction: Asthma is the most frequent chronic disease in children. One of the most important and replicated genetic findings in childhood asthma is the ORMDL3 confirmed by several GWA studies.

Aim of the study: The purpose of this study was to analyse DNA modifications, ie. single nucleotide polymorphisms (SNPs) and promoter methylation of ORMDL3 gene and its association with childhood asthma risk in Polish population.

Matherial and methods: In the study we included 418 subject, 240 asthmatic children and 178 healthy control subjects. The analysis of two SNPs (rs7216389 and rs8076131) was performed using High Resolution Melt (HRM). The methylation of the ORMDL3 promoter was examined with Methylation Specific HRM (MS-HRM), covering 9 CpG sites.

Results: We did not observe significant differences between cases and controls both in the genotype distribution of analysed SNPs (rs7216389 and rs8076131) and in the level of promoter methylation.

Conclusions: Based on our results, we could not confirm the association of ORMDL3 with childhood asthma in the Polish population.

Esophagoprotective effect of carbon monoxide released from its pharmacological donor against experimental acute esophagitis with possible involvement of cyclooxygenase/ prostaglandins pathway.

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Introduction: Gaseous molecule carbon monoxide (CO) has been shown to play an essential role in gastrointestinal mucosal defence due to its anti-inflammatory, antioxidant and vasodilatory properties. However, the involvement of CO released from its pharmacological donor, tricarbonyldichlororuthenium (II) dimer (CORM-2) in the protection of esophageal mucosa against the damage induced by acute reflux esophagitis (RE) remains unknown.

Aim of the study: Therefore, the aim of our study was to investigate if pretreatment with CORM-2 affects the severity of experimental reflux esophagitis and to determine the possible mechanisms of its action including activity of endogenous CO producing heme oxygenase-1 (HMOX-1), cyclooxygenase-1 (COX-1) and -COX-2-mediated biosynthesis of prostaglandin E2 (PGE2).

Matherial and methods: RE was induced in sixty rats via ligation of pylorus and the region between forestomach and glandular part of stomach. Animals were pretreated intragastrically with vehicle or CORM-2, combined or not with indomethacin to inhibit PGs production, or with vehicle as a control group. The esophageal mucosal mRNA and/or protein expression for COX-1, COX-2, HMOX-1 and proinflammatory cytokines: TNF-α, IL-1β was evaluated by PCR or Western blot, respectively. PGE2 concentration in esophageal mucosa was determined by ELISA. Esophageal blood flow (EBF) and esophageal lesion index were assessed by laser flowmetry and planimetry, respectively.

Results: CORM- 2 significantly decreased lesion index, increased EBF and downregulated TNF-α, IL-1β and COX-2 mRNA expression. Indomethacin did not reverse these effects of CORM-2. CORM-2 slightly but significantly increased HMOX-1 protein expression. whereas it did not alter the PGE2 tissue concentration, decreased by RE as compared with control.

Conclusions: We conclude that CORM-2 exhibits esophagoprotection against RE-induced acute damage due to EBF upregulation and anti-inflammatory activity, however independently on the activity of HMOX-1 and COXs/PGE2 pathways.

Comparison of the ORMDL3 gene expression in asthma patients, healthy controls and animal model

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Introduction: Asthma is a chronic respiratory disease affecting about 10% of the paediatric population. ORMDL3 is an example of the first gene identified in asthma by the GWAS method, and although its involvement in the pathogenesis of asthma has been confirmed, its function remains unknown.

Aim of the study: The aim of the study was to analyse the expression of ORMDL3 in asthma with use of peripheral blood leukocytes, human bronchial epithelial cell and lung tissue in animal model of asthma.

Matherial and methods: In the study we included 60 human subjects: 30 asthmatic children and 30 healthy control subjects and 13 rats: 10 asthmatic and 3 controls. The expression of ORMDL3 was analysed using q-PCR.

Results: ORMDL3 expression in the periphery was higher in asthmatic patients as compared to the control group. Local expression in the airways (human bronchial epithelial cells and rat lung tissue) showed decreased expression in asthma than in healthy controls.

Conclusions: ORMDL3 is associated with childhood asthma in the Polish population, but further functional studies are required to fully understand its role in this disease.

Genotype analysis of Bacteroides fragilis - detection of fragilysin gene in loose stool specimens

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Introduction: Bacteroides fragilis is an obligate anaerobic, Gram-negative, rod-shaped bacteria, causing most of the abdominal infections, although it constitutes only 0.5%-2% of normal gut microbiota. Some strains can produce an enterotoxin - fragilysin, which is an important virulence factor and can be etiological factor of diarrhea. It is presumed that they contribute to neoplastic transformation of colon cells.

Aim of the study: The prevalence of the bft genes encoded fragilysin among B. fragilis isolates.

Matherial and methods: A total of 33 B. fragilis were isolated from stool samples from patients of clinical hospital in Warsaw. Stool samples were plated onto the Bacteroides Bile Esculin Agar (Becton Dickinson, USA) and incubated for 48 hours in 37°C in anaerobic conditions. Colonies were isolated on Schaedler Agar and Columbia Agar (bioMérieux, France). Isolates were identified using a mass spectrometry technique MALDI-TOF MS of VITEK MS system (bioMèrieux, France). Identified strains were grown in a Brain-Heart Infusion (bioMérieux, France) to isolate genomic DNA (Genomic Mini, A&A Biotechnology, Poland). Selected genes (bft, bft-1, bft-2, bft-3) were detected using PCR technique. Obtained DNA fragments were separated using electrophoresis in 1% agarose gel to receive following products.

Results: From 92 stool samples 33 (35,9%) strains of B. fragilis were isolated. Enterotoxin coding bft gene was detected using specific primers in 5 (15,15%) examined isolates of B. fragilis. In all of bft positive samples was identified a bft-1 subtype gene.

Conclusions: 1. Bft gene which determines an enterotoxin production was detected in about 15% isolates of B. fragilis. 2. In the analyzed group only the type of bft-1 has been indetified. 3. Literature data shows that there is a variety of bft gene types what is connected not only with a type of clinical samples, but also with demographic specification of patients.

Occurrence of anaerobic non-spore-forming bacteria in diarrheal stool samples.

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Introduction: Bacteroides and Parabacteroides genus are a part of natural gastrointestinal tract's microbiome. Colon population of anaerobic bacteria amounts to 1012-1014 per gram of chyme. Anaerobes occur with aerobes in ratio 1000:1. Species with the highest prevalence are: B. vulgatus, B. thetaiotaomicron, B. uniformis and P. distasonis. However B. fragilis causes majority of inflammation in abdominal cavity. It forms 0,5% to 2% of intestinal microflora.

Aim of the study: Evaluation of incidence of various anaerobic non-spore-forming species in stool samples from patients with diarrhea.

Matherial and methods: In our study 207 stool samples from patients suspected of occurrence of antibiotic-associated diarrhea and hospitalized in Clinical Hospital in Warsaw were examined between 08.2019-01.2020. Samples were placed on Bacteroides Bile Esculin Agar and were incubated in 37°C in anaerobic conditions for 48 hours. Isolation of colonies was performed on Schaedler Agar and Columbia Agar. For identification of isolates we used mass spectrometry MALDI-TOF MS of VITEK MS.

Results: 180 Bacteroides and Parabacteroides isolates were cultured: B. vulgatus - 39 (21,7%), B. fragilis - 36 (20%), B. thetaiotaomicron - 26 (14,4%), B. ovatus/xylanisolvens - 24 (13,3%), P. distasonis - 19 (10,6%), B. vulgatus/dorei - 10 (5,5%), B. caccae – 6, B. stercoris - 5, B. cellulosilyticus - 4, B. dorei – 3, B. ovatus/thetaiotaomicron – 3, Alistipes finegoldii - 2. In the 55 fecal samples - one anaerobic bacteria species was found, in the 34 samples - two, in the 11 samples - three and in the 6 samples - four species.

Conclusions: It was found, that the highest prevalence in diarrheal feces have: B. vulgatus, B. fragilis, B. thetaiotaomicron, B. ovatus/xylanisolvens and P. distasonis. However isolation from stool samples relates to as many as 20% of them, what is an exception to non-diarrheal samples.

Small-molecule PERK inhibitor induces apoptosis in colorectal cancer cells in vitro

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Introduction: Colorectal cancer (CRC) pathogenesis is strictly associated with the induction of Endoplasmic Reticulum stress conditions and activation of the PERK-dependent Unfolded Protein Response (UPR) signaling pathway.

Aim of the study: Assessment of the effect of specific, small-molecule PERK inhibitor on CRC cells.

Matherial and methods: Detection of apoptosis induced by investigated compound was performed by caspase-3 assay. Cancerous HT-29 cells and normal cells of human colon epithelium CCD 841 CoN (CoN) were exposed to PERK inhibitor at 6µM and 50µM for 24h. Positive control constitutes cells incubated with 1µM staurosporine for 16h, whereas negative control cells treated with 0.1% DMSO for 24h. Caspase-3 activity was measured by Synergy HT spectrophotometer. Cell cycle analysis was performed by flow cytometry using PI staining. HT-29 and CoN cells were incubated with the tested compound at 6µM and 50µM for 24h. Positive control constitutes cells exposed to 1µM nocodazole for 16h, whereas a negative control cells exposed to 0.1% DMSO for 24h.

Results: There was significantly increased caspase-3 activity in HT-29 cells exposed to PERK inhibitor at 50µM for 24h, whereas it was not observed at 6µM, nor in CCD 841 CoN cells at any concentration used. Mechanistically, 50µM PERK inhibitory compound induced cell cycle arrest at G2/M phase in HT-29 cell line, while it had no effect on cell cycle progression in CoN cells.

Conclusions: Investigated PERK inhibitor induces apoptosis in CRC cell line and blocks the cell cycle at G2/M phase. CRC still remains a therapeutic challenge, whereas PERK may become a new target in the development of innovative therapy against CRC. This work was supported by grant PRELUDIUM no. 2015/19/N/NZ3/00055, grant OPUS no. 2016/23/B/NZ5/02630 from the National Science Centre, Poland and by grant of Medical University of Lodz, Poland no. 502-03/5-108-05/502-54-224-18.

THE INFLUENCE OF VITAMIN K2 ON SPHINGOLIPID SIGNALING PATHWAY AND INSULIN RESISTANCE IN HEPG2 CELLS.

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Introduction: Vitamin K2 (menaquinones) is one of the two most often found types of Vitamin K in the human diet and is also synthesized by gut bacteria conversion of Vitamin K1. Vitamin K2 has several subtypes, determined by isoprene chain length. The use of menaquinone seems to have beneficial effect on the metabolic pathologies treatment such as type 2 diabetes mellitus (T2DM), by affecting the insulin signalling pathway.

Aim of the study: The aim of the study was to assess whether Vitamin K2 affects ceramide (CER) accumulation, de-novo synthesis pathway and changes insulin resistance in lipid overloaded hepatocytes.

Matherial and methods: The study was carried out on HepG2 cells incubated with Vitamin K2 and/or palimitic acid. High-performance liquid chromatography was used to measure the concentration of ceramide, sphinganine and sphingosine. Enzymes involved in the de-novo synthesis pathway (LASS6, SPTLC2) as well as proteins and their phosphorylated forms from insulin signalling pathway (AKT, pAKT, GSK, pGSK) were assessed by western blotting.

Results: The concentrations of ceramide and sphinganine were increased in HepG2 cells incubated with PA without changes in the cells incubated with VK2. However, simultaneous incubation with PA and VK2 caused a trend towards increase in CER content but it not reached significant level. The expression of LASS6 and SPTLC2 was increased in cells incubated with VK2 or with PA alone. The treatment with PA combined with VK2 resulted in a significant increase in LASS6 and SPTLC2 expression compared to the control group and the group incubated with PA. HepG2 cells incubated with insulin and PA had lower expression of pGSK, GSK, pAKT and AKT whereas the exposure of cells to insulin, PA and VK2 simultaneously, significantly decreased the expression of these proteins.

Conclusions: Our results showed that VK2 significantly affected the sphingolipid metabolism through the augmentation of ceramide de novo synthesis what resulted in impaired insulin signalling pathway.

THE INFLUENCE OF VITAMIN K2 ON CERAMIDE DE NOVO SYNTHESIS PATHWAY IN L6 CELLS

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Introduction: Ceramide is one of the intracellular lipids which accumulation interferes with the insulin signalling cascade and leads to insulin resistance development. Vitamin K2(VK2) is a-fat soluble vitamin with anti-inflammatory and lipid-lowering properties. However, the precise mechanism of VK2 action especially on sphingolipid pathway is still unknown.

Aim of the study: The objective of this study was to examine the effects of Vitamin K2 on ceramide accumulation and synthesis pathway in L6 myotubes under lipid overload state.

Matherial and methods: The differentiated L6 myoutubes were divided into 4 groups: (1) control, (2) treated with palmitic acid (PA), (3) incubated with vitamin K2, (4) simultaneously incubated with palmitate and VK2 (PA+VK2). Ceramide, sphinganine and sphingosine content were estimated by high-performance liquid chromatography. To determine expression of enzymes involved in de novo pathway (LASS4, SPTLC1) western blot analyses were used.

Results: The concentration of sphinganine and ceramide were significantly increased in L6 myotubes incubated with PA. What is the most important, the concentration of ceramide was substantially increased in cells incubated together with PA+VK2 compared with the PA alone group. The expression of enzymes from de novo ceramide synthesis pathway namely LASS4, SPTLC1 and SPTLC2 in group incubated with both PA and VK2 was significantly increased in comparison to the PA group. However, in group incubated only with VK2, the expression of SPTLC1 was considerably decreased compared with the group incubated with PA. These results showed that PA increased ceramide and sphinganine accumulation. Using VK2 together with PA increased accumulation of ceramide producted by de novo pathway thanks to increased expression of LASS4, SPTLC1 and SPTLC2 enzymes.

Conclusions: Vitamin K2 together with PA significantly affected the sphingolipid de novo synthesis pathway leading to excessive accumulation of ceramide.

Cardiology and Hypertension

Comparison of periprocedural complications in patients undergoing percutaneous coronary intervention with radial, femoral and brachial approach.

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Introduction: The radial approach (RA) is nowadays the most commonly used one and is described as the safest. However, depending on clinical situation, brachial (BA) and femoral approaches (FA) are also used. A failure during the intervention or anatomical variations force the operator to change the access. Thus, it is important to evaluate the rate of complications related to all available access sites.

Aim of the study: To evaluate safety and rate of periprocedural complications associated with RA, FA and BA.

Matherial and methods: The study group consisted of 120 patients who underwent percutaneous coronary interventions. Patients were collected retrospectively from 2013-2019. Study was provided with ethical principles for clinical research based on the Declaration of Helsinki. Standard descriptive statistics were used in the analysis. The level of statistical significance was set at P≤0.05. All analyses were carried out with the software StatSoft, Inc. STATISTICA (data analysis software system), version 13.

Results: The average patient's age was 69±10.6 years, most of them were male (63%). The most common reason for the procedure via all approaches was stable angina. Initial access site was the most frequently changed in RA group (RA vs FA vs BA: 23% vs 18% vs 0%, p = 0.004). There was no differences in local complications at puncture site between groups (p=0.1) including major bleeding from the puncture site (RA vs FA vs BA: 0% vs 7.48% vs 2.63%, p = 0.1). Furthermore, there was no difference in periprocedural complications, however patients undergoing procedure via FA were associated with higher rate of blood transfusions (RA vs FA vs BA: 0% vs 10.71% vs 0%, p=0.01).

Conclusions: No differences in local complications after procedure were observed between groups. Femoral access was associated with the highest risk of bleeding requiring blood transfusion.

Prostanoids impair platelet reactivity, platelet extracellular vesicles release and thrombus formation in patients with pulmonary arterial hypertension

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Introduction: Prostanoids (epoprostenol, treprostinil and iloprost) induce vasodilation in advanced pulmonary arterial hypertension (PAH) but also inhibit platelets, increasing patients' bleeding risk.

Aim of the study: Comparison of prostanoid-induced platelet inhibiting effect in patients with PAH and patients treated with endothelin receptor antagonists (ERA) or phosphodiesterase 5 inhibitors (PDE5i).

Matherial and methods: Venous blood was collected from 42 patients treated with prostanoids (study group; n=42, 50±16 years, 70% female) and 38 patients treated with ERA or PDE5i (control group; n=38, 50±16 years, 65% female). Platelet reactivity was analysed in whole blood by impedance aggregometry using arachidonic acid (AA; 0.5 mM), adenosine diphosphate (ADP; 6.5 µM) and thrombin receptor-activating peptide (TRAP; 32 µM) as agonists. In a subset of patients, concentrations of extracellular vesicles from platelets (CD61+ and CD62p+; PEVs), leukocytes (CD45+, LEVs) and endothelial cells (CD146+, EEVs) were analysed in platelet-depleted plasma using flow cytometry (A-60 Micro). Platelet-rich thrombus formation was measured using whole blood perfusion system (T-TAS plus).

Results: Patients treated with prostanoids had lower platelet reactivity in response to AA and ADP ($p=0.01$) and lower concentrations of PEVs and LEVs ($p\leq0.05$), compared to control patients. Furthermore, thrombus formation was delayed ($p\leq0.003$) and thrombus size was decreased ($p=0.008$) on prostanoids. Epoprostenol did not affect platelet reactivity in vitro, but decreased the concentrations of CD61+ PEVs ($p=0.04$). In contrast, treprostinil and iloprost decreased both platelet reactivity in response to AA and ADP ($p\leq0.05$) and the concentrations of PEVs ($p\leq0.08$). All prostanoids delayed thrombus formation and decreased thrombus size ($p\leq0.04$).

Conclusions: Patients with PAH treated with prostanoids may have increased risk of bleeding both due to impaired platelet function and thrombus formation, compared to patients treated with ERA or PDE5i. Treprostinil and iloprost seem to affect platelet function more than epoprostenol.

Association between central non-dipping pattern and platelets morphology in adults with type 1 diabetes mellitus: cross-sectional study.

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Introduction: It was proved that people with type 1 diabetes mellitus (T1DM) have increased cardiovascular risk (CVR) compared to general population. One of markers of elevated CVR is non-dipping pattern. Mean platelet volume (MPV) and platelet distribution width (PDW) are related to activation of platelets. Aortic systolic blood pressure (SBPAo) is thought to have better predictive value for cardiovascular disease than brachial systolic blood pressure (SBPBr). Hypertensives with non-dipping pattern have higher MPV than dippers. However, this relationship was never investigated among people with T1DM.

Aim of the study: The aim of this study was to investigate the association between central dipping pattern and platelets morphology in subjects with T1DM.

Matherial and methods: SBPAo and SBPBr were measured with validated non-invasive brachial oscillometric device - Arteriograph 24 (TensioMed Ltd., Budapest, Hungary) - during twenty-four-hour analysis in T1DM subjects without diagnosed hypertension. Non-dipping pattern was defined as a nocturnal SBPAo fall of less than 10%. Medical history, anthropometrical features and laboratory results were collected. The group was divided on the basis of dipping pattern for: dippers and non-dippers. Non-parametrical tests and logistic regression were performed.

Results: From total n=62 subjects (n=32 males) aged 30.1 (25.7-37) years with T1DM duration 15.0 (9.0-20) years, n=36 were non-dippers based on SBPAo. Non-dipper group had significantly higher MPV (10.4 [10-10.7] fl vs 10.9 [10.3-11.5] fl; p = 0.03) and PDW (12.3 [11.7-12.8] fl vs 13.95 [11.7-15.1] fl; p=0.02) than dipper group. The groups did not differ on classic risk factors. Multivariate logistic regression revealed that MPV (OR: 2.79; 95% CI =1.23-6.35; p = 0.01) and alanine aminotransferase (OR: 1.11; 95% CI =1.01-1.24; p = 0.02) were independently positively associated with non-dipping pattern based on SBPAo.

Conclusions: T1DM subjects with central non-dipping pattern have higher values of MPV and PDW than dippers. MPV is independently positively associated with SBPAo non-dipping pattern among people with T1DM.

Impaired central hemodynamics in adults with type 1 diabetes with low cardiovascular risk.

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Introduction: Possible pathomechanisms of increased cardiovascular risk (CVR) in type 1 diabetes mellitus (T1DM) include impaired central hemodynamics and arterial stiffening. CVR in T1DM population could be estimated by Steno Type 1 Risk Engine (ST1RE) or a model based on Swedish National Diabetes Register (SNDR) data. High ST1RE score is associated with increased pulse wave velocity (PWV) but the association between CVR risk scores, aortic augmentation index (AixAo) and aortic systolic blood pressure (SBPAo) is unclear.

Aim of the study: The aim of the study was to investigate association between early markers of impaired central hemodynamics and CVR calculators scores in adults with T1DM.

Matherial and methods: The study group consisted of 62 T1DM adults.. Medical history, anthropometrical features and laboratory results were collected. AixAo, PWVAo, SBPAo, brachial systolic blood pressure, brachial diastolic blood pressure, and pulse were marked repeatedly with Arteriograph 24 (TensioMed Ltd., Budapest, Hungary). - non-invasive brachial oscillometric device - during twenty-four-hour measurement. CVR was estimated by ST1RE and SNDR. Non-parametrical tests were performed.

Results: From total 62 subjects (33 males) aged 30.0 (25.5-36.8) years with T1DM duration 15.0 (9.0-20) years, 5-year risk of CVD based on ST1RE and SNDR was low for every subject. The median 5-year estimated risk scores based on ST1RE and SNDR were 2.,2 (1..5-3.,5) % and 0.8 (0.6-1.2)%, respectively and they were positively related (Rs=0.81; p<0,01). There was a positive association between ST1RE 5-year risk and mean 24-hour SBPAo (Rs=0.31; p=0.02), mean 24-hour AixAo (Rs=0.30; p=0.02) and mean 24-hour PWVAo (Rs=0.5; p<0.01). 5-year risk based on SNDR was positively associated with mean 24-hour SBPAo (Rs=0.31; p=0.02) and mean 24-hour PWVAo (Rs=0.61; p<0.01). Mean 24-hour AixAo was associated with SNDR 5-year risk only among females (Rs=0.41; p=0.03)

Conclusions: The early markers of impaired central hemodynamics are related to CVR calculator scores in adults with T1DM from low-CVR group.

Cardiovascular incident occurrence in relation to air pollution level in Wrocław

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Introduction: Fuel combustion results in air pollution that has global and local effects, the latter is particularly intensified in large cities.

Aim of the study: The study aims to determine an impact of air quality in Wrocław on the frequency and reasons of patients visits at the Emergency Department (ED).

Matherial and methods: The study analyses the causes of patients reporting at the ED in Wroclaw University Hospital (USK) in the December-February periods from 01.2017 to 01.2020 (301 days). Obtained data were compared to average daily values of NO2, PM2.5, PM10 in that period. The authors analysed the differences in the frequency of reporting to the ED for particular reasons between groups of days differing in the level of air pollution, established relative risk of reporting due to given reason in days with particular air quality and examined the correlations between the number of the reports at the ED for a given reason and the average level of NO2, PM2.5 and PM10.

Results: Cardiovascular diseases were the main reason for reporting to the emergency department in 3468 out of 30149 patients (11%). On days with the average concentration of PM10≤20ug/m3 patients visited ED due to: stroke or TIA (p=0,02), CAD (p=0,01) including ACS (p=0,023) and myocardial infarction significantly less frequently than on other days (PM10>20ug/m3). Respiratory causes (0,000002), including asthma (p=0,048) and COPD (p=0,028) as well as cardiovascular causes (p=0,0003), especially: CAD (0,02), arrhythmia (p=0,043)- including AF (p=0,044), HF (p=0,014) and stroke or TIA (p=0,001) were reported significantly more often on days with the daily concentration of PM10>50ug/m3. We found statistically significant positive correlation between daily concentration of NO2, PM2.5 and PM10 and the frequency of reports due to respiratory and cardiovascular causes including: CAD, HF, stroke or TIA.

Conclusions: Air quality significantly affects the frequency of reporting at the ED due to cardiovascular and respiratory reasons.

Double versus standard dose of acetylsalicylic acid in patients after coronary artery bypass grafting - a randomised controlled trial

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Introduction: Acetylsalicylic acid (ASA) in a standard dose of 75 mg once daily (QD) is used for secondary thromboembolic prevention in patients after coronary artery bypass grafting (CABG). There is accumulating evidence that ASA 75 mg QD may be insufficient to suppress platelet reactivity, which tends to increase after CABG. The benefits of higher doses of ASA have not been documented so far

Aim of the study: To compare the effect of different doses of ASA on the level of platelet reactivity in patients with stable coronary artery disease after CABG

Matherial and methods: Within 24 hours after CABG, patients were randomised in a 1:1:1 ratio to three groups: control group (ASA 75 mg QD) and two study groups (ASA 75 mg twice daily [BID] and ASA 150 mg QD). Venous blood was collected before CABG and three times after CABG, at (i) 1 week, (ii) 1 months and (iii) 3 months. Platelet reactivity was determined in whole blood by impedance aggregometry (Multiplate® Analyzer) using arachidonic acid (ASPI test), adenosine diphosphate (ADP test) and thrombin receptor activating peptide (TRAP test) as agonists.

Results: Until now, 25 patients were included in the study (mean age 64.4+/-7.8 years, 74% male). 9 patients were randomized to the control group, 9 patients to the 1st study group and 7 patients to the 2nd study group. There was a trend towards lower platelet reactivity in patients treated with higher doses of ASA (75 mg QD and 150 mg BID), compared to the standard dose (75 mg QD). The trend was most visible at 3 months between ASA 150 mg QD and ASA 75 mg QD

Conclusions: Higher doses of ASA after CABG, especially ASA 150 mg QD, seem to decrease platelet reactivity, compared to standard dose. Higher standard dose of ASA used for secondary prevention might bring long-term benefits after CABG

Traditional or leadless pacemaker? The study of performance and quality of life among patients.

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Introduction: Traditional pacemakers (PMs) are associated with numerous complications related with leads and pulse generator. Leadless pacemakers (LPMs) are an answer to short- and long-term complications of PMs.

Aim of the study: The aim of our study was to compare performance and quality of life (QoL) among patients with Micra LPMs and patients with PMs.

Matherial and methods: Data of consecutive 21 patients who have had Micra Transcatheter Pacing System implanted between January 2016 and October 2017 were analyzed. Each LPM recipient was matched with a counterpart who received a traditional PM between January 2016 and October 2017, according to their age, sex and indication for implantation. QoL was assessed using 36-Item Short Form Health Survey (SF-36) and Minnesota Living With Heart Failure Questionnaire (MLHFQ), at least 12 months after device implantation. Pacemakers were controlled 1 month, 6 months, 1 year, 2 years and 3 years after implantation at scheduled appointments.

Results: Median radiation dose (22 vs 64 mGy, P ≤0.001), hospitalization time (1 vs 7 days, P ≤0.001) and time from implantation to discharge (1 vs 3.25 days, P ≤0.001) were significantly shorter in the group of classical PMs vs LPMs. The incidence of short- and long-term complications did not differ between LPM and PM group, but the complications themselves were different. The results of SF-36 and MLHFQ showed no significant differences between groups. Factors that correlated with poorer QoL were: age (p=0,006), pacing percentage (p=0,01), presence of the arterial hypertension (HA) (p=0,02), atrial fibrillation (AF) (p=0,01), New York Heart Association Functional Classification (NYHA) class III or IV (p=0,03) and other cardiosurgery (p=0,03).

Conclusions: QoL does not differ significantly between group of patients with classical and leadless pacemakers. Factors that correlated with poorer QoL were age, pacing percentage, presence of HA, AF, higher NYHA class and previous cardiac surgery.

Electrocardiogram Performance in the Diagnosis of Left Ventricular Hypertrophy according to body mass index in hypertensive patients

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Introduction: Left ventricular hypertrophy (LVH) is an important factor for adverse cardiovascular outcomes. There are various electrocardiographic criteria for LVH which have different sensitivity and specificity. Electrocardiography (ECG) is a cheap, non-invasive, commonly used method to detect LVH. Obese patients ECG results vary compared to non-obese patients.

Aim of the study: The aim of the study was to investigate the difference in sensitivity and specificity in ECG criteria for LVH according to BMI.

Matherial and methods: The retrospective study evaluated 1722 patients (832 women). The population mean age was 55±15 years. The patients were divided into two groups on the basis of BMI. The first group included 582 patients with BMI>30 kg/m2 (obese), the second group includes 1140 with BMI<30 kg/m2 (non-obese). All underwent echocardiography and 12-lead electrocardiography. The most known ten different electrocardiographic criteria of LVH were assessed and compared with left ventricular mass index (LVMI) obtained in echocardiogram in obese and non-obese groups of hypertensive patients.

Results: Most of the evaluated ECG criteria showed positive correlation with LVMI. The criteria showed overall low sensitivity (3-20%) and high specificity (88-100%) in diagnosing LVH. Both sensitivity and specificity were explicitly lower in obese patients as compared to non-obese. The sensitivity of R in V5 or V6 criteria in obese patients was 3%, while the Sokolow-Lyon voltage had 7% and the Sokolow-Lyon product 8% sensitivity. For non-obese patients the sensitivity of these criteria was 11%, 20% and 17% respectively ($p<0,05$). The specificity of R wave of aVL for obese individuals is 93% compared to 97% in non-obese ($p<0,05$). R aVL product shows specificity rate of 88% for obese and 95% for non-obese ($p<0,05$).

Conclusions: Electrocardiographic criteria for LVH improved in sensitivity and specificity by adding BMI. The simplicity of both BMI measurement and ECG makes combining these measurements helpful in clinical practice.

Association of iron profile parameters and frailty syndrome presence in patients hospitalized with the diagnosis of heart failure with reduced ejection fraction

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Introduction: Due to growth in the number of patients diagnosed with heart failure(HF), reduced quality of life and escalated healthcare costs, identification of the risk factors of bad prognosis, such as frailty syndrome (FS), is valuable.

Aim of the study: The aim was to estimate the occurrence of FS and pre-frail phenotype in hospitalized patients diagnosed with HF with reduced ejection fraction (HFrEF) and assess their iron profile parameters.

Matherial and methods: 92 patients with HFrEF (EF<40), without serious infections were examined on admission using SHARE-FI instrument. Also iron profile was collected. Statistic analysis consisted of one-way ANOVA test and ROC curve analysis.

Results: The whole population consisted of 21(23%) women, mean age was 54,3±11,6 years. Mean LVEF was 23,4±8,1%. Patients were divided in three sub-groups according to SHARE-FI calculator: 31(34%) frail, 28(30%) pre-frail and 33(36%) non-frail. ANOVA analysis of three sub-groups revealed significant differences between transferrin saturation (p=0,000016), serum iron (p=0,0011), and no significant differences in TIBC(p=0,152), ferritin(p=0,160) and haemoglobin(p=0,056) levels. Transferrin saturation and serum iron were adequately 29,3±11,5%; 17,8±7,2µmol/l in non frail group, whereas in pre-frail group these levels were lower- 23,0±8,7%; 15,3±5,6µmol/l with the lowest levels frail group- 17,4±7,8%; 11,9±5,4µmol/l. ROC curve analysis revealed best cutoff points to predict frailty for transferrin saturation equal or less than 22,4% (sensitivity-77,4%, specificity-67,2%, ACC-0,707) and serum iron equal or less than 13,0 µmol/l (sensitivity-71,0%, specificity-65,6%, ACC-0,674).

Conclusions: Frail patients had lower transferrin saturation and serum iron level than non-frail ones; comparing to them pre-frail group presented with intermediate values. The analysis of iron profile parameters may be valuable in assessing frailty in patients with HF.

Dentistry, Head and Neck

Sialendoscopy in strictures of the salivary ducts – conclusions of two-year follow-up.

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Introduction: Introduction Sialendoscopy is an innovative technique which allows for complete exploration of the salivary ductal system. It is used in management of obstructive pathologies of salivary glands, not only as a diagnostic tool, but also as a minimally invasive method of surgical treatment.

Aim of the study: Aim of the study The aim of this study was to investigate the success rate of sialendoscopic dilatation in patients with salivary duct stenosis in two-year observation period.

Matherial and methods: Materials and methods The study included 36 patients suffering from salivary duct stenosis who underwent sialendoscopy between 2017 and 2018. All the patients were admitted to our department due to recurrent painful swelling of major salivary glands, especially after food intake. Preoperatively every patient underwent ultrasound diagnostic. During sialendoscopy, balloon and instrumental dilatations, holmium: YAG laser and steroid instillation were used. In the majority of cases, stents were inserted to prevent restenosis. After sialendoscopic procedures, all patients had ENT supervision in 3 weeks and after 6 and 12 months.

Results: Results 28 cases of Stensen duct stenosis and 8 cases of Wharton duct stenosis were analyzed. In 9 patients strictures were accompanied by sialolithiasis. Single stenosis was observed in 31 cases. Multiple stenoses in Stensen duct were diagnosed in 2 patients. In 19 patients strictures were located in the distal section of the duct and in 6 patients in the proximal section respectively. Four patients suffered from stenosis of the papilla. In 15 patients (42%) in 6 months after sialendoscopy procedure no symptoms were observed. Partial improvement was achieved in 13 (36%) cases. Eight patients (22%) presented no improvement or worsening of symptoms.

Conclusions: Conclusions This study provides evidence that sialendoscopy is an effective treatment method for patients with strictures of the salivary ducts. The new procedure is a major step as it enables preservation of salivary gland function. Moreover, sialendoscopy is accompanied by a high level of patient acceptance.

The Attitude of Polish Dentists towards Children Treatment.

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Introduction: The dentists' attitude towards Children Treatment is one of the factors affecting the success of pediatric dental treatment.

Aim of the study: The aim of the study was to present the attitude of dentists towards Children Treatment.

Matherial and methods: A questionnaire survey was conducted among 736 dentists and consisted of 46 questions about premedication, adaptive and prophylactic visits, methods of treatment, attitude and impact on the child's behavior in the office, used behavioral methods, approaches to non-cooperating patients. Data were analyzed using descriptive statistics and the Spearman test ($p>|0.015|$).

Results: For the analysis 577 surveys were qualified. The average age was 33 (±31,8) years. Premedication was used by 16.7%. Disabled patients were treated by 60.5% of respondents. Only 17.8% used caries risk assessment questionnaires. Independent adaptation visits were conducted by 70.5%. Almost all performed prophylaxis, more often including treatment (59.5%). Glass-ionomer cement was most frequently used for restoration of primary teeth. Primary teeth were treated endodontically by 41.3% and young permanent teeth by 65.4%. As many as 72.3% of dentists made their attitude to a patient dependent on the style of parents' upbringing and chose on this basis methods of shaping the dental approach. About 65% of dentists used behavioral methods. Non-cooperating children were treated by 16.7%. To immobilize the child, 4.5% of dentists asked for dental assistance, and 35.6% for the parents' help. According to 84.9%, it was possible to overcome dentophobia through adaptation visits.

Conclusions: Most of the dentists treat children, including the youngest and disabled children, and proceed with prophylactic treatments. A premedication is used by a minority. Glass ionomer cement is the most popular material for reconstruction. Every second doctor immobilizes a child asking parents for help. It is possible to overcome dentophobia through adaptation visits.

The concentration of fluoride in the saliva after application of fluoride gel using toothbrush in young adults.

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Introduction: Fluoride is the foundation of preventive dentistry. Manufacturers of fluoride gels recommend mouth rinsing after gel application which reduces the concentration of fluoride in saliva. The number of studies in young adults is limited.

Aim of the study: The aim of the study was to examine to what extent mouth rinsing affects the retention of fluoride ions in saliva as compared to no rinsing after brushing teeth with fluoride gel.

Matherial and methods: The study included 103 students, consisted of a survey and a clinical and laboratory examination of saliva. A single-blind, randomized, crossover design was used. The application of fluoridated gel was performed 2 hours after breakfast. After supervised toothbrushing for 2 min with Elmex Geele(Colgate Palmolive, dose 1cm) participants in Group A(n=52) were asked to expectorate all excess product for 30sec and in Group B(n=51) to rinse their mouths with 50ml of tap water. Saliva(5 ml) was taken into tubes 15 min after brushing. Fluoride determination was carried out with ion suppression ion chromatography.

Results: Each participant used toothpaste with fluoride daily, mostly 1450ppmF. Mean values of fluorine ion concentration before brushing: group A: 0.19±0.38, group B: 0.08±0.10, p: 0.044; after brushing: group A: 15.33±14.73, group B: 6.19±5.97, p=0.001. Average post-pre-emptive differences and p-value for comparison of groups A and B (based on t-test): group A: 15.5±14.74, group B: 6.11±6.00, p=0.000. The correlations between the fluorine concentration in saliva and the daily use of fluorine pastes and between the consumption of food products with high fluorine content were proved to be statistically insignificant.

Conclusions: A higher concentration of fluoride in saliva occurs after fluoridation without rinsing the mouth. Discontinuation of rinsing after fluoridation results in a higher concentration of fluoride in saliva, which makes these preparations more effective. Demonstrating this dependence may be a basis for changing the manufacturers' recommendations on using gels and requires further research.

Assessment of the OptiDisc System efficiency in composite polishing - an in vitro study

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Introduction: Composite restorations must undergo a precise adjustment phase. The OptiDisc finishing and polishing system seems to give a smooth surface of composite filling; however, closer physical examination reveals its high roughness.

Aim of the study: Evaluation of the surface roughness of composite resins depending on the different polishing sequence and used forces.

Matherial and methods: In the study, two composite types were used. A total of 54 samples were fabricated using UV curing light with 1000 mW/cm2 intensity and covering celluloid strip. They were kept in 100% humidity for 24h prior to finishing. One specimen in each group was left unpolished and served as control. The polishing sequence consisted of 12.6 mm OptiDisc (Kerr) always followed by a polisher. Every next sample was polished using one more disc than the previous one. A surface roughness examination was performed using optical profilometer WYKO NT930 (Veeco). Each evaluated surface was 1.17 mm2. The selected roughness parameters were subjected to the analysis of variance with significance level α=0.05.

Results: The sequence of polishing had a significant effect on the composite roughness - the more complex the sequence, the smoother the surface. Moreover, higher roughness was identified in Boston samples compared to Charisma. The specimens polished with 1 N force had a slightly rougher surface than those polished with 0.5 N. However, these differences were not statistically significant. Interactions between the force of polishing, type of composite and the polishing sequences also didn't have a statistically significant influence on the roughness parameters.

Conclusions: Finishing is crucial for providing a smooth composite surface, allowing it to function properly in the oral environment. The most important aspect to consider is the polishing sequence.

The effect of chewing sugar-free gum and paraffin on salivary pH - a pilot study

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Introduction: The significant role of saliva is the prevention of dental caries. Chewing gum or paraffin stimulates saliva flow which raises pH in the oral cavity and enhances the cariostatic effect of saliva.

Aim of the study: To assess the effect of chewing paraffin and sugar-free gum on salivary pH.

Matherial and methods: The study was carried out on 12 volunteer students aged 21-27 years in good general health and oral hygiene. They were asked not to eat or drink (except water) for at least one hour before collecting saliva samples. The study was performed in two sessions at the same time of the day. At the beginning of each session, two-minute unstimulated saliva was collected. Then the participants were asked to start chewing paraffin (first session) and Orbit sugar-free chewing gum (second session) for 10 minutes. The saliva was collected in periods 4-6, 9-11, 14-16, 19-21 minutes to separate containers. The pH of each sample was measured using the wireless electrode HALO (Hanna Instruments), immediately after the saliva collection. The data were subjected to the repeated-measures analysis of variance with significance level α=0.05.

Results: In comparison to the unstimulated saliva, both chewing paraffin and sugar-free gum significantly elevated the pH within five minutes. In the 10th minute, the slightly higher increase in salivary pH was observed during stimulating by paraffin. Within the next 10 minutes after stopping chewing, the pH again decreased by about half of the previous increment (a bit faster in case of Orbit gum).

Conclusions: Both chewing paraffin and sugar-free gum effectively elevates the pH of saliva but only for a short time. Moreover, the wireless electrode HALO can be used to measure salivary pH and evaluate caries risk in dental practices.

Incidence of second primary cancers in patients with uveal melanoma

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Introduction: Uveal melanoma is the most common primary intraocular cancer in adults. According to recent reports (SEER database analysis) patients with uveal melanoma may be at about 11% higher risk of second primary cancers compared to the reference population.

Aim of the study: To estimate the incidence and location of second primary cancers in patients with uveal melanoma.

Matherial and methods: Retrospective data analysis of patients treated at the Department of Ophthalmology, Poznan University of Medical Sciences, between 1991 and 2002. The survival data and the incidence of second primary cancers came from the Greater Poland Cancer Registry.

Results: There were 137 patients: 67 men and 70 women in the mean age of 60,30 (21-90) years. 70 tumours were treated by enucleation, 46 by ruthenium brachytherapy, 14 by local resection, 6 by transpupillary thermotherapy (TTT) and 1 by cryotherapy. Out of 137 patients, in 32 cases (24%) second primary cancers were diagnosed, the most common locations were breast (18,8%) and lung (15,6%). 60 of patients (58%) died of metastatic disease, 15 patients (14%) died of other cancers and 29 of patients (28%) of unrelated causes. The mean follow-up period was 78,60 months (range: 3-286).

Conclusions: The most common second primary cancers in patients with uveal melanoma were breast and lung cancers, probably due to the overall incidence in the reference population. Higher morbidity of other neoplasms in this group requires further research.

The quality of life and sleep in patients with obturative sleep apnea

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Introduction: Obturative sleep apnea (OSA) is the most frequent type of sleep apnea and affects almost 10% of adult male population and nearly 5% of females. It is caused by excessive decrease of tension of pharyngeal muscles during time of sleep. That results in constriction or closure of the pharynx. In the aftermath of repetitive episodes of hypopnea or apnea regeneration while sleeping is non-effective.

Aim of the study: The aim of the study is to analyse the quality of life and sleep of the patients diagnosed with OSA under constant medical supervision.

Matherial and methods: 55 patients (aged 22-82) treated at Sleep Apnea Clinic in University Hospital were asked to complete a questionnaire, containing Epworth sleepiness scale (ESS) and additional questions about their quality of sleep and life. 55 employees (aged 22-61) without OSA symptoms were determined as a control group. The data was evaluated using “Statistica 13.3" (StatSoft) software and R programming language. The level of statistical significance was set to 0.05.

Results: Patients with OSA have worse quality of sleep in comparison to control group (p-value=0.002104). However, it turned out that there is no significant difference in quality of life amongst those two groups (p-value= 0.053016). Snoring, multimorbidity, sleepiness during a day and fatigue are statistically more often present in patients with OSA than in the control group. After all, there is no difference in the morning activity between both groups (p-value=0.701013).

Conclusions: Patients diagnosed with obturative sleep apnea have significantly worse quality of sleep which is not always connected to worse quality of life. The components of bad sleep quality present in patients with OSA are represented by: snoring, awakenings during a night, fatigue and sleepiness during a day. Usually, those patients have many other diseases which can also contribute to worse sleep quality. Further studies on this subject are planned.

Gynecology and Obstetrics

The Polish women's experience and level of knowledge about fertility and its disorders

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Introduction: According to World Health Organization, infertility is defined as the failure to conceive within 12 months of regular unprotected sexual intercourse (2-4 times a week). This problem, recognized by WHO as a social disease, affects approximately 10-15% of couples in Poland.

Aim of the study: To assess the experience and knowledge of Polish women, up to the age of 50, about fertility and its disorders.

Matherial and methods: A questionnaire consisting of 44 questions, divided into sections concerning: demographics, personal health data, respondents' knowledge about menstrual cycle and infertility. The questionnaire was available in social media from January till February 2020. Statistical analysis was performed in the use of Statistica.

Results: 3321 correctly filled out questionnaires were obtained, including 1127 filled out by women that neither had been nor were pregnant at the time of the survey. As many as 65.2% of respondents do not know which days in the cycle are fertile days. 42.6% of respondents do not know that ovulation occurs about 14 days before the onset of the next period, 40.3% of them are not aware that fertilization takes place in the fallopian tubes. Women, who have been and/or are currently pregnant, more often answered correctly than those who had never been pregnant. 35.4% versus 33.8% ($p<0.001$) can define when fertile days occur, 59.7% versus 52.8% ($p<0.001$) know when ovulation occurs. 60.3% of women who have already been pregnant properly indicated 1 year as the definition of infertility, in comparison to 55.8% of respondents who have never been pregnant ($p<0.001$).

Conclusions: The study has shown that knowledge about fertility and its disorders is not satisfying among Polish women. Due to the growing problem of infertility additional education related to that problem is required. It should mostly concern basics of reproductive physiology and menstrual cycle.

Influence of factors related to pregnancy and childbirth on the occurrence of postpartum depression

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Introduction: Postpartum depression (PPD) affects approximately 10-15% of women in the postnatal period. The illness influences both the mother and the child, disturbing the child's development. The impact of pregnancy and delivery on PPD has yet to have been explained thoroughly.

Aim of the study: The aim of the thesis to determine the impact of pregnancy and childbirth factors on the risk of postpartum depression occurrence and its impact on the condition of the newborn.

Matherial and methods: Research has been conducted via an anonymous online survey, shared on the social media. Answers were received from 1446 women. Each of them had given birth in the last 12 months or less. The survey was divided into two parts. The first part consisted of questions from the Edinburgh Postnatal Depression Scale (EPDS). Second part was an author's survey questionnaire.

Results: Amongst the women who took the survey, 437 (30.2%) scored a high result in EPDS, which indicates a high probability of depression, while the next 145 women (10.02%) had a borderline score. Subjects with depression were more likely to have postpartum complications (15% versus 10%). What is more, women suffering from depression assessed the delivery as traumatic (25% vs 12%). Amongst the women who had suffered from PPD, only 6% received care from a psychiatrist during or after the pregnancy. It is worth mentioning, that women with depression did not breastfeed at all more often (13% vs 9.5%).

Conclusions: Ensuring proper care during pregnancy and childbirth, and choosing the right procedures allows to reduce the frequency of postpartum complications, which reduces the incidence of PPD. Giving sufficient attention to the mental health of the woman after childbirth will help diagnosing PPD earlier, thus enable implementing proper measures and help preventing the negative effects of depression.

The pyruvate kinase activity in peripheral and uterine blood in women with typical endometrial hyperplasia and endometrial cancer

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Introduction: Endometrial cancer is one of the most common gynecological malignancies affecting more than 280,000 women worldwide each year. Pyruvate kinase is an enzyme that participates in the final step of glycolysis. With its ability to enhance tumor angiogenesis as well as mediate tumor cells migration it is one of key molecules involved in tumorigenesis.

Aim of the study: The aim of this study is to assess the potential role of pyruvate kinase activity measurement as diagnostic marker of endometrial cancer. This study looks at M2 isozyme of pyruvate kinase activity(M2-PK) measured in peripheral and uterine blood plasma samples in various stages of endometrial cancer(EC) as well as in precancerous state of atypical endometrial hyperplasia(AEH).

Matherial and methods: Measurements were performed using spectrophotometric method in citrate plasma samples from peripheral and uterine blood. Study group included 84 patients with endometrial cancer, 28 patients with atypical endometrial hyperplasia and 23 healthy controls.

Results: Pyruvate kinase activity in EC group was 3-fold higher than in control group both in peripheral and uterine blood Samples. Pyruvate kinase activity was also 3-fold higher in uterine blood when compared to peripheral blood samples. We also found statistically significant correlation between FIGO staging and detected activity with the M2-PK activity being 2-fold higher for FIGO1 than for FIGO3. We also describe a paradox in which the M2-PK activity in patients with atypical endometrial hyperplasia is lower than M2-PK activity in control group in peripheral blood samples, but higher in uterine blood samples.

Conclusions: The measurement of citrate plasma pyruvate kinase metabolic activity could be considered as interesting marker with regards to both precancerous and cancerous states of endometrium. Further studies are needed to reveal the molecular mechanism behind the described discrepancies.

Determinants of adiponectin levels during pregnancy in women with type 1 diabetes mellitus

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Introduction: Adiponectin is a protein hormone secreted by adipocytes. It is widely considered to play an important role in the regulation of both glucose and lipid metabolism.

Aim of the study: This study aimed to evaluate adiponectin concentrations in pregnant women with type 1 diabetes and establish its determinants.

Matherial and methods: The study group consisted of 88 pregnant patients with type 1 diabetes. Adiponectin levels were determined three times during pregnancy - in the first-trimester (before the end of 12 weeks of gestation), in the second-trimester (between 20th and 24th week) and in the late third-trimester (between 34th and 39th week of gestation). The analysis of associations between adiponectin values, demographic, anthropometric and laboratory parameters was performed using the Spearman rank correlation coefficient.

Results: Changes in adiponectin concentrations during pregnancy were found to be significant (p=0.02). First-trimester adiponectin levels were negatively correlated with waist-to-hip ratio (p=0.01), triglycerides (p=0.02) and C-reactive protein (p=0.005). Furthermore, a significant positive correlation between adiponectin and daily protein urinary secretion, (p=0.03), has been noted. Second-trimester adiponectin concentrations were inversely correlated with the body mass index (P=0.02), triglycerides (p=0.004) and creatinine clearance (p=0.04). Finally, third-trimester adiponectin levels were positively correlated with the glycated hemoglobin (p=0.007). There was not any significant correlation between adiponectin and total cholesterol, low-density lipoprotein cholesterol, high-density lipoprotein cholesterol, estimated glucose disposal rate, daily insulin requirement, maternal age, duration of diabetes, neonatal birth weight and placental weight.

Conclusions: Inflammatory markers and metabolic parameters, rather than obesity, might be considered as the main determinants of adiponectin concentrations throughout pregnancy in patients with type 1 diabetes.

Gynecological complications in women after radical hemato-oncological treatment due to hemato-oncological malignancies- a questionaire study.

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Introduction: Nowadays, the increasing number of cancer survivors after successful oncological treatment due to hemato-oncological malignancies is observed worldwide. Female patients at reproductive age after hemato-oncological treatment (HT) are a special group at high risk of gynecological and obstetric complications.

Aim of the study: Defining the occurrence of gynecological and obstetric complications in female patients treated radically due to hemato-oncological malignancies.

Matherial and methods: Retrospectively analysed group comprised of 36 female patients (<40 y.o.) from Department of Hematology and Bone Marrow Transplantation, who underwent HT between 2006-2019. Each woman filled in the questionnaire concerning gynecological health state before, during and after HT (78 questions).

Results: Analysed group comprised of women, who underwent HT due to: Hodgkin lymphoma - 58%, non-Hodgkin lymphoma - 19% , acute lymphocytic leukemia - 11%, acute myeloid leukemia - 8% and myelofibrosis - 3% with median age of 33 y.o (SD=8,1). All patients underwent chemotherapy, radiotherapy was implemented in 31% of patients, autologous hematopoietic stem cell transplant in 14% and allogeneic hematopoietic stem cell transplant (alloHSCT) in 14%. Main gynecological complications during HT were amenorrhoea (33%) and decreased libido (25%). Oral contraception was used by 2/36 women during HT, however 10/36 patients stopped sexual activity during that time. All patients after alloHSCT were diagnosed with premature ovarian insufficiency (POI). Infertility appeared in 28 % of all patients after HT. In analysed group 1 woman was pregnant during HT, 5 women after HT. One premature delivery was observed, however all pregnancies ended with live births of healthy newborns.

Conclusions: Gynecological complications were observed in majority of patients during HT. Prevention of POI should be taken into consideration while planning HT of young women, especially during decision of alloHSCT application. The cooperation between hematologists and gynecologists remains essential to prevent gynecological complications after HT.

Internal Medicine

PREVALENCE OF COMORBID PATHOLOGY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS AND THYROID DYSFUNCTION

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Introduction: Type 2 diabetes mellitus (T2D) is one of the major chronic disease burdens with a prevalence of 422 million patients worldwide. In addition, type 2 diabetes is a leading cause of severe morbidities and disabilities (blindness, chronic renal impairment, cardiovascular events, and lower limb amputation). Diabetes mellitus and thyroid dysfunction are endocrinopathies that are commonly seen in routine practice, and they frequently coexist.

Aim of the study: To analyze the peculiarities of comorbidity in patients with type 2 diabetes mellitus and thyroid dysfunction.

Matherial and methods: A retrospective analysis of 200 cases of patients with T2D and comorbid pathology were analyzed. T2D was defined according to the American Diabetes Association criteria of fasting plasma glucose concentration (FPG) ≥ 7.0 mmol/L, or 2-h post load value in the oral glucose tolerance test ≥ 11.1 mmol/l on more than one occasion, or pharmacological treatment for T2D confirmed by a review of medical records.

Results: According to the retrospective analysis results, among 200 patients with T2D, thyroid dysfunction was registered in 27 patients, among them, 48.1 % had hypothyroidism, 44.4 % – goiter, and 7.5 % – autoimmune thyroiditis. 100 % of patients, who had both T2D and hypothyroidism were found to have hypertension, 46.2 % had diabetic nephropathy, 38.5 % – chronic pancreatitis, 53.8 % – obesity. It should also be noted that all the patients with T2D and autoimmune thyroiditis, whose cases were included into the research, had hypothyroidism as well. Patients with comorbid T2D and goiter were most frequently found to have hypertension – 91.7 %, and obesity – 50.0 %, while chronic pancreatitis was diagnosed only in 7.7 % of the patients, diabetic nephropathy – in 16.7 %. Moreover, in one patient that was a part of the research T2D coexisted with hypothyroidism and goiter.

Conclusions: Comorbidity of type 2 diabetes mellitus and thyroid dysfunction equals 13.5 %. Hypothyroidism and goiter prevail within morbidity of thyroid disorders in patients with T2D.

Factors determining Vitamin D supplementation amongst patients with types 1 diabetes

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Introduction: Half of the individuals with type 1 diabetes (T1DM) may present Vitamin D (VD) deficiency. There is little known about factors determining a decision on VD supplementation.

Aim of the study: The study aimed to determine the factors affecting vitamin D supplementation in people with T1DM.

Matherial and methods: A cross-sectional survey study using the authors' questionnaire paper and its digital version was performed. The questions involved data on the basic characteristics of the respondent, medical history, VD supplementation status, influence of the social environment, self-education, and the most important personal motivator for VD supplement use. Multivariate logistic regression analysis was performed. We collected a total of n = 184 papers and n = 550 digital complete surveys.

Results: From 734 total respondents, 62.0% declared VD supplementation. The main personal rationale for VD supplementation were recommendation of medical specialist 172 (37.8%) and self-education 135 (29.7%). The main reasons for non-supplementation of VD were lack of knowledge about VD 159 (57.0%) and lack of motivation 77 (27.6%). VD supplementation was independently associated with a family doctor (odds ratio (OR), 95% confidence interval (CI): 4.67, 2.32–9.40) or medical specialist recommendation (16.20, 9.57–27.43), and self-education (5.97, 3.90–9.13).

Conclusions: Most Polish individuals with T1DM use VD supplements, and the decision is related to physicians' recommendations and self-education.

An unusual correlation between LDL and blood sodium levels in patients suffering from diabetes mellitus

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Introduction: Natremia is among most important homeostasis parameters. Hyponatremia is the most common type of electrolyte imbalance and is associated with an increased risk of death among patients admitted to hospital.

Aim of the study: The aim of study was to compare natremia with selected blood parameters determined on admission to hospital, and then to find correlation, if any, between those parameters.

Matherial and methods: We retrospectively reviewed the medical records of 169 patients with diagnosed type 2 diabetes and the average age of 72.43±11.62 years. We tested the correlation between natremia and: total, LDL and HDL cholesterol; creatinine; potassium; calcium; eGFRCKD-EPI and alanine aminotransferase levels in the patients. Statistical analysis was run on STATISTICA 13. The nonparametric Mann-Whitney, Spearmans' rank correlation and the Shapiro-Wilk tests were used to analyse factors affecting laboratory test results for the patients, perform correlation analyses and check the conformity with normal distribution, respectively.

Results: A positive correlation was revealed between LDL level and natremia ($p = 0.023$), as well as between natremia and chloride ion concentration ($p < 0.001$) in the patients' blood. No correlation was found between natremia and sex, age, eGFRCKD-EPI, alanine aminotransferase, HDL cholesterol, triglycerides, creatinine, as well as calcium and potassium concentrations.

Conclusions: Statistically significant correlations were found exclusively between LDL level and natremia, and between chloride and sodium concentrations. It is known that falsely low natremia could be caused by hypertriglicerydaemia, which is referred to as pseudohyponatraemia. Our study revealed another relation: high LDL level was correlated with high natremia, which requires further research due to the scant literature. The sodium, potassium and chloride concentrations are known to be interconnected by the need to ensure the electrolyte balance, as seen in the Gamble diagram. The study showed statistically significant concentration correlation between sodium and chloride, but not between sodium and potassium.

The association between the NADH dehydrogenase serum concentration and markers of insulin resistance in people with diabetes mellitus type 1

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Introduction: The lack of endogenous insulin secretion together with insulin resistance (IR), make diabetes mellitus type 1 (DM1) a disease of energy destruction. The main organelles responsible for the energetic homeostasis are mitochondria. It can be suspected that a metabolic disease such as DM1 causes adverse changes in the structure and function of mitochondria, which can influence the treatment and the development of chronic complications. One of the methods allowing to investigate the function of mitochondria by checking the function of mitochondrial complex 1 is non-invasive NADH dehydrogenase serum concentration test.

Aim of the study: The aim of the study was to assess the mitochondrial function in adults with DM1 and the relationship with IR

Matherial and methods: The study group consisted of 36 people with DM1, 12 women and 24 men, in age 38 (26-50) years with the duration of the disease 20 (12-28) years and HbA1c 8.35 (6.92-9.78) %. All participants were treated with functional intensive therapy. NADH dehydrogenase serum concentration was measured using ELISA test. Higher NADH dehydrogenase describes better function of mitochondria. IR was evaluated with indirect markers. The estimated glucose diposal rate (eGDR) was calculated by the following mathematical formula: 24,31-12,22 (WHR) – 3,29 (hypertension 0/1) – 0,57 (HbA1c) [mg/kg/min]. It was assumed that the higher the eGDR, the lower IR.

Results: Medians of chosen IR indicators among investigated group were: eGDR 7.60 (5.58-8.99) mg/kg/min, WHR 0.88 (0.83-0.92) and NADH dehydrogenase concentration 2.25 (0.72-3.81) ng/ml. People with eGDR above the median (lower IR) were proved to have higher NADH dehydrogenase concentration 2.9 (1.42-4.6) vs 1.22 (0.37-2.88) ng/ml, p=0.008). Negative correlation was observed between NADH dehydrogenase concentration and WHR (Rs=-0.35, p=0,03) whereas positive correlation was observed between NADH dehydrogenase concentration and eGDR (Rs=0.43, p=0,008). Multivariate linear regression confirmed a significant association between insulin sensitivity and better mitochondrial function (beta=0.54,p=0.003).

Conclusions: People with DM1 with lower IR (higher insulin sensitivity) are characterized with better mitochondrial function

Associations between intestinal barrier integrity markers clinical features of individuals with type 1 diabetes

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Introduction: Zonulin is a protein that regulates the reversible permeability of tight junctions. Intestinal fatty-acid binding protein (I-FABP) is produced by enterocytes and is a marker of their damage. Both proteins may be used as markers of the intestinal barrier function. There is scarce data on intestinal barrier function among individuals with long-lasting type 1 diabetes (T1DM).

Aim of the study: To assess associations between markers of intestinal barrier function with clinical features of adults with T1DM.

Matherial and methods: This cross-sectional study concerns patients with T1DM lasting more than five years without gastrointestinal disorders. The data on medical history, lifestyle, anthropometric features, and lab findings were collected. The skin accumulation of advanced glycation end-products representing long-term glycemia control was measured by AGE Reader. Insulin resistance was assessed by Visceral Adiposity Index and estimated Glucose Disposal Rate. The serum concentration of zonulin and I-FABP will be assessed using ELISA arrays. Non-parametrical statistical tests were performed. Data is presented as median (interquartile range).

Results: Due to current epidemic circumstances, to end of the March, the serum concentration of zonulin and I-FABP will not be measured. The results will be obtained directly after the end of the SARS-Cov-2 pandemic. The study group consists of 75-85 individuals aged 35 (24-41). The median of the duration of diabetes, body mass index, and glycated hemoglobin were equal to 17 (9-24) years, 25.7 (22.7-28.0) kg/m2, and 7.6 (6.8-8.7) % respectively. 57% of the study group had at least one diabetic complications: 51% neuropathy, 23% retinopathy, and 6% nephropathy.

Conclusions: The study may indicate associations between zonulin, I-FABP, and features of long-lasting T1DM. These relationships may shed light on the function of intestinal barriers among individuals with T1DM and provide background for further studies.

Reduced quality of life and sexual satisfaction in isolated hypogonadotropic hypogonadism

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Introduction: Isolated hypogonadotropic hypogonadism (IHH) is a rare genetic condition characterized by gonadotropin-releasing hormone (GnRH) deficiency. Delayed or absent puberty and impaired fertility are common clinical features of IHH, which can have a significant impact on patients' health-related quality of life (HRQoL), sexual satisfaction and mood.

Aim of the study: This study aimed to assess the impact of IHH on HRQoL, presence of depressive symptoms, erectile dysfunction (ED), and sexual satisfaction. Interactions between these aspects, as well as the influence of hormone replacement therapy (HRT), were evaluated.

Matherial and methods: 132 IHH subjects (89 men and 43 women; median age 30 ± 21.50, range: 18-72 years) and 132 sex- and age-matched controls (median age 30.50 ± 17.50, range: 18-71 years) were enrolled. HRQoL, depressive symptoms, ED, and sexual satisfaction were assessed using the Zung Self-Rating Depression Scale (SDS), 15D instrument of HRQoL (15D), Sexual Satisfaction Questionnaire (SSQ), and the 5-item International Index of Erectile Function (IIEF-5).

Results: Median overall scores of three scales (15D, SSQ, and IIEF-5) were lower in the IHH group than in controls. Median values of the SDS were higher in patients vs. controls. IHH patients with depressive symptoms or ED had lower overall 15D scores than those without such symptoms. Age of patients at the time of IHH diagnosis inversely correlated with their overall 15D scores. No differences were found between scores of patients treated with HRT for at least one year and untreated subjects in any of the scales.

Conclusions: IHH patients, despite HRT, may experience a significant impairment of their HRQoL and sexual satisfaction compared to healthy subjects and are at an increased risk of developing depressive symptoms and ED. The late diagnosis of IHH seems to have a significant negative impact on HRQoL. More attention should be devoted to the well-being and the various aspects of quality of life in the treatment process of IHH patients.

IL-33 and soluble ST2 receptor as mediators of systemic inflammation in OSA patients

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Introduction: Obstructive sleep apnea syndrome (OSA) is a chronic condition characterized by recurrent pauses in breathing during sleep. OSA is highly associated with chronic low-grade systemic inflammation. Interleukin 1 superfamily (IL-1) is a group of 11 cytokines which play a role in a wide range of immune processes. IL-33, one of the most recently discovered members of IL-1 superfamily is an alarmin cytokine promoting inflammatory responses. IL-33 signaling pathway begins with binding of the cytokine to the ST2 receptor. Activation of IL-33 is limited by soluble ST2 (sST2) receptor freely present in blood.

Aim of the study: The main aim of the project was to investigate IL-33 and receptor sST2 protein level in blood serum of OSA and comparison to healthy individuals with association of polysomnography parameters.

Matherial and methods: The study included 40 individuals, who underwent PSG and based on apnea-hypopnea index(AHI) were divided into severe OSA group (n=20;AHI≥30;85% male) and healthy control (n=20; AHI<5; 70% male). All participants had their peripheral blood collected in the morning (6:00-7:00am) after the PSG. IL-33 and sST2 protein concertation measurements were performed using ELISA.

Results: Groups were matched regarding sex(p=0.2962), age(p=0.292) and total sleep time(p=0.279). OSA group compared to control group had both higher level of IL-33 serum protein (118.15pg/mL,IQR:76.97–140.41 vs. 40.23pg/mL,IQR:27.43–93.95) and sST serum protein (209.54±50.39pg/mL vs. 159.07±49.04pg/mL). IL-33 correlated with disease severity measured by apnea-hypopnea index (AHI)($p<0.001$;$r=0.597$), arousal index ($p=0.014$,$r=0.385$) and BMI ($p=0.005$,$r=0.438$), while sST2 protein level was only associated with AHI($p<0.001$,$r=0.538$). Further, correlation between IL-33 and sST2 protein level was observed ($p<0.001$,$r=0.577$). Multiple regression, using the progressive step method, revealed that IL-33 protein level was significantly affected by AHI ($p<0.001$,$b=0.487$) and sST2 level ($p=0.025$,$b=0.317$). Obtained model explained 49.3% of IL-33 protein level variability.

Conclusions: OSA patients suffer from increased inflammation mediated by IL-33, which is associated with elevation of soluble ST2 receptor and severity of the disorder.

Evaluation of the focal changes in liver in patients with alveolar echinococcosis treated with albendazole

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Introduction: Alveolar echinococcosis(AE) is a parasitic disease caused by Echinoccocus multilocularis. After ingestion of eggs by human, oncosphere hatches in lumen of small intestine and then penetrates intestinal wall in order to enter portal circulation. It localizes itself in liver, usually forming a non-embossed structure. AE occurs rarely in Poland (about 40 cases per year), but in recent years there has been an increase in incidence among humans.

Aim of the study: The aim of the study was to evaluate focal changes in liver in patients treated with albendazole based on the results of ultrasound examination and laboratory tests of patients.

Matherial and methods: Our study took into account 11 patients(4 men,7 women), who were diagnosed with AE in years 2015-2018. The results of laboratory and imaging examinations on the day of the diagnosis, the day of the first control visit (6 months later) and the second control (about 12 months later) were compared.

Results: In 3 patients there were no hepatic symptoms at the time of diagnosis. In abdominal ultrasound examination, the lesions in the liver were described in 6 cases as cysts, in 3 cases – as litho-fluid focal lesions/changes, and in 2 as infiltrations. Lesions in liver varied from 6 to 110mm in diameter. In laboratory findings, GGTP was elevated in 10 patients, whereas in 3 patients it was the only elevated hepatic marker. In 6 people, there was a suspicion of neoplastic process before confirmation of echinococcosis. One year after the diagnosis, 4 patients underwent resection of liver segment, in 2 patients liver lesions decreased in size, while in the rest, despite the stabilization of laboratory markers, liver lesions were not significantly reduced.

Conclusions: Despite treatment with albendazole and stabilization of liver function (due to normalization of laboratory markers), the lesions caused by E. multilocularis are not decreasing in size significantly. Due to that, patients require regular follow-up visits and control USG, CT or MRI scans in periods of minimum 6 months.

Analysis of traveling-related factors among patients with dengue fever and malaria returning from tropical regions

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Introduction: Nowadays travelling to tropical destinations became affordable, so there is increase in occurrence of tropical diseases in tourists. Malaria, caused by Plasmodium protozoa, is characterized by hectic fever. In dengue fever, caused by dengue virus, there are fever, muscle/joint pains and characteristic skin rash. Both diseases are mosquito-borne and have usual onset about 2 weeks after exposure. For people traveling to tropical countries vaccination and taking antimalarial drugs are often recommended

Aim of the study: The aim of the study was to analyze factors related to traveling to tropical regions among patients, who returned with either dengue fever or malaria.

Matherial and methods: The study took into account 22 patients (6 men,16 women), who were diagnosed with either malaria(3 patients) or dengue fever(19 patients) between years 2011-2019. Patients were divided into 2 groups – travel agencies clients(12 patients) and independent travelers(10 patients). Various factors were analyzed among these groups.

Results: Travelling destinations included over 15 countries with most(6) cases from Thailand. For tourists typical stay was 2 weeks and for independent travelers about a month. The mean age of travel agency's clients was 35 years. All 12 patients were diagnosed with dengue fever. At admission, patients presented high fever(100%), muscle/joint pains(66.7%), tiredness(50%), vomiting(41.7%), skin rash(41.7%), headache(25%).66.7% of patients presented symptoms after return. Half of patients had recommended vaccinations and only one patient was taking antimalarial drug. The mean age of independent travelers was 40 years. Out of 10 patients 7 were diagnosed with dengue fever and 3 with malaria. At admission, patients presented high fever(100%), headache(40%), muscle/joint pains(40%), skin rash(40%), tiredness(20%) and vomiting(20%). In half of patients symptoms occurred after the return. 70% of patients had recommended vaccinations and 30% patients were taking antimalarial drugs.

Conclusions: With increasing number of travels, it is important to suspect tropical diseases in patients presenting fever and flu-like symptoms after return. Only few travelers prepare themselves medically before trips, so It is important to raise awareness about proper preparation.

Evaluation of AQP3 and AQP5 genes expression in hemodialyzed patients with end-stage renal disease

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Introduction: Thirst and xerostomia are the main cause of excessive intake of fluids in patients on chronic haemodialysis and contribute to inter-dialysis weight gain (IDWG). High IDWG is associated with higher risk of cardiovascular death. Understanding the physiology of water management in hemodialyzed patients allows to limit IDWG. Aquaporins (AQPs) are family of transmembrane channels, that transport water across the cell. Experimental data suggest ideal prospects for AQPs as biomarkers and therapeutic targets in clinic.

Aim of the study: The aim of the study was to evaluate the expression level of AQP3 and AQP5 genes in hemodialyzed patients with end-stage renal disease and determine the correlation between expression level of examined genes and clinical parameters of those patients.

Matherial and methods: 40 samples of RNA were isolated from peripheral blood of patients (24 men, 16 women) from one Dialysis Station. Among all patients 13 were diabetic. To evaluate expression level of examined genes, real-time polymerase chain reaction was performed. Statistical analysis of results was done using Statistica 13.1. $p<0.05$ was considered as statistically significant.

Results: There was no statistically significant correlation between relative level of expression of both investigated genes and sex (AQP3 p=0.946; AQP5 p=0.924), age (p=0.699; p=0.948), cause of end-stage renal disease (p=0.469; p=0.209), urea reduction ratio (URR) (p=0.163; p=0.215), haemoglobin level (p=0.644; p=0.366), IDWG in kg and % (p=0.646, p=0.819; p=0.739, p=0.734), duration of a single haemodialysis procedure (p=0.646; p=0.388), duration of renal replacement therapy (p=0.525; p=0.874) and occurrence of diabetes (p=0.225; p=0.424). However, there was a tendency for lower values of AQP5 gene mRNA level in diabetic patients.

Conclusions: There is no correlation between expression level of AQP3 and AQP5 genes and demographic or clinical parameters of examined group of patients. Tendency of lower expression for AQP5 gene in diabetic patients looks promising and requires further research on a larger group of patients.

Non-alcoholic liver disease is related to insulin resistance among individuals with type 1 diabetes.

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Introduction: Non-alcoholic liver disease (NAFLD) is an asymptomatic condition that increases the risk of cirrhosis and cardiovascular events. Currently, the main challenge in the treatment of T1DM is to prevent the development of insulin resistance (IR), diabetic complications, and preterm mortality.

Aim of the study: We aimed to investigate the association between features of insulin resistance (IR) with the presence of NAFLD in individuals with type 1 diabetes (T1DM).

Matherial and methods: The study analyzes data from Poznań Atherosclerosis in Adult Patients with long-term Type 1 Diabetes Mellitus Study (PARADISE T1DM Study). The project was approved by the local Ethical Committee (nr of consent 67/19). We cross-sectionally investigated adults with T1DM. We retrieved data on medical history, lifestyle, anthropometrical features, and lab findings. The presence of a fatty liver radiologist assessed using abdominal ultrasound. We assessed IR using validated formulas: estimated Glucose Disposal Rate (eGDR), Visceral Adiposity Index (VAI). We performed multivariate logistic regression and a receiver operating characteristic (ROC) curve analysis.

Results: Among n = 93 participants (males, 66.7%), n = 9 (9.7%) had NAFLD in abdominal ultrasound. The individuals with fatty liver had higher body mass index, waist and hip circumferences, transaminases, triglycerides, eGDR, and VAI. In the adjusted multivariate logistic regression models eGDR (Odds Ratio [OR] = 0.66, 95% Confidence Interval [CI]: 0.46-0.94), and VAI (OR = 1.85, 95% CI: 1.19-2.86) were independently related to the presence of NAFLD. eGDR, and VAI predicted the presence of NAFLD with the area under the ROC curve (AUROC) equal to 0.78 (95% CI: 0.65-0.91; cut-off = 4.32 mg/kg/min, Sensivity = 94.0%, Specificity = 55.6%), and 0.76 (95% CI: 0.58-0.95; cut-off = 2.56, Sensivity = 88.8%, Specificity = 64.3%) respectively.

Conclusions: IR is associated with the presence of NAFLD in individuals with T1DM. IR formula may help in the prediction of NAFLD.

Hepcidin in newly diagnosed acromegaly patients.

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Introduction: Hepcidin is an acute phase liver-derived protein, responsible for maintaining iron homeostasis. Hepcidin-ferroportin axis disruption results in iron-related disorders. Acromegaly is a rare disease, caused by oversecretion of growth hormone (GH) and insulin-like growth factor-1, in which accompanying haematological and iron disturbances were observed.

Aim of the study: The purpose of the study was to evaluate hepcidin level and iron homeostasis in newly diagnosed acromegaly patients in comparison to healthy control subjects (CS).

Matherial and methods: We enrolled 25 patients (9 women, 16 men) aged 49 ± 17 years, newly diagnosed with acromegaly and 24 healthy CS (8 women, 16 men) aged 58 ± 12 years. The clinical evaluation and laboratory tests (complete blood count, ferritin, iron) were performed at diagnosis of acromegaly and compared with CS. Hepcidin-25 was measured in blood serum by high-sensitive ELISA method.

Results: The median hepcidin serum concentration was significantly lower at acromegaly diagnosis than in CS [9.8 ng/ml (6.2 - 18) vs. 21.2 ng/ml (14.0 - 33.5), p = 0.004)]. Patients diagnosed with acromegaly presented lower ferritin level than CS [94 ng/ml (59 - 142) vs. 184 ng/ml (112.5 - 245), p= 0.02 for men and 36 ng/ml (22 - 75) vs. 107.5 ng/ml (313 – 40.5), p= 0.086 for women]. Hepcidin in men with acromegaly correlated positively with ferritin (rho= 0.70) and mean haemoglobin concentration (rho= 0.51) but negatively with red blood count (rho= -0.59). In CS a positive correlation was between hepcidin and ferritin both in men (rho= 0.68) and woman (rho= 0.88).

Conclusions: Significantly lower hepcidin and ferritin levels at acromegaly diagnosis may be caused by excessive endogenous GH secretion, through erythropoiesis stimulation and higher iron demand during organ overgrowth. Hepcidin involvement in iron metabolism of acromegaly patients was confirmed by its correlation with ferritin and blood parameters.

Erectile dysfunction in individuals with type 1 diabetes is associated with long-term metabolic control and skin autofluorescence: a cross-sectional study. PARADISE Study

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Introduction: Type 1 Diabetes Mellitus (T1DM) is a chronic disease of an autoimmune origin. Chronic hyperglycemia leads to the formation of advanced glycation end products (AGEs), the accumulation of which is related to the progress of diabetic complications. Erectile dysfunction affects 37.5% of individuals with type 1 diabetes (T1DM). Skin autofluorescence (AF), an indirect marker for AGE, is associated with the presence of severe ED.

Aim of the study: The study aimed to investigate the prevalence of ED among individuals with T1DM and the relationship between ED and diabetes management.

Matherial and methods: The data comes from the project Poznań Atherosclerosis in Adult Patients with long-term Type 1 Diabetes Mellitus Study (PARADISE T1DM Study). Adult patients with T1DM visiting Diabetology Department were cross-sectionally investigated. Medical history, anthropometrical features, lab findings were collected. All individuals filled the International Index of Erectile Function (IIEF-5). IIEF-5 total score < 22 represented the presence of ED. Skin autofluorescence (AF) was measured on the volar aspect of the forearm using an AGE Reader. Insulin resistance (IR) was assessed by the estimated Glucose Disposal Rate.

Results: From total n = 70 patients, n = 30 (42.9%) suffered from ED. The presence of ED was associated with higher glycated hemoglobin serum level (OR, 95% CI; 1.62, 1.02-2.60; p = 0.043), presence of at least one diabetic complication (3.49, 1.10-11.03; p = 0.03), skin AF (9.20, 1.60-52.94; p = 0.01), but not with IR (0.78, 0.57-2.60; p = 0.12). Skin AF values ≥ 2.2 indicates presence of AF with a sensivity of 70.0% and a specificity of 77.5% Area under the curve was equal to 0.72 (95% CI: 0.60-0.85).

Conclusions: The presence of ED in individuals with T1DM is associated with HbA1c, the presence of at least one diabetic complication, and skin AF. Increased skin AF may help in the detection of ED.

Inverse correlation of CTLA-4 expression with kidney function and serum immunoglobulin concentration in primary glomerulonephritides

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Introduction: Major causes of chronic kidney disease are primary proliferative and nonproliferative glomerulonephritides (PGN and NPGN). However, the pathogenesis of PGN and NPGN is still not fully understood. Cytotoxic T-lymphocyte-associated antigen-4 (CTLA-4) is a T-cell membrane receptor that plays a key role in T-cell inhibition. Despite its role in autoimmunological diseases, yet little is known about the involvement of CTLA-4 in the pathogenesis of PGN and NPGN.

Aim of the study: The aim of this study was to determine the role of CTLA-4 in the pathogenesis of PGN and NPGN by evaluating the frequencies of T and B lymphocytes expressing CTLA-4 and the serum concentration of the sCTLA-4 isoform in patients with PGN and NPGN in relati

Matherial and methods: The study included peripheral blood (PB) samples from 40 PGN and NPGN patients and 20 healthy age- and sex-matched volunteers in the control group. The viable PB lymphocytes were labeled with fluorochrome-conjugated monoclonal anti-CTLA-4 antibodies and analyzed using flow cytometry. The serum concentration of sCTLA-4 was measured using ELISA.

Results: The frequencies and absolute counts of CD4+/CTLA-4+ T lymphocytes, CD8+/CTLA-4+ T lymphocytes and CD19+/CTLA-4+ B lymphocytes and the serum sCTLA-4 concentration were lower in PGN and NPGN patients that in the control group. Reduced sCTLA-4 expression was associated with a lower concentration of serum immunoglobulins.

Conclusions: Our results indicate that deregulation of CTLA-4 expression may result in continuous activation of T cells and contribute to the pathogenesis of PGN and NPGN.

NON-HIGH-DENSITY LIPOPROTEIN CHOLESTEROL IS STRONGLY ASSOCIATED WITH THE METABOLIC SYNDROME

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Introduction: One of the most important signs of metabolic syndrome (MS) is impaired lipoprotein metabolism. Among all types of lipoproteins, non-high-density lipoprotein cholesterol (non-HDL-C) is the most potent cardiovascular risk factor that reflects total concentration of all atherogenic molecules. Although its clinical significance is still frequently underestimated, non-HDL-C concentration has been established as a secondary target in management of dyslipidaemias in the most recent ESC 2019 guidelines.

Aim of the study: The aim of the study was to investigate alterations of lipid parameters in men suffering from MS.

Matherial and methods: 62 adult males fitting IDF 2005 metabolic syndrome criteria and 70 controls from Lubusz voivodeship aged 40 to 70 years old were included to the study. Measurements of total cholesterol (TC), low-density cholesterol (LDL-C), high-density cholesterol (HDL-C) and triglycerides (TG) concentrations were made twice and then averaged. Non-HDL-C cholesterol level was calculated as the difference: TC – HDL-C. All blood samples were taken in the morning after an overnight starvation.

Results: Blood concentrations of TG (median 188,5 mg/dL vs 100,5 mg/dL; $p<0,0001$) and non-HDL-C (median 210,5 mg/dL vs 191,5 mg/dL; $p=0,0009$) were significantly elevated in subjects with MS compared to the control group. Furthermore, HDL-C levels were lower in the MS group than in the control one (median 43 mg/dL vs 56 mg/dL; $p<0,0001$). TC and LDL-C were slightly higher in participants with MS, however they did not reach statistical significance. In addition, we found that non-HDL-C concentration was highly correlated with TC and LDL-C levels ($r=0,97$ and 0,92 respectively; $p<0,05$) and moderately correlated with TG concentration ($r=0,54$; $p<0,05$).

Conclusions: Non-high-density lipoprotein cholesterol concentration is significantly elevated in men with metabolic syndrome, leading to increased cardiovascular risk.

Neurology, Psychiatry and Neurosurgery

Risk factors for a surgical site infection following a prior craniotomy

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Introduction: Craniotomy is an often-performed surgical operation with various complications attached to it. One of them is surgical site infection after craniotomy (SSI-CRAN) for which risk factors are still ill-defined.

Aim of the study: In considering patients operated at University Medical Centre Maribor, department of Neurosurgery we aimed to identify risk factors for developing SSI-CRAN.

Matherial and methods: We performed a retrospective cohort study in which we analysed patient's data covering the period January 2009 to August 2019 between the group of patients with SSI-CRAN and a control group. In the observed period, there were 66 patients with SSI-CRAN. There were 70 patients in a randomly selected control group. We collected demographic, epidemiological, surgical, clinical and microbiological data exclusively from patients where elective craniotomy had been performed.

Results: Of the 1192 patients who received a craniotomy in the given period, 66 (5.5%) patients developed SSI-CRAN. The demographic characteristics of the groups were similar. The most common infection sites were osteomyelitis (66.7%) and epidural abscess (63.6%). The most frequent causative organisms were Propionibacterium acnes (54.5%), coagulase-negative staphylococci (45.5%) and Staphylococcus aureus (39.4%). In the statistical analysis performed by Fisher's exact test, the factors associated with SSI-CRAN were Surgicel® (89.4% vs. 67.1% in SSI-CRAN and control group respectively, p=0.0019), adhesive dura (13,9% vs. 2.9% in SSI-CRAN and control group respectively, p=0.0274), sutures used for skin closure (69.7% vs. 34.3% in SSI-CRAN and control group respectively, p=0.0001), performed frontal craniotomy (28.8% vs. 12.9% in SSI-CRAN and control group respectively, p=0.0328) and postoperative prescription of corticosteroids (73.7% vs. 54.4% in SSI-CRAN and control group respectively, p=0.04).

Conclusions: This study identifies the risk factors of SSI-CRAN which could be tackled by developing preventive strategies aimed at reducing the incidence of SSI-CRAN.

Comparison of early treatment effects of selected first line drugs among patients with relapsing-remitting multiple sclerosis

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Introduction: Dimethyl fumarate (FD) and teriflunomide (TF) are immunomodulatory drugs, which are the first lines of treatment for relapsing-remitting multiple sclerosis. In clinical studies, FD has over 56% reduction in relapse rate, when TF reduces ARR with a 31,4%. Both drugs can cause an increase in hepatic transaminases and a decrease in the number of leukocytes. During treatment with FD blood counts take place every 3 months, while with TF every 2 weeks in the first 6 months of treatment, then every 8 weeks.

Aim of the study: Comparison of disease activity indicators and laboratory tests results in patients with relapsing-remitting multiple sclerosis (RRMS) treated with first line treatments - dimethyl fumarate and teriflunomide.

Matherial and methods: The study involved 164 patients with RRMS: 124 treated with FD and 40 treated with TF. The assessment of basic disease activity indicators, such as annual relapse rate (ARR), EDSS scale, T2 and Gd+ changes in MRI and control laboratory tests (blood count, ALT, AST, creatinine, urine) performed quarterly among patients treated with FD and TF.

Results: A higher rate of relapse-free and clinical progression was observed in the FD-treated group than in those receiving TF (76.47% vs 67.65% and 71.43% vs 61.90%). The FD group had a lower percentage of people free from radiological progression (92.65% vs 95.24%). In the FD group, the ARR at the end of the observation was significantly lower ($p = 0.000$) than at inclusion. The EDSS did not differ at the end of observation in both groups. In the one-year follow-up period, no differences were found in the TF and FD groups in the level of basic laboratory tests, only the lymphocyte count dropped significantly in the FD treated group.

Conclusions: Pharmacotherapy with both drugs is safe in patients, although FD treatment shows greater clinical efficiency.

The incidence of Horner syndrome as the first symptom of the neuroblastoma.

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Introduction: The Horner syndrome (HS) manifests by the unilateral ptosis, miosis, enophthalmos, and anhedonia. Most commonly, HS is caused by trauma and surgery procedure. However, it can also be provoked by tumors, especially neuroblastoma among pediatric patients.

Aim of the study: The objective of this study is to analyze the occurrence of HS in patients diagnosed with neuroblastoma.

Matherial and methods: The retrospective analysis of the data from 2004 to 2019 on the Department of Pediatric Oncology, Hematology and Transplantology was performed. The group of patients younger than 18 years old counts 119 children, 62 girls, and 57 boys. All of them were diagnosed with neuroblastoma.

Results: Among 119 patients, there were 4 children (3,36%) with HS as a presenting symptom. HS occurred in another 4 patients (3,36%) after the surgical procedure of removing the tumor. The adrenal gland was the most frequent localization of the tumor. Nevertheless, HS much more frequently was connected with the mediastinum siting. As a presenting symptom HS occurred in 2 of 11 cases (18,18%) with mediastinum localization. All of the patients with HS were younger than 2 years old.

Conclusions: The investigation of the cause of isolated HS is crucial, because it can be the first symptom of the neuroblastoma. At the same time, the surgery procedure increases the risk of HS incidence as a complication of the treatment.

Comparison of recordings from surface and needle electrodes used for motor evoked potentials in patients with surgical corrections of adolescent idiopathic scoliosis

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Introduction: Motor evoked potentials (MEPs) recordings are the elements of neuromonitoring used in patients with adolescent idiopathic scoliosis treated with surgical correction. Different factors such as types of electrodes may influence the quality of recorded MEP parameters. It seems crucial to compare the results using different electrodes, as this allows for a better implementation of neuromonitoring tests.

Aim of the study: To verify quality of two different recording approaches and compare the results of the amplitude and latency parameters of MEPs recordings from two different types of electrodes (surface - SE or needle - NE) used for neuromonitoring purposes during surgical correction of adolescent idiopathic scoliosis (AIS).

Matherial and methods: The study group consisted of twenty-one patients with AIS treated surgically. The compared parameters included amplitudes and latencies of MEP recordings measured with surface electrodes (approx. 28kΩ) and needle electrodes (approx. 1.5kΩ). The studies were performed before and after scoliosis correction. The marker muslces were anterior tibial muscles (TA) and pollicis brevis (APB). Potentials were induced after electrical stimulation with scalp electrodes (150-180mA).

Results: Amplitudes of MEPs recorded with SE were about half of NE values. The mean amplitudes recorded from APB were 390μV (SE) and 1263μV (NE). The mean amplitudes recorded from TA were 354μV (SE) and 786μV (NE). The latencies recorded with both types of electrodes from both key muscles were similar at mean - fom APB 21.6ms (SE) and 24.2ms (NE), and from TA 29.2ms (SE) and 30.5ms (NE).

Conclusions: The outcomes may help to investigate the key differences in MEPs recordings based on the type of the electrodes used for neuromonitoring during surgical correction of AIS; thus, help to compare the results of recordings from both types of electrodes in future or in cases when using standard NE is not necessary or not possible.

The influence of manual vagus nerve stimulation on the selected immunological parameters in patients with drug-resistant depression

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Introduction: Psychoneuroimmunology deals with the relationship between the nervous, endocrine and immune systems and their impact on the emotional state of a person. Lately, attention is paid to the role of the T lymphocytes in the development of drug-resistant depression. An interesting and at the same time non-invasive method of treating this type of depression seems to be manual stimulation of the vagus nerve (mVNS) that could improve the clinical condition of a patient by modulating the neuroimmunological axis.

Aim of the study: We assessed whether the 4-week mVNS can improve the symptoms of the drug-resistant depression and influence the percentages of T lymphocyte subpopulations.

Matherial and methods: Peripheral blood was collected on EDTA from 5 patients with a drug-resistant depression at three-time points: on the day the study started, after 2 weeks and after 4 weeks of daily mVNS. We analyzed the percentages of CD4+ and CD8+ cells with expression of CD69, CD95, CD25, HLA-DR antigens as well as NK and NKT cells with flow cytometry. The severity of depressive symptoms was assessed with the 21-question Beck Depression Inventory (BDI) and 17 item Hamilton Depression Rating Scale (HDRS-17).

Results: After 4 weeks of mVNS, there was a significant reduction of depressive symptoms measured with HDRS-17. The percentage of NKT cells, CD4+, and CD8+ cells were significantly increased after 4 weeks of mVNS. The rate of CD8+HLA-DR+, CD4+CD25+, and CD8+CD25+ cells was significantly decreased after 4 weeks of mVNS. The percentage of CD8+CD69+ and CD4+CD95+ cells significantly increased after therapy. We also saw significant correlations between changes in selected immune parameters and the results of BDI and HDRS-17.

Conclusions: The results show that manual stimulation of the vagus nerve not only significantly improves the mood of patients suffering from drug-resistant depression, but can also modulate immune system parameters.

Analysis of correlation between VDR gene mutations and the course of Levodopa-treated Parkinson's disease patients.

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Introduction: Parkinson's disease is second most often occuring neurodegenerative disease after Alzheimer's disease. Latest research indicated that vitamin D modulates over 1000 genes involved in cellular growth, protein synthesis and immunological processes. Several animal studies showed potential protective attributes of VD in dopamine cells.

Aim of the study: The aim of the study was to analyze the genetic variablility within Vitamin D receptor gene in order to assess potential correlation between its polymorphisms and clinical course of Parkinson disease.

Matherial and methods: We performed sanger sequencing(3130xl Genetic Analyzer) of VDR gene on genomic DNA isolated from peripheral blood leukocytes of 87 levodopa-treated Parkinson disease patients. We also collected data regarding UPDRS part 2 and 3, Hoen Yahr Scale scales scores as well as prevalence of dyskinesias.

Results: From analyzed VDR gene fragments splicing region of exon 1 turned out to be the most interesting one. Mutation of "start"(ATG) codon was detected in most cases. In examined patients C/C genotype was present 32 times, C/T 53 times and T/T 23 times. Patients in research group had statistically significant prevalence of SNP. We found that dominant C/C alleles showed statistically earlier average age of diagnosis. In addition, the presence of each subsequent T allele significantly delayed the onset of the disease ($p = 0.014$). The T/T genotype could have also extended the time from diagnosis to the implementation of l-dopa treatment, but data did not reach statistical significance ($p = 0.07$) We have also connected C/T genotype of rs2228570 variant with higher chance of levodopa-induced dyskinesias.

Conclusions: We conclude that due to connections between detected mutations and clinical characteristics gene sequencing may in the future be a viable way to predict future Parkinson Disease course.

The Effectiveness of Repeated Intravenous Ketamine on Depressive Symptoms, Suicidal Ideation and Functional Disability in Adults with Major Depressive Disorder and Bipolar Disorder: Results from the Canadian Rapid Treatment Center of Excellence

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Introduction: The effectiveness, tolerability, and safety of IV ketamine in adults with treatment resistant depression (TRD) receiving care in real-word settings is insufficiently characterized.

Aim of the study: Herein, results from a naturalistic, retrospective study are presented from an outpatient off-label Canadian IV ketamine clinic.

Matherial and methods: Adults (N = 213; Mage = 45) with Major Depressive Disorder or Bipolar Disorder, with a minimum of Stage 2 antidepressant resistance received IV ketamine at a community-based multi-disciplinary clinic. The primary outcome measure was change from baseline to post-infusion 4, on the Quick Inventory for Depression Symptomatology-Self Report (QIDS-SR; n = 190). Secondary measures included QIDS-SR-measured response and remission rates, changes from baseline to endpoint in Generalized Anxiety Disorder-7 Scale (GAD-7; n = 188) and the Sheehan Disability Scale (SDS; n = 168).

Results: Significant improvement in total depressive symptoms severity ($p < 0.0001$) was observed after four infusions of IV ketamine 0.5-0.75mg/kg. Moreover, the response rate (QIDS-SR total score change ≥ 50%) was 27% and remission (QIDS-SR total score ≤5) rate was 13%. Patients receiving IV ketamine exhibited anxiolytic effects ($p < 0.0001$,), improved overall psychosocial function ($p < 0.0001$) and reduced suicidal ideation ($p < 0.0001$). Compared to the baseline infusion, dissociation severity significantly reduced in subsequent infusions.

Conclusions: IV ketamine was safe, well-tolerated, and effective at improving depressive, anxiety, and functional impairment symptoms in a well-characterized cohort of adults with TRD.

The Internal Cerebral Vein: New Classification of Branching Patterns Based on Computed Tomography Angiography

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Introduction: The internal cerebral vein (ICV) is a deep cerebral vein that begins at the foramen of Monro by the union of the thalamostriate (TSV) and the anterior septal (ASV) veins. The lateral direct vein (LDV) is its other major tributary.

Aim of the study: The aim of this study was to evaluate the anatomy of the ICV and its primary tributaries and classify them depending on their course patterns using computed tomography angiography (CTA).

Matherial and methods: Head CTAs of 250 patients were evaluated in this study. We identified the number and termination of the ASVs and LDVs. The course of the LDV and its influence on the number of TSV and their diameters and courses were assessed. The ASV-ICV junctions and their locations in relation to the foramen of Monro also were evaluated.

Results: We classified ICV branching patterns into 4 types depending on the presence of an extra vessel draining the striatum. In the most common type 1, only the thalamostriate vein collects blood from the basal nuclei (77.0%). Types 2 (16.0%) and 3 (6.0%) are characterized by the presence of a supratha- lamic or retrothalamic LDV, respectively, which receives tributaries from the striatum. The LDVs were identified in 22% of the hemispheres, and usually they terminated at the middle third of the ICV (65.45%). In type 4 (1.0%), the basal vein takes an unusual course and drains the basal nuclei. The most common location of the ASV-ICV junction was anterior (57.20%), with the ASV terminating at the venous angle.

Conclusions: Detailed anatomic knowledge of both the normal and variant anatomy of the ICV branching patterns is crucial to develop optimal neurosurgical strategies to access third and lateral ventricles, and the large number of diagnostic head studies available currently allows us to conduct an assessment of anatomic variations on a great number of subjects.

Assessment of the risk of deterioration among conservatively treated patients due to mild traumatic brain injury.

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Introduction: Traumatic brain injury (TBI) is experienced by about 50 millions of people worldwide every year. Most cases are classified as mild traumatic brain injury (TBI) based on the Glasgow Coma Scale (GCS) score on admission. Patients diagnosed with mTBI are referred for in-hospital observation at the neurosurgical department. This solution is to ensure rapid neurosurgical intervention in the event of life-threating deterioration.

Aim of the study: This study aimed to determine the risk of deterioration (GCS drop during hospitalization) and the need for neurosurgical intervention (NI) among patients conservatively treated due to the mTBI

Matherial and methods: Retrospective analysis of 186 patients diagnosed with mTBI in 2008-2019 were performed. According to the GCS score on admission, patients were divided into 3 groups: GCS 13, GCS 14 and GCS 15. Their medical records were investigated for deterioration and NI. Age, gender and length of stay were also analyzed.

Results: Deterioration was observed in seven (3.76%) out of all 186 cases. In particular groups, three (2.52%) deteriorations occurred in the GCS 15 group. Two (3.85%) in the GCS 14 group and also two (13.33%) in GCS 13. Three NI were needed, two in GCS 14 and one in GCS 13. One patient from GCS 13 group died after 8 days from surgery.

Conclusions: Patients with a GCS score of 15 on admission are the least likely to deteriorate. The need for NI in these patients is very unlikely. The greatest risk of deterioration and the need for NI is among patients with a GCS score of 13 on admission due to mTBI.

GENETIC VARIABILITY WITHIN DRD2 GENE AND THE CLINICAL COURSE OF PARKINSON'S DISEASE AND EFFICACY OF LEVODOPA TREATMENT

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Introduction: Parkinson's disease is the second most common neurodegenerative disorder in the world with Levodopa being the gold therapeutic standard. The response to levodopa treatment may be varied, possible from the fact that the genetic variability may determine the response to the treatment.

Aim of the study: The aim of this work was to investigate the impact of genetic variants in the gene encoding dopamine receptor D2 (DRD2) on the observed differences in the clinical course of Parkinson's disease and the effects of levodopa treatment in the diagnosed patients.

Matherial and methods: Patients diagnosed with Parkinson's disease representing the Polish population were included in the study group (126 patients: women and men aged 39 to 95). The whole peripheral blood was drawn from the patients and protected, then the genetic material in the form of DNA was extracted and the genotyping of single nucleotide polymorphisms (SNP) was performed using the TaqMan probes.

Results: We detected rs2283265 and rs1076560 genetic variants of the DRD2 gene determine the more frequent presence of dementia and higher patients' scores in the II and III part of the UPDRS ($p < 0,05$). Furthermore, they do not affect the presence of levodopa treatment complications and the need for deep brain stimulation in patients diagnosed with Parkinson's disease ($p > 0,05$).

Conclusions: We believe that genetic sequencing may in future serve as a tool to assess the future course of PD.

Oncology, Hematology and Radiotherapy

Monocytic myeloid-derived suppressor cells (M-MDSC) as a new clinical biomarker in patients with chronic lymphocytic leukemia (CLL)

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Introduction: CLL affected about 904,000 people globally in 2015 and resulted in 60,700 deaths. Depending on the stage of the disease we use watchful waiting, then chemotherapy and immunochemotherapy may be used. MDSCs are heterogeneous population of immature myeloid cells found as one of the major components of tumor microenvironment. MDSCs are divided into two subgroups: mononuclear monocytic (M-MDSC) and polymorphonuclear granulocytic (PMN-MDSC). MDSCs enhance other immunosuppressive cells, secrete IL-10 and TGF-β, generate nitric oxide (NO). The accumulation of M-MDSCs has been demonstrated in many types of human solid tumors.

Aim of the study: The aim of the study was to assess the percentage of M-MDSC cells in patients with chronic lymphocytic leukemia and establish if they may be used as clinical biomarker.

Matherial and methods: Study included 110 patients diagnosed with CLL and 30 healthy controls with similar median age. Peripheral blood samples were collected into EDTA-coated tubes and immediately processed. Flow cytometry analysis of M-MDSCs was performed on peripheral blood mononuclear cells (PBMCs). The samples were stained with a combination of fluorescent-labelled monoclonal antibodies anti-CD14, anti-CD11b, mouse anti-human HLA-DR and anti-CD15. Statistical analysis was calculated with Statistica 13.

Results: The percentage of M-MDSCs was significantly increased in patients with CLL in comparison to the HVs ($p<0.01$) and depended on the stage of the disease. Also, we have found positive correlation between percentage of M-MDSCs and white blood cells (WBC) count ($r=0.262$; $p<0.05$), peripheral blood lymphocyte count ($r=0.270$; $p<0.05$) and time to treatment. Analysis of the ROC curves and AUCs revealed that M-MDSCs percentage could be potential CLL clinical biomarker.

Conclusions: The accumulation of M-MDSCs in peripheral blood of CLL patients was observed as well as positive correlation with the stage of the disease. Further studies are required to confirm the observation and determine whether M-MDSCs accumulation is an independent prognostic factor.

Applicability of features of EU-TIRADS scale in assessment of possible malignancy of suspicious thyroid lesions.

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Introduction: Thyroid cancer is the most common endocrine malignancy. In ultrasound assessment(USG) of thyroid nodules the TIRADS scale(based on features of malignancy) is used. Thyroid cancers include Papillary Thyroid Cancer(PTC), Follicular Thyroid Cancer(FTC), Medullary and Anaplastic cancers. Nodules can also contain a benign tumor–adenoma.

Aim of the study: The aim was to evaluate USG features of neoplastic thyroid nodules, analyze them with respect to their histopathological type and assess applicability of EU-TIRADS scale.

Matherial and methods: 188 patients with suspected/confirmed thyroid malignancy underwent thyroid USG, in which suspicious nodules were described, and then thyroidectomy. Histopathological results confirmed type of tumor in each patient. Hence USG descriptions of neoplastic nodules of confirmed type were analyzed.

Results: In PTC, most of the 130 patients had hypoechoic(86.1%) and solid(93.1%) nodules.34% had microcalcifications.51.5% had peripheral vascularity pattern. In 7.7% suspicious pathological lymph nodes were seen.91.5% scored 5 in TIRADS. In FTC, most nodules in 24 patients were hypoechoic(83.3%) and solid(79.2%) of mostly round(58.3%) shape.41.7% of nodules had a peripheral halo of decreased echogenicity and 16.7% had microcalcifications.54.1% had peripheral vascularity pattern and 29.2% presented capsular bulging. 79.2% of nodules scored 5 in TIRADS. Medullary cancers(8 patients) were mostly hypoechoic and solid.50% had halo effect and microcalcifications.62.5% presented intranodular vascularity pattern. All nodules scored 5 in TIRADS. 95.5% of adenomas had oval shape and 63.6% a halo sign.4% contained microcalcifications.TIRADS scores were heterogenous. Due to small number of other neoplasms no reliable pattern could be established.

Conclusions: Most of neoplastic nodules were hypoechoic and solid. Many presented alarming features like peripheral halo or microcalcifications. Except for medullary cancer, other neoplasms had peripheral vascularity pattern, which can be wrongly interpreted as a calming sign. Assessment of traits included in TIRADS scale is crucial, as it allows to correctly predict character of suspicious nodule.

Clinicopathological characteristics of medullary breast carcinoma

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Introduction: Medullary breast carcinoma (MdBC) is a rare subtype of invasive ductal breast cancer (IDC), comprising <5% of all invasive BCs. Its histopathological features are: lymphoplasmacytic infiltration, noninvasive microscopic circumscription, syncytial growth pattern >75%, and grade 2-3 nuclei. It might present various expression of estrogen (ER), progesterone (PR) and HER2 receptors.

Aim of the study: As MdBC occurs relatively rarely, the knowledge on it is limited. Attempts to summarize the data gave conflicting results. Our study aimed to analyze a representative group of cases and develop conclusions that might bring advances in further research on MdBC.

Matherial and methods: 12 MdBC excisional biopsy and radical mastectomy samples were stained with H&E to assess their histological type, malignancy and mitotic index and underwent immunohistochemical procedures to determine their ER, PR and HER2 expression.

Results: Patients with MdBC represented 1.1% (12 women) of 1122 patients with invasive BC examined during the study. On average, the patients with MdBC were 51.4yo (30-70yo), comparing to 60.5yo in all IDCs. The mean tumor diameter was 2.1cm (1.2-3.5cm). Importantly, there were no T1a, T1b, T3, T4 cases in MdBCs. T1c (10-20mm in the greatest dimension) was the most common size in MdBCs (58.3%). No regional lymph nodes involvement was found (pN0) in 83% of MdBCs and 57% of IDC ($p<0.001$). There were no G1 MdBCs. G2 and G3 comprised 58.3% and 41.7% respectively. All MdBC cases were ER(-) and PR(-), HER2 overexpression was found in 8.3% of samples. In a 5-year follow-up the overall survival (OS) was 91%.

Conclusions: According to obtained results MdBC occurs at younger age than average IDCs. Despite having greater mean size than IDCs and no low-grade cases it is not associated with lower OS, more frequent metastases or lymph node invasion. It is predominantly triple negative, thus treatment by choice is chemotherapy. In HER2(+) cases trastuzumab can also be used.

Can the Ottawa Score be a predictor for the recurrence of venous thromboembolism in patients with diffuse large B cell lymphoma?

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Introduction: Cancer patients have a four-fold to seven-fold higher risk of development of venous thromboembolism (VTE) when compared to non-cancer patients. The Ottawa score is a scale, which is applied for predicting the VTE recurrence for cancer patients. However, according to our knowledge, there have not been any reports on the role of the Ottawa score for patients with diffuse large B cell lymphoma (DLBCL).

Aim of the study: The aim of the study was to evaluate the frequency of VTE recurrence in DLBCL patients and validate the Ottawa score.

Matherial and methods: Retrospect analysis included patients treated for DLBCL in the Department of Hematology and Bone Marrow Transplantation, Poznan University of Medical Sciences in the years 2009-2019. We used the Ottawa score, in which high-risk predictors (of female sex or history of previous VTE) received 1 point while stage I lymphoma gives 2 negative points. Patients with a score ≤0 were categorized as low risk of VTE recurrence and patients with a score of ≥1 had a high-risk of recurrence.

Results: Among 451 patients who were treated for DLBCL in the years 2009-2019, 89 developed venous thromboembolism (19.7%; median age 57, range 20-87 years, 54%-males) and 8 had VTE recurrence (9%). Of the 89 patients, 46 were classified as low risk and 43 as high risk of VTE recurrence. All of the patients with VTE recurrence belonged to the high-risk category. 18.6% of patients classified into the high-risk category experienced VTE recurrence. Univariate analysis showed that a high Ottawa score was significantly associated with the development of VTE recurrence (RR 3.03; CI 1.04-8.85, p=0.042). Gender or advanced stage of disease were not associated with VTE recurrence. No fatal courses of VTE recurrence were observed.

Conclusions: The Ottawa score was useful in the prediction of VTE recurrence in patients with DLBCL.

Effectiveness of pembrolizumab in advanced NSCLC

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Introduction: Until recently, the only therapeutic option for patients with advanced NSCLC was palliative chemotherapy associated with a median overall survival (OS) approximately 12 months. Novel immunotherapies have demonstrated clinical efficacy.

Aim of the study: The aim of the study was to investigate the effectiveness of pembrolizumab after failure of chemotherapy in routine clinical setting.

Matherial and methods: 34 patients who failed previous lines of chemotherapy (1-3) were enrolled in the study between Mar 2017 and Aug 2017. Median follow up time was 30 months. The inclusion criteria were CS III/IV NSCLC, PD – 1 expression >1%, and good performance status (ECOG), adequate laboratory tests and lack of active brain metastases. Most patients were smokers . Most patients had comorbidities: cardiovascular (20 patients), DM (3), COPD (3) and asthma (1). Therapy was continued until disease progression, completion of a 2-year of immunotherapy treatment period or unacceptable toxicity. The response to treatment was evaluated according to RECIST 1.1, based on CT imaging. Assessment of toxicity was made using CTCAE version 4.0.

Results: Patient data analysis was performed in Dec 2019. 13 patients (38%) discontinued treatment prematurely and were lost to follow-up before disease progression. 6 patients survived more than 2 years after initiating treatment. Median OS was 8,25 months; median PFS 6,5 months. Responses of PR, SD and PD were recorded in 5 (15%), 9 (26%) and 10 (29%) patients, respectively. 3 patients did not have disease progression at 30 months after treatment initiation. 8 patients experienced AEs, including 1 of grade 3 (psoriasis and arthritis).

Conclusions: Pembrolizumab is effective in pretreated PD-L1 positive NSCLC. 41% of patients gained clinical benefit and 14% had appreciably extended survival. Conversely, 38% of patients were lost to follow-up during the initial stage of treatment. More precision qualifying criteria are needed to avoid high percentage of patients without benefit.

Polymorphism of TET2, DMNT3A, RUNX1 gene mutations in patients with myelodysplastic syndromes.

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Introduction: Myelodysplastic syndromes (MDS) are group of heterogenous myeloid neoplasms characterized by ineffective hematopoiesis, presence of cytopenias and frequent transformation into secondary acute myeloid leukemia (secAML). Genomic studies provide unprecedented insight at molecular landscape of clonal proliferation in MDS. TET2 and DNMT3A genes are involved in DNA methylation, whereas RUNX1 gene play role in transcription process. Understanding the genetic disease profile and influence of detected molecular factors on disease evolution and treatment strategy is still demanded.

Aim of the study: Use of pyrosequencing to confirm the presence of mutations- previously detected with NGS moreover quantitative analysis of TET2, DNMT3A and RUNX1 polymorphisms.

Matherial and methods: Bone marrow samples (BM) collected from 72 patients from 4 polish hematological units between 09.2014-12.2019 underwent analysis. Presence of TET2 c.4076G>T, c.4638G>C, c.4044+2dupT, RUNX1 c.509-2A>C, DNMT3A c.1014+1G>T mutations have already been partially confirmed (analysis is ongoing) in DNA isolated from BM using pyrosequencing and Sanger sequencing.

Results: In analyzed group median age at MDS diagnosis was 63 years old (range 18-88). Transformation to secAML occurred in 47,2%(34/72) of patients. 22,2%(16/72) of patients underwent allogenic hematopoietic stem cell transplantation (8 patients after transformation to secAML). Until now TET2 c.4076G>T and c.4638G>C mutations were found in patients diagnosed with MDS-EB2 who progressed to secAML. In patient with c.4638G>C TET2 mutation the ratio of wild type allele to mutated allele was 47% to 53% in BM. C.4076G>T TET2 mutation occurred in patient after alloHSCT and the ratio of wild type allele to mutated allele was 71% to 29% in BM, whereas after relapse the ratio was 10 to 90%.

Conclusions: TET2 mutations occur frequently in MDS patients who progressed to secAML. Pyrosequencing resemble reasonable diagnostic method to confirm presence of clinically important mutations throughout the course of disease.

Analysis of SMYD3 and EZH2 genes expression in thyroid cancers

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Introduction: Epigenetic modifications, including histone methylation through the SMYD3 and EZH2 genes, are important for the activation or repression of genes involved in oncogenesis. Their significance has already been identified in many types of cancer and is currently undergoing more and more extensive research because they are seen as a promising goal in targeted therapies. The correlation of their overexpression with higher aggressiveness and worse prognosis has already been observed in various types of cancer, including medullary thyroid carcinomas (MTCs).

Aim of the study: The aim of the present study was to analyze histone methyltransferases EZH2 and SMYD3 gene expression in thyroid cancer and to correlate it with the clinical outcome.

Matherial and methods: In this study, we analyzed SMYD3 and EZH2 expressions in 59 malignant and in 33 benign thyroid tissue samples using qPCR. The study group consisted of papillary thyroid cancers.

Results: We found EZH2 overexpression in thyroid cancers, while SMYD3 expression did not differ between malignant tissue samples and controls. EZH2 overexpression was not significantly higher in tumors staged pT3 or pT4 than in tumors staged pT1 or pT2, also metastases to the lymph nodes and multifocality were not associated with higher EZH2 expression.

Conclusions: Thus, overexpression of the EZH2 gene may indicate a greater susceptibility to developing papillary thyroid cancer. The EZH2 gene may be a potential therapeutic target in this type of thyroid cancer.

Porphyrin and protoporphyrin derivatives as potential photosensitizing agents in photodynamic therapy of skin cancers.

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Introduction: Photodynamic therapy (PDT) is a clinically approved minimally invasive therapeutic procedure that can affect selective cytotoxic activity on cancer cells. The procedure involves administration of a photosensitizing agent followed by irradiation with a wave length corresponding to the absorbance band of the sensitizer. The action on the tissue of reactive oxygen species leads to direct death of cancer cells, damage to microcirculation and induction of local inflammatory response. Clinical studies have shown that Photodynamic therapy (PDT) is a clinically approved minimally invasive therapeutic procedure that can affect selective cytotoxic activity on cancer cells. The procedure involves administration of a photosensitizing agent followed by irradiation with a wave length corresponding to the absorbance band of the sensitizer. The action on the tissue of reactive oxygen species leads to direct death of cancer cells, damage to microcirculation and induction of local inflammatory response. PDT can be effective in the early stages of cancer. PDT therapy can also extend inoperable tumours patients' lives and significantly improve their quality of life. Minimal Toxicity in relation to tissues negligible systemic effects, excellent cosmetic effects make it a valuable method in the treatment of skin cancers and precancerous conditions.

Aim of the study: Determination of the effectiveness of synthetic protoporphyrins (PP) and porphyrins (P) in PDT in squamous cell carcinoma (SCC) in an in vitro model. Chemical modifications of protoporphyrins were aimed at increasing the ability of the compound to penetrate the tumour cell and intensify the absorption of light quanta.

Matherial and methods: Squamous cell carcinoma cells (A431) were treated with PPIX and its derative: 2,7,12,18-tetramethyl13, 17-bis [2- (2-methyl-5-nitro-1H-imidazolyl) ethoxycarbonylethyl] -3,8-divinylporphyrin (PPI), 2,7, 12.18-tetramethyl-13.17-bis (1,4,7 trioxanonylcarbonylelthyl) - 3,8-divinylporphyrin (PPII) and porphyrins of these derivatives (PI-Zn and PII-Zn), which contain a centrally located zinc atom. Some tests were exposed to UVB radiation -10.5 J /cm2. A follow-up study was also performed using normal BJ-5ta fibroblasts. Cytotoxicity was determined by MTT test.

Results: Synthetic deratives have shown high anti-tumour effects in photodynamic therapy. Synthesized PP had a stronger effect than porphyrins containing a zinc atom in the structure.

Conclusions: Results of in vitro tests can be a starting point for the introduction of a new therapeutic agent and the development of an algorithm for treatment in PDT using synthetic protoporphyrins and porphyrins.

Curcumin ECT combined with PDT in melanoma treatment

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Introduction: Curcumin is currently tested towards its anticancer properties [1] . Due to the low bioavailability, the researchers try to improve its delivery by the use of electrochemotherapy (ECT). Moreover, its cytotoxic effect is increased by PDT. Both of the therapies show promising effects when applied alone, but their combination could be beneficial as well [2] .

Aim of the study: This study aimed to establish the most effective protocol for the combination of curcumin-aided ECT with PDT for melanoma treatment.

Matherial and methods: The experiments were performed on both – melanotic (A375) and amelanotic (C32) cell lines. Human fibroblasts (HGF) were used as a model of non-cancerous cells. To study the PDT and ECT protocols, we analysed the biological effects (viability, death type and caspase expression) of irradiation and of high electric fields on curcumin. Using mass spectrometry methods, we have analysed the effect of irradiation on curcumin's stability. Molecular dynamics studies were performed to assess the curcumin's localization with respect to the membranes. The theoretical model was validated in fluorescence staining studies.

Results: After blue light irradiation, curcumin undergoes decomposition to more potent and smaller compounds, such as vanillin and ferulic acid. Due to its amphipathic nature, curcumin first partitions within the lipid membranes (cells envelop). With time, it changes its localization to intracellular membranes. Concerning the effectiveness of using curcumin as anticancer agent, the preincubation with the drug led to much worse results.

Conclusions: First possibility is that irradiation of the photosensitizer disrupts the membranes in which it localizes, making extensive damage. On the other hand, inside the cells, curcumin could be rapidly metabolized thus the effectiveness of PDT drastically reduces. The obtained results suggest that the most effective way of combining both therapies is to electroporate simultaneously after addition of the drug and irradiate afterwards.

Is visfatin a potential serum marker of recurrent papillary thyroid cancer?

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Introduction: Nicotinamide phosphoribosyltransferase (NAMPT) (visfatin/ pre-B-cell-enhancing factor) is an enzyme catalyzing the rate-limiting step of nicotinamide adenine dinucleotide (NAD+) synthesis. It is detectable in most cell types and its expression is up-regulated in many different human malignancies, where it promotes cell growth and survival, DNA synthesis, mitochondrial biogenesis, and angiogenesis. Papillary thyroid cancer (PTC) is the most common type of thyroid cancer, representing about 80 percent of all thyroid cancer cases.

Aim of the study: The study was performed to investigate the potential feasibility of a blood-based diagnostic visfatin serum test as a marker in patients with papillary thyroid cancers

Matherial and methods: The study comprised 100 patients with PTC, who underwent total or near-total thyroidectomy with postoperative I131 ablation of thyroid residual tissue and 100 sex- and age-matched controls. Serum concentrations of visfatin, TSH, FT4, FT3, thyroglobulin (Tg), anti-thyroperoxidase antibodies (TPOAbs), anti-thyroglobulin antibodies (TgAb), fasting glucose and insulin were measured in the study and control groups. Statistical analysis was performed with MedCalc Statistical Software version 19.1.5.

Results: Comparisons of visfatin serum levels between patients with papillary thyroid cancer and healthy controls revealed similar concentrations in both groups (p=0.9425). Also, the ROC curve analysis did not find visfatin as a biomarker of papillary thyroid cancer. Visfatin serum levels was similar in disease-free patients with papillary thyroid cancer and in patients with tumor relapse. The analysis showed that the cutoff point of TSH-stimulated Tg higher than 0.94 ng/ml was the best predictor of cancer recurrence.

Conclusions: Visfatin is not a potential serum marker of papillary thyroid cancer. Despite evidence in the literature for up-regulation of visfatin/NAMPT in thyroid cancer tissue, the same is not true for serum and it cannot be used as a potential serum marker of recurrent/metastatic disease.

Orthopedics, Physiology and Sports Medicine

How is the Heart Rate (HR) changing through autonomic regulation during Ice Swimming?

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Introduction: Ice Swimming is a winter time sport performed by either professionals or beginners. It is usually practised outdoor in large bodies of still or running water. Winter swimmers in polish are commonly called „walruses". Regular ice swimming is said to be health beneficial by:

- boosting immune system functioning
- improvement of thermoregulation processes
- peristalsis of vessels improvement

Aim of the study: The aim of this study was to research how entering cold water is affecting heart rate (HR) as a part of Autonomic Nervous System (ANS) reaction at the very moment of immersion.

Matherial and methods: All the participants took part in 20-minutes long warm-up including, running, jumping and stretching. After the warm-up participants were provided with Holters' monitor and entered ice cold water for 3 full minutes. After 3 minutes, the subjects left the water and also the Holters' monitor was taken from them. One week later a 24 hours-long Holters' monitor test was conducted on each of the participant. Its' reading were than compared to in-water ones.

Results: Mean readings from 24h-long Holters test

Minimal BPM 66,9 +/- 7,7
Average BPM 67,1 +/- 7,9
Maximal BPM 67,4 +/- 8,1
Mean readings from post-immersion Holters test
Minimal BPM 137,8 +/- 13,2
Average BPM 138,6 +/- 13,3
Maximal BPM 139,5 +/- 13,3
P values = 0 on each reading

Conclusions: 1. Immersing cold water works as a trigger for increasing sympathetic activity (fight or flight reaction.) 2. By sympathetic activation and increasing BPM organism is providing needed warmth for the outer structures of the body.

How ice swimming is affecting outer body temperature?

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Introduction: Ice swimming is often practiced by athletes or ordinary people. This activity has its own health beneficial effects like improving immune system or increasing the efficiency of thermoregulation.

Aim of the study: Aim The aim of this study was to research how ice swimming affects the process of thermoregulation of the body directly before and after the immersion.

Matherial and methods: Materials & Methods 15 participants aged 20-25 (Mean age 23.7 years old, mean BMI: 22.8 ±1.45, number of females: 8, number of males: 7) immersed a cold water (1 degree Celsius) for 3 minutes. Each immersion was preceded by 20 minute warm-up including running, stretching and jumping. The outer body temperature was measured before warm-up and directly after immersion on 29 parts of the body: forehead, occipital part of the head, on hands (palmar and dorsal surfaces), arms (anterior and posterior surfaces), forearms (anterior and posterior surfaces), feet (plantar and dorsal surface), lower legs (anterior and posterior surfaces), thighs (anterior and posterior surfaces), abdomen, chest, back (upper and lower part).

Results: The outer body temperature dropped at all tested points. The biggest difference was recorded on the lower back (before immersion 34.3± 1.5 degrees Celsius, after immersion 14.3± 4.9 degrees Celsius, p=0.0000), abdomen (before immersion 33.4± 1.9 degrees Celsius, after immersion 10.3± 4.9 degrees Celsius, p=0.0000) and the dorsal surface of the feet (right foot before immersion 28.4± 2.3 degrees Celsius, right foot after immersion 12.3± 5.1 degrees Celsius, p=0.0000, left foot before immersion 28.0± 2.9 degrees Celsius, left foot after immersion 12.5± 5.1 degrees Celsius, p=0.0000).

Conclusions: Conclusion This study can help to understand the process of thermoregulation in ice cold water, and improve knowledge on the subject.

ApiFix® – the new method to fix adolescent idiopathic scoliosis

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Introduction: Adolescent idiopathic scoliosis (AIS) is spine deformity with curvature >10° accompanied by reduced kyphosis and vertebrae rotation of unknown etiology. AIS may be assessed by Cobb angle, thoracic kyphosis (Th4-Th12), lumbar lordosis(L1-L5) pelvic index (PI) and sagittal vertical axis (SVA). Patients with curves exceeding 45° in Cobb angle in thoracic region or 50° in thoracolumbar region are candidates for surgical intervention. The Apifix® system is implant with ratchet mechanism which corrects deformity, it is said to be at least as efficient as commonly used posterior spinal fusion.

Aim of the study: The aim of the study was to assess the radiologic effectiveness of ApiFix® system in AIS treatment.

Matherial and methods: All 20 patients were diagnosed with AIS. Six x-ray pictures including three in standing anatomical position and three in lateral view were taken: before surgery, right after and follow-up, at least 6 months after surgery. Cobb angle, PI, thoracis kyphosis from Th4 to Th12 vertebra and lumbar lordosis from L1 to L5 segments were analysed and compared using statistical tests. Also surgery duration and fused vertebra were analysed.

Results: The mean difference between Cobb angle before surgery and at follow-up was (-18.79o; SD=11.66) statistically significant ($p<0,0005$). The thoracic kyphosis angle before surgery equaled 27,49 (SD=9,23) and at follow-up was 35,51 (SD=6,79), the difference between these measurements was statistically significant ($p=0,0035$). Lumbar angle before surgery was 46,54 (SD=12,83) and directly after surgery was 44,23 (SD=11,82) difference between in lordosis before and after surgery was statistically significant ($p=0,0474$) SVA and PI measurements were not statistically significant. Number of segments fused was 7,5 (SD=1,24), time of surgery was 70,67 minutes (SD=10,50).

Conclusions: Current results indicate that ApiFix® system treatment is successful in permanent decrease in Cobb angle and increase in thoracic kyphosis, decreasing spinal deformity – scoliosis.

Epidemiology of hand injuries in paediatric population.

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Introduction: The incidence and causality of paediatric hand injuries. It may be vital in injury prevention, training and treatment priority. There are few papers in literature referring to this subject.

Aim of the study: The aim of the study was to assess the epidemiology and causation of hand injuries in paediatric population.

Matherial and methods: The study group in retrospective study included 291 patients, 74 females and 271 males aged 1- 18years old (mean age = 12,2; SD=4,52). Patients were admitted to the Polish Mother's Memorial Hospital Research Institute (ICZMP) to the Clinic of Orthopaedics, Traumatology and Hand Surgery for Children between 2015-2020. The cause of the injury and diagnosis has been taken from hospital database. Institutional Review Board (IRB)approval has been obtained. Statistical analysis has been performed.

Results: From 291 patients, data was collected and divided into 9 injury groups. It was observed: 15 dislocations, 26 open fractures, 124 closed fractures, 37 isolated tendons injuries, 53 multiple tendons injuries, 14 subamputations and 45 amputations. 155 injuries concerned right upper limb and 131 of left, 3 injuries included both upper limbs. There is no relationship between sex and causation or occurrence of hand injury. However it has been revealed that there is a relationship between age and occurrence of closed fractures (mean age=9,81; SD=5,56; $p<0,021$), isolated tendon injuries (mean age =13,27; SD=4,54; $p<0,045$) and amputations (mean age=10,5; SD=4,88; $p<0,007$). Main causes of hand injuries include: sport training (29,77%), accidents during agricultural machines use (15,26%) and contact with glass (14,50%).

Conclusions: Current results clearly show the epidemiology and causation of hand injuries in paediatric population that should be taken into account in special prevention programmes.

Bullseye shooting sports as a risk factor of carpal tunnel syndrome (CTS) and coexisting neuropathies of the upper extremity

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Introduction: Using firearms while training shooting sports require maintaining shooting position for an extended period of time. During this process the shooter sustains repetitive force impact caused by recoil, which may result in induction of neuropathies including carpal tunnel syndrome (CTS) and pathologies at proximal levels: at Erb's point or the spinal.

Aim of the study: Assessing whether shooting sports are a risk factor of CTS and other neuropathies of the upper extremity.

Matherial and methods: Screening consisted of 3 subtests: 1) von Frey filaments test (vFf) (changes in sensory perception); 2) Tinel-Hoffman sign - median nerve , 3) history of CTS specific symptoms. Additionally, a test for Froment's sign was performed. We examined 42 shooters, from whom 13 had scored positive on at least one subtest, which qualified them to enroll into MEP (motor evoked potentials induced with magnetic field), global EMG (electromyography) and ENG (electroneurography) studies. They were used to measure nerve fibers transmission from the spinal to distal levels; nerves of the brachial plexus, median and ulnar nerve were examined.

Results: Screening revealed 13 shooters; 10 with symptoms in the shooting hand. In addition, 2 Froment's signs were detected. Further tests involved 9 shooters since 4 refrained from participation in the research. Neurophysiological examination confirmed CTS in 9,5% (4/42) of shooters and brachial plexus pathologies in 21,4% (9/42). Additionally, 2 ulnar neuropathies at wrist were found. MEP, ENG and global EMG studies displayed statistically significant results for pathologies not only in shooting extremity but also in second one. Importantly, MEP study displayed significant pathologies in shooting population concerning nerve fiber transmission to all examined muscles in both extremities: deltoideus, biceps brachii, pollicis brevis, adductor digiti mini.

Conclusions: Bullseye shooters are likely to be at greater risk of developing CTS (9,5% vs 2,7% in general population) and other upper extremity neuropathies (21,4%) in both shooting and not-shooting hands.

Impact of declared physical activity on metabolic control of adults with type 1 diabetes

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Introduction: There is evidence of better metabolic control in physically active people with type 2 diabetes, however, much less is known about how exercise affects those with type 1 diabetes.

Aim of the study: This study aims to investigate whether physical activity can positively affect type 1 diabetes. Conclusions can be used to provide evidence to recommend exercise in type 1 diabetes.

Matherial and methods: 82 participants with type 1 diabetes aged 18-35 (women/men 32/68%) observed in one-year period were enrolled into a controlled-clinical trial. A self-administered questionnaire and in-depth interview were conducted on each visit within 3 weeks, three, six and twelve months after diagnosis. During visits each participant underwent a comprehensive medical examination; blood samples were collected for testing: glycated haemoglobin (HbA1c), C-peptide (CPE), low-density lipoprotein (LDL), high-density lipoprotein (HDL) and triglyceride (TAG). People physically active ≥2.5 times per week (median value) of each period were included into the physically active group - PHA-YES (51%), while rest of participants (activity <2.5 times pw) were included into less physically active group - PHA-LESS (49%). Remission criteria are: HbA1c<6.5%, CPE>0.5 ng/ml and daily insulin requirement <0.3 U/kg/d. In PHA-YES lower HbA1c levels were observed in three [6.00(5.6-6.9) vs. 6.45(6.1-7.2)%; p=0.001] and twelve months [6.3(5.6-7.1) vs. 6.8(6.2-7.4)% p=0.011] than in PHA-LESS. PHA-YES more often achieved remission at 12 months than PHA-LESS (53%/23% p=0.007).

Results: In PHA-YES, the disease remission median was five months longer than in PHA-LESS [12(6-13)vs. 7(4-9) months; p=0.017]. Participants declaring physical activity from the beginning of the diagnosis had lower daily insulin requirement at disease onset [0.150(0.100-0.230)vs. 0.200(0.080-0.360) U/kg/d, p=0.023]. Physical activity had no significant effect on CPE at three and twelve months (p=0.757; p=0.635 respectively) and no effect was observed in relation to the lipid profile.

Conclusions: Physical activity in people with type 1 diabetes leads to better glycemic control and prolongs time and occurrence of disease remission.

Paediatrics and Neonatology

Measles in pediatric patients in Warsaw: a 3-year retrospective single centre study

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Introduction: Measles is an infectious disease caused by Morbillivirus. It is spread worldwide and remains an important cause of death among young children globally, despite the availability of a safe and effective vacciane.

Aim of the study: The aim of the study was to retrospectively analyze the clinical manifestations of measles among children admitted to the Department of Children`s Infectious Diseases in Warsaw.

Matherial and methods: Medical charts of 84 patients diagnosed with measles from January 2017 to December 2019 were included. The demographic, clinical and laboratory data of children were analyzed. Measles was confirmed by PCR testing.

Results: There were 37 girls and 47 boys. The median age was 1 year and 11.5 months (range: 1 month to 16 years). The median number of days of hospitalization was 4. 5 children (5.95%) had a confirmation of one dose of vaccination. According to local guidelines, 21 children (25%) should have had full course of vaccination. 28 children (33.33%) were under the recommended age of administering the first dose. Fever and rush were present in 100% of children. The rush usually occurred 1 day before admission to hospital (36.90%). The median number of days after which it started to disappear was 5. 55 children had Koplik's spots (65.48%), 78 had cough (92.86%), 75 had conjunctivitis (89.26%). Splenomegaly was observed in 55.95% of patients and hepatomegaly in 33.33%. The disease was further complicated by pneumonia in 38 patients (45.24%) or acute otitis media in 19 (22.62%). 83 children (98.81%) needed symptomatic treatment and 58 (69.05%) were treated with at least one antibiotic.

Conclusions: The course of measles was typical in most cases. The disease was complicated in a significant number of patients. Most of the children diagnosed with measles have not been vaccinated. We should emphasize the advantages and importance of population vaccinations against measles.

Feelings of children during medical procedures - the matter of their age, sex or experience?

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Introduction: Medical procedures can be physically harmful and cause psychological trauma among young children, possibly resulting in certain lifelong aversion. However, detailed factors concerning children's attitude toward medical management remain unknown.

Aim of the study: The aim of the study was to evaluate children's feelings while undergoing minor medical procedures depending on age, sex and previous experience and to compare it with university students.

Matherial and methods: We conducted a survey among 382 primary school children, as well as 334 university students. Questions concerned the frame of mind at the moment of examination, during dentist and general physician appointment, vaccination, hospitalization and condition of sore throat.

Results: First of all, the experience of hospital stay resulted in better feelings about possible future hospitalization in both groups, and about dentist appointment in the group of children. Secondly, girls and women declared lower mood during general physician appointment. Interestingly, in the group of children boys felt worse at the moment of survey, while in the group of students women felt so. The current frame of mind correlated with an appraisal of all other situations among students, whereas only with physician appointment and vaccination among children. All of above were statistically significant. For both groups, the most unpleasant condition was sore throat. However, in regards to medical procedures exclusively, vaccination appeared to be the most traumatic for children and hospitalization for students.

Conclusions: Earlier experience and sex of children can affect their feelings about medical procedures. Presented analysis suggests that every medical should do their best to provide pleasant atmosphere for every child during medical contacts.

Analysis of B regulatory cells with phenotype CD19+CD24hiCD27+IL-10+ and CD19+IL-10+ in autoimmune thyroid diseases.

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Introduction: Autoimmune thyroid disease (AITD) is the most common organ-specific autoimmune disorder. Activation of immune cells may be triggered by genetic, environmental and endogenous factors. Studies recently emphasize the immunosuppressive role of B regulatory (Breg) cells in regulation of immune response. It is therefore crucial to study the role of Breg cells in AITD.

Aim of the study: The aim of the study was to estimate and compare the expression of CD19+CD24hiCD27+IL-10+ and CD19+IL-10+ (B10) B cells in patients with Graves' disease (GD), Hashimoto's thyroiditis (HT) and healthy control group.

Matherial and methods: The study group consisted of 24 patients with Graves' disease (mean age 14.9 years old) and 22 patients with Hashimoto's thyroiditis (mean age 15.2 years old) admitted to Department of Pediatrics, Endocrinology, Diabetology with Cardiology Division, Medical University of Bialystok. The control group included 20 sex- and age-matched healthy children (mean age 15.4 years old). The expression of the immune cells populations using four-color cytometry in FACSCanto II cytometer (BD Biosciences) was analysed. Statistica 10.0 was used to calculate all the data. P value <0.05 was considered as statistically significant.

Results: Significant decrease of CD19+CD24hiCD27+IL-10+ ($p<0.033$ for GD and $p>0.05$ for HT) and CD19+IL-10+ ($p<0.0431$ for GD and $p<0.033$ for HT) B lymphocytes was observed in untreated patients with GD and HT comparing to the control group. Moreover analysis revealed comparable percentages of CD1d+CD5+CD19+ CD24+ CD27+IL-10+ B cells in the peripheral blood both in patients with thyroid autoimmune disease and the control group. Negative correlation between percentage of CD19+IL-10+ B cells and serum level of TSI ($p<0.01$) antibodies was found in untreated Graves' patients. There was no such correlation detected in relation to CD19+CD24hiCD27+IL-10+ B cells.

Conclusions: Reduction of Breg cells with expression of CD19+CD24hiCD27+IL-10+ and CD19+IL-10+ (B10) could be responsible for immune tolerance loss and therefore cause autoimmune process in thyroid gland.

Prevalence of overweight and obesity among children with type 1 diabetes treated with a continuous subcutaneous insulin infusion and its clinical impact on diabetic control.

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Introduction: According to World Obesity Federation 20-25% of polish children and adolescents are overweight and obese. T1D and overweight or obesity coexistence results in worse diabeticcontrol and increases the risk of chronic complications.

Aim of the study: The purpose of the study was to asses the prevalence of overweight and obesity in children and adolescents with T1D treated with insulin pump and their metabolic control.

Matherial and methods: The study group consisted of 270 patients(124 girls), aged mean 13±5.7ys, mean time of diabetes duration 5.7±3.3ys and mean HbA1c 7.2±1.3%. They were treated with insulin pumps over 1y. We analysed: levels of HbA1c, cholesterol, HDL, LDL, triglyceride(TG), vitamin D3(VD), systolic(SBP) and diastolic(DBP)blood pressure. Also total daily insulin(TDD) and basal insulin dose were evaluated. The population was divided into groups depending on BMI: lean(L), overweight(W), obese(O). Overweight was defined as a BMI≥85th pc and<95th pc, obesity - BMI≥95th pc.

Results: Obese occurs statistically more often in girls than boys (69.6%vs.30.4%) p=0.04. Group O compared with L had statistically: higher median HbA1c 7.9[7.4;8.8]% vs.6.8[6.3;7.5]%, p<0.0001, lower median VD 20[15;25]ng/ml vs.23[18;29]ng/ml, p=0.020, higher median SBP 126[120;134]vs.119[110;127]mmHg. Statistically higher median SBP was seen in group W compared to L 126[120;130]mmHg vs.118[110;126]mmHg p=0.0008. There were no significant differences between groups in cholesterol, LDL, HDL, TG total and basal insulin dose.

Conclusions: In the analyzed group, overweight and obesity occurred with a similar frequency as in the general Polish pediatric population. Insulin requirement in overweight and obese children was not increased. However, it was more difficult for them to achieve the recommended metabolic control of diabetes which was especially expressed in the obesity group. Moreover, in the group pf children with obesity and overweight, increased systolic blood pressure was more common and they had a lower level of vitamin D3 than lean children.

Utility of P300 Event-Related Potentials in Cognitive Impairment Screening Concerning Childhood Acute Lymphoblastic Leukemia Survivors: Comparison of Different Treatment Protocols.

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Introduction: Modern treatment protocols in childhood acute lymphoblastic leukemia (ALL) resulted in high cure rate and improved long-term survival. However, due to their high intensity, they are also associated with many side effects, including central nervous system toxicity.

Aim of the study: To evaluate the use of P300 event-related potentials in screening of cognitive impairment in childhood ALL survivors.

Matherial and methods: A group of 136 patients, 66 males (48.5%), aged 4.9 to 27.9 years who have completed ALL therapy, were screened for cognitive impairment with endogenous P300 potentials. ALL therapy was conducted according to modified New York (NY) (30 patients) and subsequent revisions of modified Berlin-Frankfurt-Münster (BFM): previous BFM protocols (pBFM) (32 patients) and BFM95 (74 patients). The control group consisted of 58 patients.

Results: The total group of ALL survivors had significantly prolonged the mean latency of P300 (331.31 vs 298.14 ms, P<0.001) and reaction time (439.51 vs 380.11 ms, P=0.002) compared to the control group. Abnormalities in endogenous evoked potentials were observed in 10 (33.33%) NY, 5 (15.63%) pBFM and 21 (28.38%) BFM95 patients. The mean latency time was significantly longer compared to the control group (298.14 ms) in all analyzed protocols (NY: 329.13 ms, P=0.001; pBFM: 332.97 ms, P<0.001; BFM95: 331.47 ms, P<0.001). The largest and also significant prolongation of reaction time was recorded in the NY group (461.8 vs 380.1 ms, P=0.039). Analyzing the effect of radiotherapy on P300 potentials, a significantly higher frequency of prolonged reaction time in non-irradiated BFM95 patients was found (21.62 vs 15.85%, P=0.007). Radiotherapy methods used in NY and pBFM protocols have also significantly reduced the P300 wave amplitude (mean values: 10.395 vs 12.739 ms, P=0.027).

Conclusions: Endogenous P300 event-related potentials may be useful in screening assessment of late cognitive impairment in ALL survivors. The type of treatment protocol significantly modulates the individual parameters of the registered P300 potentials.

Analysis of qualification to post-exposure vaccination against rabies in children bitten by animals in the head and neck area.

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Introduction: Rabies is a fatal, infectious disease caused by the neurotrophic Rabies virus. It is usually caught from bites of sick animals. Risk of getting infected depends on distance between place of the contact with the pathogen and central nervous system which determines a notable danger for exposures in the head and neck area. Because of the fact that effective curative treatment does not exist, pre- and post-exposure prophylaxis is extremely important.

Aim of the study: The aim of the study was to characterize children potentially exposed to Rabies virus after exposure in the head and neck area. Circumstances of incidents, attacking animals and frequency of post-exposure prophylaxis were also analyzed.

Matherial and methods: Retrospective epidemiological analysis of 67 children at the age range of 10 months to 17 years and 10 months (median 6 years), who were admitted to the Department of Children's Infectious Diseases of Medical University of Warsaw for the sake of bite, scratch or salivate by animals in the head and/or neck from 27.10.2016 until 12.11.2019.

Results: Analysis revealed that girls were attacked more frequently (53,73%, 36/67), most commonly by dogs (91,04% 61/67). 32,84% (22/67) of animals was previously vaccinated against rabies, 31,34% (21/67) not vaccinated and the serological status of 35,82% (24/67) of them was unknown. The 43 patients were qualified to post-exposure vaccination. 27,91% (12/43) procedures were not completed, partially due to negative results of veterinary observation of the animal (75%, 9/12). Applying of specific immune globuline was necessary in 2,99% (2/67) of cases, 44,78% (30/67) of patients needed surgical assistance and 35,82% (24/67) got the antibiotic.

Conclusions: Exposure to potential infection by the Rabies virus is an interdisciplinary problem which involves pediatricians, surgeons and vets. Animals ought to be vaccinated but truly essential is making their owners aware of that and once a child is bitten, a complete prophylaxis scheme should be implemented.

Assessment of weight status and dietary habits among Polish teenagers in Małopolska

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Introduction: A balanced diet is fundamental to healthy growth and development of children and adolescents. It helps to protect against malnutrition, as well as overweight and obesity leading to civilization diseases including diabetes, heart disease, stroke and cancer.

Aim of the study: The aim of the study was to analyze the prevalence of increased body mass and nutrition habits in a sample of Polish teenagers.

Matherial and methods: Students attending primary and junior high schools in Małopolska were enrolled into the study. A questionnaire enquiring about their nutritional habits was conducted and analyzed.

Results: The study involved 3778 students (50% females) at the age of 14.1±0.7 years. Body weight and height were reported by 92.4% of respondents. Most of them - 74.1% had BMI in normal range (10-90 percentile), 5.8% of teenagers were underweight (<10 percentile), 7.2% were overweight (90-97 percentile) and 5.2% were obese (>97 percentile). The differences in BMI were not statistically significant between boys and girls. Regarding the number of meals per day both males and females most often indicated number 5: 32.5% vs. 35.1% respectively, p=0.04. Most respondents 56.2% reported to eat breakfast every day, while 15.3% reported not to eat breakfast at all – 14.1% boys vs. 16.6% girls, p=0.03. 23.1% of the respondents followed the recommended daily vegetables intake, more females than males: 24.3% vs. 21.9% respectively, p=0.04. Fruits were eaten daily by 40.3% of teenagers (without sex differences). Most teenagers - 77.5% - admitted to eat fast food once or less a week. 22.1% of responders consumed sweets daily. 15.8% of teenagers admitted to drink fizzy drinks each day – more boys than girls: 17.5% vs. 14.3%, p=0.008.

Conclusions: The prevalence of overweight and obesity was more than twice as high than prevalence of underweight in researched population. Increased body weight and unhealthy dietary habits are important epidemiological problem among Polish teenagers.

Pharmacy

Evaluation of sCD8 and sCD25 antigens as predictors of response to atezolizumab in non-small cell lung cancer patients – pilot study

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Introduction: It is estimated that in 2020 there will be almost 5,000 new cancer cases diagnosed and over 1,600 cancer deaths in the United States each day, whereas lung and bronchus cancer is predicted to be one of the leading causes of cancer-related mortality. Atezolizumab (ATEZO), an anti-programmed death-ligand 1 (PD-L1) monoclonal antibody, has shown to be efficacious in the treatment of non-small cell lung cancer (NSCLC), which accounts for about 80% of lung cancer cases. However, the only currently available predictive biomarker in NSCLC patients - PD-L1 expressed by tumor cells - has a limited value as a predictor for response to the immunotherapy.

Aim of the study: The aim of this study is to assess the value of soluble forms of CD8 (sCD8) and CD25 (sCD25) as biomarkers for response to ATEZO in NSCLC patients.

Matherial and methods: The study involved 28 NSCLC patients qualified for ATEZO treatment. Blood samples (pre-dose) were collected at 3-week intervals within the first 3 months; one additional sample was obtained at 6 month, if possible. Evaluation of treatment response was performed according to RECIST. Serum levels of sCD8 and sCD25 were assessed with ELISA.

Results: No significant differences in sCD8 and sCD25 concentrations were found between patients with a clinical benefit (at least disease stabilization)(N=14) and without it (N=14), as well as between patients with adenocarcinoma (N=15) and squamous-cell NSCLC (N=10). There was no enough evidence to conclude that there is any association between NSCLC type and obtaining a clinical benefit (Fisher's Exact Test, p=0.14419).

Conclusions: Our pilot study did not confirm sCD8 and sCD25 to be useful in predicting the patient’s response to ATEZO treatment. A larger sample size would be necessary to corroborate the findings. Acknowledgments: This work was supported by the Polish National Science Centre (NCN; grant number 2019/03/X/NZ6/00406).

GENETIC POLYMORPHISMS OF VITAMIN D RECEPTOR AND PLASMA CONCENTRATIONS OF VITAMIN D 25-HYDROXYMETABOLITES IN PATIENTS WITH CARDIOVASCULAR DISEASE

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Introduction: Vitamin D plays important role in bone metabolism and vitamin D deficiency was correlated with chronic diseases such as cancer, autoimmune disorders, diabetes and cardiovascular diseases. 25(OH)D is the most widely used indicator of vitamin D status in human body. Biologically active form 1,25(OH)2D3 of vitamin D exerts its action after binding with vitamin D receptor encoded by VDR gene. Therefore, determination of VDR genetic polymorphism and 25(OH)D concentration may be helpful in prevention and clinical evaluation of the disease progression.

Aim of the study: Identification of ApaI and TaqI genetic polymorphism and determination of 25(OH)D3, epi-25(OH)D3 and25(OH)D2 in plasma of patients with cardiovascular disease.

Matherial and methods: The study involved 53 patients. Plasma concentrations of 25(OH)D3,epi-25(OH)D3and 25(OH)D2 were measured by UPLC-MS/MS method. Identification of the ApaI(rs7975232, G>T) and TaqI (rs731236, T>C) genetic polymorphisms was performed by PCR-RFLP

Results: The frequency of VDR ApaI GG, GT and TT genotypes were 39.6, 35.8 and 24.5%, respectively. For the VDR TaqI polymorphism, the TT, TC and CC genotypes were 45.3, 41.5 and 13.2% in the studied population. Mean concentrations of 25(OH)D3, epi-25(OH)D3 and 25(OH)D2in samples collected in spring/summer were 17.2, 3.1 and2.3 ng/ml and were slightly higher than in autumn/winter (12.3, 2.4 and 2.2 ng/ml, respectively).25(OH)D deficiency was stated in 74% of patients. Significant correlations were confirmed between ApaI and TaqI genetic polymorphism and Body Mass Index (BMI) ($p<0.05$). Frequencies of TT TaqI and GG ApaIgenotypes were significantly lower in patients with obesity ($p<0.03$). No association between TaqI and ApaI polymorphisms and age, sex, HbA1c orlipid profilewas observed. Furthermore, no correlation between ApaI and TaqI genotypes and hypertension, heart failure or diabeteswas reported.

Conclusions: Patients with cardiovascular disease exhibited the high rate of vitamin D defficiency. TaqI and ApaI VDR gene polymorphisms may be potential predictors related to obesity.

Assessment of the effect of atorvastatin on the pharmacokinetic parameters of sorafenib in rats

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Introduction: Atorvastatin is a substrate and an inhibitor of the OATP1B1 (ang. organic anion transporting polypeptide 1B1) transporter and may interact with drugs such as sorafenib. Effectiveness combination therapy with HMG-CoA reductase inhibitors with chemotherapeutic agents (e.g. tyrosine kinase inhibitors) and promising results for the treatment of other orphan drug combinations, encourage researchers to seek and expand the spectrum of their anti-cancer application and treatment of comorbidities.

Aim of the study: The aim of the study was to assess the effect of atorvastatin on the pharmacokinetic parameters of sorafenib and its action of the sorafenib N-oxide metabolite in rats.

Matherial and methods: The study included 16 adults male Wistar rats Rattus norvegicus. Animals were divided into a control group: CG (n = 8) receiving vehiculum first, followed by sorafenib at a dose of 100 mg/kg and a test group: TG (n=8) receiving atorvastatin at a dose of 20 mg/kg in 0.9% NaCl, and then include sorafenib at a dose of 100 mg/kg. The concentrations of sorafenib, sorafenib N-oxide were assayed using the HPLC methods (high-performance liquid chromatography) with ultraviolet (UV) detection (λ=265nm). Pharmacokinetic parameters were calculated based on the noncompartmental model. The statistical evaluation was performed in the SAS program.

Results: The mean values of PK parameters with standard deviations [SD] for sorafenib in TG and CG were as follows: Cmax = 3.66 [1.21] vs. 1.56 [0.35] μg/ml (p=0.0003), AUC0-t = 104.67 [18.90] vs. 62.83 [16.14] μg×h/ml (p=0.0003), t0,5 = 14.70 [3.17] vs. 21.75 [7.54] h (p=0.0287) and for sorafenib N-oxide were: Cmax = 0.38 [0.09] vs. 0.11 [0.03] μg/ml (p=0.0136), AUC0-t = 14.04 [2.11] vs. 4.10 [1.56] μg×h/ml (p<0.0001), t0,5= 27.04 [8.49] vs. 53.31 [25.23] h (p=0.0211).

Conclusions: Co-administration of sorafenib and atorvastatin leads to increased exposure to the chemotherapeutic agent. Therefore, sorafenib and sorafenib N-oxide levels should be monitored during therapy with atorvastatin to avoid side effects.

Comparison of pharmacokinetics of two active metabolites of metamizole between men and women after total gastrectomy.

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Introduction: Total gastrectomy (TG) entail anatomical and functional alterations in the alimentary tract. The pharmacokinetics (PK) of oral drugs may be altered in patients underwent TG. Additionally, sex-related differences in its PK have been reported. Metamizole is one of the most commonly used analgesic in the postoperative period, including patients after gastrectomy. Activity of metamizole is determined by two active metabolites: 4-methylo-antypiryne (MAA) and 4-amino-antypiryne (AA).

Aim of the study: This study was designed to compare PK of two active metabolites of metamizole, MAA and AA, from tablets between men and women after TG.

Matherial and methods: The research was carried out on 20 patients after TG: men (group 1, n=12; mean [SD] age 64.7 [15.2] years; weight 87.3 [14.7] kg; and BMI 27.7 [4.3] kg/m2) and women (group 2, n=8; mean [SD] age 62.6 [12.1] years; weight 58.4 [6.6] kg; and BMI 21.3 [1.9] kg/m2). Blood samples were gathered during 24 hours after oral administration of metamizole (500 mg). Plasma concentrations of MAA and AA were measured with HPLC-UV method. Pharmacokinetic calculations were performed by noncompartmental analysis.

Results: The main pharmacokinetics parameters for MAA in men and women were as follows: Cmax= 2.31 [1.59] vs. 3.64 [1.75] mg/L (p=0.1053), tmax = 2.5 [3.1] vs. 1.94 [0.78] h (p=0.5629), AUClast= 16.09 [18.78] vs. 21.54 [11.85] h*ng/mL (p=0.4373), and for AA: Cmax= 0.49 [0.19] vs. 1.08 [0.83] mg/L (p=0.0552), tmax = 5.6 [8.6] vs. 1.7 [0.8] h (p=0.1469), AUClast= 3.64 [2.27] vs. 6.46 [4.42] h*ng/mL (p=0.1291).

Conclusions: In patients after gastrectomy, the exposition for the active metabolites of metamizole, MAA and AA, measured by Cmax and AUC, was higher in women in comparison to men, however the differences were not significant. It may indicate for more effective analgesic effect of metamizole in women.

Therapeutic Drug Monitoring of Levetiracetam – preliminary study of clinical usefulness

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Introduction: Therapeutic drug monitoring (TDM) is a common clinical practice aimed at individualizing therapy and optimizing dosage regimens to increase clinical efficiency. Arguments for TDM include among others, non-linear pharmacokinetics and polytherapy. Levetiracetam (LEV) introduced on the drug-market recently, is currently used as an anti-epileptic drug. Available medical data report limited evidence to monitor this drug, but it may be recommended in cases where the pharmacokinetics change.

Aim of the study: This work aimed to develop a method for LEV determination for therapeutic use. The presented procedure allowed to detect LEV with high efficiency, which confirmed its usefulness in clinical practice.

Matherial and methods: The available guidelines for the determination of levetiracetam were used for the analysis. Biological material from patients treated with LEV was secured for researches. A method of drug isolation via liquid chromatography with UV detection was developed. During the research, the usefulness of various extraction methods, separation conditions and factors affecting the analysis were examined. The relationships between drug levels and dose, gender, age, drug form and possible interactions with other medicaments were evaluated.

Results: Twenty patients between 18-40 years old have been qualified for research. Determined drug concentrations ranged from 1.2 to 45 μg/ml in blood collected at various time intervals from the last dose to the collection time. Significant dependence was observed during polytherapy with lamotrigine and valproic acid.

Conclusions: It seems reasonable to monitor blood LEV levels in groups of epileptic patients undergoing polytherapy. Increasing the size of the research group by introducing routine determination of blood levetiracetam level will give more data to control therapy effects. The developed method is characterized by practical aspects and it may show potential for future usage in clinical laboratories.

The assessment of metformin effect on sorafenib pharmacokinetics in rats.

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Introduction: Sorafenib is a tyrosine kinase inhibitor used to treat patients with hepatocellular carcinoma (HCC). In the liver, it undergoes CYP3A4-mediated metabolism to sorafenib N-oxide (SR-NO), which exhibits pharmaceutical properties as well. The expression of organic cation transporter (OCT) type 1 is associated with the predictions of the response to sorafenib therapy. Metformin is a non-metabolized anti-diabetic agent, vulnerable to interaction during its absorption process. OCT1 transports both drugs into hepatocytes and is known to cause clinically significant drug-drug interactions. They are commonly co-used among HCC patients with add-on type 2 diabetes mellitus - especially in the light of a growing number of reports which investigate the anti-cancer properties of metformin.

Aim of the study: This study aimed to assess the effect of sorafenib−metformin interaction on the pharmacokinetics (PK) of sorafenib and SR-NO.

Matherial and methods: Wistar rats assigned to the study group (n=8) orally received both metformin (100 mg/kg BW) and sorafenib (100 mg/kg BW), while the control group received vehiculum with sorafenib (n=8). The plasma concentrations of sorafenib and SR-NO were measured using HPLC-UV (λ=265 mm). The pharmacokinetic parameters were determined and calculated using a non-compartmental model and statistically analyzed with SAS software version 9.4.

Results: The mean values of pharmacokinetic parameters ± standard deviations in the study group and control group for sorafenib were as follows: Cmax=1.27±0.38 vs. 1.56±0.35 ng/mL (p=0.7499), AUC0-∞=36.79±8.96 vs. 67.05±16.70 ng·h/mL (p=0.0041), ka=0.35±0.23 vs. 0.74±0.31 1/h (p=0.0106), Cl/F=1.41±0.50 vs. 0.80±0.22 L/h·kg (p=0.0026). Respectively, the results for SR-NO were as follows: Cmax=0.13±0.04 vs. 0.11±0.02 ng/mL (p=0.8981), AUC0-∞=8.55±2.36 vs. 8.61±2.19 ng·h/mL (p=0.9988), tmax=21.43±6.80 vs. 16.38±8.21 h (p=0.4363).

Conclusions: Co-administration of sorafenib and metformin significantly reduced the exposure of rats to sorafenib, probably by interrupting the re-absorption process. It might decrease the effectiveness of oncological treatment, and therefore require sorafenib dose or dosage adjustment.

Oxidative stress in patients treated and intoxicated with valproic acid

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Introduction: Valproic acid (VPA) belongs to the group of anticonvulsants and it has a wide application in many types of paroxysms treatment. Its usage is generally safe, but it can marginally cause liver damage. The mechanism of VPA activity is complex and hasn't been completely recognized yet. One of active metabolites is 2-propyl-4-pentenoic acid (4-en VPA) which can be responsible for hepatotoxic effects of the drug enhanced by generated oxidative stress (OS). To monitor, the OS specific markers are used, such as lipid peroxidation as well as the ones allowing to assess antioxidative status.

Aim of the study: The aim of this study was to examine the influence of the VPA and its active metabolite, 4-en VPA both in therapeutic doses and in poisoning on the formation of OS in patients.

Matherial and methods: For the OS assessment there have been applied quantitative markers such as total glutathione concentration and the level of antioxidant potential (FRAP) in the patients' plasma. The concentration of VPA and 4-en VPA have been determined in plasma by the HPLC method.

Results: 29 patients treated with VPA due to epilepsy (VPA 71±11 μg/ml, 4-en VPA 4,1±0,8 μg/ml) and 28 poisoned ones (VPA 332±435 μg/ml, 4-en VPA 11,3± 10,0 μg/ml) were qualified for the study, of which 12 were monitored at the time of admission (VPA 740±609 μg/ml, 4-en VPA 19,9±12,4 μg/ml) and after a certain time, reaching drug lower levels (VPA 203±192 μg/ml, 4-en VPA 10,3±8,0 μg/ml). Together with the VPA concentration increase, lower FRAP values (by 37% in the poisoned group and 23% in treated ones) and the decrease in total glutathione (by 38% in the poisoned group and 33% in treated ones) were observed.

Conclusions: Valproic acid generated oxidative stress which could condition its toxic effects in therapy as well as in the course of intoxication.

Public Health

Parenteral supplementation aka vitamin drips services in Poland: cross-sectional websites study

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Introduction: Parenteral supplementation also called vitamin drips, are a new kind of complementary health services. Providers advert the vitamin drips as a treatment for many condition but there is a lack of scientific evidences for most of the claims. To date, most of the scientific reports on this phenomenon were anegdotical.

Aim of the study: To characterize the parenteral supplementation services in the largest Polish cities based on their websites.

Matherial and methods: We included all websites generated by Google search engine for search input "kroplówka witaminowa + [name of a city in Polish]". We included cities with at least 250 thousands of citizens. The characteristics included presence on social media, information on qualification process including indications and contraindications, and available parenteral supplements. We performed descriptive statistics.

Results: We analyzed total n = 92 websites domains representing n = 121 facilities. The most of the services were offered in: Warsaw (n = 32, facilities), Wrocław (n = 14), and Gdańsk (n = 12). There were presented information on personel, and contraindications for 66.9%, and 18.2% facilities respectively. The websites representing only two (1.7%) facilities provides citations on scientific evidences. The services were mainly indicated as a treatment for: vitamin and/or micronutrients deficiency [n = 98 (81.0%)], physically active individuals [n = 92 (76.0%)], fatigue [n = 89 (73.6%)], hangover [n = 83 (68.6%)], and immunity enhancement [n = 79 (65.3%)]. The most commonly offered intravenous supplements were: vitamins C [n = 83 (68.6%)], B12 [n = 60 (49.6%)], and magnesium [n = 56 (46.3%)].

Conclusions: The websites lacks of many essential information on the qualification, procedure, and contraindications. The parenteral supplementation is presented as complementary treatment in a wide range of conditions without scientific background.

Functional and physical assessment among frailty patients. Preliminary study.

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Introduction: The benefits of physical activity for the human body and physical functional are confirmed by many studies. Frailty syndrome is associated with the loss of physiological reserves associated with pathologically accelerated aging processes as a response for stress factors, i.e. disease, surgery. Predisposes to adverse health effects, i.e. falls, hospitalization, institutionalization, loss of independence, disability, and even death. However, there is no golden mean for the definition, screening tool of frailty syndrome. But the assessment of undertaking physical activity among elderly and compared to functional assessment among frailty patients are needed. Which may show the impact of physical activity on prevalence of frailty.

Aim of the study: Assessment prevalence of frailty syndrome among older people. The second aim of the study was physical and functional fitness assessment. Finding factors that may characterize patients with frailty syndrome.

Matherial and methods: We examined a 133 patient (94women, mean age 76,83) using Fried criteria as screening tools and shared patients for three groups: frail, pre-frail and non frail. Handgrip strength were asses and analysis of body composition (Tatina), circuit measurement, Timed up and go test, gait speed, Short Physical Performance Battery, Instrumental Activities of Daily Living Scale and self-assessment of health were taken.

Results: Frail and pre-frail patients had a reduced percentage of regular physical activity up to the age of 60. However, after the age of 60, both groups were characterized by not taking physical activity compared to the non-frail group. They also more often described their health status as poor or medium. Also in the test assessing overall fitness and risk of falls (Up and go test, IADL) frail and pre-frail group showed increased limitations compared to the non-frail patients.

Conclusions: Undertaking physical activity may be associated with better self-assessment of health and better results in assessing physical and functional fitness among the older population. People with frail and pre-frail syndrome have poorer functional performance and an increased risk of falling. However, research on a larger population is needed.

The use of alternative medicine in cancer patients in Poland

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Introduction: Alternative medicine (paramedicine, pseudomedicine) denotes methods and practices that are claimed to have diagnostic or therapeutic effect, but are refuted, unproven, and not science-based. Apart from the lack of efficacy, side effects of such methods may negatively impact standard anticancer therapies. In general, these procedures are not accepted by medical community and may be illegal. Significant increase in the use of alternative medicine in Poland, particularly among cancer patients, creates a significant medical and social problem.

Aim of the study: The purpose of this study was to determine the scope of this phenomenon in Poland, with emphasis on cancer patients.

Matherial and methods: We performed a search using Google search with the following search query: “alternative medicine”, “alternative cancer treatment”, “whole body hyperthermia”, “vitamin drips”, “bioresonance therapy”. For each voivodeship in Poland we checked the first three Google pages with most popular search results. All institutions were independently reviewed by three researchers (AP, PS, MW), and assessed for inclusion and exclusion criteria.

Results: Initial screening allowed the development of the database including 121 alternative medicine institutions or Internet pages where patients have access to unproven therapeutic methods. The most common alternative therapies were vitamin drips and bioresonance therapy (70 and 38, respectively). Detailed analysis of our study will be presented during the conference.

Conclusions: Our study confirms a widespread use of alternative medicine in Poland. Analysis of medical, social, psychological and economic background of this phenomenon may facilitate development of preventive measures.

Presence of clinical remission in type 1 diabetes is related to air pollution.

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Introduction: In recent years, particular attention is being paid to the influence of the environmental factors on people's health. The poor quality air leads to the development of autoimmune diseases, including type 1 diabetes mellitus (T1DM). There is no data about the relationship between air pollution and remission period in T1DM.

Aim of the study: To assess the association between the occurrence of remission after a year of T1DM and exposure to air pollution.

Matherial and methods: 96 people (65% male) with newly diagnosed T1DM, participants of the prospective InLipoDiab1 study (the Insulin Therapy and Lipoproteins Profile in Type 1 Diabetes Study), were included in the analysis. The exposure to five air pollutants have been studied in two subgroups: with occurrence of remission and without after 1 year of T1DM. The addresses of permanent residence and date of the diagnosis were used to obtain geographic- and time-specific monthly average air concentrations of particulate matter <10 micrometer in diameter, ozone, sulfate dioxide, nitrogen dioxide and benzoapyrene. All concentration levels were collected and based on the official data of the Chief Inspectorate of Environmental Protection in Poland. Remission was defined as actual HbA1c(%)+[4×insulin dose (units/kg per 24 h)] - value defining partial remission ≤9.

Results: After 1 year of observation, clinical remission was present in 68 (71%) people. In comparison of both groups, with and without remission ozone exposure in a month of the onset of T1DM was significantly higher among the participants with no occurrence of remission [38.5 (28.1 - 57.1) vs 61.45 (50.0 - 70.4) µg/m3, $p<0.001$]. The study showed the positive correlation between ozone exposure in a month of the onset of T1DM and levels of glycated hemoglobin (HbA1c) measured at 12 months from the diagnosis ($Rs = 0.34$, $p<0.001$).

Conclusions: Increased ozone levels might contribute to lack of remission occurrence among people with newly diagnosed T1DM.

What is the quality of sexual life in qualified patients and patients, who underwent lung transplantation? - a single-center study

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Introduction: Lung transplantation (LTx) is the only effective method of treatment for patients with end-stage lung diseases - a procedure that prolongs life and increases the quality of life. An important aspect, which changes in the course of severe diseases, is quality of life, especially sex life. This aspect is yet to be discussed extensively.

Aim of the study: The aim of the study is to compare patients' quality of sex life at the qualification process to patients' who underwent LTx.

Matherial and methods: Study group consists of 98 patients (24 women before LTx and 15 after LTx, 40 men before and 19 after), who were admitted to Silesian Center for Heart Diseases. To assess the patients' quality of sex life, we used: The Changes in Sexual Functioning Questionnaire (CSFQ) and WHO Quality of Life-BREF (WHOQOL-BREF). To assess lung function, patients underwent 6-Minute-Walk-Test (6MWT) and spirometry.

Results: Patients after LTx obtained higher results - compared to patients qualified for LTx - in the WHOQOL-BREF survey: mostly in Somatic (75.2 vs 49.5 point), Psychological, Social and Environment domain. In CSFQ men after LTx got more points in domains: Pleasure, Desire/Frequency, Desire/Interest, Arousal/Excitement, and the Total (50.7 vs 43.6 point) CSFQ Score. Women before and after LTx obtained comparable results: before surgery have slightly higher results in the Arousal/Excitement and Orgasm/Completion domains. Among patients before and after LTx, CSFQ results indicate higher quality of male sex life than women. Lung efficiency tested in 6MWT and spirometry is better in patients after LTx than in qualified patients (520.1m vs 339.6m; FEV1=64.8% vs 30.5%).

Conclusions: Patients after LTx show better pulmonary function and quality of sex life than qualified patients. Preliminary results encourage us to conduct research on a larger group.

Analysis of Answers to Queries among Anonymous Users with Gastroenterological Problems on an Internet Forum

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Introduction: Gastrointestinal ailments are perceived as an embarrassing problem. A lack of trust in confidentiality in a medical office and limited access to public healthcare may convince patients to search for treatment on the Internet. Internet forums are an attractive source of health-related information.

Aim of the study: We aimed to investigate threads in the gastroenterological section of a popular Polish medical forum for anonymous users.

Matherial and methods: We characterised the following aspects in threads: the main problem of the original poster, declared ailments and rationale of the responses (rational, neutral, harmful or not related to the problem of the original poster). We analysed over 2717 forum threads initiated in the years 2010–2018.

Results: Users mostly asked for diagnosis of the problem [1,814 (66.8%)], treatment [1,056 (38.9%)] and diagnostic interpretation [308 (11.3%)]. The most commonly declared symptoms were abdominal pain [1,046 (38.5%)], diarrhea [454 (16.7%)] and bloating [354 (13.0%)]. Alarm symptoms were mentioned in 309 (11.4%) threads. From the total 3550 responses, 1,257 (35.4%) were assessed as rational, 693 (19.5%) as neutral, 157 (4.4%) as harmful and 1,440 (40.6%) as not related to the user's problem. The original poster's declaration of blood in stool, dyspepsia, pain in the abdominal right lower quadrant, weight loss or inflammatory bowel disease was positively related to obtaining at least one potentially harmful response.

Conclusions: Advice from anonymous users on Internet forums may be irrational and disregard alarm symptoms, which can delay the diagnosis of life-threatening diseases. The public should be aware of this danger, and this problem requires forum administrators to take action that would promptly direct users who report emergency symptoms to seek medical advice.

Physical Elder Abuse, the Hidden Suffering

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Introduction: Elder abuse and neglect is now recognized internationally as a growing and serious problem of the 21st century. This topic requires urgent attention from health care systems, social assistance, government and the general public.

Aim of the study: This study was performed to determine the prevalence of elder abuse and its associated risk factors and perpetrators.

Matherial and methods: The sample in this cross-sectional study consisted of 250 older adults. The data was collected using a form for assessing elder abuse and neglect, which was prepared by scientists in accordance with the literature. Logistic regression analysis was used to identify factors associated with the subtypes of physical elder abuse.

Results: In this study, the overall rate of elder physical abuse was 21.6%, and pulling and shoving was the most frequent type. The ordinal logistic analysis showed that the likelihood of experiencing more severe abuse was significantly higher in older adults over 72, in women, people with <233 EUR income and living in the city.

Conclusions: The results of this study showed that violence is an important problem for the elderly. The elderly, especially those who are 75 years old or older, have a low level of education, low socioeconomic status, live in the city should be evaluated for abuse.

Do women use stimulants during pregnancy?

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Introduction: Smoking and drinking alcohol are still very popular among women in Poland, which may result with difficulties in quitting smoking for the time of pregnancy. Caffeine, considered harmless, can be excessively consumed by pregnant women and have a negative effect on fetal development. The study is aimed at assessing the readiness to introduce changes in the field of the stimulants.

Aim of the study: The study was designed to assess pregnant women awareness concerning effects of stimulants on the proper fetal development.

Matherial and methods: The study was conducted in the form of an anonymous questionnaire at the Gynecology and Obstetrics Clinical Hospital in Poznań among 407 women staying in the maternity department. The survey contained questions about the knowledge about the effects of various stimulants, also those commonly considered safe, on fetal development.

Results: 83% of pregnant women realize drinking even small amounts of alcohol carries a high risk for the proper development of the fetus, and in case of large amounts of alcohol - it is 98% of respondents. 88% of women rated smoking as highly risky for the fetus, but only 65%

Conclusions: Tea consumption by pregnant women is common, however, those recommended for pregnant women have low popularity. The surveyed women are aware of adverse effects associated with high intake of alcohol and smoking cigarettes, however, they perceive passive smoking and small amounts of alcohol consumption as less harmful to the child's health. Therefore, it is justified to inform patients about harmful effects of passive smoking and any amount of alcohol on the proper development of the fetus.

Opinion of pregnant women about preventive vaccinations

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Introduction: Vaccines recommended for pregnant women are those against influenza and pertussis. Anti-vaccination movements are becoming more and more popular, which may turn into a lack of conviction to vaccinations during pregnancy due to fetus safety. The study is to indicate the basic reasons for making decisions about refusing to vaccinate during pregnancy.

Aim of the study: The research goal was to check the awareness of pregnant women regarding the impact of preventive vaccinations conducted during pregnancy on the fetus development and to collect opinions on the Immunization Programme.

Matherial and methods: The study was conducted as an anonymous questionnaire among 407 women staying in the maternity department at the Gynecology and Obstetrics Clinical Hospital in Poznań. The questionnaire consisted of 40 questions. It contained questions about vaccinations carried out both before and during pregnancy and assessed awareness about importance of vaccinations for the proper development of the child. Women's opinions about the need for preventive vaccination in children were also examined.

Results: Only 7% of women were vaccinated against influenza and pertussis during pregnancy. 51% of pregnant women receive information about preventive vaccinations recommended during pregnancy from a gynecologist. 25% and 33% of women, respectively, are aware of the benefits of vaccination during pregnancy against influenza and pertussis. Only 72% of patients consider the Immunization Programme necessary. Despite this, 97% of respondents plan to vaccinate their children.

Conclusions: A small percentage of pregnant women decide to carry out vaccinations recommended during pregnancy. The area of activities aimed at increasing vaccination among pregnant women is to inform about the possibility of performing the above vaccinations, as well as dispelling the doubts of patients regarding the safety of their use during pregnancy. Despite the growing popularity of anti-vaccination movements, most respondents see the need for general immunization and declare their willingness to vaccinate their children.

Pression or passion? Study addiction amongst medical university students.

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Introduction: Nowadays, the development of science, technology and focusing on self-improvement force the society to gain more and more knowledge. Increasing the pression to acquire the best learning outcomes and distinguish oneself amongst the academic society is expecially present on medical universities. It may lead to study addiction, which is the educational equivalent of workaholism.

Aim of the study: The aim of study was to estimate the incidence of study addictions amongst II year students of medical courses at the Medical University of Silesia in Katowice.

Matherial and methods: A two-piece, anonymous survey was used to carry out the research. The first, obligatory part consisted of general questions (age, gender, place of living etc.) while the second one was dedicated to the polish adaptation of the Bergen Study Addiction Scale by Paweł Atroszko.

Results: Amongst 619 surveyed students, 139 declared excessive involvement in the study process by completing the specific part of the questionnaire. In this group women constituted 82,73% and men 17,27% while the avarage age of the respondents was 20,55 +/- 2,82 years. The average score was 20,65 +/- 6,66 points. The highest results were obtained by medical students, while the lowest by those studying obstetrics.

Conclusions: No statistically significant correlation was found between gender, marital status, orientation or source of income and learning addiction. Nevertheless, the collected data shows how many students are affected by this problem. The results may help to singularise groups of study addicted students, launch anti-addictional prophylaxis and therapeutic movements to reduce the negative effects of this phenomenon.

The world at your fingertips- increasing internet addicions amongst students

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Introduction: The increasing number of people declaring symptoms of behavioral addictions indicates that the problem needs closer consideration. Behavioral addictions are commonly found and tolerated in our society and the Internet addiction is very sensitive case. Excesive use of the Internet can lead not only to physical and emotional problems but also to a worsening of the quality of real-life human interactions. The border between a healthy and exploiting use can often be blurred due to the difficult identification of the problem.

Aim of the study: To explore the problem of Internet addiction among II grade studets of medical degrees in Silesian Medical University.

Matherial and methods: A two-piece, anonymous survey was used to hold the research. The first, obligatory part consisted of general questions (age, gender, place of living etc.) while the second one was dedicated to Problematic Internet Use Tests, adaptation of the Internet Addiction test by K.Young, filled out by those who subjectively asessed themselves as potentially at risk of addiction. The analysed group consisted of 619 students. Data from both parts of survey were compared and analysed with Statistica 13.0.

Results: The Problematic Internet Use Test (TPU) was filled by 205 respondents (33,12%). Average age was 20,81 +/- 1,20; for women (N=168) 20,76 +/- 1,12 and 20,97 +/- 1,54 for men (N=37). 13,69% of women and 24,32% of man obtained results indicating high risk of problematic use of the Internet in the future.

Conclusions: The survey did not show any correlations between any of the studied factors and the problematic use of the Internet among respondents. There is no visible risk group, however, this indicates that everyone can become a potential victim. High percentage numbers show how imprtant the problem is and that it is essential to take it into serious consideration.

Assessment of nutritional status and diet of Polish truck drivers

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Introduction: Excessive body weight is mainly associated with the wrong amount and quality of meals consumed. Their high energy density, which is characterized by fast food products, sweetened drinks, and at the same time low physical activity affect the increase in excessive body weight in the population. A group particularly vulnerable to these factors are professional truck drivers. Due to the nature of the work, this group is at risk of excessive weight gain and its metabolic consequences.

Aim of the study: The aim of the study was to assess the nutritional status and diet, and to indicate the possible need to change the current eating habits of Polish truck drivers.

Matherial and methods: The research was conducted in cooperation with the Truckerslife Foundation, among 230 professionally active truck drivers, aged 19-73 (average 39 years). Nutrition status was determined using the Body Mass Index. Body fat content was measured by bioelectrical impedance (Tanita BC-1000). The diet was assessed on the basis of the modified KomPAN questionnaire, determining the frequency of consumption of individual product groups, and the index of healthy diet was calculated. In addition, the blood pressure was measured.

Results: Almost 50% of the respondents were overweight and 33% had obesity of the I or II degree. The average fat content was 21% (8.6-42%). Evaluation of nutrition showed that a diet 79% of respondents was characterized by low intensity of healthy - consumption of vegetables, fruits and legumes. Optimal blood pressure was found only in 13% of drivers, while in 14% the values indicated hypertension.

Conclusions: The conducted research indicates that professional drivers are significantly exposed to the risk of overweight and obesity, and consequently civilization diseases such as hypertension. Giventhe results obtained, consideration should be given to developing principles of prevention and health promotion including proper nutrition and promotion of physical activity among professional truck drivers.

Mortality in Hospitals

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Introduction: The exact information on the cause of death is given by expert teams based on pathological or legal medical expertise. Reliable information can be obtained from doctors in clinics or hospitals if the deceased person was treated in such an institution and if an illness was diagnosed before that (intrahospital mortality). The analysis of intrahospital mortality gives a lot of information that can be used to plan the number of beds, quantity of medication supply, equipment purchasing, organizing and making highly qualified medical teams (medical team for reanimation), the number of reanimation procedures, the number of pathologists needed for autopsy etc

Aim of the study: The aim of this paper was to identify the total number of deceased, the most frequent causes of death and 10 leading diagnoses of deceased patients in the Clinic for internal diseases in the UCC Tuzla in 2012.

Matherial and methods: Archived materials were used (disease history and reports on deceased patients made by doctors employed in the Clinic for internal diseases in the UCC Tuzla).

Results: During 2012 in the Clinic for internal diseases in Tuzla 6476 patients were treated in the hospital and 349 died which is 5,38% of the total number of hospitalized patients.

Conclusions: In 2012 in the Clinic for internal diseases UCC Tuzla 6474 patients were hospitalized and 349 died. The most common cause of death in the Clinic for internal diseases in the UCC Tuzla were cardiovascular diseases (n=168; 48,13% of all deceased persons), which together with cerebrovascular diseases (n=68; 19,48% of all deceased persons) make 236 (67,62%) persons who died from cardio and cerebrovascular diseases.

Surgery

Mersey Burns Centre Admission Proforma Quality Improvement Project

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Introduction: Burns injury management requires the involvement of a multidisciplinary team and is associated with a great cost to the NHS every year. A thoroughly completed Burns Admission Proforma can provide vital information for the effective management of a burn. It provides clear details of the injury, background medical information, details of the initial management plan, and enables sharing of information and tasks with other members of the multidisciplinary team.

Aim of the study: The aim of the study was to assess the quality of record keeping after the introduction of version 3.4 of the burns admission proforma at the Mersey Burns Centre. Another aim of the project was to identify areas for improvement and create an improved proforma (version 4.0).

Matherial and methods: Data on 63 individual fields on the Mersey Burns Proforma was collected for 80 new patients assessed on the Mersey Burns Unit between June and July 2019. The data was then compared to the previous audit in September 2018.

Results: In comparison to the previous audit, the quality of the completion of the Burns Admission Proforma continued to require further improvements. In comparison to the April-September 2018 audit, 14 fields improved and 36 deteriorated. Of note, TBSA % and print name improved, whilst time of clerking deteriorated.

Conclusions: The Burns Admission Proforma has made good progress from its original version and does require further adjustments to ensure complete data input. It sets a high standard for data collection and presents itself as a useful tool for other Burns units across the United Kingdom.

Impact of age on perioperative outcomes of laparoscopic adrenalectomy for incidentaloma

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Introduction: Incidentalomas are diagnosed in about 4% of abdominal CTs performed for other reasons among middle-aged people. This percentage increases by 10% in the elderly. It is thought that operations for incidentalomas are much more dangerous for older people than for the younger ones.

Aim of the study: We aimed to assess whether the age is a significant factor influencing perioperative outcomes of laparoscopic adrenalectomy for incidentaloma.

Matherial and methods: We reviewed prospectively created database of 272 patients divided into two age groups (in accordance to WHO guidelines): 86 patients were over 65 years old (≥65) and 186 patients – under 65 years old (<65). Intra- and postoperative parameters recorded within 30 days after the initial surgery were considered as the endpoints of the study.

Results: Outcomes analysis in ≥65 group did not show significantly more intraoperative adverse events compared to <65 group (4% vs. 3%, p=0.055). No significant differences were observed in median operative time (95.61±38.47 min for ≥65 group vs. 87.13±34.28 min for <65 group, p=0.074), percentage of conversions (1% vs. 2%, p=0.944), reoperations (1% vs. 1%, p=0.571) and mortality (0% for both groups). According to Clavien-Dindo classification, both groups did not significantly differ in the rates of postoperative complications (12% vs. 14%, p=0.090). The respective median length of hospital stay was 3 days for both groups (p=0.086) and also readmission rate was similar: 1% vs. 5% (p=0.429).

Conclusions: After analyzing the outcomes based on our database we believe that laparoscopic adrenalectomy for incidentaloma remains safe in elderly.

Outcomes regarding symptoms alleviation in patients suffering from GERD after laparoscopic Nissen fundoplication

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Introduction: Gastroesophageal reflux (GERD) is a condition which affects about 20 to 40% of general population. Patients suffering from GERD present bothersome symptoms including heartburn and chest pain which concern up to 58% and 34% of the patients respectively which contributes to the significant decrease of quality of life. Usually, GERD is chronically treated with proton pump inhibitors (PPIs). Therefore, up to 30% of patients who take PPIs consider them ineffective. In such situation, surgical treatment can be considered as an alternative, for instance laparoscopic Nissen fundoplication (FNL).

Aim of the study: The aim of the study was to evaluate the effectiveness of NFL in alleviating symptoms in different age groups among GERD patients.

Matherial and methods: One hundred and twelve patients who had undergone FNL due to GERD between May 2015 to June 2018 were enrolled in this study. The following data were extracted by telephone and personal follow-up using prepared questionnaire about satisfaction after surgery. Statistical analysis was performed in Statistica 13 software (Statsoft, US). Patients were divided into three groups according to their age: <40; 40-59; >59 years old. Patients answered questions considering their symptoms before and after NFL on the scale from 1 to 4, which concerned the frequency of the symptoms (1-everyday, 2-often, 3-sometimes, 4-never).

Results: In the first group median value of frequency of chest pain reported by our patients before NFL was 2 and after NFL was 4. Heartburn was graded 1 before NFL and 4 after. The same trend was observed in the rest of groups as the median outcome of NFL completely relieved symptoms.

Conclusions: Laparoscopic Nissen fundoplication is a valuable method for patients suffering from GERD, especially among patients who are unresponsive to PPIs treatment. Post-surgery follow-up shows that NFL is a very effective method in decreasing symptoms of GERD and increasing patients quality of life.

Lactate levels in the emergency department in patients with liver and/or splenic injury.

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Introduction: In the case of abdominal trauma, spleen and liver are two most commonly injured organs. Lactate level is used as a mortality predicting factor in trauma patients.

Aim of the study: The purpose of the study was to analyse whether higher lactate levels measured in the emergency department are associated with higher mortality rate, Injury Severity Score (ISS), and longer stay in an intensive care unit (ICU) in patients with splenic and/or liver injury.

Matherial and methods: All hospitalized patients in Riga East clinical university hospital with splenic and/or liver injury over 18 years of age in three years from the start of 2017 till the end of 2019 were retrospectively analysed. The data analysis was done using SPSS Statistics 23 (descriptive statistics, Spearman test, and Mann-Whitney U test).

Results: From 01/2017 till 12/2019 there were 112 patients who had liver and/or splenic injury. From those patients, 38 had isolated liver injury, 56 had isolated splenic injury and 18 patients had a combination of both. Overall mortality rate was 11,61% with 99 patients surviving and 13 patients dying. In the group of surviving patients, the median lactate level was 1.80 [1.21-2.95] mmol/l and in exitus letalis group median lactate level was 4.50 [2.72-6.13] mmol/l. Differences between both groups in lactate levels were statistically significant (Mann-Whitney U test; $p=0.004$). Lactate level and duration of stay in ICU had a weak correlation ($r=0.256$; $p=0.020$). There was a statistically significant association between lactate level and exitus letalis ($p=0.003$). Lactate level and ISS had moderate ($r=0.427$) and statistically significant ($p< 0.001$) correlation.

Conclusions: Lactate levels are significantly higher in patients who do not survive after splenic and/or liver injury than in surviving patients. Higher ISS is associated with higher lactate levels. Lactate measured in the emergency department could be used as a prognostic factor of patient mortality with splenic and/or liver injury.

Can PNED Score save surgeons from midnight calls?

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Introduction: Non-variceal upper gastrointestinal bleeding (NVUGB) is serious clinical condition still associated with numerous adverse outcomes and significant mortality. Recently described Progetto Nazionale Emorragia Digestive (PNED) Score has been suggested to be superior to well-established tools in predicting mortality among patients with NVUGB.

Aim of the study: The aim of our study was to validate PNED Score as the outcomes predictor in patients hospitalized for NVUGIB and compare its performance with Admission Rockall Score.

Matherial and methods: The retrospective analysis included consecutive patients with NVUGB between January 2013 to January 2020 in a single tertiary referral center. The PNED and Rockall scores were calculated for each patient. The primary outcome was in-hospital mortality. Secondary outcomes were: rebleeding, blood transfusion, surgical treatment and favorable outcome. The area under the receiver-operating characteristic curve (AUROC) was used to quantify the diagnostic accuracy of the two predictive models. Statistical analysis was performed with Statsoft STATISTICA v.13.

Results: We analysed 458 patients with NVUGB, 36.7% male and 63.3% female, with a mean age 67.4 years (range 21-101). Mortality rate in the entire group was 11.4%. Rebleeding occurred in 12.2% of patients, 75.3% of them required blood transfusion whereas 4.6% underwent surgical treatment. A total of 16 (3.5%) patients were discharged without any complications. Statistical analysis revealed that PNED Score had statistically significant capability of identifying death (AUROC 0.7; $p<0.0001$), rebleeding (AUROC 0.82; $p<0.0001$), transfusion (AUROC 0.67; $p<0.0001$), surgical treatment (AUROC 0.87; $p<0.0001$) and favorable outcome (AUROC 0.65; $p=0.02$). It was also significantly superior to the Rockall Score in predicting the risk of rebleeding ($p<0.0001$), transfusion ($p=0.045$), surgical treatment ($p<0.0001$) and favorable outcome ($p=0.036$).

Conclusions: The PNED Score can be used to predict in-hospital mortality, rebleeding, transfusion, surgical treatment and favorable outcome in patients with NVUGB. It seems to be more relevant in rebleeding, transfusion, surgery and no complications assessment than Rockall Score.

Ultrasonographic anatomy of the Cephalic Vein in the deltopectoral triangle - is it a good vascular access site?

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Introduction: Several access points to gain central venous access were described, one of them being the cephalic vein (CV). It is one of the two main superficial veins of the forearm which drains closely to the central venous system, making it a candidate for implanting pacemakers/defibrillators or placing central catheters.

Aim of the study: To assess the anatomy of the CV and adjacent vessels in the clavipectoral triangle using ultrasound.

Matherial and methods: 11 healthy volunteers aged 21-25 with no history of any procedure performed on upper arm were recruited. Total number of 22 arms were examined using LOGIQ F8 GE ultrasound with L6-12 transducer (6-13MHz). CV was identified in the deltopectoral triangle and its course was followed to its outlet. The diameter and depth of the CV were measured in the vertex of the deltopectoral triangle, at the inferior border of clavicle and near the outlet. The vessel in which the CV terminated was identified and measured.

Results: The mean diameter of the CV was 0.34 cm in the vertex of the triangle and 0.49 cm near the clavicle, allowing a theoretical introduction of respectively 10 and 14 Fr catheters. The CV was located deep to the clavipectoral fascia in all cases and its mean depth was 1.27 cm. The CV outlet was located below the inferior border of the clavicle in 11 cases and behind the clavicle in 11 cases, terminating respectively into the axillary or subclavian vein. No outlets above the clavicle were found, neither were supraclavicular CV courses.

Conclusions: The CV could be easily visualised in all arms and US assessment of its anatomy could be useful in planning procedures and avoiding complications due to the superficial course and relatively constant anatomy. The proximity to the central venous system and the diameter allowing introduction of wider catheters makes the CV a good access site.

Impact of cardiac surgery on patients' cognitive functions in the perioperative period

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Introduction: Cardiac surgery is an interference in the physiology of a heart, which works as a pump providing continuous oxygen delivery to every tissue in our body. This cardiac surgery-related interference may be associated to dysfunction of blood flow and furthermore – oxygenation of tissues, especially nervous tissue, which is extremely vulnerable to O2 deficiency.

Aim of the study: Defining cardiac surgery influence on cognitive functions in patients before and after surgery to check if there are any perceptible changes. Cognitive functions deterioration after surgery may be an early sign of hypoxia-induced brain damage.

Matherial and methods: Prospective, non-randomized, one-center study on 50 patients (44 men, 6 women) who were admitted for an elective cardiac surgery in Department of Cardiac Surgery, Medical University of Bialystok. We used Beck's Depression Test for patients under 65 years old and Geriatric Depression Scale for patiens older than 65 years, MOCA Cognitive Functions Test (Polish Version) and Choynowski's Memory Test. Patients were reviewed before and after surgery in a separate room, providing privacy and quiet environment. Post-surgery tests were performed minimum 48 hours from patient coming back to Surgery Department from post-op intensive care ward.

Results: The average result in the MOCA test decreased by 0.3 points - statistically insignificant ($p > 0.73$), deterioration of the result of the visual-spatial function test by 0.16 point ($p < 0.05$), decrease in the result of the attention test by 0.11 point ($p < 0.05$). In the deferred memory study we recorded an increase of 0.82 point ($p < 0.05$) which may be due to the fact that patients were able to remember the words.

Conclusions: Cardiac surgery may be a risk factor for cognitive impairment associated with brain hypoxia during surgery and may be associated with deterioration of the cognitive function of patients in the perioperative period, and also the life quality of patients operated on in cardiac surgery departments.

PhD Session

The potential influence of potassium metabisulfite on the cell viability in non-small-cell lung cancer (NSCLC)

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Introduction: Most of lung cancers are non-small-cell lung cancer (NSCLC). This life-threatening malignancy causes high mortality, therefore positive results of researches related to the assessment of inhibition of its growth would give huge possibilities for patients with cancers and new opportunities of therapies. In the presented study, the effects of potassium metabisulfite on NSCLC cells were evaluated.

Aim of the study: The aim of the study was to investigate the potential influence of potassium metabisulfite on the viability of cancer cell line A549.

Matherial and methods: A549 cells were purchased from the American Type Culture Collection. The cells were grown in F-12K Medium supplemented with 10% heat-inactivated fetal bovine serum, FBS, 50 units/ml penicillin and 50 µg/ml streptomycin. MTT assay was employed to determine IC50 of potassium metabisulfite - the cells were incubated with potassium metabisulfite for 24 hours. The cells of line A549 were prepared to the cytotoxicity assay detecting the apoptosis by the flow cytometry using ready-made Annexin V-FITC Apoptosis Detection Kits. The impact of particular potassium metabisulfite concentrations on the tested cancer cells (10 mM; 5 mM; 2.5 mM; 1 mM and 0.5 mM respectively) has been assessed. Apoptosis was induced by the addition of 1µg/ml staurosporine for 3 hours as a positive control. Protein expression (Caspase-3) were demonstrated using western blot analysis.

Results: The results demonstrated that at a concentration of 5 mM of potassium metabisulfite, cell viability of lung cancer is inhibited in around 50%. Moreover, concentration of potassium metabisulfite over 0,5 mM induced apoptosis in cancer cell lines A549.

Conclusions: Potassium metabisulfite possess the potential to inhibit the viability of non-small-cell lung cancer.

Do water sports affect body balance?

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Introduction: Body balance is necessary for proper human functioning, and its quality is particularly important for athletes of all disciplines. Water sports seem particularly interesting because they require an extremely good balance from the player due to the unstable ground and continuous changes caused by wind and wave, which cannot be predicted. Water sports competitors must additionally control the equipment, which also promotes the development of coordination, agility and thus a sense of balance.

Aim of the study: The aim of the presented research project is to assess the static balance in high-performance athletes training selected water sports, such as rowing, canoeing and kitesurfing, and to compare it with the control group.

Matherial and methods: 21 athletes practicing competitive water sports (4 canoeists, 5 rowers, 12 kite surfers) participated in the study. The control group (n = 24) was recruited from healthy people with anthropometric characteristics similar to the examined athletes. The balance of the subjects was assessed using a posturographic study, which is a highly objective measurement method. The analysis of the equilibrium system efficiency was carried out on the basis of 3 sets of posturographic tests: with eyes open (visual inspection), with eyes closed (visual inspection disabled), under feedback conditions (autocorrection).

Results: In the study conducted with open eyes, no statistically significant differences were observed between the test and control groups. Analysis of the results of parameters assessed with eyes closed in both groups showed that athletes showed significantly higher average values of the number of anterior-posterior deflections, and significantly lower average values of% of the rear - right deflections. During the feedback study, a significantly lower mean swing radius in the group of athletes compared to the control group.

Conclusions: 1. There were no significant statistical differences in the open-eyed study comparing people practicing water sports to healthy people. The obtained result suggests that the postural stability in the studied groups is similar. 2. Professionally practicing water sports show less postural stability in the test with eyes closed, as evidenced by, among others obtained results of body deflections in the sagittal plane. 3. Analysis of the results showed that athletes practicing competitive water sports show better postural control in feedback conditions.

Assessment of the physical activity status of people with intellectual disabilities.

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Introduction: Disability is a broad concept, used not only in the medical world, but permeates many spheres of life. Its multidimensionality has caused problems in determining its exact definition and types. One type of disability is intellectual disability defined as developmental conditions which are characterised by reduced cognitive functions, including the ability to learn, adaptability and skills, based on a variety of etiologies. People with intellectual disabilities may be characterized by limited psychomotor development and they also have sensory-motor disturbances. Depending on the degree of disability, these disorders may be manifested to a lesser or greater extent.

Aim of the study: The aim of the study is to assess physical fitness of people with intellectual disabilities.

Matherial and methods: The study was attended by 40 people, including 23 people with a disability to a light degree and 17 people with a moderate disability. The subjects were aged from 14 to 24 years. The test tool in the study was the Eurofit Special Fitness Test.

Results: Analyzes of Student's t tests for independent samples showed that there were statistically significant differences between people with various degrees of disability in the gym bench passage $t(37) = 7.54$; $p < 0.001$, long jump from place $t(36) = 5.28$; $p < 0.001$, medical ball thrust $t(36) = 3.30$; $p < 0.01$, run at 25m $t(20) = -7.75$; $p < 0.001$ and torso inclination from the lying down with legs bent $t(36) = 7.93$; $p < 0.001$. There were no differences between persons with varying degrees of disability in terms of the forward-forward score in the flat sex $t(37) = -1.66$; $p = 0.105$.

Conclusions: Eurofit Special Fitness Test is a very popular research tool for assessing physical fitness among people with intellectual disabilities. It can be influenced by its fairly simple form, requiring no specialist equipment and based on well-known forms of activity. In this study people with moderate disabilities have shown less physical fitness than those with a mild disability. Intellectual disability is a condition that is becoming increasingly common in society. Because of the wide range of symptoms, motor symptoms are often overlooked. More attention should be paid to the physical fitness of people with intellectual disabilities by continuing research in this subject.

Benzyl and morpholide derivatives of the novel oleanolic acid oximes conjugated with diclofenac downregulate the Nrf2-ARE signaling pathway in human hepatocellular cancer cells in comparison with normal hepatocytes

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Introduction: Naturally occurring triterpenoid, oleanolic acid (OA) was shown to possess anti-tumorigenic activities in several in vitro and in vivo models. Limited bioavailability of OA justifies searching for its more available derivatives. Moreover, coupling triterpenoid analogs with NSAIDs may enhance their pharmacological activity.

Aim of the study: This preliminary study aimed to evaluate the effect of novel oleanolic acid oximes (OAO) conjugated with diclofenac (DCL) on the downregulation of Nrf2-ARE signaling pathway.

Matherial and methods: HepG2 hepatoma cells and THLE-2 normal human hepatocytes were incubated for 24h with tested compounds in selected concentrations based on MTT assay. The activation of Nrf2 was assessed by the evaluation of its translocation into the nucleus and binding to ARE sequence by the ELISA assay. Muse®Cell Analyzer was used to flow cytometric assessment of the phosphorylated ERK and ROS, namely superoxide radicals. Expression of Nrf2, SOD-1, NQO1, GPx, and HO-1 was evaluated by RT-PCR and Western blot method.

Results: Cell viability was affected mostly by 3-diclofenacoxyiminoolean-12-en-28-oic acid morpholide and 3-diclofenacoxyiminoolean-12-en-28-oic acid benzyl ester in both cell lines. The level of Nrf2 in the nucleus and binding to ARE sequence was decreased as a result of treatment with these conjugates in HepG2 cells, in contrast to the effect exerted in the THLE-2 normal hepatocytes. In HepG2 cells, decreased expression level of SOD-1, NQO1, GPx, and HO-1 both on mRNA and protein levels was also observed. This effect was related to the phosphorylation of ERK and the level of reactive oxygen species.

Conclusions: These results indicate that conjugation of DCL with novel OAO may protect cancer cells against chemoresistance through inhibition of the Nrf2-ARE pathway and, at the same exert a chemopreventive effect in normal hepatocytes. Those novel compounds might be considered the potential modulators of hepatocellular carcinoma therapy and chemopreventive agents. Funding: National Science Centre, 2016/21/B/NZ7/01758.

Cervical dystonia: radically different risk of pain occurrence between the disease phenotypes

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Introduction: Cervical dystonia (CD) is a neurological disorder caused by prolonged muscles contractions resulting in abnormal postures and repetitive movements of the head and neck. Cervical pain, which pathophysiology has not been fully elucidated, is one of the most disabling CD symptoms and affects from 60% even up to 88,9% of patients. To date, none of the studies have investigated an interdependence between pain occurrence and particular disease phenotypes.

Aim of the study: This is the first study quantifying the risk of cervical pain associated with two most commonly used classifications of CD. The aim of the study is to determine groups of CD patients requiring intensified pain management.

Matherial and methods: Data collection was based on the physical examination performed by two independent assessors with the use of validated scales (Col-Cap, TWSTRS, PNRS). Depending on the deviation angles of the head and neck, patients were classified as CD phenotypes as following: torti, latero, antero, or retro in TWSTRS scale, and caput or collis in Col-Cap classification. Data on the disease duration and received treatment were obtained from the medical records. All of patients completed extended pain questionnaire.

Results: We examined 60 patients suffered from CD. Cervical pain was reported by 66,7% of them. The only TWSTRS phenotype associated with increased risk of pain occurrence was latero (OR=3,95; $p<0,05$). Each of two Col-Cap phenotypes correlated with the incidence of cervical pain: caput positively (OR=3,78; $p<0,05$) and collis negatively (OR=0,29; $p<0,05$).

Conclusions: The risk of CD-related pain was determined by the disease phenotype. The enhanced risk of cervical pain was observed in latero (TWSTRS) and caput (Col-Cap) phenotypes; conversely, collis type of CD (Col-Cap) was characterized by the lowest risk of cervical pain. Patients with latero and caput type of CD may require intensified pain management.

Brain-derived neurotrophic factor expression predicts polyneuropathy and overall survival in multiple myeloma patients

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Introduction: Brain-derived neurotrophic factor (BDNF) belongs to proteins stimulating the growth, survival and differentiation of neurons and blood vessels. It plays an important role in the pathogenesis of many malignancies, including multiple myeloma (MM). BDNF promotes angiogenesis and osteoclastogenesis induced by cancerous plasma cells. There are also reports that it is relevant to the development of chemotherapy-induced polyneuropathy.

Aim of the study: The aim of the study was to determine the predictive and prognostic value of BDNF in patients with multiple myeloma treated with bortezomib and / or thalidomide-based chemotherapy regimens.

Matherial and methods: The study group consisted of 91 patients with newly diagnosed MM treated frontline with bortezomib and/or thalidomide-based triplet chemotherapy regimens. Median follow-up was 24 months (range 1-56 months). Severity of polyneuropathy was assessed according to the National Cancer Institute Common Toxicity Criteria (NCI-CTC) scale. The Mann-Whitney U test was used to compare differences in BDNF concentration according to response to treatment. Correlation assessment was carried out using the Spearman correlation test. The Kaplan-Meier estimation method and Cox logistic regression were used to assess probability of survival and disease progression.

Results: We observed that BDNF concentration correlated with the severity of polyneuropathy ($p=0.0463$). Higher BDNF values were noted in patients who responded to treatment ($p=0.0326$) and BDNF proved to be a useful marker to predict lack of response after 8 cycles of treatment (sensitivity - 100%, specificity - 61.5%, $p=0.0142$). Moreover this marker showed significant diagnostic usefulness in diagnosis of CIPN (sensitivity - 76%, specificity – 71.43%; AUC = 0.77, 95% CI: 0.64-0.88; $p<0.0001$). Low BDNF was independent, unfavourable prognostic factor associated with reduced overall survival (OS) analysis (HR = 2.79, $p=0.0470$).

Conclusions: In the era of new anti-myeloma drugs, serum BDNF level may play a role as a prognostic factor, and constitute a useful biomarker in predicting the development of drug-induced peripheral neuropathy.

The effect of paracetamol on the exposure of sorafenib and its active metabolite (sorafenib N-oxide) in brain tissue in rats

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Introduction: Sorafenib (S) is a multi-targeted tyrosine kinase inhibitor (TKI) used for the treatment of advanced renal cell carcinoma and hepatocellular carcinoma. Paracetamol (P) is one of the most commonly used analgesics. Moreover, brain metastases are found in about 30% of patients with disseminated cancer. The evaluation of the penetration of S and sorafenib N-oxide (SNO) into the brain allows to assess a possible effect of a changed drug transport to the tissues affected by cancer cells after administration of P. Studies have shown a correlation between the use of P and reduction in the penetration of the other TKI (sunitinib) across the blood-brain barrier (BBB). S is a P-glycoprotein (P-gp) substrate, while P increases the functional expression of P-gp at the BBB, which finally may affect the pharmacotherapy.

Aim of the study: The aim of the research was to analyze the effect of P on the brain exposure of S and SNO in an animal model.

Matherial and methods: The study was performed in 2 groups of rats, each consisting of 42 animals. The first group (I S+P) received a single dose of P p.o. (100 mg/kg) and after 30 min – S p.o. (100 mg/kg). The second group (II S) received firstly vehiculum p.o. and after 30 min – S p.o. (100 mg/kg). Blood samples and brain were collected during 24 h. The concentrations of S and SNO in plasma and the brain tissue were measured by HPLC (Symmetry®C8; IS:lapatinib). Pharmacokinetic calculations were performed in WinNonlin using a noncompartmental analysis and statistical evaluation was done in Statistica software.

Results: The validation of the S and SNO assay confirmed that the method is linear (r = 0.999), accurate and precise (CV <10%). Administration of P increased the Cmax and AUC0-t of S and SNO in the brain (Cmax,S increased by 50%; Cmax,SNO by 52%; AUC0-t,S by 78%; AUC0-t,SNO by 51%).

Conclusions: Administration of P increases the exposure to S and SNO in the rat brain.

Non-surgical Case Report I

Complete DiGeorge syndrome: a rare type of a common genetic disorder

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Introduction: DiGeorge Syndrome (DGS) is a syndrome caused by the deletion of q11.2 fragment on the 22nd chromosome. It is one of the most common genetic disorders, it occurs 1 in every 4000 births. However, there is a subunit of patients (circa 1%) with a complete DiGeorge syndrome (cDGS), which characterizes with a complete aplasia of thymus and what it generates is a grave lack or an absence of CD3+ T lymphocytes.

Case report: A 6-day old newborn was admitted to our Intensive Neonatal Care Unit. Facial abnormalities were noticed. An echocardiography has been performed on our patient. It confirmed the tetralogy of Fallot and other cardiac abnormalities. Additionally, our blood tests confirmed hypocalcemia with hypoparathyroidism. Aplasia of thymus was affirmed during the examination of lungs. Assessment of subsets and maturity of lymphocytes demonstrated a complete lack of CD3+ lymphocytes. Furthermore, the study showed lymphopenia, elevated granulocytes levels, raised percentage of NK and B cells. MLPA corroborated the deletion of 22q11.21.

Conclusions: Pathogenesis of the development of parathyroid glands and thymus is linked to impaired development of the III and IV pharyngeal pouches. The disturbance of the neural crest is also considered to contribute to the anomalies in DGS patients. The cause of so many cardiovascular defects is the mutation of TBX1 gene. 80% of patients with DGS have at least one such defect. Neonatal hypoparathyroidism resulting in hypocalcemia, with cardiological defects are highly diagnostic symptoms of DGS. What is exceptional in our patient is the complete lack of the thymus. cDGS presents with a state similar to SCID. Such patients are susceptible to opportunistic infections. Every case of untreated cDGS is fatal. The only highly effective treatment is the transplantation of the thymus. Successful recipients develop polyclonal CD3+ lymphocytes and an antigen specific immune response. Long-term survival rates reach up to 75%.

The largest interstitial deletion 7p14.3p21.2- case report and literature review.

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Introduction: Deletions of the short arm of chromosome 7 are rare chromosomal findings. There were only several reported cases with similar deletion. The deleted region contains a number of genes, for instance HOXA cluster, where mutations lead to hand-foot-genital syndrome(HFGS). The most interesting findings were additional, bilateral tags on the neck in our patient, haven't been seen yet in previously reported cases.

Case report: The newborn boy, from the first pregnancy of healthy and nonconsanguineous parents was born at 38th week of gestation by cesarean section. Birth weight was 2400g (<4th centile), length 52cm (85th centile), head circumference 33cm (20th-25th centile). The Apgar scores were 4 at 1st minute, 7 at 5th and 8 at 10th. Routine ultrasound examination at 11-13 weeks' gestation showed increased risk of Trisomy 21 and Trisomy 18 (NT- Nuchal Translucency = 4,9mm (>99th percentile)). Few days later NT was normal (1,8mm) and invasive prenatal diagnostic procedures have not been undertaken. Moreover, ultrasound examination during the 3rd trimester showed fetal growth restriction and shortening of long bones. After birth nasal oxygen ventilation was needed due to a frequent desaturation episodes, especially during feeding. Laryngeal stridor and sucking problems were also noted. Dysmorphic features were evident and included: asymmetric palpebral fissures with a ptosis of left eyelid, small, low-set and dysmorphic ears, shortening of long bones. The patient's limbs and urogenital defects like hypospadias and cryptorchidism were similar with these presented in hand-foot-genital syndrome. Due to a set of dysmorphic features a karyotype was performed after birth. Results showed interstitial deletion 7p14.3p21.2 of 15 Mb.

Conclusions: Lack of 7p14.3p21.2 region belongs to the largest deletions, which were found so far. Further reports are necessary in delineation of phenotypic spectrum. To date, our patient has been found as an only child with additional tags on the neck.

Blunt abdominal trauma after lightning strike in a pregnant patient - case report

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Introduction: Injuries in pregnant women might constitute a serious threat to the health or life of both a pregnant woman and the foetus. The effects of a lightning strike are mainly injuries caused by a sudden fall of an injured party. Foetal mortality reaches up to several tens of percent. This is mainly due to the reduced resistance of the foetal skin to electric conduction and the presence of the aquatic environment. An electric shock to a pregnant woman can lead to a miscarriage, premature delivery, placental abruption, foetal death or intrauterine foetal growth inhibition.

Case report: The patient was admitted in the 32 + 5 weeks of GII PII to the hostpital due to the blunt trauma to the abdomen caused by the lightning strike. The main complaint was the pain in the area of injuries. Medical history: cesarean section two years earlier, (indication: tokophobia), cigarettes in the first trimester of pregnancy. On admission: one foetus, alive, in the cephalic longitudinal position. Cardiotocogram showed foetal tachycardia – FHR = 189 / min. No delivery state was found. The vaginal part of the cervix was preserved, the cervical os was closed. Bleeding from the birth canal. Amniotic sack preserved. Abdominal ultrasound did not reveal any abnormalities or free fluid. An ultrasound of the foetus was performed, in which separation of the correctly positioned placenta was suspected. The patient was qualified for caesarean section. A male child was born with a body weight of 1995 g in good condition, 6 on the Apgar scale. The abruption of the placenta on 1/5 of its surface was confirmed. On the 30th day of his life he was discharged home

Conclusions: The effects of a lightning strike on a pregnant patient may be very diverse. Special attention should be paid to the possible need for premature termination of pregnancy.

Multiple intracranial abscesses in a three-year-old girl with reduced FcgR III receptor expression on natural killer cells - a case report

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Introduction: A brain abscess is a purulent infection of the central nervous system. We report a case of multiple intracranial abscesses due to an unusually rare, primary immunodeficiency.

Case report: A three year old girl was admitted to the hospital due to extreme malaise, persistent headaches, vomiting and 39°C fever. Laboratory tests showed increased ferritin and inflammatory markers. Empiric antibiotics were administered. A cardiological consultation revealed incomplete Kawasaki disease. High doses (2 g/kg) of intravenous immunoglobulins were given that led to condition improvement. However, three days later, fever returned with persistently high inflammatory markers. Therefore, intravenous steroid therapy in pulses (methylprednisolone 30 mg/kg for 3 consecutive days) was started. Despite the short improvement, the fever recurred. Due to persistent headaches and suspicion of raised intracranial pressure, patient was referred to the neurological department. Brain magnetic resonance imaging (MRI) revealed multiple abscesses in the right frontal lobe. An urgent trepanopuncture was performed. Abscess culture was positive for Clostridium innocuum and Peptoniphilus asaccharolyticus and pathogen directed antibiotic treatment was administered. During the sixth week of antibiotic therapy, control MRI showed a new, considerably larger purulent abscess of the right temporal lobe. Neurosurgery was performed resulting in complete regression. Following this, immunological tests were done and showed reduced expression of FcgR III receptor on natural killer (NK) cells. Test results were confirmed twice, with a year apart between each one. Three-year follow-up shows no serious infections in the patient.

Conclusions: In a patient with brain abscesses, one should consider immunological conditions. According to our best knowledge, we report the fourth case of reduced expression of FcgR III receptor on NK cells, which presented as multiple brain abscesses. Further genetic testing is needed to detect genetic mutations.

How can a 4L Heart Fit in the Human Chest?

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Introduction: Ebstein anomaly is a rare congenital heart defect characterized by a significantly distorted tricuspid valve and right heart anatomy. Clinical presentation ranges from mildly symptomatic to severely debilitating. We report a case of a giant heart in a 38-year-old patient incidentally diagnosed with Ebstein anomaly.

Case report: A 38-year-old patient presented in 2013 in the cardiological outpatient clinic due to palpitations and mild dyspnea (functional status NYHA class II). The ECG revealed atrial fibrillation, he underwent transthoracic echocardiography that established the diagnosis of Ebstein anomaly. Since it was an incidental finding of congenital heart disease, further diagnostic workup was implemented, including chest radiograph, cardiopulmonary test, and cardiac magnetic resonance. Transthoracic echocardiography revealed typical features of the Ebstein anomaly. The offset of the septal tricuspid leaflet was apically displaced >8mm/m2, with significant tricuspid regurgitation and extreme atrialization of the right ventricle. Chest X-ray demonstrated a severe cardiac enlargement - cor bovinum. Subsequent CMR confirmed enormous volumes of the right heart chambers (functional right atrium = 3300ml, right ventricle = 426ml).

Cardiopulmonary testing demonstrated only moderately impaired exercise capacity (peakVO2 = 17.9 ml/kg/min which is equal to 53 %predicted peakVO2, RER = 1.19) with no limitation on the lung function (FVC = 4.32 L; 88% predicted FVC, 70 % FEV1/FVC).

Laboratory findings were as follows: BNP = 165,8 pg/mL

Conclusions: This case of extreme cardiomegaly presents an unusual finding. The patient presented in a clinically benign fashion in contrast to what might be expected, with mildly elevated serum markers (i.e. BNP) and moderately decreased exercise tolerance. Increased regurgitant fraction, atrial wall fibrosis, and myofibril misalignment seen in EA are likely factors acting in concert to permit such adaptation seen with this degree of right atrial dilatation. Congenital nature of EA allows time for adaptation thus allowing a 4L heart to fit in the human chest.

Adult-onset Still's disease (AOSD) – a diagnostic challenge: case report

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Introduction: AOSD is a rare inflammatory disease of unknown etiology. The most typical symptoms of AOSD include evanescent rash, arthritis and quotidian fever but clinical course may significantly vary among patients. AOSD is considered as a diagnosis of exclusion – it should be made based on the Yamaguchi or Fautrel criteria but requires excluding infectious, malignant, and other connective tissue diseases.

Case report: In October 2019 a 36-year old woman was admitted to the hospital because of generalized maculopapular rash, fever, arthralgia, malaise, cervical lymphadenopathy and sore throat. As wide-range antibiotics were ineffective, the patient was transferred to the Department of Rheumatology of Military Institute of Medicine. Due to high levels of CRP and hepatic transaminases patient was started on oral glucocorticosteroids (GCS) and intravenous immunoglobulins (IVIg), but without significant improvement. Laboratory tests revealed very high levels of serum ferritin, while antinuclear antibodies were absent. After exclusion of neuroinfection and infective endocarditis, a preliminary diagnosis of ASD was suggested and treatment with intravenous (followed by oral) GCS and cyclosporine (CsA) was started. The patient was readmitted to the hospital 3 weeks later because of persisting fever and treatment side-effects. CsA was stopped and the patient was restarted with IVIg. Few days later patient developed generalized lymphadenopathy. The PET CT scan was performed and revealed increased metabolism in lymph nodes and spleen. However, histopathologic examination ruled out lymphoproliferative process. Therefore, as the patient met the Yamaguchi criteria, the diagnosis of AOSD was confirmed. Treatment with steroids was continued and, as IVIg were inefficient, intravenous cyclophosphamide was started which led to complete resolution of symptoms.

Conclusions: Although AOSD is a relatively rare auto-inflammatory disease it should be taken into account in a differential diagnosis of patients suffering from fever of unknown origin, especially if it is accompanied by skin rash and arthralgia.

Renal failure of transplant kidney due to MGUS which develops to amyloidosis and multiple myeloma

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Introduction: Monoclonal gammopathies are rare cause of end-stage renal disease. MGUS (Monoclonal Gammopathy of Undetermined Significance) is asymptomatic single-clone plasma cell proliferation, resulting in secretion of excessive homogeneous monoclonal chains. Each year about 1% of people with MGUS go on to develop serious diseases including light-chain amyloidosis or multiple myeloma.

Case report: 47-years-old man presented proteinuria and signs of nephrotic syndrome. Renal biopsy was performed, there were amyloidosis-like changes and monoclonal glomerulitis. Protein electrophoresis of blood detected monoclonal IgG kappa protein. The urine test showed monoclonal IgG protein and free light chains kappa. No changes in bone marrow biopsy was recognized. Plasma cells were within normal limits. As a result, MGUS was diagnosed. Treatment of renal disease was steroids, melphalen, azathioprinum. Short-term improvement was observed, followed by development of renal failure. A preemptive living donor kidney transplantation was performed. After 18 months of right functioning transplant kidney (creatinine 1,1 mg/dl), proteinuria was detected. Renal biopsy showed recurrence of monoclonal glomerulopathy. Test FREELITE revealed abnormal ratio of light chains k/l: blood-5,38 (N:0,26–1,65), urine-147 (N:2,04 – 10,37). But only 3years later, when patient was 61, AL amyloidosis was confirmed in bone marrow biopsy. The treatment was Bortezomib and dexamethasone which reduced proteinuria from 5 to 1g/24h. Also 50% reduction of chain kappa protein was achieved. But at age of 64, kidney transplant failure occurred, requiring dialysotherapy. Another bone marrow biopsy revealed multiple myeloma. Treatment with bendamustine brought no effects and strong adverse effect (anemia requring blood transfusions). Now 67-years-old patient is disqualified from renal transplant due to lack of remission and bad general condition.

Conclusions: This is rare case MGUS which led to end-stage renal disease and after years evolved into multiple myeloma and amyloidosis. Attributing rapid recurrence of gammopathy to living kidney donation, the transplantation from deceased donor should be prefered in ESRD due to MGUS.

Challenges in Diagnosis of Monogenic Forms of Diabetes - Case Study of MODY2 Patient

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Introduction: Diabetes mellitus is a disease characterized by hyperglycemia due to primary defects in insulin secretion by β-pancreatic cells or resulting from impaired insulin action on peripheral tissues. MODY (Maturity-Onset Diabetes of the Young) constitutes one of monogenic forms of diabetes inherited in autosomal dominant manner. MODY is characterized by functional defects of pancreatic β-cells resulting in hyperglycemia.

Case report: An eight-months old male infant was admitted to hospital due to gastroenteritis. During hospitalization, multiple mild fasting hyperglycemia results were obtained. On admission the patient did not present any clinical features indicative of diabetes such as polydipsia, polyuria or loss of weight. Family history revealed patient mother's mild fasting hyperglycemia present since childhood and gestational diabetes requiring insulin treatment, as well as diabetes of a yet unknown type in patient's grandmother and great grandmother. Due to given conditions, monogenic diabetes was suspected. Laboratory analysis proved mildly increased fasting glucose level in OGTT, hypertriglyceridemia and elevated PCT. Genetic testing revealed the presence of GGC/AGC mutation in glucokinase gene. Patient's mother and grandmother underwent the same genetic testing, both resulting positive.

Conclusions: MODY2 patients typically exhibit mild fasting hyperglycemia, but do not experience elevated postprandial glucose levels. Treatment with oral hypoglycemic agents and insulin does not seem to influence the fasting hyperglycemia. Moreover, prevalence of long-term vascular complications is similar to that of non-diabetic population. Given these arguments, dietary intervention alone is advised for MODY2 patients outside of pregnancy. However, it is important to identify MODY2 patients in order to avoid mistaking their cases for Diabetes Type 1 or 2. Hypoglycemia and other adverse effects are frequently reported in MODY2 patients who had been misdiagnosed and treated with glucose-lowering agents. Therefore, running genetic tests in an affected family is crucial to avoid unnecessary treatment.

Rare case of hypertensive crisis in a two years old boy

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Introduction: Hypertensive crisis is a clinical condition that characterizes with sudden blood pressure elevation. This state can be classified as hypertensive urgency or hypertensive emergency, depending on whether organs were damaged (hypertensive urgency) or not (hypertensive emergency). Irrespective of the cause of these states, both of them require immediate treatment and medical supervision.

Case report: 2 years old boy was admitted because of weight loss, loss of apetite, mild dehydration, paroxysmal abdominal and limb pain, high blood pressure and tachycardia. Symptoms (excluding high blood pressure and tachycardia) occured 2-3 weeks before referral. All of the laboratory tests performed were within normal limits. Pharmacological treatment of the hypertension was implemented (captopril, propranolol, amlodipine), but there was no improvement of the boy's clinical state. The treatment was modified, by adding doxazosine, what caused significant hypotensive effect. Symptoms presented by the patient, and elevated level of normetanephrine, suggested disturbances in catecholamines metabolism. Given the clinical state of the patient, during the diagnostics pheochromocytoma, paraganglioma, neuroblastoma and porphyria were excluded. Occuring symptoms suggested mercury poisoning, therefore mercury/creatinine index was measured in urine. The result showed quintuple increase of the upper limit of normal m/c index. This allowed to make a final diagnosis – hypertensive crisis caused by mercury poisoning. Currently the patient presents normal blood pressure and heart rate, therefore pharmalogical treatment was withdrawn. The cause of mercury exposure is during examination.

Conclusions: Hypertensive emergencies and urgencies often require detailed diagnostics, including rare causes of hypertension, such as mercury poisoning.

Phlegmon formation as an unforeseen complication following radiotherapy of the hypopharynx

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Introduction: Phlegmon is an extremely rare and usually unforeseen complication in patients with malignant neoplasms, who undergo radiotherapy. The condition is usually of a bacterial origin and its formation may be precipitated by an impaired immune system.

Case report: In this case report, we present a 54-year-old male who has undergone radiotherapy treatment for squamous cell carcinoma in the tonsil-lingual angle. Four months later, the patient developed radionecrosis with subsequent edema, bleeding, and epithelial changes, as well as signs of acute infection that rapidly spread from neck to chest and the stomach. Ultimately, the patient has been diagnosed with radionecrosis and phlegmon complicated by the radiotherapy and poor health status.

Conclusions: Our primary interest was to investigate why the patient has developed a phlegmon, as this is a very atypical consequence following radiotherapy. We refer to the literature to determine if the similar case has been reported in the head and neck area. We suspect that the etiology related to the radiation therapy is complicated by the patient's compromised immune system.

Non-surgical Case Report II

Retroperitoneal fibrosis

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Introduction: Retroperitoneal fibrosis is a rare disease characterised by inflammation and fibrotic changes in the retroperitoneal space. Retroperitoneal fibrosis results in the compression and pathology of the ureters and surrounding blood vessels, which has implications on the kidneys and other major organs. The aetiology of the disease is either idiopathic or secondary, which is related to malignancies, infections or iatrogenic causes. The disease is prevalent in men between 40-60 years at a ratio of 1:200,000. The rarity of the disease eludes to a significant amount of cases being undiagnosed, and thus there needs to be significant importance given to ensuring a diagnostic algorithm.

Case report: In March 2018, a 72-year-old man was admitted to the hospital because of abdominal pain, fever and weight loss. Medical history includes hypertension, paroxysmal atrial fibrillation, thoracic degenerative joint disease, lumbar spinal haemangioma and total thyroidectomy. Diagnostic tests showed elevated inflammatory markers; while imagining with USG showed dilation of the right ureter and CT revealed a concentric retroperitoneal periaortic mass. Additionally, a computed tomography angiography (CTA) showed a soft tissue structure of 16mm thickness on the anteromedial side of the abdominal aorta; resulting in hydronephrosis. Hydronephrosis was treated with a JJ catheter, while the patient was also prescribed methylprednisone (32-16mg) and AZA. Histological biopsy of the retroperitoneal space showed a chronic inflammatory infiltrates and local fibrosis. Once a USG confirmed a normal right ureter, the catheter was removed, and CT confirmed a reduction in the size of the retroperitoneal mass.

Conclusions: Improvement of imaging and diagnostic techniques can ensure optimised patient outcomes. The clinical picture has shown that it is imperative to establish a diagnostic algorithm due to the vague symptoms but severe complications. It is therefore essential the clinician be aware of how to evaluate rare diseases such as this when encountering differentials diagnostically.

A patient with metastatic gastric cancer treated with pembrolizumab- disease progression or adverse effect of the drug?

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Introduction: Hypopituitarism is a rare disease caused by decreased secretion of one or more hormones produced by pituitary gland. The most common causes of hypopituitarism are tumors, infections, injuries and irradiation. In the presented case hypopituitarism was not a result of any of these potential reasons.

Case report: A 70-year-old man was admitted to the hospital with anorexia, nausea, 5 kilograms weight loss and low blood pressure, despite the withdrawal of hypertension drugs. In March 2019, this patient was diagnosed with HER2 positive metastatic gastric cancer. He received CAPOX chemotherapy, trastuzumab and pembrolizumab or placebo within a clinical trial. The patient was pale and had dry skin. His heart rate was 100bpm and the blood pressure 94/66 mmHg with orthostatic hypotension. Laboratory studies revealed a low level of cortisol (1,22 ug/dl), fT4 (0,72 ng/dl) and TSH (1,63 uIU/ml). The results suggested central hypothyroidism. The patient had also a low concentration of sodium (130 mmol/l) and potassium (3,36 mmol/l). The additional studies showed a low concentration of ACTH, which indicated secondary adrenal insufficiency. The abdominal ultrasound did not show any pathologies of the adrenal glands. The MRI of the pituitary gland was performed and did not reveal any abnormalities, such as tumor or stroke. The patient's condition improved after an introduction of hydrocortisone and levothyroxine.

Conclusions: Immunotherapy's role in cancer treatment is still rising. Pembrolizumab is a therapeutic antibody, which blocks PD-1 protein localized on lymphocytes, resulting in activation of immune system and destroying cancer cells. Unfortunately, antibodies like pembrolizumab, despite their effectiveness in cancer therapy, may cause overreaction leading to autoimmune diseases. There have been reported cases of immune-related side effects manifesting as inflammation of the pituitary gland or hypothyroidism . In the presented case the patient had non-specific symptoms, which might have resembled the signs of cachexia. It is vital to remember about adverse effects of immunotherapy.

Choriocarcinoma with metastases to the central nervous system

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Introduction: Choriocarcinoma is a rare malignant trophoblastic tumor, which is the most aggressive form of a gestational trophoblastic disease. When it comes to the prognosis, it is good if chemotherapy is implemented. However, brain metastases are related with higher morbidity and are real challenge in treating process. In this case, radiotherapy, surgical intervention, intrathecal chemotherapy or even high-dose intravenous chemotherapy may be beneficial and should be concerned single or in combination.

Case report: A 44 years old female patient was admitted to the ER because of headache, vomiting, worsened contact and difficulties with speaking. She was sleepy and slowed down mentally. MR of the head revealed a mass in the left frontal lobe as well as mass effect with the displacement of brain structures. The patient, who gave birth 4 months ago, was consulted by gynecologist. Tough uterus and vaginal bleeding were reported. Also, beta HCG was high-155085 mI/mL. CT scan showed metastases in the lungs. The suspected diagnosis of choriocarcinoma was made and the patient was transferred to the gynecological oncology clinic. She was in severe condition without verbal contact. Also, central paresis of the facial nerve on the right side occurred. Chemotherapy according to the EMA-CO regimen was prescribed. Patient's condition improved and she was discharged from the hospital. Later, chemotherapy was continued however severe pancytopenia appeared, so transfusions and usage of granulocyte growth factor were necessary. Moreover, the patient developed neutropenic fever. The control MR showed a picture corresponding to hemorrhagic changes within choriocarcinoma metastases, other pathologies present in the first MR were absent.

Conclusions: The case highlights the role of rapid diagnostic imaging of neurological disorders. Properly implemented treatment may significantly improve clinical condition of the patients suffering from choriocarcinoma. However, chemotherapy is associated with a number of side effects, which have not been avoided in this patient.

Genotype-Phenotype correlations in a family with Osteogenesis Imperfecta, a case report

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Introduction: Osteogenesis imperfecta (OI) is a group of rare inherited disorders of connective tissue with the common feature of excessive fragility of bones. It is a result of mutations in the collagen type I, a main component of connective tissue. 90% of OI cases are caused by mutations in genes COL1A1 and COL1A2. OI has a broad spectrum ranging from an asymptomatic or very mild form- type 1 to a severe, lethal form- type 2.

Case report: The case report regards large Polish family with multiple family members affected by Osteogenesis Imperfecta. In this study 9 family members were described. Heterozygous variant in exon 38 of the gene COL1A2 position g.31467 causing mutation Gly682Ser was detected in all tested individuals. Despite the fact that all the family members have the same type of the gene mutation they present different severity and symptoms of disease. The clinical heterogeneity in the family is discussed in this study. Clinical features of Osteogenesis Imperfecta such as the frequency of bone fractures and the appearance of bone deformity, scoliosis and dentogenesis imperfecta varied among patients. Blue discoloration of the sclera was the only feature that appeared among all of the patients.

Conclusions: The disorder may exhibit considerable intrafamilial variability in the number of fractures and degree of disability, but such variabilities are not commonly described. The reasons for the significant phenotypic variations in one family are not clear.

Dysphonia and deviation of the tongue without hearing changes: a diagnostic dilemma

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Introduction: Paragangliomas of the head and neck are uncommon (0.6% of all head and neck tumours), and most frequently occur in the carotid body, the jugular bulb, and the vagus nerve. Rare and typically slow-growing, these tumours usually present with clinical symptoms reflecting local mass effect. The wide variety of clinical presentations pose a diagnostic challenge, and reliable radiologic investigation is crucial for accurate diagnosis and treatment.

Case report: We present a 62-year-old male who reported to the clinic in March 2017 with a year's history of sore throat and feeling of throat obstruction. Physical exam noted paralysis and deviation of the tongue to the right. The patient was dysphonic, and examination of the larynx revealed unilateral paresis of the right vocal fold. Nasal fibroscopy and otoscopy were unremarkable, and the patient did not report any tinnitus or changes in hearing. Magnetic resonance imaging (MRI) of the skull base was performed in April of the same year, as well as angio-MRI with contrast, revealing a vascular mass measuring 32 x 16 x 34 mm in the vicinity of the right jugular foramen, interfering with cranial nerves IX, X and XII. Diagnosis of paraganglioma of the jugular bulb (glomus jugulare) was made. The patient subsequently underwent radiotherapy and embolisation of the tumour due to its precarious location. An MRI performed during follow-up in November 2019 revealed a decrease in size to 14 x 19 x 28 mm.

Conclusions: Voice changes coupled with cranial nerve paresis should be a high index of suspicion for lesions of the lower cranial nerves. Though glomus jugulare typically presents with hearing loss and tinnitus (80%), the lack of these symptoms in our patient can be attributed to early diagnosis utilising radiologic examination of the base of the skull, and swift treatment.

Is it better to live with or without awareness of disease, or what lies behind the diagnosis of Klinefelter Syndrome?

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Introduction: Klinefelter syndrome is the most common sex chromosome disorder where affected males carry an additional X chromosome. The additional X chromosome carried by the patients result in hypogonadism, androgen deficiency and impaired spermatogenesis. However sometimes diagnosis cannot be made before or during puberty. The first diagnostic differentiation becomes apparent upon adulthood. This is due to the fact that younger patients retain normal function of gonadal and pituitary gland until puberty. Characteristic picture for adult patients are elevated FSH and LH levels and a plateau of testosterone levels to the lower half of the normal range or below.

Case report: This study analyzes the case of a 45-year-old patient with suspected Klinefelter Syndrome, who was falsely diagnosed with elevated FSH levels and significantly reduced levels of testosterone.

Until now, he has been treated endocrinologically for hypothyroidism. The patient manifests the appearance characteristic of the disease unit we describe, i.e. rare facial and body hair, gynecomastia, reduced muscle mass with female fat distribution, rounded hips and reduced testicle size. Despite the fact that clinical symptoms indicate the described syndrome, the patient is reluctant to consider genetic testing. This is influenced by the fear that awareness of the disease will lower his sense of masculinity while confirming infertility. The patient believes that a positive result of the test will leave negative societal impact in his life and will further worsen his self-esteem and quality of life.

Conclusions: The case we described illustrates how this disease can lead to doctors not only facing diagnostic challenges but also ethical issues. It is important for the doctor to maintain a neutral attitude, to realize how impactful may a diagnosis as such be, to discuss its consequences and therapeutic options, while not exerting pressure on the patient and giving him the opportunity to make his own informed decision.

Vocal Cords Dysfunction, as an asthma-mimicking cause of chronic cough

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Introduction: Vocal cord dysfunction (VCD) is characterized by full or partial vocal fold closure leading to difficulty and distress during respiration, especially during inhalation without any organic disease. The main symptoms include wheezing, stridor, sudden laryngospasms or less frequent - chronic cough. Due to the similar clinical picture it is often mistaken for astma, although they may occur simultaneously. The pathophisiology is ambiguous and it may be associated with genetic factors, GERD, rhinusitis, stress, occupational exposition and physical activity, as a trigger. The most effective diagnostic procedure is laryngoscopy, which can reveal the abnormal movement of the vocal cords. The treatment is usually multidisciplinary with logopedic rehabilitation, pharmacology and psychotherapy.

Case report: The patient was a 44-year-old man, who was reffered to the clinic in order to be further diagnosed due to a chronic cough which had been observed for almost two years. The accompanying symptoms included a dyspnea even with a little exertion and the deterioration of the effort tolerance. They began with the occupational exposure to chemical substances while working in the paintshop. The exacerbating factors were also intensive scents and temperature changes. The patient had been hospitalized a few times before the diagnosis of RADS and RUDS syndrome was made. This syndrome is considered to be a type of occupational asthma. He was treated with glucocortycoids and bronchodilars, but without a significant change. On admission, patient was in a fair general condition with dyspnea, intensified cough, tachypnoe and wheezing. Further diagnostics, proceeded in the clinic, excluded the presence of occupational asthma and revealed the abnormalities, characteristic for VCD which enabled conducting the appropriate and effective treatment.

Conclusions: Vocal Cord Dysfunction is a pathology, which can mimic the clinical picture of more frequent diseases, with asthma out front. Similiarities in syndromes may cause difficulty with making a correct diagnosis, and so providing the successful treatment afterwards.

Childhood anemia

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Introduction: Child anemia is quite common cause of visiting pediatrician. The most common types are due iron or vitamin B12 deficiency. But while diagnosing it's unavoidable to forget about other causes- from congenital to oncological -related types. Treatment requires constant medical supervision and may lead to impaired child's functioning and side effects.

Case report: 3y.o. boy 39 Hbd, GII PI NVD (Blackfan-Diamond anemia, GDM1 and hypothyroidism during pregnancy) born in asphyxia (Apgar 5-6-7-7) with birthweight 3270g was admitted to NICU. His lab tests results in first day of life: RBC 4,4x10^6/mm^3, HGB 14,3 g/dl, HCT 43,2%, MCV 99um^3, MCHC 32,9pg, PLT 89tys/mm^3. Chest X-ray showed enlargement of heart, in ECHO PFO with left-right flow and PDA. Blood morphology made in following days showed significant worsening of RBC- related parameters, ferrytine 950 ug/l, Fe 150 ug/dl with vestigial reticulocyte renewal. In myelogram hypoplasia of erythrocytic series. Based on clinical presentation and family history child was diagnosed with Blackfan-Diamond anemia (with genetic testing for further confirmation) and started treatment with steroids. Multiple blood transfusions were required. Due to treatments side effects after year steroids got waived, but returned after 3 months long break. Control lab tests showed persistent low levels of RBC system with high ferritin and iron levels. Treated with Encorton and vitamin supplements, last transfusion 11 months ago.

Conclusions: Carefully diagnosing child based on clinical view and laboratory findings is important for patient's wellbeing. It's important to make up for deficiencies through supplements for better child's development. Also as doctors we need to remember about various side effects of the used treatment. Steroids play big part in treating various diseases but due to many side effects are controversial drugs in pediatrics. In Blackfan-Diamond anemia it is possible to use chelating treatment for high iron and ferritin levels but only without growth disorders.

Gardner syndrome? - case report

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Introduction: Aproximately 30% of colorectal cancers (CRC) are inherited, 20% have familial risk and 10% have well-known genetic basis. However, less than 1% of colorectal cancers are related with familial adenomatous polyposis (FAP). FAP is a genetic disorder caused by germline mutations in APC gene. In patients with FAP numerous adenomas are observed, more than 100 in classical form or between 10 and 100 in attenuated form. Subtype with extraintestinal tumours, such as osteomas of skull, epidermoid cysts, desmoid tumours and more, is called Gardner Syndrome. There is near 100% risk of developing CRC in APC patients at an early age. In guidelined, it is advised to perform colonoscopy once in the year or two years starting from 12-15 years old until prophylactic colectomy will be carried out. Also, some authors recommend thyroid ultrasound once a year due to higher risk of thyroid cancer.

Case report: In 2012 a 17-year-old man with familial history of CRC(father died at the age of 35), was diagnosed with FAP. Unfortunately, the patient refused to have either prophylactic colectomy or even genetic consultation. Six years later, the patient developed adenocarcinoma of sigmoid rectal flexure, stage G2. Patient was qualified to palliative chemotherapy due to an unresectable tumor, regimen FOLFIRI. However, at the beginning of treatment, malnutrition of patients was observed (BMI 14), so the first two cycles the L-F4 regimen was given. Patient refused parenteral nutrition, hopefully during the treatment, the weight of the patient had been continuously risen. In march 2019, treating process was finished in spite of progression.

Conclusions: Tumors related to hereditary syndromes often develop in younger age than spontaneous neoplasms. If malignancy hasn’t developed yet, specific must be undertaken. Also, patients must be given the right to decide about this treatment, even though making a not recommended choice.

Autoimmune hemolytic anemia with cold agglutinin as a rare manifestation of Epstein-Barr virus infection

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Introduction: Infectious mononucleosis is one of the most common manifestations of Epstein-Barr virus infection. Although cold agglutinin occurs in more than 60% of patients with infectious mononucleosis, it is rare to develop autoimmune hemolytic anemia (1-3% of infected patients). Antibodies form in a cold type of autoimmune hemolytic anemia belongs to IgM, IgG, IgA class, against polysaccharides found on erythrocytes, due to which they agglutinate at low temperatures what leads to complement activation and hemolysis. Characteristics of hemolytic anemia are high: percentages of reticulocytes, LDH activity, free bilirubin concentration, and low haptoglobin concentration.

Case report: 7 years old boy, referred from GP. He was admitted to the hospital due to yellowness of the skin and whites of the eyes. His upper respiratory tract was infected for 3 days. When he was 3 years old, he was diagnosed with diabetes type 1. During admission to the hospital, he was in good condition. In physical examination, no further abnormalities were found. Results of laboratory test showed a high level of CRP and procalcitonin and features of hemolytic anemia. In USG examination of the revealed splenomegaly. The serological examination confirmed an active EBV infection. Due to progressive anemization, warm blood was drawn for clot and 2 times for EDTA and hemolytic anemia with cold agglutinin was confirmed. Methylprednisolone and Clemastinum was administered. Then packed red blood cells transfusion was made. In check-up examination, there were packed red blood cells not seen features of hemolysis and the level of hemoglobin was normal.

Conclusions: Although hemolytic anemia with cold agglutinin occurs rare, it can be a serious threat to health and life. It should always be considered in differential diagnosis hyperbilirubinemia and anemia during active viruses infection such as EBV.

Suspicion of Jacobs syndrome in a 9-month-old boy

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Introduction: Jacobs syndrome is caused by a quantitative aneuploid type chromosome disorder characterized by the presence of an additional Y chromosome in men. XYY syndrome occurs in approximately 0.1% of the male population. It is estimated that this number is significantly underestimated due to the lack of genetic screening. To confirm Jacobs syndrome, a man must have an XYY karyotype and clinical signs such as physical and behavioral features. Physical features include high growth, while behavioral features include developmental delay, speech disorder, cognitive impairment, and emotional and social development difficulties. What is more, IQ level is often reduced by 10 to 15 points compared to siblings.

Case report: A boy born by nature during the first pregnancy. It was a threatened pregnancy because of genital bleeding occurred at 9th week of pregnancy. At 13th week of pregnancy, abnormal flow on the tricuspid valve (retrograde wave) was observed, therefore, at 16th week of pregnancy, an amniocentesis was performed, in which the karyotype 47, XYY was found. Since birth, the patient's weight, height and circumference exceed the mean values. The patient had problems with food intake such as downpouring and an undercutting of the frenulum was performed at 3 months of age. The patient was also diagnosed with reduced muscle tone and poor eye contact.

Conclusions: The infant develops abnormally. Time standards in the implementation of milestones have not been observed. The child has some features that may suggest the occurrence of Jacobs syndrome, they are hypotension, low, but normal body weight with concomitant tall growth. At present, the child does not show behavioral and social problems. XYY syndrome is difficult, because there are only symptomatic treatment options, consisting of minimizing discomfort.

Noninsulinoma Pancreatogenous Hypoglycemia (NIPH) - a rare case of nesidioblastosis in an adult with type 2 diabetes mellitus

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Introduction: Nesidioblastosis is a rare cause of hyperfunctioning pancreatic β cells, usually associated with excessive insulin secretion and hypoglycemia. This condition results in a disease called noninsulinoma pancreatogenous hypoglycemia (NIPH) which incidence in adults is estimated at 0.5–15% of organic hyperinsulinemias.

Case report: 53-year-old patient was admitted to our Clinic to diagnose the cause of hypoglycemic episodes. According to the patient, in the previous 3-4 months he has observed events of hypoglycaemia, documented by glucometer measurements, and at the same time the accompanying symptoms which made it impossible to continue his professional career. He was previously diagnosed with type 2 diabetes mellitus and treated with metformin for approximately 2 years. Neither anamnesis nor physical examination were significant. Initially, the decision to discontinue the treatment was made. Unfortunately, the symptoms did not improve, serum glucose levels ranged between 40 and 130 mg%. Therefore, a supervised 72 hour fast was performed twice, which ended in symptomatic hypoglycaemia after 6 and 12 hours from the start. Laboratory tests showed the following results – glucose level at 41 mg/dl, insulin at 12 mIU/L and C-peptide at 3 ng/ml. Additionally, CT scan and MRI of the abdomen as well as endoscopic ultrasound were ordered but no abnormalities were found. Eventually, pancreatic biopsy was performed, showing spilled proliferation of abnormal β cells. Hence, NIPH in course of nesidioblastosis was diagnosed. After distal resection of the tail and part of the pancreatic shaft, a significant clinical improvement was noticed. When a satisfactory glycemic control was achieved by diet only, the patient was discharged in general good condition.

Conclusions: NIPH is a rare condition, which requires thorough diagnosis as clinical manifestations vary widely and the treatment entails surgical intervention. There are no clear guidelines for general prevention, but postbariatric surgery patients and families affected by this disease should be cautioned.

Unexpected radioiodine uptake in pancreatic adenosquamous carcinoma.

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Introduction: Thyroid scintigraphy is a nuclear medicine examination used to evaluate thyroid tissue. Clinical indications include checking functional status of a thyroid nodule, differential diagnosis of thyrotoxicosis, detection of thyroid cancer and whole body scan for distant metastases and follow-up for tumor recurrence. The examination is based on the fact that trapping, metabolism and storage of iodine is more prominent in functioning thyroid tissues than other tissues.

Case report: The 68-year-old man was diagnosed with papillary thyroid cancer in 2013. The patient underwent a thyroidectomy. In 2015 metastasis of papillary cancer was found on left side of the neck. In January 2018, a surgery was performed to remove two lymph nodes - mediastinal and cervical. Histopathological examination confirmed metastases of papillary carcinoma. Additionaly, in June 2018, neck exploration with lymphadenectomy was performed and further lymph node metastases were detected. Therefore, in July 2018, the patient was referred for post-therapeutic whole-body scintiscan. Surprisingly, performed examination demonstrated a pancreatic uptake, which is not typical for radioiodine scintiscan. Firstly, it was interpreted as an artifact related to radioiodine contamination, due to the fact that levels of stimulated thyroglobulin were low and there was no evidence of persistent disease. However, repeated scan revealed even more pronounced uptake in the pancreas. The performed CT scan revealed the presence of pancreatic tumour. Thus, in 2019, the patient underwent surgical resection of the pancreas. Pancreatic adenosquamous carcinoma was diagnosed on histopathological examination.

Conclusions: There are some cases of unexpected radioiodine uptake, which have been reported. The considered causes of unusual uptake of radioactive iodine include the physiological variant, benign and malignant pathological lesions or contamination. The examination of immunihistochemical expression of sodium-iodine symporter (NIS) of histopathological specimen may explain the mechanism of iodine trapping in the pancreatic tumour and positive results may serve as a basis for non-standard therapy with radioiodine.

Non-surgical Case Report III

Successful treatment of skin metastases in ovarian cancer

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Introduction: Ovarian cancer has the highest mortality rate among gynecological cancers. It usually spreads directly to the peritoneal cavity, but can also cause distant metastases by lymphatic and hematogenous routes. Skin metastases are very rare and appear only in 0.9% to 4% of patients. Usually they reveal themselves on the skin of the abdomen, but they can also be diagnosed on the chest, buttocks, breasts and less often on the skin of the limbs.

Case report: We present a case of a 54-year-old woman diagnosed with FIGO IIIC ovarian cancer (Adenocarcinoma serosum ovarii) who developed skin metastases and has been succesfully treated with paclitaxel weekly and bevacizumab. In the past, the patient underwent radical surgery, with adjuvant chemotherapy (paclitaxel and cisplatin). The patient had 5 platin-sensitive recurrences, all treated with chemotherapy, the last one additionally with surgery. After that numerous skin lesions in the form of pustules on the right shoulder and shoulder blade were noticed, as well as an increasing lymphoedema of the entire right upper limb. Sections for histopathological evaluation were taken with confirmation of metastatic nature. Moreover paclitaxel weekly 80mg/m2 and bevacizumab 7.5mg/kg administered every 3 weeks were implemented. Significant improvement and regression of skin lesions has been observed, as well as reduction in edema within the upper limb. There was a decrease in CA125 antigen level from 2050.4 U/ml to 64.8 U/ml after the second administration of bevacizumab. At present the patient is continuing the current treatment.

Conclusions: Skin metastases from ovarian cancer, which are rare in clinical practice, mostly occur in the late stages of the disease and are usually associated with poor prognosis. However, in some cases, overall survival and quality of life can be extended with appropriate therapy. In our patient, the use of bevacizumab with paclitaxel was effective in treating skin metastases of ovarian cancer.

Contact dermatitis on acrylates related to occupation - a case report

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Introduction: Acrylates are an important and increasingly reported cause of the clinical manifestations of allergic contact dermatitis. This applies not only to clients, but also to beauticians performing treatments exposing them to the above-mentioned substances. Due to occupational exposure to acrylates, people working in the field of cosmetology in some cases, after documenting the relationship between the disease and occupational exposure, they are treated as occupational diseases. Statistically, one of the most common occupational dermatoses is occupational contact dermatitis. They can be divided into irritant and allergic contact dermatitis, i.e. allergic contact dermatitis. In most cases, both types of contact dermatitis manifest as eczematous skin lesions with eczema morphology, located on exposed skin surfaces, especially on the skin of the hands. The basis for diagnosis is a thorough medical history, a thorough physical examination and the result of patch tests.

Case report: This paper presents a case report of a 36-year-old beautician who experienced an allergic skin reaction to acrylates, manifested as clinically severe eczema of the hand. Thus, in the case of the patient presented by us, there was an evident contact polyvalent allergy, which due to her profession, absolutely requires further tests to establish a highly probable cause-and-effect relationship (namely exposure to highly allergenic compounds in the beauty salon and development of contact allergic eczema), and recognition of the clinical problem as an occupational disease. It requires meeting strictly defined requirements, defined in medical legislation.

Conclusions: Beauticians are a professional group at high risk of developing contact dermatitis. Acrylates, commonly used in beauty salons, are etiological factors responsible for the development of contact hypersensitivity and both immediate and delayed type allergies. The early implementation of diagnostics and the correct diagnosis of occupational contact dermatitis allow you to optimize treatment, implement secondary prevention and virtually immediate change in working conditions.

A diagnostic challenge - autoimmune responses in a newly presenting type 1 diabetic patient

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Introduction: Autoimmune polyglandular syndrome (APS) type 2 is defined by the presence of two or more of the following: primary adrenal insufficiency, autoimmune thyroid disease, type 1 diabetes mellitus (T1DM). The presence of one autoimmune condition should encourage clinicians to consider the increased risk for autoimmunity targeting of other endocrine tissue.

Case report: A 27-year-old male presented to the emergency department with weakness, dyspnea, stabbing chest pain. He was initially admitted with a diagnosis of acute coronary syndrome, which was excluded during further diagnostics. His blood glucose level was 304 mg/dL and arterial blood gas showed metabolic acidosis. Urine test detected glucosuria with acetonuria. Patient was referred to the diabetology department for a comprehensive diagnostic. The patient's past medical history included atopic dermatitis and Gilbert's syndrome. On admission, the patient reported 2-week history of polyuria and polydipsia without weight loss. Diagnosis of diabetic ketoacidosis (DKA) was promptly performed. Treatment with intravenous fluids and insulin was initiated. However, the patient remained very drowsy and had difficulty controlling blood glucose levels over next days. Sodium levels remained low ranging from 115 to 126 mmol/L, whereas potassium level was normal (4,49-4,09mmol/L). The possibility of an underlying pathology was addressed. Dark tanning of the skin, symptomatic hypotension and electrolyte imbalances, led to the suspection of adrenal insufficiency, which later was confirmed by laboratory findings (cortisol:1,76µg/dL, ACTH:1863pg/ml). The patient responded well to steroid therapy and proper glycemic control was accomplished. Moreover, subsequent testing (high levels of anti-GAD and anti-IA2 autoantibodies) verify a diagnosis of T1DM.

Conclusions: The coexistence of other autoimmune diseases with T1DM is not uncommon. The clinical picture of acute adrenal insufficiency and DKA may be similar. This case highlight such presentation, where suspicion for polyglandular disorder needs to be maintained in order to prevent mortality from the index disease as well as the associated diseases.

Curious case of Maroteaux-Lamy syndrome in Polish family – importance of genetic testing

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Introduction: Maroteaux-Lam syndrome(Mucopolysaccharidosis type VI) is a rare, autosomal recessive lysosomal storage disorder caused by deficient enzymatic activity of N-acetyl galactosamine-4-sulphatase which is caused by mutations in the arylsulphatase B (ARSB) gene. To date 163 different types of mutations in the ARSB have been reported. However, the mutation spectrum in the MPS VI phenotype is still not known.

Case report: A 14 month-old male patient was admitted to our hospital suffering from hand contracture thought to be a result of arthritis. In the 4th week of his life hip dysplasia was diagnosed, shortly followed. By left-sided inguinal hernia development. In the 7th month the mother noticed a “hump” of the spine as well as contractures in the knee joints. There was no family history of any illnesses. Since the boy presented symptoms characteristic of MPS VI molecular testing(Sanger sequencing) was performed. We studied a child suspected of having MPS VI and 11 relatives from his family. We identified a C to T transition resulting in an exchange of the Arg codon 160 for a premature stop codon (R160*, in exon 2). The transition was located in CpG dinucleotides.

Conclusions: The study provides some insights into the genotype-phenotype relationship in MPS VI and the importance of genetic testing when diagnosing MPS, which is only very occasionally performed and is not a mandatory test for the diagnosis. Additionally, we present here the history of family with confirmed MPS VI that is extremely rare especially in south-eastern Poland. What is more, the position where the mutation is located is very interesting because it is the region of CpG, which is the site of the methylation process. Thus, this opens a new point of view indicating the involvement of epigenetic mechanism that should be examined in the context of patomechanism of MPS.

In search of "red flag" symptoms accompanying spinal pain present in DLBCL

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Introduction: Spinal pain in the sacrolumbar region can be easily underestimated, given that it is one of the most common ailments in adults in Poland. However, it could also be a sign of an active neoplastic process, e.g. an aggressive Diffuse Large B-Cell Lymphoma (DLBCL).

Case report: A 34-year-old patient with first stage obesity and type two diabetes presented with sacrolumbar back pain to his GP. An abdominal USG did not show any abnormalities at the time. After the visit, he started to engage in physical activity and lost 3kg of weight, but the back pain continued to persist. Moreover, in February 2019 he experienced paraesthesia of the upper extremities. After an orthopedic consultation, an RTG and MR of the cervical vertebrae were performed. The MR showed multilevel myeloproliferative lesions. In April, the patient's spinal pain exacerbated and a low-grade fever appeared (reaching 38°C). Therefore, the patient came to the ED where he was urgently consulted hematologically. The doctor concluded that there is little evidence to suspect a myeloproliferative syndrome and the patient was admitted to the Internal Medicine ward for further testing. During hospitalization, an abdominal USG showed small metastatic lesions in the liver which were later confirmed using CT. A PET-CK also exposed enlarged lymph nodes and numerous metastases in the lungs and bones – however, the origin of the cancer was not discovered. The histopathological examination of an enlarged lymph node revealed DLBCL. The patient received chemotherapy, went into remission and is being monitored in a hematology clinic.

Conclusions: Due to the patient's young age and a high incidence of lower back pain in obese persons, his symptoms could have been easily neglected. Paying attention to the "red flags" (such as paraesthesia, raised body temperature) can lead to a faster diagnosis of a particularly aggressive lymphoma.

Oligosymptomatic Multiple Myeloma

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Introduction: Multiple myeloma (MM) is a malignant plasma cell disorder. It is believed to be preceded by asymptomatic monoclonal gammopathy of unknown significance (MGUS), when the monoclonal protein is present in patients without underlying diseases. The diagnosis of MM requires ≥10% clonal plasma cells in bone marrow plus the presence of one or more CRAB features or one or more biomarkers of malignancy (clonal bone marrow plasma of ≥60%, serum free light chain (FLC) ratio of ≥100, or ≥1 focal lesion in MRI.).

Case report: In April of 2013, a 55-year-old woman with a history of stage 3 chronic kidney disease and subnephrotic proteinuria since 2005 (a renal biopsy from 2005 was normal), was admitted to the clinic for a diagnosis of proteinuria (2,2g/24h, no erythrocyturia, serum creatinine 1,27 mg/dl). Proteinogram was normal, autoimmune antibody panel was negative. A renal biopsy was performed, showing non-specific, mild glomerulal abnormalities. She was discharged in good clinical condition. In August of 2018, she returned with proteinuria of 2,7 g/24h, progression of CKD (creatinine 2,8 mg/dl) and normocytic anemia, accompanied by metabolic acidosis. A month prior she took part in a clinical trial of daprodustat. ESR was normal. The proteinogram was without abnormalities, however monoclonal protein (kappa light chain) was found in serum and urine. A marrow biopsy showed 27,2% of plasma cells and 11% of monoclonal plasma cells. This lead to the diagnosis of MM, ISS stage III. Normal bone X-rays and calcium levels excluded osteolysis. She was referred to a hematology clinic.

Conclusions: Multiple myeloma's non-specific onset often hinders the diagnostic process. Such symptoms may direct the differential diagnosis in a different way, delaying the introduction of treatment, which while slowing the course of the disease, does not cure it. Thus, MM continues to be a challenge for clinicists.

From preeclampsia to peripartum cardiomyopathy

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Introduction: Cardiovascular events during pregnancy could pose serious complications for the mother and the child during both the pregnancy and postpartum period. The following case considers the challenges of identifying the etiology of acute heart failure (HF) in a 27-year-old female in the peripartum period.

Case report: The patient presented at 27 weeks of pregnancy with preeclampsia, later progressing to eclampsia with seizures. Seizures were controlled with magnesium sulfate. Despite aggressive treatment of hypertension, the patient's blood pressure remained significantly elevated. Four days post-admission, the patient experienced a hypertensive crisis and an emergency C-section was performed without complications. The patient continued to experience hypertension postpartum with decreased left ventricular ejection fraction (45%), fluid in the pericardial sac and both pleural cavities as well as myocardial edema seen in cardiac magnetic resonance (CMR). Viral and rheumatological tests were negative, thyroid hormones were normal. The patient's hypertension was successfully reduced pharmacologically. Bromocriptine was administered to stop lactation. Unexpectedly, despite IV supplementation of electrolytes, the patient experienced cardiac arrest due to ventricular tachycardia (torsades de point) on the 7th day postpartum and was successfully resuscitated with shock delivery. Patient remained in the hospital for one-month post-admission with progressive improvements of her HF symptoms. A follow-up CMR revealed no edema nor fibrosis. The patient was discharged home on heart failure treatment.

Conclusions: A combination of symptoms of this patient poses a challenge in identifying the cause of acute HF as due to hypertension or postpartum cardiomyopathy (PPCM), which is a diagnosis of exclusion. Myocardial edema along with clinical presentation (acute HF, ventricular arrhythmias and cardiac arrest) are more suggestive of PPCM. Irrespective of the difficulties in establishing the differential diagnosis, the patient should be carefully monitored not only during the acute phase but also during the entire hospitalization.

Seeking the Cause of Hypoglycaemia – a Rare Case of Insulin Autoimmune Syndrome

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Introduction: Insulin autoimmune syndrome (IAS), first described in 1970, is a rare condition which only concerns patients with no history of insulin treatment. It is caused by anti-insulin antibodies which interfere with bioactivity of the hormone and may lead to hypoglycaemia. Aetiology of IAS remains uncertain.

Case report: A 45-year-old woman presented to our Clinic reporting diaphoresis, hands shakiness and palpitations for 3 previous months. According to the patient, her glycaemia would reach levels as low as 40 mg/dl (measured with glucometer). She denied any chronic diseases or treatment. Before admission the patient had undergone oral glucose tolerance test which showed glycaemia as high as 233 mg/dl after 2 hours. Also, a short fasting test had been performed - at 8AM values reached 86 mg/dl, >1000 microIU/ml for glucose and insulin, respectively, then at 12AM lessened to 81 mg/dl and 789.2 microIU/ml. The results raised suspicion of insulinoma. Laboratory tests performed during hospitalisation as part of full fasting test revealed remarkably raised insulin serum concentration (up to 386 microU/ml) and presence of ketones in the urine. At the same time, C-peptide level remained within reference limits (1.10-3.30 ng/ml), whereas glucose level ranged between 61-95 mg/dl, being normal or decreased. Additionally, serum protein electrophoresis showed noticeable hipergammaglobulinemia. CT scan of the abdomen was also ordered, however, nothing relevant was found. Eventually, 12,5% polyethylene glycol (PEG) precipitation test was performed attaining 3,5 % insulin recovery which indicated the presence of anti-insulin autoantibodies (unbound insulin concentration was assessed at 14,3 microIU/ml). All of this was highly suggestive of autoimmune basis of hypoglycaemia. The patient was discharged in general good condition with referral for ambulatory treatment continuation.

Conclusions: It is important to keep in mind that presence of antibodies might render routine insulin assays unreliable. Therefore, including IAS in differential diagnosis of hypoglycaemia seems indispensable in non-diabetic patients.

Refractory coeliac disease- could it be a lymphoma?

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Introduction: Enteropathy associated T-cell lymphoma (EATL) is characterized by neoplastic proliferation of T cells in patients with coeliac disease (CD) and it commonly manifests as an intestinal tumor. Its incidence is very low and it is diagnosed mostly in regions with high prevalence of CD.

Case report: We describe two cases of patients diagnosed with CD who developed EATL. The first patient is a 42 year-old male who was diagnosed with CD due to abdominal discomfort after meals. The patient was first treated with proton pump inhibitors (PPI) without any result. Two years after the diagnosis, the patient's general condition deteriorated. He reported fatigue, anemia as well as basophilia with eosinophilia. The Computer Tomography (CT) scan revealed a tumor within the small intestine. The patient underwent partial small bowel resection. The pathological examination of the resected specimen showed neoplastic cells consistent with EATL. Chemotherapy according to CHOEP schedule was introduced. After six courses of chemotherapy, the patient achieved complete remission. The second patient is a 44 year-old female who had a history of abdominal pain followed by vomiting which lead to the diagnosis of CD. The therapy with Budesonide was introduced. In spite of the rigorous gluten-free diet, the symptoms exacerbated. The radiological examination revealed a bowel wall thickening. The partial small bowel resection was performed. The microscopic examination in correlation with immunohistochemistry lead to the diagnosis of EATL. The patient was qualified for CHOP chemotherapy. She has undergone three courses up until now. Currently, the patient's general condition is good. The prognosis in this type of lymphoma is bad. High-dose chemotherapy followed by autologous bone marrow transplantation may improve outcomes. Therefore both patients are currently being qualified for it.

Conclusions: Despite the low incidence of EATL, with these two cases we would like to highlight the importance of diagnostic imaging in patients with coeliac disease who fail to respond to introduced treatment.

Is the fear of severity misguiding medical practitioners from a proper diagnostic trial? - IgG4-related pancreatitis Case Report

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Introduction: Type 1 autoimmune pancreatitis (AIP) is the pancreatic manifestation of IgG4-related disease (IgG4-RD) characterized by mild abdominal symptoms, obstructive jaundice, elevated IgG4 serum levels and massive infiltration of IgG4-plasma cells with obliterative phlebitis. Its similarity to more severe conditions (e.g. pancreatic adenocarcinoma) makes it often overlooked during the diagnostic process.

Case report: 64-year old male was admitted to the ER with a history of 5 days epigastric discomfort with accompanying discoloured diarrhoea and dark urine. Physical examinations revealed: jaundice, hypertension (180/90mmHg), palpable mass and sensitivity in the right hypochondrium. Due to acute cholecystitis suspicion abdominal ultrasound, CT and blood tests were ordered. Laboratory investigation revealed AST 244U/l, ALT 818U/l, bilirubin 9,68mg/dl, hyperglycemia 261mg/dl and hypokalemia 2,24mmol/l. Ultrasound showed a hypoechogenic mass lesion of the pancreatic head (42x47mm), bile ducts and gallbladder dilatation with 18mm gallstone. Abdominal CT confirmed the bile ducts dilatation and cholelithiasis. The potassium supplementation, hypotensive drugs, spasmolytics and insulin were administered. During endoscopic retrograde cholangiopancreatography, the excessive bile was evacuated and the stent was inserted. The postprocedural serum level of AST, ALT and bilirubin decreased, amylase and lipase ranged within normal limits. The further diagnosis of pancreatic mass was necessary, thus additional blood tests and MRI were ordered. The tumour markers ranged within normal limits, whereas IgG4 levels were slightly elevated (3,45g/l). MRI revealed diffusely decreased signal intensity of the pancreas, which is often associated with AIP. The autoimmune disease was also suggested by the follow-up ultrasound. EUS is ordered and will be performed in May to confirm the AIP diagnosis.

Conclusions: Pancreatoduodenectomies for benign conditions are relatively frequent and approximately 1/4 of cases are postoperatively diagnosed as AIP. Pancreatic surgery isn't recommended in case of IgG4-RD, due to its spectacular response to steroids. Therefore considering AIP during the diagnostic process is crucial for optimal therapy and avoiding unnecessary surgeries.

The case of mucopolysaccharidosis type VI in Polish family. The importance of genetic testing and genotype-phenotype relationship in the diagnosis of mucopolysaccharidosis.

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Introduction: Mucopolysaccharidosis type VI (MPS VI) is a rare, autosomal recessive lysosomal storage disorder caused by the deficient enzymatic activity of N-acetyl galactosamine-4-sulphatase which is caused by mutations in the arylsulphatase B (ARSB) gene. To date, 163 different types of mutations in the ARSB have been reported. However, the mutation spectrum in the MPS VI phenotype is still not known.

Case report: On the patient and his family members were performed molecular testing of the ARSB gene to confirm MPSVI. Molecular characterization of the ARSB gene was performed using Sanger sequencing. We studied a child suspected of having MPS VI and 11 relatives from his family. We identified a C to T transition resulting in an exchange of the Arg codon 160 for a premature stop codon (R160*, in exon 2). The transition was located in CpG dinucleotides.

Conclusions: The study provided some insights into the genotype-phenotype relationship in MPS VI and the importance of genetic testing when diagnosingMPS, which is only very occasionally performed and is not a mandatory test for the diagnosis. Additionally, we present here the history of the family with confirmed MPS VI that is extremely rare especially in south-eastern Poland. What is more, the position where the mutation is located is very interesting because it is the region of CpG, which is the site of the methylation process. Thus, this opens a new point of view indicating the involvement of epigenetic mechanism that should be examined in the context of the pathomechanism of MPS.

Surgical Case Report I

Cardiovascular-burdened patient and the classic surgical treatment of the aneurysm.

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Introduction: This case concerns a 79-year-old man with a rich medical history. Among others, atrial fibrillation; hypertension; type II diabetes; post-CABG condition; post-stroke condition; post-colorectal cancer resection; ischemic myocardial cardiomyopathy; arteriosclerosis obliterans of the lower limbs and associated claudication, after cardiac treatment of arrhythmias was done a right femoro-supragenicular popliteal bypass.

Case report: Despite such a rich medical history, it has been additionally observed a slow growth of the abdominal aortic aneurysm, june 2016 - aneurysm diameter 57mm in USG. Thus, the patient underwent an endovascular aneurysm repair (EVAR). E-tegra stent graft was used; internal iliac arteries preserved, perioperative course without complications. Unfortunately, in December 2016, a control CT scan showed aneurysm diameter enlargement to 72mm and a visible leakage. In February 2017, the first reintervention and modeling of the aneurysm's neck. Despite the reintervention, subsequent years, the aneurysm diameter has been increasing to 85mm in August 2018. This was accompanied by a leakage of type I, type II and backache. Therefore, in September 2018 was made an another reintervention. The stent graft was removed, leaving the crown and its first segment. A classical simple aortic prosthesis was implanted. The patient stayed in the hospital for 8 days, including 1 at the ICU, the operation outcome was successful. Unfortunately, the latest CT scan showed the formation of iliac artery aneurysms, which is why the patient is scheduled for the next surgery on 16/03/2020.

Conclusions: In conclusion, patients previously disqualified from classical aneurysm surgery can successfully undergo more risky and complicated procedures at a later time. In our opinion, often the classical way of surgery for aneurysms is a better choice for the patient than the endovascular aneurysm repair (EVAR).

Bezoars - nonspecific symptoms, difficult diagnosis, simple treatment

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Introduction: Trichotillomania is a mental disorder involving the pathological hair pulling, often swallowed by patients - trichophagia. This disease contributes to the formation of trichobezoars, hair balls in the gastrointestinal tract that can lead to its obstruction. If a trichobezoar in stomach has a "tail" penetrating into further parts of the digestive tract and causes obstruction, Rapunzel's syndrome can be recognized. The work presents examples of two pediatric patients diagnosed with trichobezoars.

Case report: Patient No. 1, 15 years old girl, admitted to the Pediatric Oncohematology Clinic because of suspected stomach tumor detected by abdominal ultrasound. The patient did not have an entire obstruction of gastrointestinal tract, took liquid foods, negated weight loss. After examination she was admitted to the Pediatric Surgery Clinic. For diagnosis, image tests were performed which suggested a 12x11 cm bezoar. Laboratory tests showed elevated PCT, CRP and erythrocytes in urine test. Patient No. 2, 15 years old girl, reported to Emergency Room in a severe condition due to dehydration and vomiting, with cachexia symptoms. After diagnosis of prerenal renal failure, she was admitted to the Paediatrics Clinic. The ultrasound revealed widened intestinal loops filled with liquid content and air in the hepatic portal system. In the Pediatric Surgery Clinic, CT scans showed widened jejunum and proximal ileum, but also compact masses measuring 7x5 cm, suggested bezoars. Gastroscopy revealed cardiac and pylorus dilatation also gastric mucosa abnormalities. Laboratory tests showed elevated CRP values, neutrophilia, lymphocytopenia and erythrocytes in urine test. Surgery treatment was performed in both cases. It involved removing bezoars from the abdominal cavity.

Conclusions: The aim of this case report is to show difficulties in puting the correct diagnosis, because mental illness contributes to their development, which is often negated by patients and their carers, also the ensuing creations can give non-specific symptoms that may imitate other diseases.

The most common complications of hydrocephaly on example of patient in whom a ventricular-peritoneal valve was inserted twice.

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Introduction: Hydrocephalus is a condition caused by obstruction of CSF flow which leads to progressive ventricular dilatation. The work presents the case of a patient who experienced complications during hydrocephalus treatment.

Case report: Female patient born prematurely by Ceasarian Section at 31 week of pregnancy (1200g, Apgar 6/8/9). The indication for caesarean section was placenta detachment, preeclampsia and life-threatening fetal asphyxia. Ultrasonography of CNS showed third degree intraventicular hemorrhages. Control tests revealed lateral ventricular extension. Puncture showed citosis and proteinemia. Child was qualified for a surgery. Rickhams reservoir was applied. Then when obtained positive results from general examination and negative bacteria cultures, the ventricular-peritoneal valve was implanted. The day after surgery there were two bradycardia episodes with decrease in saturation. The next day patient spiked a fever, the decrease in O2-sat and heart rate was revealed. Blood test showed decrease in pH, increase CRP and procalcitonin. Empirical antibiotic therapy was implemented. 3 days after surgery, physical examination revealed decreased muscle tone, poor spontaneous motor activity, tremors of the extremities and episodes of turn ups of the eyeballs. Postoperative CT revealed widening of the superaventricular system (Evans index - 0.45) and hypodense zones in the surroundings of the lateral ventricles. High levels of protein and Staphylococcus capitis MRCNS colonies were found in CSF. Due to infection, the valve was removed, then the Rickham reservoir was applied and targeted antibiotic therapy was implemented. After stabilization of patient condition, the CSF medium-pressure peritoneal valve was implanted with Rickham's sub-chamber.

Conclusions: Implantation of ventricular-peritoneal valves is effective, however it is fraught with numerous complications, mostly infections. The aim of this work is to show the importance of asepsis during the procedure, adequate preoperative antibiotic therapy and the reduction of time of the surgery itself to a minimum are emphasized, which reduced risk of complications.

Pott's puffy tumor as a rare extracranial complication of chronic rhinosinusitis

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Introduction: Pott's puffy tumor is described as osteomyelitis of the frontal bone accompanied by subperiosteal abscess. This condition is caused by inflammation spreading from frontal sinus to the bone directly or via blood vessels. It manifests itself as a swelling of the forehead with tenderness on palpation, often fever and poor general condition. Some of the risk factors are type 2 diabetes mellitus, head trauma and chronic rhinosinusitis.

Case report: A 47-year-old patient reported with a swelling of the forehead and subfebrile state, complaining about headache in the frontal region and left nasal cavity obstruction. The patient had suffered from chronic rhinosinusitis for many years. In April 2019 he underwent septoplasty with nasal polypectomy. In November 2019 the symptoms intensified and the swelling on the left side of the forehead and cheeks appeared. The management in a regional hospital after the CT included bilateral maxillary sinus puncture, biopsy of the swelling and intravenous antibiotic therapy – clindomycin and amoxicillin with clavulanic acid. Another CT revealed deficits in bony walls of the left frontal sinus. Pott's puffy tumor was diagnosed and the patient was admitted to the Department of Otolaryngology, Head And Neck Surgery with the aim of surgical treatment. Endoscopic sinus surgery was performed and three days later, because of only partial improvement, open surgery was conducted. The patient was discharged in good condtion, with the recommendation of targeted antibiotic therapy - ciprofloxacin.

Conclusions: Early imaging and targeted antibiotic therapy play the key role in the management of Pott's puffy tumor. They may reduce the risk of intracranial complications. The surgery is necessary. Careful postoperative care with antibiotic therapy is also crucial.

Sudden cardiac arrest due to a “frozen leaflet” phenomenon during TAVI

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Introduction: The phenomenon of stuck leaflet called the “frozen leaflet” is a rare complication of transcatheter aortic valve implantation (TAVI). It often leads to hemodynamic instability of the patient and is a life threating condition. Only seven cases of patients with a “frozen leaflet” phenomenon have been described in the literature so far.

Case report: A 82-years old women with symptomatic severe aortic stenosis (echo findings: max gradient =100mmHG, mean gradient= 60mmHg, AVA=0.7cm2) and mild aortic regurgitation was admitted to the hospital. Risk stratification was performed with EuroSCORE (6.4%) and STS (7.6%) scale and evaluated as high. She underwent TAVI from transfemoral access. A Symetis Acurate valve was implanted after prior predilatation with use of ballon catheter. After implantation of the bioprosthesis, severe central aortic regurgitation and paravalvuar leak were observed. Thus, another predilatation of the valve was performed and the paravalvular leak was reduced. However, severe transvalvular aortic regurgitation with haemodynamic instability and severe hypotension were still present. An effective cardiopulmonary resuscitation was performed. A catheter probing of the implanted prosthesis with the use of the pigtail was performed. It resulted with a complete resolution of transvalvular regurgitation and patient’s clinical stabilization. The patient was discharged on the 7th day after TAVI in good general condition.

Conclusions: Due to scarce data, the exact mechanism of the "frozen leaflet" phenomenon remains unknown. Several actions may cause the “frozen leaflet”, such as damage of the bioprosthetic valve during inflation, implantation of insufficiently dilated and deformed valve, improper placement of balloon catheter or prosthetic valve cusp entrapment due to excessive calcification of the native valve. Further examination of similar clinical cases is required in order to clearly define the problem and to determine the best procedural method to handle it successfully.

Pectus excavatum – relapse is not the end

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Introduction: Pectus excavatum is the most common congenital deformity of the chest wall. In the past, the method of choice was Ravitch procedure. Currently, the minimally invasive Nuss method is most commonly used. The aim of the study is to show the validity of reoperation in relapses of chest wall deformities and the possibility of using minimally invasive methods in such cases, which will be presented on the example of a patient from our clinic.

Case report: The patient, currently 18 years old, was admitted to the Clinical Department of Orthopedics in 2015 to perform a funnel chest correction surgery. The procedure was performed using the Ravitch method, without complications. In 2016, recurrence of chest deformity was observed. After diagnosis at the Pediatric Surgery Department, the patient was qualified for the Nuss surgery. A metal plate was implanted under thoracoscopic control and the adhesions in the retrosternal space were separated. A month after the procedure, the patient reported pain due to the radiographic evidence of the dislocation of the plate. The disc was moved under scopia control. Intraoperatively, significant chest intolerance was found. Double-sided stabilizing crossbars were installed, and the plate for ribs was reinforced. Right-sided pneumothorax and hematoma on the anterior surface of the right lung were present postoperatively. In 2019, the plate dislocated again. The incorrectly positioned plate was removed and two new stabilizing plates connected by a crossbar were implanted by thoracoscopic method. Within six months of the operation, the patient did not report any discomfort. The patient remains under control of the Pediatric Surgery Clinic and physiotherapists.

Conclusions: The recurrence of pectus excavatum is not a disqualifying factor for the minimally invasive surgery. By using the appropriate modification of the method and with experience of the surgical team, a satisfying final result can be achieved.

“Stones” under the skin - extensive calcinosis cutis associated with mixed connective tissue disease

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Introduction: Calcinosis cutis (CC) is a rare disease characterised by subcutaneous deposition of stone-like insoluble forms of calcium. It may be restricted to a single phalanx or apparently involve a vast area of the limbs and trunk. Various factors may trigger the appearance of the calcifications, such as skin trauma or abnormal calcium and phosphate metabolism. The most common is dystrophic type, usually associated with connective tissue diseases.

Case report: We present a case of a 49-year-old woman diagnosed with mixed connective tissue disease (MCTD), who was referred to a surgical ward due to large bilateral calcifications of tights and gluteal region. The patient was treated for MCTD from her early thirties, presenting periodical systemic lupus erythematosus and vasculitis. The first hard nodules formed on the chin four years earlier and later they started to appear on the buttocks and tights. The lesions were enlarging over time and opening on the skin surface with appearance of a whitish discharge, which often lead to superinfections. Eventually affecting joint surfaces, lesions caused pain and difficulties in movement. No renal insufficiency (GFR>90) or abnormal serum calcium and phosphate levels were detected. Largest calcifications from buttocks were surgically removed and no complications were observed. Moreover, genetic tests were performed.

Conclusions: CC is a debilitating condition that may lead to systemic implications and disability, therefore it decreases patient’s quality of life. This disease can be managed by surgery, pharmacotherapy and other techniques, however skin incrustations are often recalcitrant to treatment. Severe calcifications occur rarely in MCTD and such were previously reported only in around a dozen of patients. On the contrary to our case, the treatment in these cases was not fully successful or even not applied. Our patient is the first case when genetic tests were conducted and the suspicion of underlying genetic factor was made.

Is multiannual inguinal hernia a challenge for surgeons?

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Introduction: Inguinal hernia is the most common abdominal one and constitutes 75% of all anterior abdominal wall hernias. Currently, the Lichtenstein repair is a gold standard for inguinal hernia, that minimalizes the risk of recurrence below 1%. Large scrotal hernias are considered a challenge for surgeons due to increased risk of recurrence and perioperative complications.

Case report: A 56-year-old man diagnosed with a giant right scrotal hernia was qualified for Lichtenstein repair. In the past, he underwent left inguinal herniorrhaphy. His past medical history revealed the operation of left-handed scrotal hernia. Based on preoperative computed tomography 2/3 of small intestine, cecum, descending colon and half of a transverse colon were revealed as a content of hernia sac. The procedure was performed under general anesthesia. Intraoperatively, destroyed posterior wall and deep inguinal ring with large scrotal hernia was revealed. Scrotal sac was opened and its contents were reduced into abdominal cavity. A substantial segment of omentum was resected due to increased risk of intra-abdominal hypertension and respiratory insufficiency. The peripheral scrotal sac was left in scrotum, proximal part of scrotal sac was resected and firmly ligated. ProGrip (15cm x 9cm) mesh was applied in typical position after reconstruction of posterior wall of inguinal canal. None complications were noted. The patient was discharged five days after the operation in good general condition.

Conclusions: Long-lasting indirect inguinal hernia without professional health care might lead to scrotal or labial hernia. Operation of giant scrotal hernia is associated with increased risk of perioperative complications caused by intra-abdominal hypertension and respiratory insufficiency. In some clinical scenarios resection of omentum is needed. To minimize the risk of perioperative complications, repair of complicated hernias should be performed in reference centers.

Elderly patient with bowel ischemia

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Introduction: Acute mesenteric ischemia (AMI) is a rare disease, with incidence of 0.09% to 0.2%. The cause of this condition is sudden interruption of the blood supplying intestine. This process is leading to ischemia, cellular damage and necrosis. The incidence of AMI is increasing due to aging process, comorbidities including cardiac arrhythmias, low cardiac output, congestive heart failure or infarction. According to worldwide and national sources it is associated with a mortality of 60-80% up to over 90%. Uttermost influence on a therapy is early diagnosis and efficient treatment.

Case report: 80-year-old male with a history of atrial fibrillation was presenting abdominal pain from several days. It aggravated for a few days with no reaction after NSAID. The patient reports constipation. No medication admitted. As part of his emergency room the patient had a chest and abdomen X-ray. This revealed a distended intestinal loops. In laboratory findings only NT ProBNP increased level. Exploratory laparotomy was made which revealed totally necrotized large intestine and segmentally changed small intestine. Surgery was withdraw as a consequence of distress and fatal prognosis. Patient wa provided only a palliative care. He died day after surgery.

Conclusions: This case demonstrates several key features in the evaluation of an elderly patient who is admitted with mesenteric ischemia. Presentation of symptoms especially with elderly is really poor and not clear. The diagnose should be a combination of clinical and imaging elements, sometimes even minimally invasive. In some case, even if treatment is prompt the range of necrosis results lack of success. If irreversible changes and poor prognosis are found doctor should consider cons of operation and its consequence. If region of surgery is extensive the decision about palliative therapy should be used especially dulling pain, instead of futile medical care.

Rare small intestine adenocarcinoma

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Introduction: Small intestinal neoplasms, despite the large size of this organ, occur sporadically However, primary malignant tumors of the small bowel represent only 1–3% of all malignant gastrointestinal tumors. According to the National Cancer Registry in Poland, 220 cancers of this organ were recorded in 2009 whereas 3 595 new cases of SBA are found each year in Europe. There is a slight male predominance and median age at diagnosis ranges from 50 to 70 years. At early stages, small intestine cancers are detected accidentally because they remain asymptomatic for a long time. The first symptoms of the disease are not specific. Patients report abdominal pain worsening after a meal, nausea, vomiting, weight loss and weakness. Small intestinal neoplasms can lead to gastrointestinal obstruction. Surgery is the main therapeutic strategy for localized disease.

Case report: 43 year old patient was admitted to Internal Medicine Department with history of remitent hypogastric pain with observed weight loss. Because oof advanced diagnostic procedure such as gastro- and colonoscopy, TK imaging, USG of abdomen he was transferred to Surgery Department where surgery was preformed. Ileum tumor was resected afterwards patient was in good condition.

Conclusions: Small bowel cancer is an infrequent condition. Symptoms are non-specific so You need to be vigilant during diagnostics. It is possibility of complete tumor resection, routinely resection of the affected bowel segment with healthy tissue margins. Surgery is effective method of radical treatment.

Diagnostic difficulties of chronic abdominal pain.

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Introduction: I will present the case of a patient with chronic abdominal pain caused by critical narrowing of the superior mesenteric artery and, as a result, intestinal ischemia.

Case report: A 75-year-old patient with bronchial asthma, hypertension, cholecystectomy and gastroesophageal reflux reported to the internal medicine department on 28/2/2019 due to abdominal pain lasting about 2 years and significant weight loss. The pains appeared unrelated to food intake, they also occurred at night and were diffuse. Because of pain, the disease reports a decrease in appetite. Abdominal ultrasound showed no abnormalities. Gastroscopy and colonoscopy were performed, resulting in erythematous gastropathy and numerous sigmoid diverticula. In the CT of the abdominal cavity with contrast, in the right iliac pit in the caecum area single bands with increased fat density - suspected inflammatory or post-inflammatory changes and calcification at the bottom of the uterus. Diagnostics were extended to MR biliary tract, as a result of which the presence of deposits was excluded. No irregularities were found in laboratory tests. Due to suspicion of an appendic abscess, a surgical consultation was requested. The patient did not require surgical intervention and was discharged home in good general condition. A year later she was re-admitted to the ward due to the continued persistence of non-specific abdominal pain and further weight loss. Another CT scan was performed, in which, apart from previously described abnormalities, critical stenosis of the proximal visceral sections and the superior mesenteric artery was found. Percutaneous upper mesenteric artery angioplasty with a 6x19 mm stent was performed with a very good effect. The postoperative period went without any complications.

Conclusions: Diagnosis of abdominal pain is very difficult and can be long-lasting. The multitude of symptoms and non-specificity of pain means that the diagnostics can last up to 2 years and sometimes require the cooperation of several specialists.

Individualised surgical treatment of an advanced Gastrointestinal Stomal Tumour – case report

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Introduction: Gastrointestinal stromal tumours (GIST) are the most common mesenchymal gastrointestinal tract neoplasms. They usually localize in the stomach or small intestine, originating from the interstitial cells of Cajal, which play a crucial role in autonomous gastrointestinal movement. They represent a spectrum of changes ranging from small and benign to aggressive and massively metastatic. As the symptoms of GIST are non-specific, many patients do not seek proper medical help until the neoplastic process reaches its metastatic stage.

Case report: In this study we present a case of a 55-year-old woman, who was referred to our clinic with a 3-months history of discomfort in the abdomen. PET-CT revealed massive neoplastic infiltration of the gastric wall, as well as peritoneal and hepatic metastases. Immunohistochemical staining of a tissue from a liver metastasis confirmed the markers characteristic for GIST including CD117 and DOG1. As a radical operation was not possible, continual chemotherapy with imatinib was administered, however, in two years' time, the neoplasm became immune to the medication and progressed. Furthermore, control gastroscopy showed a spot of changed tissue on the inner surface of the stomach associated with the large, submucosal tumour. Second-line treatment with sunitinib was introduced, yet there were no signs of remission and CT revealed that a fistula in the damaged gastric wall has developed. In order to prevent the symptoms wedge resection of the stomach with primary tumour was performed. No complications were noted. After the surgery patient's condition improved and CT with contrast performed 3 months later confirmed further shrinking of the tumour.

Conclusions: GIST, while it might be asymptomatic, is a dangerous disease and may lead to serious complications. Effective therapy of such a condition requires balance between surgical and chemotherapeutical treatment. In similar case, salvage surgery might create a chance for the patient to return to the targeted therapy.

Accidental caustic ingestion injury.

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Introduction: 26 000 cases of caustic ingestion injury are reported annually in the United States, of which approximately 9 000 concerns adults. Chemical burns of the gastrointestinal tract can be accidental or intentional and depend on the type of substance, consumed amount and time of exposition.

Case report: A 27-year-old male patient was admitted to the department of Thoracic Surgery in order to assess the severity of gastrointestinal chemical burn after accidental ingestion of the cleaning agent. Due to bad general condition of the patient, computed tomography of the chest, abdomen and pelvic cavity was performed. The CT scan revealed the intramural gas bubbles in the esophagus and stomach, without any evidence of perforation. Because of the presence of extensive burn in the area of the tongue, epiglottis, middle and lower pharynx the tracheotomy must have been performed. The patient had been qualified for conservative treatment (antibiotic and anti-ulcer therapy) and transferred to the surgical department, where radiological improvement was observed. In the fourth week of hospitalization, the patient's condition worsened. Another CT scan showed the presence of gastric and duodenal perforation and spleen hematoma. Splenectomy and gastrectomy had been accomplished, and the patient was subsequently transferred back to the department of Thoracic Surgery for esophageal resection with salivary fistula formation and jejunostomy. On the first postoperative day, the patient was transferred to the Intensive Care Unit, where he underwent recovery and self-feeding education. Esophageal restoration surgery is planned.

Conclusions: Caustic ingestion injury is a life-threatening condition which is associated with complications such as perforation, gastroenterological, respiratory bleeding or respiratory obstruction. To long-term consequences include also esophageal stricture, esophageal-tracheal fistula and gastroesophageal reflux disease.

Surgical Case Report II

Genetic unfolding: Rare overgrowth syndrome and Wilms tumor in a 3-year old boy – a case report and review

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Introduction: Simpson-Golabi-Behmel Syndrome (SGBS) is a rare X-linked recessive disorder, which increases risk for malignant neoplasms by 10%. In this report, we discuss the outcome of treatment and future prognosis of a 3-year old child with Wilms tumor due to underlying SGBS.

Case report: The child was diagnosed in recent months with SGBS and referred to Pediatric Surgery, after a prophylactic ultrasonography raised suspicion that he may have a Wilms tumor. CT showed a 21x 26mm ovoid solid mass in the right kidney that distorted the hilum and no evidence of metastasis. The general condition of the patient was good. Planned nephrectomy of right kidney was decided, due to hilar location of the mass and to reduce intra-operative spillage. Post-operation, histopathologists established the mass to be Wilms tumor of blastemic origin. Such diagnosis required: port placement for further chemotherapeutic treatments, flank radiation for the mild spillage intra-operation, and planned future surveillance for a high recurrence rate of Wilms in the child within the next 2 years.

Conclusions: Although Wilms tumor prognosis has significantly increased (>90%), one should remember that overgrowth syndromes pose a considerable risk for recurrence. This report emphasizes the benefits of prophylactic screening and the precautions implemented in tumor removal, which protect children that have >5% risk for recurrence.

Perforation of the appendix in a 3 week old girl

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Introduction: Appendicitis, although it occurs generally between 6 and 10 years old, can occur in any age group.

In newborns this condition is extremely rare (40:100 000 live births). There is no known etiology in this age group. It is often confused with NEC (necrotizing enterocolitis), due to non-specific symptoms such as flatulence (89%), vomiting, abdominal tenderness (48%), anxiety or lethargy (36%) and fever. The diagnosis is delayed in time and often made intraoperatively or postoperatively (85% during laparotomy). Perforation of the appendix has a high mortality. It ranges between 25 and 80%. Probably such a high mortality results from prematurity (about 50% of newborns with perforation), lack of characteristic symptoms, late diagnosis, a high percentage of perforation and comorbidities. This disease is disturbing because the incidence of complications associated with perforated appendicitis is greater as opposed to non-perforated appendicitis.

Case report: The authors will present the case of a 3-week-old girl, who was admitted to hospital due to vomiting with gastrointestinal and subsequent biliary contents. The child at the time was suffering, fretful. Physical examination revealed increased muscle tension, tachycardia, tense and tender palpation, and lazy intestinal peristalsis. In the laboratory tests parameters of the inflammation were normal. In imaging tests without pathological changes. After a surgical consultation, the patient was referred to the Operating Block as a matter of urgency, where gangrenous, perforated appendicitis and purulent peritonitis were found intraoperatively.

Conclusions: Inflammation and perforation of the appendix is a condition rarely seen in newborns and can be a direct threat to life. Therefore, it should always be taken into consideration, when there are no characteristic gastroenterological symptoms, even though there are no changes in medical tests. Appendicular perforation in children under 1 month of age occurs in less than 0.01% of cases of appendicitis.

Kidney cancer in young adults: a series of three cases.

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Introduction: Kidney cancers comprise 3% of all malignant neoplasms in Poland. It affects men more frequently than women. Apart from certain types such as Wilms' tumor, the usual age of onset is 45 years or more. Smoking, obesity, hypertension, painkillers overuse, exposition to certain toxins such as nitrozamines as well as a number of genetic disorders, including von Hippel-Lindau disease, have been considered risk factors for the disease. Treatment consists mainly in surgical excision of the tumor.

Case report: We report a series of 3 patients hospitalized for renal cancer in the Department of Urology in Jozef Strus Municipal Hospital in Poznan, Poland in 2019. Patient 1 was a 28-year-old woman with a painful Bosniak III renal cystic lesion in her right kidney found during a routine ultrasound examination in gestation. Patient 2 was a 37-year-old man. He was a physical worker with left flank pain that he attributed to excessive lifting. A tumor in his left kidney was found accidentally when he contracted cystitis. Patient 3 was a 34-year-old woman. A tumor in her left kidney was found accidentally on MRI scans performed due to sciatica. Patients 1 and 2 underwent total nephrectomy and the patient 3 – tumorectomy.

Conclusions: Kidney cancer is usually diagnosed in patients aged between 50 and 70. Nevertheless the presented cases show that every age cohort is at a potential risk. Unfortunately, in initial stages kidney cancer seldom demonstrates any clinical signs. Early detection of renal cancer reduces the risk of radical nephrectomy, which may lead to end-stage renal disease and, consequently, to cardiovascular events, hemodialysis and reduced quality of life. Our patients, along with the majority of all affected individuals in Poland, were diagnosed accidentally. For this reason, we encourage all physicians to perform imaging examinations, such as sonography, more frequently.

Simple peritoneal cyst or post adnexectomy implantation of ovary tissue in peritoneum – a case report

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Introduction: An adnexectomy (ovary removal surgery) can be performed applying laparotomic techniques. In this surgical approach, the surgeon makes an incision in the patients' lower abdomen to obtain access to ovaries. After ligation of vessels and soft tissue dissection removal of ovary is made. Possible complications of the procedure are the spread of potentially cancerous cells and implantation within the peritoneal cavity as well as the formation of wound metastases in the abdominal wall.

Case report: The case of a patient who in a routine examination showed a two-chamber simple cyst (dimensions: 44x46x41mm) that was located on the peritoneum. The finding has an artery and a vein seen in sonography. The pathology is not accompanied by any other abnormalities such as pain, hormonal disorders or an increase in the concentration of tumor markers in the blood. It is speculated that the lesion originates from previously removed ovaries in laparotomy procedure, the remains of which may have implanted in the peritoneum. The cause of the operation were bilateral cysts of the ovaries. The history of patient operations includes conservative myomectomy, radical hysterectomy due to uterine bleeding, two cesarean sections, abdominal and hiatal hernia surgery. The patient undergoes regular ultrasound scans which results are compared to IOTA regulations, and tumor markers are regularly tested (ROMA test). Taking into account frequent abdominal surgeries, the fact that the patient has polypropylene mesh implantation and anesthesiological contraindications, the implant, inferred to be benign, is not qualified for the removal.

Conclusions: It seems possible to implant simple cyst cells from organs of the abdominal cavity and ovaries into the peritoneum during laparotomy. The most probable origin of the cyst are ovarian cells. Regular gynecological follow-up visits in patients with extensive medical history are essential in preventing life-threatening progression from occurring.

Extensive lymphatic malformation of the head and neck causing life-threatening complications - case report

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Introduction: Lymphatic malformations are rare vascular tumors, most involve the head and neck. They are usually diagnosed before the age of 2. Surgery is difficult due to the proximity of important anatomical structures and the potential cosmetic effect. The cavernous type reaches considerable sizes and consists of dilated lymph filled structures. Treatment includes surgery, sclerotherapy and laser therapy.

Case report: A five-month-old boy was admitted to the Department of Pediatric Surgery to continue treatment. The patient was born in the 40th Hbd with extensive lymphatic malformation. The lesion was found postnatally, covering the right cheek, eyelid, oral cavity and neck. During previous hospitalizations surgical decompression of the largest fluid compartments, obliteration with hyperosmotic glucose solution, double picibanil (OK-432) sclerotization and partial tumor mass reduction were performed. The lesion tended to recur locally despite the treatment used. During the presented hospitalization the boy was qualified for the next step surgery. Before the procedure, difficult intubation was encountered, despite the presence of an experienced anesthesia team. Intraoperatively the lesion was removed subtotally to the maximum possible extent using neuromonitoring. On the third postoperative day, spontaneous broncholaryngospasm occurred during the planned endotracheal tube replacement. Despite reintubation attempts, a 30-minute cardiac arrest occurred, ending with successful resuscitation. Due to the intensive emergency treatment, the patient survived, however, hypoxic encephalopathy developed, manifested as spastic tetraplegia.

Conclusions: The presented case shows that usually minor lesions can cause some life-threatening complications. In case of extensive tumors, the prognosis is uncertain and often total resection is impossible due to the risk of deformity and functional impairment. Multidisciplinary care and vigilance are necessary. Potentially dangerous complications may result from the direct mass effect of the lesion and from the treatment used. In severe cases, improving the quality of life is more important than the cosmetic effect.

Endometriosis as a diagnostic and therapeutic challenge

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Introduction: It is estimated that 1 983 982 women in Poland suffer from endometriosis. On average, before a woman is diagnosed, she consults with 10 doctors, and the time for the final diagnosis is usually 8 years. Endometriosis is a disease in which cells similar to those in the endometrium, the layer of tissue that normally covers the inside of the uterus, grow outside of it.

Case report: A 27-year-old woman came to a gynecologist because of increasing pain during menstruation, which interfered with her daily functioning. She was referred to the hospital with suspected pelvic endometriosis. Laparoscopy was performed, diagnosed: CPP, pelvic adhesions, pelvic endometriosis. Prescribed drug therapy (Zoladex 3,6 mg). Due to recurrent symptoms CT scan was performed, suspected the presence of an endometriosis focus. The MR image showed no tumor lesions in the pelvis, no focal lesions. Rectal ultrasound showed no abnormalities. Due to discrepancy in imaging, the patient had the MRI scan – the results showed fibrous endometriosis focus in the colon area. Her doctor discontinued drug treatment and recommended a consultation at a pain clinic and the introduction of natural treatment. In the meantime consultations with a urologist and surgeon were planned. Patient performed second MRI – which revealed foci of endometriosis in the soft tissues of the pelvis and the wall of the uterus. Supracervical amputation of the endometrium with fallopian tubes on both sides was performed. Histopathological examination confirmed the suspicion of endometriosis and adenomyosis. The patient takes medicines every day. She attends visceral therapy. Pain symptoms occur sporadically and do not affect daily functioning.

Conclusions: Endometriosis is one of the most common gynecological diseases, there are still challenges concerning diagnosis and treatment. Multidisciplinary team is essential in optimizing patient management.

Leadless pacemaker implantation in the patient with repaired Tetralogy of Fallot - case report

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Introduction: Tetralogy of Fallot (ToF) being the most common cyanotic congenital heart disease accounts for 3-5% of infants with congenital heart defect. This disease consists of the following features: large ventricular septal defect, right ventricular outflow tract obstruction, right ventricular hypertrophy and overriding of the aorta. This combination of defects results in decreased level of oxygenated systemic blood. The treatment of choice remains surgery. However, there is the great risk of developing tachyarrhythmias and bradyarrhythmias in ToF patients.

Case report: We report the successful implantation of MicraTM Transcatheter Pacing System (Micra TPS, Medtronic, Minneapolis, MN, USA) in a 21-year-old patient with repaired ToF who was admitted to tertiary cardiology center in order to replace pacemaker, which she had inserted owing to sick sinus syndrome and II grade atrioventricular block during her second year of life. The Heart Team qualified the patient for leadless pacemaker implantation. An access via right femoral vein was obtained with 23 Fr sheaths. Micra was fixed into upper part of the interventricular septum. Implantation was free of complications. During 2- year follow-up the patient was in general good condition with proper device parameters.

Conclusions: The leadless pacemaker implantation could be effective and feasible treatment of patients with Tetralogy of Fallot. Nevertheless, the Micra requires more clinical experience and studies with a larger cohort.

Implantation of a leadless pacemaker as an answer to recurrent skin reactions to a classical pacemaker

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Introduction: Despite the most careful choice of materials for cardiac implantable electronic devices hypersensitivity reactions are still being observed. Different approaches to this problem have been described, sometimes these reactions can be self-limiting but most often the device must be ultimately removed. However a vast majority of patients require pacemaker reimplantation. We present a case of the newest pacing technology use as an answer to recurrent skin reactions - a leadless pacemaker.

Case report: The case concerns a 24-year old patient with recurrent skin reactions to a dual chamber transvenous pacemaker, implanted due to third-degree atrio-ventricular block. First skin reaction occurred during one of the scheduled pacemaker controls. The symptoms were: skin redness, swelling, pain, and they resolved spontaneously. Another skin reaction was noted after over 2 years and manifested as skin redness with swelling. Pocket revision was performed with pacemaker replacement in subpectoral region. In postoperative period no complications were observed although after one month from device reposition symptoms such as thinning of the skin, purulent discharge and fistula in the pocket of the device were recognized. Again, local condition improved spontaneously. Recurrence of symptoms took place 3 months after revision and manifested as pain and bruising. Despite of implemented pharmacotherapy the device had to be removed. Pacemaker removal was performed with subsequent implantation of leadless MicraTM Transcatheter Pacing System (Micra TPS, Medtronic, Minneapolis, MN, USA). No complications during follow up were observed.

Conclusions: A leadless pacemaker might be a promising solution for patients with recurrent allergic reaction to a transvenous pacemaker. There is a lack of guidelines for management in patients with recurrent hypersensitivity to a pacemaker and this issue requires more researches.

Recurrence of uncommon type III endoleak after many years of thoracic aneurysm endovascular treatment.

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Introduction: A prevalence of thoracic aortic aneurysms is 5.9-10.4 cases per 100 000 person-years and is comparable for men and women. The introduction of thoracic endovascular aortic repair (TEVAR) to routine clinical practice has enabled to perform exclusion of aneurysm sac applying minimally invasive approach. Endovascular treatment is associated with markedly reduced mortality, postoperative morbidity and shorter in-hospital stay compared to open surgical methods. Unfortunately, TEVAR may be linked to higher incidence of secondary interventions, thus regular follow-up is obligatory.

Case report: A 71-year old patient, with a history of numerous percutaneous coronary interventions, implantation of permanent pacemaker, persistent atrial fibrillation and two previous TEVAR procedures was admitted to hospital with chest pain. In 2008, computed tomography angiography (CTA) revealed large descending aortic aneurysm with maximal diameter of 13 cm. During primary TEVAR, two segments of stent grafts were deployed. A postprocedural course was uneventful and the patient was discharged on the 8th day. Nine years later, the follow-up CTA (when the patient stayed asymptomatic), disclosed type III endoleak due to disconnection of the proximal and distal segments. An emergency repeat TEVAR was performed and another stent graft (of 38 mm in diameter) was implanted with good angiographic result. Unfortunately, two years after re-TEVAR patient was again admitted to hospital, this time with chest pain, and required implantation of one more stent graft due to recurrence of type III endoleak.

Conclusions: Minimally invasive methods of treatment of descending aortic aneurysms are safe and should be considered especially in elderly high-risk patients with concomitant disorders. However, regular CTA follow-up is mandatory to diagnose possible asymptomatic local complications such as endoleaks. Endovascular treatment of type III one is possible and it seems to be relatively safe.

Facial nerve palsy as the first and the only manifestation of the congenital cholesteatoma: case report

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Introduction: Congenital cholesteatoma is a rare lesion, located behind the preserved eardrum in the middle ear. It develops slowly and may be asymptomatic for years. Growing, it can cause destruction of the auditory ossicles and temporal bone. Symptoms depend on the destruction of individual structures and may include hearing loss and paresis or paralysis of facial nerve.

Case report: In February 2019, a 20-year-old female reported to the emergency department with symptoms of peripheral left facial nerve palsy. Otoscopy was performed and showed no abnormalities. The patient denied hearing deterioration. Bell's palsy was diagnosed. Dexamethasone injections were prescribed. Due to lack of improvement in the patient's clinical condition MR was performed. It revealed no aeration of left temporal pyramid's pneumatic cells. Despite that, further examinations were discontinued and treatment was continued without clinical improvement. In January 2020, otolaryngological consultation took place and due to suspection of chronic otitis media CT scan was performed and showed massive inflammatory lesions of the left middle ear with features of bone destruction of left temporal pyramid's pneumatic cells, the facial nerve canal dehiscence and the lack of stapes suprastructure. The patient was urgently referred to the PUMS Otolaryngology Clinic for surgical removal of a lesion in the middle ear. Left ear tympanoplasty in closed technique with double access was performed. Postoperative diagnosis was a non-inflammatory otitis media and extensive congenital cholesteatoma of the left middle ear with peripheral facial nerve palsy. The material was sent for histopathological examination.

Conclusions: In this case, facial nerve palsy was caused by rare diagnosis of congenital cholestaetoma. Therefore, it is relevant to insightfully search for the cause of this condition. Attention should be paid to the diagnostic difficulties of congenital cholesteatoma. Rapid actions may reduce a risk of cholestaetoma's complications such as permanent facial nerve paralysis and permanent hearing loss.

Giant ovarian serous cystadenoma - case report.

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Introduction: Ovarian tumours are a heterogenous neoplasms with a varied morphological and histological features resulting in frequent diagnostic problems. Determining histological pattern is essential to administer the optimum treatment and define the prognosis. Ovarian cancer is primarily a disease of postmenopausal women. Therefore, increased oncological alertness among this group is required.

Case report: 66-year-old patient presented to her primary medical doctor complaining of abdominal distension and recurrent pain. Abdomen ultrasound revealed large cystic lesion with septum. CT scan confirmed fluid-filled cyst measuring approximately 22,5x22x15 cm, arising from the left ovary. On the admission to the hospital calculated ROMA was 31,930 %. A surgical exploration by laparotomy was performed and numerous adhesions alongside with giant, totally cystic, vascularized and smooth mass located within retroperitoneal space were encountered. Intraoperative histological examination confirmed serous cystadenoma diagnosis. Both tumour and appendages were removed successfully. However, partial bowel resection (15 cm) had to be performed to assess the extent of the tumour spread. Broad spectrum antibiotic therapy was administered and patient was discharged home in overall good condition after 7 days of observation.

Conclusions: The peak incidence of ovarian serous cystadenomas is at the 4th to 5th decades of life. Regular pelvic examination in women who are menopausal and postmenopausal enable detection of suspicious masses at the early stage of differentiation. It affects the size of surgery field and lowers the probability of consequent complications. Further therapeutic strategy is based current scans and tumour markers level. Taking into consideration that such a lesion may be malign tumour, radical removal is a standard procedure in cases similar to presented.

Penetrating vertebral artery injury by a stab wound managed with use of endovascular methods.

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Introduction: Vertebral arteries are the main blood supply to the posterior cerebral circulation and their every injury is associated with risk of serious complications including brain infarct or intracranial haemorrhage. Vertebral artery injury most commonly occurs as a result of a blunt trauma. Penetrating injury to the artery is very rare but often very dangerous and associated with high mortality rate.

Case report: The patient is a 56 year old male who sustained multiple knife stabs to the trunk and face as a result of an argue during an alcohol libation. He remained in stabile state, conscious and presenting no neurological symptoms and was transported to a hospital where he underwent trauma scan. It revealed a foreign body, most likely knife blade, stuck in a cervical spine and directly penetrating into the area of left transverse foramen and vertebral artery. After necessary securing his wounds the patient was transported to the neurosurgery department where digital subtractive angiography was performed to assess an extent of the damage to the vertebral artery. Angiography showed the foreign body was in direct contact with left vertebral artery and the tip entering its lumen. No contrast agent leakage however was noticed. Due to patent contralateral vessel, the decision was made to embolise the injured artery using multiple endovascular coils placed distally, proximally and at the level of injury. Next, the patient uderwent open surgical procedure during which the broken knife blade was removed. No excessive arterial bleeding occured. The postoperative course was uneventful.

Conclusions: In case of penetrating wounds careful imaging diagnostics is required to identify possible damages to vessels and plan further treatment. Endovascular embolisation of injured vertebral artery is safe and effective method to maintain bleeding control during open surgical procedure and foreign body removal.

Uterine tumor mistaken for twin pregnancy - a case report.

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Introduction: Up to 10% of all uterine sarcomas are endometrial stromal sarcomas. Although it is mainly diagnosed in the age group of 40-50 years old, the number of cases reported in younger women seems to be increasing rapidly. ESSs classification is based on cell morphology and mitotic count into low-grade and high-grade tumors.

Case report: A 27-year-old female presented to the Gynecology Outpatient Clinic due to massive uterine bleeding. Ultrasound examination showed extended endometrium with hypoechoic fluid. Abnormal twin pregnancy was diagnosed and patient was admitted to the hospital. β-hCG test was negative. During endometrial abrasion procedure suspicious mass of uterine was found. Assumed to be the stromal myoma. It was treated with GnRH agonist. Histopathological test was not clear due to scanty biopsy material. After three months of observation and hormonal therapy patient underwent a hysteroscopic removal of tumor. Histopathological examination revealed endometrial stromal sarcoma. Additional cytogenetic test was performed and YWHAE-FAM22 gene fusion characteristic for high grade EES was found. After total abdominal hysterectomy with bilateral salpingo-oophorectomy patient underwent combined chemotherapy. Currently hormonal therapy is advised.

Conclusions: It is challenge to diagnose ESS correctly. Clinical manifestation is nonspecific, with wide range of symptoms such as abnormal uterine bleeding, pelvic mass or abdominal pain. Well-prepared, representative biopsy material is necessary for correct diagnosis. Cytogenetic tests enable to distinguish low and high grade tumors. A prompt diagnosis and timely intervention are keys to success, especially in oncology cases. Hence, it is necessary to consider this diagnostic despite the nonspecific symptoms even in younger women.

Slipped capital femoral epiphysis – the importance of early diagnosis and treatment

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Introduction: Slipped capital femoral epiphysis (SCFE) is a common hip disorder in adolescents. The average incidence is 10.8 per 100 000 children 8 to 15 years of age. The disease consists in posteroinferior displacement of the femoral head on the femoral neck, through the weakened epiphyseal plate. It is often associated with obesity and accelerated growth. The common symptoms are pain in the hip, groin, thigh or knee and antalgic gait.

Case report: A 15-year-old boy with obesity presented with pain in the left hip of 3 month's duration. Physical examination revealed positive Drehmann's sign and limited range of motion in left hip joint. Radiological evaluation showed a moderate slip of proximal femoral epiphysis on the left side (epiphyseal shaft angle of 50°). This was an indication for surgical hip dislocation. Subtle lesions revealed on the right side corresponded to imminent SCFE. The patient underwent surgical dislocation of left hip joint. After reposition, the epiphysis was stabilized with cannulated screws. To prevent further displacement of epiphysis in right hip joint, in situ fixation was performed. After one year, the patient presented with correct range of motion in both hip joints. He was able to walk without pain. Screws were removed after the epiphyseal plates were closed.

Conclusions: Due to non-specific, misleading symptoms, the diagnosis of SCFE is often delayed. SCFE should be considered in children who present with limping and pain in lower extremity. These patients should be urgently evaluated with bilateral hip radiography.

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