INTERNATIONAL STUDENT CONGRESS

ABSTRACT
BOOK
2023

ISC 2023

Dear participants of the ISC 2023,
our team was able to welcome over 120 students from 33 countries this year. I want to thank our sponsors, especially the medical university of Graz and vice rector of studies and teaching Mag. Dr. Vogl for all the support.
I want to say a big thank you to all the ISC team members for all their great ideas, time and effort they put into the congress.
We already received a lot of positive feedback from you, the participants and from our prof chairs! Thank you so much for your great presentations and all the interesting talks. I hope you enjoyed the congress and the social program as much as I did and were able to get to know our lovely city Graz. We would love to see you again next year !

Lars Schäfer
ISC President 2023

MEET THE TEAM

THE PEOPLE WHO MAKE UP THE ISC

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ISC 2023

Friday

Pediatrics
Oral Session

Two images, one patient. The bewildering difference between radiological implications and clinical picture - case report.

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Introduction: Head trauma is a major danger for the developing central nervous system of children. It may cause a major nervous impairment affecting the rest of patients' life. However - pediatric patients have a great regenerative capacity and even complex injuries may have a relatively mild clinical outcome.

Case presentation: The patient was a 16-year old traffic accident victim admitted to the emergency department. Due to multiple injuries a CT polytrauma protocol was performed. Scans showed a brain hematoma over the right cerebral hemisphere, signs of subarachnoid hemorrhage, cerebral edema with signs of intussusception under the sickle and into the foramen magnum. Fracture of the occipital bone on the left side, with a subcapsular hematoma. The follow-up CT scan after trepanation of the skull and removal of the subdural hematoma on the right side showed visible hemorrhagic foci. In addition, an increase in cerebral edema was observed with entrainment of brain tissue through the craniotomy opening. One year after the injury MRI showed a further evolution of the post-traumatic changes - enlargement of malastic cavities surrounded by a zone of gliosis within the right frontal and temporal lobes and progression of dilatation of the ventricular system. However, the patient was able to sign the consent for this MRI.

Conclusion: We should not always trust the presumptions based on radiological imaging, while thinking of a possible clinical outcome. This case presents the incredible plasticity of the nervous system in pediatric patients, whose imaging suggests the presence of much deeper neurological deficits.

A 5-year-old boy with a rare tumor in the abdomen - a case report.

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Introduction

Ganglioneuroblastoma (GNB) is a neuroblastic neoplasm originating in the adrenal medulla or extrarenal sympathetic ganglia, which has features of a well-differentiated low-grade tumor - ganglioneuroma, and a poorly differentiated high-grade tumor - neuroblastoma. The clinical picture is nonspecific and often manifests as abdominal pain and symptoms of pressure on adjacent structures.

Aim

To present a clinical case of a child with nonspecific gastrointestinal symptoms as the first sign of neoplasm.

Case report

A 5-year-old boy was admitted to the Emergency Department with severe abdominal pain. He had been having episodes of constipation and worsening pain for 3 months. An abdominal X-ray showed features of intestinal obstruction. Abdominal ultrasound showed a heterogeneous, pathological mass modeling the upper pole of the left kidney. A left adrenal tumor measuring 5x6x5 cm was confirmed on a computed tomography scan, which also showed enlarged periaortic lymph nodes and vertebral lesions. Based on imaging studies, a neuroblastoma-like lesion was suspected. The boy underwent an adrenalectomy and bone marrow biopsy. Histopathological examination showed it to be an intermixed GNB with metastasis. As a result of intensive treatment, the patient's clinical condition improved.

Conclusion

Imaging studies play a key role in the evaluation of children with nonspecific symptoms, enabling the detection of lesions that require further diagnosis and treatment, including those of a neoplastic nature. Although a definitive diagnosis is obtained after histopathological analysis, imaging studies are critical in establishing an initial diagnosis, assessing the progression of the neoplastic process, and stratifying risk before treatment.

Arterial ischemic stroke in a 2-year-old child with a cardiac burden - a case report

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Introduction

Arterial ischemic stroke (AIS) is a rare emergency in children, that has become an increasingly recognized cause of morbidity and mortality in children. The incidence rate is 1–2 per 100,000 children per year. Symptoms of pediatric stroke are similar to those in adults. but the causes are distinct. Cardiac risk factors are present in the case of 24-31% of all pediatric AIS. Up to 70% of affected children can have persistent neurological deficits, both motor and cognitive.

This study aims to present a clinical case of a pediatric patient with an AIS and cardiovascular burden.

Case report

A 2-year-old boy was admitted to the Pediatric Neurology Department after a head injury 3 days earlier with symptoms: anxiety, gait disturbances, weakness in the strength and tension of the left extremities, and impaired reflexes. The child had been under the care of a cardiologist for a year due to a patent foramen ovale and possible congenital thrombophilia. Magnetic resonance imaging of the brain showed irregular ischemic lesions in the right temporal lobe, hippocampus, and thalamus. Cardiology consultation did not fully clarify the cause of the stroke. The child's general condition improved and there were no signs of paresis.

Conclusion

Of particular note is this case, because of the age of the patient, which may be the reason for overlooking the slight symptoms of a stroke. Awareness about initial symptoms and using MRI as the first and only imaging test is the key to early diagnosis and subsequent successful treatment.

Atypical symptoms as a harbinger of a serious disease - the role of imaging studies in the diagnosis of rhabdomyosarcoma in a child

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Introduction

Rhabdomyosarcoma (RMS) is a neoplasm that occurs mainly in children aged 1-5 years. It is the most common soft tissue sarcoma occurring in childhood. The most common primary loci include the head and neck region, genitourinary tract and extremities. Treatment of RMS includes surgery, intensive combination chemotherapy and radiation therapy.

Aim

To present a clinical case of a child with nonspecific symptoms as the first sign of neoplasm.

Case report

A 5-year-old patient was admitted to the Department of Pediatric Neurology with left peripheral facial nerve palsy. The symptoms occurred during the administration of an antibiotic ordered by the general practitioner. In the MRI performed in the department: within the pneumatic cells of the left temporal bone, there were visible masses measuring: 36x27x16 mm. CT scan of the head revealed bony destruction of the pyramid of the left temporal bone. After head imaging due to the suspicion of a proliferative process, biopsy of the left ear canal lesion was performed, based on which a diagnosis of rhabdomyosarcoma was made. Appropriate chemotherapy was implemented, which the patient continues to pursue.

Conclusion

Both MRI and CT are valuable imaging modalities in the diagnosis and monitoring of treatment of rhabdomyosarcoma, complementing each other. Rapid diagnosis makes it possible to implement appropriate treatment in a shorter period of time, which significantly improves the prognosis.

When the 2-day-old visits the pediatric oncology department... Congenital leukemia - report of two cases.

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Congenital leukemia (CL) is leukemia that develops in utero and is extremely rare (accounts for <1% of all childhood leukemia), usually diagnosed at birth or within the first 28 days of life. The immense number of leukemic cells leads to clinically evident disease (the most common clinical signs are hepatomegaly, splenomegaly, and skin lesions) after birth or shortly after that. Most CL are Myeloid in origin. There is a 20-fold increased risk of leukemia in individuals with Down syndrome (DS). CL has a poor prognosis.

We present a report of two cases of CL - neither case was associated with trisomy 21. Both patients were transferred to the pediatric oncology department within the first three days of life from the neonatal department, presenting at birth with numerous petechiae and bruises all over the body. In a lab test, hyperleukocytosis was diagnosed - over 667 thousand white blood cells (WBC) in the first patient and over 27 thousand in the second patient. The first child was diagnosed with acute lymphoblastic leukemia (ALL) and treated with AIEOP BFM ALL 2017. The second child was diagnosed with T-cell ALL with myeloid marker coexpression - treated with Interfant-06, later changed to AML-BFM 2012. Both underwent a bone marrow transplant.

In general, neonatal leukemia carries an increased risk of treatment-related mortality and a high relapse rate compared to leukemia in older children. However, our cases show that chemotherapy for neonatal leukemia can be curative - it passed over five years from one of the cases.

Friday

Cell/ Genetics Oral Session

Validation of a bioinformatic procedure with the analysis of TP53 gene mutations

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Introduction: Considering that genetic analysis has a fast-growing significance in the diagnosis of various malignant tumours, bioinformatic applications become more and more inevitable, thus their capability of processing genetic information. TP53 gene mutations are one of the most common genetic changes in colorectal cancer, but also in other types of malignant diseases, representing an excellent subject for bioinformatic analysis.

Aim: The aim of our research is to validate the bioinformatic application we created, by analysing 25 samples of TP53 genes from patients diagnosed with malignant colorectal cancer.

Material and Methods: In our work, we compared the sequences of 25 healthy TP53 genes with the structure of 25 genes sequenced from the sample of patients diagnosed with colorectal cancer, and then we determined the most common mutation hotspots in the examined samples.

Results: Using our program to compare the sequences, we found out that the most frequent mutations were in exon 8, presenting differences in eight samples. These mutations were mostly between the 815th and 860th positions. The second exon, containing the most mutations was exon 4 with five samples presenting alterations mostly between the 250th and 275th positions.

Discussion: Based on our results, these type of comparison-based bioinformatic applications provide a perfect way for analysing genetic information and identifying mutations in the structure of such significant genes, as the TP53. Considering the mutations in both healthy and malignant samples, the position of these can conclude to a more precise analysis, helping the genetic diagnosis of these malignant diseases.

Transplantation of satellite cell populations isolated from a novel 3D skeletal muscle model

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The impressive regenerative capacity of adult skeletal muscle originates from the muscle stem cells, known as satellite cells (SCs). Normally, these SCs are located between the basal lamina and the sarcolemma of the myofibers in a quiescent state. Upon injury, SCs start to proliferate into myoblast and eventually fuse into multinucleated myofibers to regenerate the damaged tissue. When transplanted, both myoblasts and SCs can contribute to the regeneration of damaged muscle in mice. However, efficient engraftment into the SC niche is limited and a high number of cells is needed for efficient regeneration. Moreover, ex vivo expansion of SCs leads to loss of regenerative capacity, mainly due to the loss of stemness. In this project, we aim to isolate SCs from a novel in vitro 3D muscle model. After isolation of the mononuclear cells, fluorescence-activating cell sorting with different antibody combinations against SC surface markers will be performed to obtain SC populations. Subsequently, these SC populations are transplanted into immune-deficient mice in order to observe the engraftment and regenerative capacity of the different SC populations. RNA sequencing will be performed on the different SC populations to determine which genes contribute to successful regeneration and engraftment. With this novel approach, we believe to find an 3D-TeSM-derived SC population that will have a high regenerative capacity and will engraft more efficient in the SC niche. Moreover, this approach will also be suitable for the clinic in the future, as patient-derived hiPSC can be genetically corrected and transplanted back.

Studying therapy-induced senescence escape in in vitro cancer models

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Introduction: As senescence is widely understood as a permanent cell cycle arrest, therapy-induced senescence (TIS) is exploited in cancer treatments. However, certain populations of cancer cells have been shown to escape TIS. While the exact molecular mechanisms behind this phenomenon remain to be understood, recent evidence suggests TIS escape may be facilitated via polyploidy.

Aim: Monitor senescence in cancer cells to gain more insight into the mechanisms behind TIS escape.

Materials and Methods: We made reporter constructs with transgenic lamins to monitor senescence, with histone H2B to monitor polyploidy and with geminin to monitor cell-cycle re-entry. These constructs were transfected into cancer cell lines A549 (lung), MCF7 (breast) and DU145 (prostate), which were irradiated with 10 Gray to induce senescence. The cells were then imaged at different time points after irradiation with confocal microscopy to monitor senescence, polyploidy and cell cycle re-entry. Senescence was also confirmed in these cells with Senescence-associated beta-galactosidase (SA-ß-gal) staining and lamin B1 degradation using Western blot.

Results and Discussion: We observed that irradiation induced senescence in the three cancer cell lines (SA-ß-gal positive; changes in transgenic lamins) and the cells re-entered the cell-cycle between day 7 and day 11 (geminin positive; loss of SA-ß-gal) after irradiation. Further, we observed the cells increasing in nuclear content (H2B) at the time of senescence escape. Our results suggest TIS escape to be a pan-cancer phenomenon which is linked to polyploidy. Interfering with polyploidy upon TIS induction may therefore be a potential therapeutic strategy to prevent cancer recurrence.

Modeling and overcoming clinically relevant resistance mechanisms to CDK4/6 inhibitor-based therapy in hormone receptor positive breast cancer cells

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Introduction:

Dysregulation of the cell cycle is a hallmark of cancer. In hormone receptor-positive (HR+) breast cancer, aberrant proliferation is driven by female sex hormones. Cyclin-dependent kinase 4/6 inhibitors (CDK4/6i) which directly target the cell cycle combined with endocrine therapy, have become the standard of care in patients with advanced HR+ breast cancer. However, resistance to CDK4/6i is frequently observed in these patients.

Aim:

The aim of this project was to model clinically relevant molecular mechanisms of CDK4/6i resistance in breast cancer cell lines in vitro and to explore new treatment strategies to overcome resistance. We focused on mutations detected in patients resistant to CDK4/6i, such as Fibroblast Growth Factor Receptor 1 (FGFR1) amplification, and loss of Breast Cancer Gene 2 (BRCA2) or Retinoblastoma Protein 1 (RB1).

Materials and Methods:

Various CRIPSR/Cas9 techniques were used to introduce these mutations in breast cancer cell lines. The impact of the respective mutation on cell cycle and CDK4/6i sensitivity was evaluated by flow cytometry.

Results:

BRCA2 and RB1 knockout as well as FGFR1 overexpression were successfully introduced in different breast cancer cell lines. FGFR1 overexpression and RB1 loss enhanced growth of the tumor cells. Interestingly, BRCA2 knockout cells showed decreased growth rates. As expected, RB1 loss induced a strong resistance to CDK4/6i.

Discussion:

We developed a workflow to efficiently model clinically relevant mutations in breast cancer cells. This platform can now be used to rapidly explore treatment strategies to overcome resistance observed in patients.

Concentration dependence of in vitro anticancer effect of cytochrome-mineral composite nanoparticles

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The mitochondrial haemoproteid cytochrome C (cytC) plays a key role in the intrinsic pathway of apoptosis (genetically programmed cell death). In cancer cells, however, apoptosis is blocked due to the inability of their mitochondria to release cytC. Then, the apoptosis can be triggered by the introduction of exogenous cytC, using the ability of tumor cells to phagocytize extracellular colloid particles with submicron size on which cytC is previously adsorbed. Therefore, we use the mineral montmorillonite (MM) which is permitted for use in the human medicine and is suitable as drug deliver carrier because of its large adsorption capacity determined by the half micrometer size and 1 nanometer thickness of its monoplates. The inability of the normal cells (apart from neutrophils and macrophages) to phagocyte colloid particles protects them and determines selectivity in the treatment of neoplasms with composite cytC-MM.

In the present study, we investigated the physicochemical properties of cytC-MM nanoparticles as a function of cytC concentration in the suspension, employing the methods of microelectrophoresis, static and electric light scattering. Besides, we tested the in vitro cytotoxic effect on colon cancer cell culture using equine cytC, which is 97% structurally identical to the human cytC. The results showed that both cytC solution and MM suspension had no effect on the cancer cells but the composite cytC-MM nanoparticles killed 97% of the cells after 96 h treatment. Interesting finding was that the cytotoxicity depends nonlinearly on the cytC concentration in the cytC-MM suspension, but linearly on the logarithm of this concentration.

Is KL-3 a potential alternative to podophyllotoxin? – a comparison of safety and effectiveness.

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Due to antimitotic activity podophyllotoxin (PPT) is used to treat anogenital warts (caused by HPV). It stabilizes microtubules and stops replication of cellular DNA. The structure of PPT is modified to create novel podophyllotoxin derivatives. We studied PPT and its derivative KL-3, synthesized at the University of Warsaw.

Our research was conducted on the human keratinocyte line (HaCaT). We tested them with PPT (Sigma Aldrich) and KL-3. We assessed the cell viability (PrestoBlue Assay) in 6 concentrations: 0,25; 0,5; 1; 2,5; 5 and 25μM. Similarly, we used electron microscopy to analyze the cells after 24 and 48h - we observed dose-dependent changes in cellular morphology. Confocal microscopy images proved that both substances enter the cell as endocytic vesicles - research after: 5; 10; 30; 60; 90; 120; 180; 240; 360min, 24h. To compare the toxicity, number of organelles and vesicles, we used a One-way ANOVA test in PRISM and ImageJ.

KL-3 was less toxic than PPT in 0,25; 0,5 and 1 μM concentrations, at higher, there were no differences. After 24h treatment with 1 μM KL-3 induced transient ER stress, mitochondrial swelling and elongation of cytoplasmic processes. After 48h most of those changes were reversed with simultaneous induction of autophagy. In PPT-incubated cells we observed constant vacuolization of the cytoplasm and the loss of cell membrane.

We proved that KL-3 is less toxic than PPT for HaCaT cells. Additionally, most KL-3 changes are reversible in contrast to PPT. Present study may suggest that KL-3 is a potential alternative to PPT.

Friday

Internal Medicine Oral Session

Massive transfusion increases serum magnesium concentration – a retrospective study

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Introduction: Massive transfusion of red blood cells (RBCs) is a lifesaving procedure. However, it is associated with several complications, e.g. dysmagnesemia. Since magnesium is an intracellular cation, the transfusion can significantly influence the recipient's blood magnesium concentration. However, how often RBCs have abnormal levels of magnesium is unknown.

Aim of the study: The aim of this study is to access how the transfused RBCs influence the recipient's serum magnesium concentration and how often blood products have abnormal intracellular magnesium concentrations.

Patients and methods: A retrospective study was performed among 27 patients hospitalized in the Central Clinical Hospital of the Medical University of Warsaw between November 2021 and March 2022 who received a massive blood transfusion (≥4 units/hour). Data on serum magnesium concentration preoperative, 24-h, and 48-h postoperative were collected from the hospital database. Intracellular RBCs magnesium concentration was measured in 113 samples by the colorimetric method.

Results: There was a statistically significant change in mean serum magnesium concentration preoperative and 24-h postoperative (0.9±0.12 vs 1.05±0.14, $p < 0.00001$), but also preoperative and 48-h postoperative (0.9±0.12 vs 1.06±0.15, $p < 0.000001$) values. The median RBC magnesium concentration was 1.12 (0.34-3.18) mmol/L, which is below the reference values of 1.65–2.65 mmol/L. The mean magnesium concentration in the packed RBCs plasma was 0.214 ± 0.036 mmol/L.

Discussion: Transfused RBCs significantly increased serum magnesium concentration 24-h and 48-h postoperative, which is contrary to the results of other researchers. It could be a result of mild hemolysis, as packed RBCs were hypomagnesemic.

Utilization of HCM-AF Risk Score in forecasting occurrence of atrial fibrillation - 5-year observation

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Hypertrophic cardiomyopathy (HCM) is a genetic-disease causing numerous life-threatening complications. Atrial fibrillation (AF) in HCM population constitutes an important step in progression of disease. Recently developed American tool - HCM-AF Risk Calculator allows accurate prognosis of AF occurrence in HCM patients.

The aim was to assess clinical application of HCM-AF Risk Score in prediction of 2 and 5-year clinical outcome of Polish patients with HCM.

Retrospective cohort study included 92 patients with HCM (50% female, median age 53.5) and baseline sinus rhythm diagnosed at 1st Clinic of Cardiology, Medical University of Silesia in 2013-2018. Analysis involved clinical characteristics, laboratory tests, echocardiography, Holter monitoring, 2- and 5-year clinical outcome (total mortality, re-hospitalization, ICD implantation, heart failure) regarding the baseline HCM-AF Risk Score.

According to HCM-Risk Score stratification 11 patients (11.9%) from analyzed cohort had low, 17 (18.5%) had intermediate, and 64 (69.1%) had high risk of AF. In patients from low-risk cohort mortality was 18.2% whereas AF incidence was 9.1% and 18.2% in 2- and 5-year follow-up respectively. However, in the intermediate-AF-risk cohort mortality was 11.8% and AF incidence was 17.7% and 25.5%. In high-risk group AF has been detected in 25 (43.9%) patients within 2-year-follow-up and 32 (56.1%) within 5 year-follow-up, total mortality was 43.9% and HF progression was significant.

HCM-AF Risk Score may be useful in both prediction of AF occurrence and clinical outcome in HCM patients. Polish HCM population is characterized by relatively high HCM-Risk Score and high AF occurrence thus AF screening should be obligatory in this group.

Deceleration capacity and heart rhythm variability as indicators of vagal denervation after pulmonary vein isolation

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Introduction: Pulmonary vein isolation (PVI) is a well-established method of ablation of atrial fibrillation (AF). Exact mechanism of AF has not been discovered yet. One of suggested theory is arrhythmogenic role of ganglionated plexi (GP), responsible for vagal innervation of the heart. It has already been proved that ablation of atrial GP is associated with improved PVI outcomes. But it is still unclear how to assess the modulation of vagal component after PVI.

Aim: Deceleration capacity (DC) and heart rhythm variability (HRV) parameters were investigated to determine their potential function as indicators of vagal denervation after PVI.

Material and methods: 47 patients (28 males, 19 females) with paroxysmal AF were enrolled into the study. DC and HRV were calculated with appropriate software using available 24-hour Holter recordings performed before and/or after PVI.

Results: Mean DC before PVI was 5,65 ms vs 3,7 ms after PVI (p= 0,0000396). Also, HRV parameters were statistically different - SDNN - 145 ms vs 105,7 ms (p=0,000515), rMSSD - 35,13 ms vs 23,67 ms (p= 0,0204) and pNN50 - 12,06% vs 5,49% (p = 0,0307). Heart rate did not different statistically – 69,4 bmp vs 68,9 bmp (p=0,86).

Discussion: DC and HRV parameters may serve as good indicators of vagal denervation after PVI. Clinical value of these parameters needs to be investigated in further trials.

Predictors of Carotid Atherosclerosis in asymptomatic patients with coronary disease

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Introduction:

Atherosclerosis is considered a generalized disease- connection between coronary artery disease and peripheral atherosclerosis is significant. There are no guidelines for the patients with asymptomatic carotid artery stenosis.

Aim:

The aim of this study is to evaluate frequency and predictive factors of carotid atherosclerosis in patients with coronary artery disease.

Materials and methods:

This was a prospective observational study. We used the carotid ultrasound to detect the stenosis in 21 consecutive patients, 6 females, 15 males; the mean age: 71,5. Carotid atherosclerosis was defined according to the guidelines.

Results:

Plaque occurred in 14 out 21 patients(67%). Those were older(74,9±7,9; 71,5±10,4 p=0,03) and more often with lower body-mass index(BMI)(27,1±3,4; 28,6±4,3 p=0,01) as well they were less often obese(14%; 43% p=0,02). Moderate plaques were observed with lower frequency in patients with BMI ≥30 (14%; 43% p=0,02), using antiplatelet drugs (57%; 71% p=0,02). Plaques in carotid arteries were more common in patients taking anticoagulants(14%; 0% p=0,02).

In stenosis positive population univariate logistic regression revealed: age(OR=1,1; Cl 1,0-1,3; p=0,004) as positive, BMI(OR=0,6; CL 0,3-1,02; p=0,05), obesity(OR=0,3; CL 0,06-1,01; p=0,05) as negative predictors. In patients with moderate plaque it revealed: antiplatelets(OR=0,25; Cl 0,6-0,97; p=0,04) as a negative predictor. The multivariable model showed that age(OR=1,12; Cl 1,001-1,25; p=0,04) was an independent predictor.

Conclusions:

The results of our analysis showed that carotid atherosclerosis was more often in patients with lower BMI, while obesity was a negative predictor. Older age was an independent positive predictor. Antiplatelet drugs were revealed as a negative predictor of moderate carotid stenosis.

Predictors of periprocedural myocardial infarction after rotational atherectomy

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Introduction

Rotational atherectomy is more effective than traditional balloon angioplasty in inelastic plaques, however it is connected with higher risk such as periprocedural MI(myocardial infarction).

Purpose

The aim of this study is to evaluate frequency and predictive factors of periprocedural MI occurring after RA (rotational atherectomy).

Methods

This was a retrospective observational study. We revised the data of 534 patients. Definition of MI was consistent with the 4th universal definition of MI.

Results

Periprocedural MI occurred in 45(8%) patients. They were more often older (74,6±8,2; 72±9,3% p=0,04), with SYNTAX Score(SS) >33 (18%; 7% p=0,01) and higher rates of no/slow flow during the procedure (9%; 1% p=0,0003), and nondilatable lesion was a less often indication.

Univariate logistic regression models revealed: male gender (OR 0,53; CI 0,29-0,98;p=0,04) SS>33 (OR 2,8; CI 1,21-6,50;p=0,02), age (OR 1,04, CI 1,00-1,07;p=0,04) no/slow flow (OR 7,85; CI 2,12-29,04;p=0,002), prior CABG (OR 0,07, CI 0,01-0,56;p=0,01) nondilatable lesion (OR 0,41; CI 0,21-0,82;p=0,01) as positive and negative predictors. Multivariable model showed that no/slow flow (OR 6,70; CI 1,38-32,48;p=0,02), high SS>33 (OR 2,95; CI 1,19-7,35;p=0,02), nondilatable lesion (OR 0,42; CI 0,21-0,85;p=0,02) and CABG in the past (OR 0,08; CI 0,01-0,62;p=0,02) were independent predictors.

Conclusions

Periprocedural MI after RA was not an uncommon complication- it was present in almost every twelfth patient. Our analysis showed there is connected with female sex, older age and more severe coronary disease. Not surprisingly occurrence of no/slow flow increased the risk. Prior CABG and nondilatable lesion were connected with lower risk of this complication.

Friday

Anesthesia & Neurology Poster Session

Local Periarticular Infiltration with Dexmedetomidine Results in Superior Early Patient Well-being compared to Ultra-Sound Guided Regional Anesthesia after Total Knee Arthroplasty: A Randomized Controlled Trial with Two-Year Follow-up

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Introduction: There are currently various different pain management approaches for patients undergoing total knee arthroplasty (TKA), which are the subject of controversial debate.

Aim: The study aimed to compare local periarticular infiltration anesthesia (LIA) and ultrasound-guided regional anesthesia (USRA) using a combined popliteal and femoral block in terms of functionality, pain and well-being. For this purpose, a novel drug combination consisting of Ropivacaine and Dexmedetomidine was used.

Materials and Methods: Fifty TKA patients were prospectively randomized in a 1:1 ratio to two groups. The LIA group received LIA into the knee joint including the posterior knee capsule, while the USRA group received two single-shot nerve blocks. Both groups were compared in terms of functionality, pain, and well-being. Evaluations were conducted preoperatively and at five days, six weeks, one year, and two years postoperatively.

Results: At six weeks, one year, and two years after surgery, there were no significant differences in functional outcomes between the two groups. In the LIA group, a moderate correlation was observed between well-being and pain on day five. Six weeks postoperatively, the LIA group exhibited significantly better well-being but worse pain scores. No differences in the parameters were found between the groups at one and two years post-surgery.

Discussion: The application of USRA and LIA have different effects on the well-being and pain of patients in the early postoperative phase, but lead to similar functional outcomes. We believe that LIA enhances fast-track knee recovery by improving short-term well-being, increasing practicality, and speeding up application.

Cloning and expression of a novel GLB1 mutation discovered in GM1-gangliosidosis patient

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Introduction: GM1-gangliosidosis is a lysosomal storage disorder leading to progressive neurological symptoms. It is caused by pathogenic variants in the Galactosidase beta 1 (GLB1) gene encoding ß-galactosidase. This enzyme cleaves the terminal beta-galactose from different substrates like gangliosides, glycoproteins and glycosaminoglycans. Pathogenic variants in the GLB1 gene lead to absent or reduced ß-galactosidase activity resulting in an accumulation of the glycosphingolipid GM1-ganglioside in neuronal tissue. So far, around 300 pathogenic variants of the GLB1 gene have been described.

Aim: The aim of this diploma thesis was to clone and express a new mutant form of the GLB1 gene that was discovered recently. By measuring its activity in vitro, it was investigated whether this new mutation leads to the expression of dysfunctional protein.

Methods: A mutant and a wildtype variant of the GLB1 gene were cloned in competent E. coli cells. Recombinant plasmid-DNA was isolated with maxi-prep DNA isolation. To check successful isolation, restriction analysis and DNA electrophoresis were performed. For expression of the GLB1 gene variants, HEK-293T cells were transfected with the recombinant plasmid-DNA. Expression was detected with a Western Blot analysis. Enzyme activity was measured with photometric enzyme assay.

Results: The enzyme was successfully expressed and the enzymatic assay showed a significantly diminished activity of the mutated GLB1 gene in comparison to the wildtype (96.9±26.1 vs. 283.5±44.1 nmol/h/mg, p=0.008).

Discussion: The reduced enzyme activity suggests the novel mutation as a pathogenic variant of the GLB1-gen, leading to manifestation of GM1-gangliosidosis.

Design and Preliminary Evaluation of a Newly Designed Patient-Friendly Discharge Letter – A Randomized, Controlled Participant-Blind Trial

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Introduction: Low health literacy has been associated with poor health outcome and impaired use of healthcare services. The discharge letter represents a key source of medical information for patients and can be used to counteract low health literacy.

Aim: The aim was to develop and evaluate a new, patient-directed, version of the discharge letter.

Materials and Methods: Based upon two conventional discharge letters (CDL; one surgical and one medical letter), two new, patient-friendly discharge letters (PFDL) were designed following 5 key principles: short sentences, few abbreviations, large font size, avoidance of technical terms and no more than 4 pages length. Medical undergraduates were randomized into two blinded groups (CDL, PFDL) and asked to assess the assigned letter for structure, content and patient-friendliness. Subsections were rated on a 6-point Likert scale (1=completely agree, 6=completely disagree), the results were compared using the Mann-Whitney-U-Test with a $p < 0.05$ being the level of significance.

Results: In total, 74 undergraduates participated in the study. PFDL (35 participants) were rated significantly better than CDL (39 participants) regarding structure (median 1 vs. 2, $p=0.005$), content (1 vs. 3, $p<0.001$) and patient-friendliness (2 vs. 6, $p<0.001$). Of all 17 subsections, PFDL were rated significantly better in 12 cases, and never worse than CDL.

Conclusion: PFDL were rated significantly better than CDL counterparts. Medical undergraduates were considered the ideal cohort, not being medical lays and yet unbiased regarding everyday clinical practice. Further tests evaluating the impact of the PFDL on patient comprehension and health literacy are necessary.

Friday

Dentistry
Oral Session

Augmented Reality for Dental Applications: Enhancing Education and Treatment Planning

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Introduction: Augmented reality (AR) technology has the potential to improve dental education and treatment planning by providing a more immersive and interactive experience. The aim of this study was to develop an AR application that allows users to view and manipulate a 3D data set of a human skull using a smartphone or AR headset. The removal of teeth, changing their color, or visualizing potential implants are application examples.

Material and Methods: A CT data set (MUG500+https://figshare.com/articles/dataset/MUG500_Repository/9616319), of a human skull was imported into Blender software and prepared, e.g., redefining the object surface and separating each segment, for integration onto an AR platform using Unity. The AR project was tested on an Android smartphone and a Microsoft HoloLens.

Results: The AR project allowed users to view and manipulate teeth in 3D with views from different angle and perspective.

Discussion: The AR project is a valuable tool for dental professionals and students to better understand and analyze the complex anatomy of the whole head. The technology has multiple potential applications, including use by dental students for anatomy study and by dentists for visualization of teeth and roots, treatment planning, and patient communication. In addition to its educational value, the AR project also has practical applications in the dental field, such as more accurate treatment planning. Overall, the AR project represents a promising development in dental education and treatment.

Interleukin-35 pathobiology in periodontal disease: a systematic scoping review

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Introduction: Interleukin (IL)-35 is a novel anti-inflammatory cytokine that is produced by regulatory T cells. IL-35 mediates immunological functions and plays a protective role in several diseases such as asthma and rheumatoid arthritis.

Aim: The aim of this study was to systematically review the literature and collecting the available evidence regarding the role of IL-35 in pathogenesis of periodontal disease.

Material and Methods: A systematic search of five main electronic databases was conducted. The identified studies were subjected to pre-identified inclusion criteria. The retrieved papers were assessed by the authours independently and consensus was reached in cases where disagreement occurred. Articles written in languages other than English, case reports, letters to editors, conference abstracts, theses, and dissertations were excluded from the review.

Results: A total of 176 possibly relevant articles were identified through the search strategy. Finally, 15 papers which met the criteria of eligibility were included in this review by consensus. Three subclinical study, ten cross sectional investigation and two randomized clinical trials constituted the final set of studies in this review.The results of observatory human studies confirmed the presence of high levels of IL-35 in saliva, GCF, serum, and gingival biopsies of patients suffering from inflammatory periodontal disease. Moreover, two included clinical trials showed that non-surgical periodontal therapy could downregulate IL-35 production in chronic periodontitis patients.

Discussion: Interleukin-35 has an undeniable role in pathobiology of inflammatory periodontal disease. Further well-controlled studies are needed to better elucidate the functional pattern of IL-35 in pathogeneisis of gingival and periodontal disease.

ASSESMENT OF DENTAL CARIES IN YOUNG PEOPLE DURING THE MARTIAL LAW

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Introduction.

The war caused irreparable damage to the psycho-emotional state of Ukrainians. Those people who lived in the zone of active hostilities or whose close relatives remain there feel the influence of wartime much more strongly than those people who are distant from such regions.

Aim.

The aim of the study was to assess the condition of dental caries in young people during martial law.

Patients and Methods.

The subjects of the study were 21 young people aged 19-26, who are students of the Poltava State Medical University. All participants were divided into 2 groups. The I - experimental group consisted of young people who came to study from the zone of active hostilities or regions that are occupied by the enemy. II group - control - young people who came to study from relatively calm regions. The ICDAS II index was determined for all the examined, which allows to determine the stage and depth of the carious process starting from the initial non-cavity changes.

Results.

The ICDAS index for the experimental and control groups did not differ significantly. But lesions with codes 1 and 2 prevailed in the experimental group, which indicates a more active stage of caries in individuals who are under the influence of stronger stress factors. At the same time, not a single lesion with code 1 was found in the control group, and the vast majority of lesions fell on codes 2 and 3 .

Friday

Young science Session 1

Phyto-stem cell of medicinal plant under Plant Genetic Conservation Project of Thailand, University of Phayao

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Creating the future of health sciences must include intelligent health science system which could revolutionize our approach to healthcare, public health and medicines development. Plant genetic conservation project in Thailand allows 'Solf' system dimensions for solving the complex issues that are related to human factors. Medicinal plant genetic resource and photo-stem cell are powerful for biomedical drug research and development ecosystem. Numerous medicinal plants such as Cannabis, Golden gardenia, Lady slipper orchids and Carnivorous plants have been developed under biotechnology technique. Improvement of phyto-stem cell and secondary metabolites from various medicinal plants are focused on discovery and development of anti-virus and anti-cancer drugs. Bioinformatic analysis and high-throughput data of plant genetics collection have made significant contribution to mechanism -base drug discovery which accelerate drug target identification, side effect and predict drug resistant. Effectively modeling and system require an understanding of the current state and clear vision of future health science. Thailand, we are connecting each medical science frontiers to build up our sustainable ecosystem for a better life which can drive the high quality of health to world citizenships standard.

Phyto-stem cell and bioinformatics of Lady's slipper orchids; the next wave for future medical science research and drug development

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Plant genetics data of various secondary metabolites in Lady's slipper orchids from 5 genus in 137 species have been used to compare the medical potential for drug and natural plant product development. Plant biotechnology was prepared for pharmaceutical phyto-stem cell extract and apply for the experiments. The HPLC were used to analyzed various medical properties from plant extract and the bioinformatics analysis was applied to find drug target and related antimicrobial efficiency. Plant tissue culture of 4 types of Lady's slipper orchid in Thailand (1. Paphiopedilum tonsum 2. Paphiopedilum barbatum 3. Paphiopedilum gigantifolium 4. Paphiopedilum sanderianum 5. Paphiopedilum rothschildianum) was used to manipulate phyto-stem cell for molecular genetics approach and gene transformation.

Bioinformatics of phytocannabinoid and flavonoid in cannabis plant from green house, Thailand-Drug development before export in 2024

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Growing cannabis plant in greenhouse and support the female flower development with 3 hours LED light during the early morning (6.00-9.00 AM) and evening (6.00-9.00 PM) is a major process to produces high quality of medical cannabis with high CBD and flavonoid. Bioinformatics study have been reported the link of both bioactive natural products in some flowering plants, liverworts and fungi. Various photosynthesis parameters have measured to evaluate the physiology change in cannabis for plant-based use in drug development of Apinya medical CO, LTD/Thailand. Cannabis plants were used for phytoremediation treatment and biofuel for green and clean environment.

Pharmaceutical LAB and convention medicine with full extract cannabinoid oils are ongoing research and test before export in 2024.

Ethnomedicinal properties and phytochemical genetic data analysis of world orchidaceae species

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This genetic data analysis has been focused on medicinal Orchidaceae species in several parts of the world. Plant species and herbal usage including processing and treatment have been reported. Phytochemical contents and potential application related to gene family were produced and defined with PCA methods. Anticancer and antivirus properties of medicinal orchid were potentially screen for drug development process with multivariate analysis. This data-driven branch of science with a large number of information from molecular biology, computer science and mathematics for develop new and powerful databases and software packages to extend our views of medicine and pharmaceutical research.

Growing Future Food and Plant Medicine in Space: The Innovative Plant Condo for Astrobotany and Experiment for Medicinal Plant Culture.

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Plants would be a feasible solution to produce medicines in space. Food and medicine from plant is necessary for space farming in long distance space flight to Mars and working in International Space Station. Experiments and investigation of how medical plants grow and survive under various conditions in space require a mini-growth chamber that allows controlling humidity, temperature, light, and other factors of plant growth. Therefore, this work was to design a mini-medical plant growth chamber that would facilitate the cultivation and experiment of medical plant germination and development in space. The comparison of recently six models (various space institutes) was used to support our design. Early in the seed germination test, three of high potential medical plant seeds; Capsicum spp., Coriandrum sativum L., and Lactuca sativa L. were used. Hot water (60°C) inhibits germination of Capsicum spp., Coriandrum sativum L. to 50% and 100%, respectively. In control, Lactuca sativa L. shows the high germination rate at 2.31 and 19.04 times to Coriandrum sativum L. and Capsicum spp, respectively. We suggest Lactuca sativa L. for further experiments in space. Moreover, Plant Condo was prepared with automatic plant nutrient circulation under the micro-controller board (Micro: Bit) to grow vegetables, herbs, and fruits. Mini scale with a vertical shape can limit the area of cultivation which is suitable for the International Space Station. The type and dimension of plant nutrients filter and the ratio of food waste decomposition were evaluated for sustainable waste management in space.

Friday

Surgery & Oncology Oral Session

Is thrombocytopenia more common in patients hospitalized in the emergency room or intensive care unit?

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Thrombocytopenia due to reduced platelet production occurs in bone marrow aplasia, non-effective thrombopoiesis and dysfunctions in the regulatory mechanisms of platelet production. The characteristic symptom of thrombocytopenia is the presence of petechiae on the skin and mucosa.

The study aimed to show whether there are differences between the number of platelets and platelet parameters in patients from the hospital emergency room (ER) and patients hospitalized in the intensive care unit (ICU).

Platelets count (PLT) and platelet parameters were determined using an automated hematology analyzer Sysmex XN2000. In the study results of 1114 patient from ICU, including 621 women aged 57±4 years old and 493 men aged 51±5 y.o. and 1191 patients from ER, including 581 women aged 54±3 y.o. and 610 men aged 52±6 y.o., were enrolled.

The mean PLT count in women from ICU was 96x10^3/µl ±19.1, and in men from ICU 111x10^3/µl ±9.7. The mean PLT count in women from ER was 143x10^3/µl ±11.3 and in men from ER 133x10^3/µl±14.5. The mean immature platelet fraction (IPF) for the ICU group of women was 5.71±0.33% and for men 4.71±0.48%, while for ER women group it was 3.22±0.19% and for ER men group 4.35±0.13%. PLT and IPF differed significantly between women hospitalized in ICU and women from ER, $p<0.001$ and $p=0.007$, respectively. Difference in the number of platelets in ICU and ER men was statistically significant, $p=0.001$.

Our study shows that in patients hospitalized in the ICU, platelet production in the marrow is more strongly stimulated despite the patients' thrombocytopenia.

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

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INTRODUCTION: Positive oncological family history, as well as the second malignancy in childhood, require profound genetic testing using adequate next-generation sequencing (NGS) panel to provide the complex screening for certain patients.

CASE REPORT: We present the case of a patient with a genetic malignancy predisposition, positive oncological family history and the second malignancy in childhood.

The patient was diagnosed with nodular sclerosis classical Hodgkin lymphoma (cHL), IIIB grade at the age of 8. Her father suffered from cHL at the age of 27. The patient was treated successfully according to the TL-3 group EuroNET-PHL-C1 protocol without radiotherapy. At the age of 16, she was diagnosed with Ewing sarcoma of the 6th left rib with metastases in vertebrae and the head of the left femur, without bone marrow involvement. According to Euro Ewing 2012 protocol Arm B, she underwent preoperative radiochemotherapy and surgical management. She continues postoperative chemotherapy. The mobilization of hematopoietic stem cells was successful only in the second trial after a double dose of filgrastim.

Germinal tumorigenesis predispositions NGS panel detected heterozygous mutation of unknown significance in PALB2 gene (NM_024675.4:c.110G>A;p.Arg37His) in the patient and her father.

DISCUSSION: The detected mutation impairs the homologous recombination activity of PALB2. It was previously seen in families with early breast and ovarian cancer history. In the family with a similar PALB2 mutation, the child of a mother suffering from renal cell cancer presented acute lymphoblastic leukemia and Ewing sarcoma. Therefore, it confirms the pathogenicity of this mutation inherited via an autosomal dominant manner.

Saturday

Young Science Session 2

Cannabis 'Yes' or 'No' for future human health impact: Bioinformatics of plant sterols metabolism in drug discovery and development

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High throughput data used in bioinformatics can facilitate the discovery of desirable drugs which connect to disease symptoms under genetics and environment factors. Recently, biological screening, molecular modeling and BLAST show high performance as a key in the major processes involved in the discovery and development of natural products from botanical source. New evidence of similarity between human and plant steroid metabolism, especially 5α-reductase activity impacts health such as prostatic hypertrophy, polycystic ovary syndrome. Phytosterols-brassinosteroid, fatty acids and polyphenols from various plants such as tomatoes, potatoes, rice, bean, rapeseed and herbs have been reported and used as plant-based for drug development. On the other hand, riding high on cannabis use as herb consumption or alternative medicine impacts both men and women on physical side effects and mental health problems. Moreover, combining cannabis and steroids is creating a complication side effects. Challenges in medical science research and innovation drug evolution need biopharmaceutical expertise and investment under modern approach and technology.

Substrate conformational change in α-galactosidase catalyzing galactomannan hydrolysis

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Alpha-galactosidase is useful for diagnosis of Fabry disease in male patients. In this study, the details of catalytic itinerary in alpha-galactosidase catalyzing galactomannan hydrolysis were elucidated using Cremer-Pople parameter calculator. The input of the calculator is the Cartesian coordinates obtained from our previous simulation data. The output of the analysis includes the Cremer-Pople plot and substrate conformation (1,4B at ES <-> 4H3 at TS <-> 4C1 at EP and 1,4B at ES <-> 4H3 at TS <-> 4C1 at EP). The obtained results would be helpful in understanding carbohydrate deformation during catalysis of alpha-galactosidase acting on the galactomannan.

Alpha-galactosidase catalyzing transglycosylation reaction with melibiose: A Cremer-Pople analysis of sugar substrate

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At present, enzyme reactivity can be simulated with in silico methods to understand and design better properties of enzymes for human benefits in a sustainable society. A large data set generated from any protein simulations always makes the interpretation a challenging task in view of computational perspective. In this study, we make use of the previous simulated data on a transglycosylation reaction (TG) with a melibiose in α-galactosidase (αGAL), a family 27 glycoside hydrolase and analyze them with Cremer-Pople parameter calculator. With geometric reaction coordinate of TG with two acceptor molecules (melibiose and surcrose), it is found that the sugar conformational change follows 1S3 at ES <-> 4H3 at TS <-> 4C1 at EP in melibiose and 4H5/4E at ES <-> 4H3 at TS <-> 4C3 at EP in sucrose during the reaction. The obtained results could improve current information on the sugar deformation in catalysis of αGAL and other related GHs.

Saturday

OB-GYN & ENT
Oral Session

THE VALUE OF WET MOUNT COMPARED TO STAINED VAGINAL SMEAR EXAMINATION IN RUTINE CYTOLOGICAL AND MICROBIOLOGICAL DIAGNOSTICS

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University of Novi Sad, Faculty of Medicine, Serbia

Introduction: The most common method of examinig cytological and microbiological elements of vaginal smear in rutine work is direct microscopy of wet mount or stained smear.

The aim: Mastering technique of microscopical examination of vaginal smear and analizing value of wet mount microscopy in comparison to microscopy of stained smear.

Material and Methods: Vaginal smears have been collected from 30 women. Immediately after they have been taken, we put them in original test tube which contained 0,9% NaCl and transported them to laboratory where we microscopically examined them within two hours. After that, every smear has been diyed, fixated and stained by Papanicolau staining method and again microscopically examined on the same magnification.

Results: Through microscopical examination of both wet mount and stained mount it was able to detect all types of cells from stratified squamous epithelium, leukocytes and different microorganisms such as Doderlein s Vaginal Bacillus and Bacterial Vaginosis with clue cells. In one case filamentous bacillus Leptotrix has been detected. Koilocytes which are indication of HPV infection have also been seen. All these element were detected in both methods which indicates that there is no significant difference between them.

Conclusion: Having considered similar diagnostical valuation of both methods, wet mount is potentially better choice because it is inexpensive, simple and delivers immediate results. One of the flaws of wet mount is necessity of fast transport which could be overcame with relatively short training of gynaecologist to examine vaginal smears immediately after collecting them.

COVID-19 during pregnancy - description of three severe cases requiring intensive care

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Introduction:

During pregnancy, changes occur regarding the physiology of the immune and respiratory systems, which affect the greater susceptibility to viral infections and the occurrence of more serious complications in pregnant women. Women in the third trimester of pregnancy are at greater risk of severe Covid-19 and the onset of severe respiratory distress syndrome. SARS-CoV-2 infection in pregnant women is associated with a higher risk of intensive care unit (ICU) hospitalization, invasive mechanical ventilation, use of extracorporeal membrane oxygenation (ECMO) therapy and patient death.

Aim:

To describe three cases of young women who were infected with SARS-CoV-2 in the third trimester of pregnancy.

Patients and Methods:

All patients were not vaccinated against Covid-19. Patients were hospitalized as a result of severe Covid-19 and deteriorating general condition. Depending on the case, chest X-ray, computed tomography, magnetic resonance imaging were used to visualize disease progression. In presented cases, there were various complications of infection, including premature termination of pregnancy, cesarean section, subcutaneous emphysema, pneumomediastinum, pulmonary embolism and acute respiratory distress syndrome.

Results:

The women required ICU hospitalization, invasive mechanical ventilation and use of ECMO therapy. In each case, the disease ended in the death of the patient.

Discussion:

SARS-CoV-2 infection in the third trimester of pregnancy is associated with a higher risk of severe complications. In every case presented, patients with severe Covid-19 required ICU hospitalization, invasive mechanical ventilation and ECMO therapy. Covid-19 in pregnancy complicated by acute respiratory distress syndrome, or pulmonary embolism, can end in the death of the patient.

The assessment of implementation of the recommendations for SKIN-TO-SKIN CONTACT after birth. A retrospective study.

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Introduction

Skin-to-skin contact (SSC) is a procedure that helps the newborn adapt to life outside mother's body. Polish pediatric guidelines recommend 2 hours of SSC immediately after birth, which may be interrupted only in a health or life-threatening situation and the reason should be saved in medical records.

Aim

The aim of the study is to assess implementation of the recommendations for SSC and to determine whether specific perinatal factors affect the performance of the procedure.

Patients and Methods

A retrospective analysis of data from health books and data-sheet from perinatal period of 155 pediatric patients was performed. The study investigated whether perinatal factors (week of birth, method of delivery, Apgar score, birth weight) have an influence on the performance of SSC and whether the correct SSC affects the way of feeding. Statistical analysis was made in Statistica 13.3.

Results

SSC was performed on 60.6% of patients. A positive correlation between SSC, method of birth and breast-feeding was shown. The contact time was significantly longer after spontaneous labor than the cesarean section. Nevertheless, in 66 cases there was no information about duration or the reason for omission of SSC. Significant correlations between SSC, Apgar score and birth weight were also investigated.

Discussion

It is necessary to improve the condition of completing medical records to include all information about SSC, especially about the reason for omission. Programmes to facilitate proper qualification and the standardization of recommendations are needed. It is worth educating parents about benefits of SSC, demonstrated in this study.

Borderline ovarian tumor and endometrial cancer - two different diseases or one common? A case report.

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Introduction:

Endometrial and ovarian cancer are the most common synchronous gynecological malignancies. The most common histological subtype of synchronous endometrial and ovarian cancer is endometrioid endometrial cancer. Patients with synchronous ovarian and endometrial tumors are usually young, nulliparous, and premenopausal. While synchronous primary endometrial and ovarian cancers are common, primary borderline ovarian cancers coexisting with endometrioid endometrial cancer are relatively rare.

Aim:

To present a patient with a synchronous borderline ovarian tumor and endometrioid endometrial cancer.

Patients and methods:

The female patient, aged 30, was admitted to the Department of Gynecology for the further diagnosis of previously found ovarian tumors of 8 cm in size. Due to the ovarian cancer suspicion, the woman was qualified for laparotomy removal of the right adnexa and enucleation of the left ovarian cyst. In the histopathological examination, the changes were described as an endometrioid borderline cancer of the right and left ovary. Two months later, a CT scan showed a soft tissue lesion of 11 mm in size in the uterine cavity.

Results:

The patient was qualified for hysteroscopic excision of the lesion in the uterus. The result of the histopathological examination indicated G1 endometrioid carcinoma of the uterus.

Discussion:

To make an accurate pathological diagnosis of synchronous primary endometrial and ovarian cancer, a thorough patient history, imaging data, and immunohistochemistry must be collected. This will allow for making an appropriate diagnosis and implementing appropriate postoperative management, and thus improving the patient's comfort.

Saturday

Internal Medicine Poster Session

Endometrial cancer and its complications: a great therapeutic challenge

A. A. Patrascanu, S. M. Belbe, A. I. Paucean, A. L. Deac
Iuliu Hatieganu University of Medicine and Pharmacy Cluj Napoca, Romania

Endometrial cancer is a frequent gynecological cancer that is especially found in postmenopausal women who also present arterial hypertension, hyperinsulinemia and obesity . Regarding the complications, this type of neoplasia is usually associated with anemia due to metrorrhagia, deep vein thrombosis and organ failure as a result of metastasis.

A 63-year-old patient known with hypertension and depressive-anxiety disorder, with a history of chemo- and radiotherapy after a surgically removed endometrioid adenocarcinoma (low differentiated, G3, FIGO II) 2 years ago, is admitted to the emergency service with right iliofemoral acute deep vein thrombosis. The treatment with anticoagulants based on LWMH was immediately started. During the anticoagulant therapy, the patient developed a muscular hemorrhage that evolved with compartment syndrome, anemia requiring transfusion and rhabdomyolysis with acute renal failure. Further investigations indicate an inflammatory syndrome (CRP 14,81 mg/dL, neutrophils 14100/µl), normochromic anemia (hemoglobin 7,9 g/dL), renal failure (creatinine 3,24 mg/dL), hyponatremia, hypochloraemia, CK 1453 U/L, NT-proBNP 1242 pg/ml. No cardiovascular modifications were found at the time of the admission, but on the fourth day of hospitalization, the patient had an episode of atrial fibrillation, treated with amiodarone. A CT scan was ordered showing left internal obturator adenopathy with secondary hydronephrosis. The patient was hospitalized for 21 days, treated for each acute complication and palliative chemotherapy was started.

The peculiarity of the case lies in its complications: rhabdomyolysis with acute renal failure as a side effect of anticoagulants, anemia and deep vein thrombosis as paraneoplastic syndromes, atrial fibrillation and pelvic adenopathy that resulted in hydronephrosis.

Review of cupropoptosis-related lncRNA's potential as cancer biomarkers

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Although the death rate from cancer has fallen by 32% over the past 28 years, it still occupies the leading position in the causes of death. It was recently proven that curpoptosis, a novel type of programmed cell death, plays a substantial role in tumorigenesis and cancer progression. Therefore, we would like to review the cuproptosis-related lncRNAs (CRL) and their prognostic potential in cancer.

Data curation was performed with the help of PubMed and PubMed Central databases using the relevant keywords (e.g., 'cuproptosis', 'lncRNA', 'cancer biomarkers'). Eventually, 20 articles were thoroughly elaborated, and the lncRNAs with the highest prognostic potential were chosen.

We have chosen 3 curpoptosis lncRNAs (CRL LINC00205, CRL LINC01410 and CRL LINC01138) with the most distinctive features. All of them are considerably overexpressed in cancer tissues and promote disease development. In addition, CRL LINC00205 and CRL LINC01410 are shown to inhibit the microRNA expression and CRL LINC01138 is implicated in the regulation of arginine methylation. Both processes entail changes in cancer development, cell proliferation and growth, as well as metastasis activation.

This literature review indicates that even though in-depth mechanisms of curpoptosis-related lncRNA’s involvement in cancer should be studied more, it was shown that one CRL dysregulation can be involved in the development of various types of cancer by different mechanisms. Most attention was paid to the difference of expression in normal and neoplastic tissues, which may be advantageous for early-stage cancer prognosis.

Celiac disease is more than just a dietary restriction. A rare case of type 2 refractoriness in a patient with a severe form of celiac disease.

W. Skoczek[1], P. Rasamikomen[1], P. Eder[1,2]

[1]Poznan University of Medical Sciences, Poland; [2]Department of Gastroenterology, Dietetics and Internal Medicine

Investigation: A 40-year-old female was admitted to the hospital, presenting signs of acute abdominal pain, watery diarrhea, vomiting with subsequent peripheral edema, and massive ascites.

Case report: A full diagnostic work-up allowed to diagnose a severe form of celiac disease (CD) with the appearance of ulcerative jejunitis on magnetic resonance enterography (MRE). A gluten-free diet (GFD), budesonide, and parenteral nutrition were introduced.

A negative anti-tissue transglutaminase titer confirmed a full adherence to the GFD, but complete duodenal villi flattening shown microscopically was suggestive of refractory CD (RCD). Enteroscopy was performed with multiple small bowel biopsies - molecular, and the immunohistochemical assessment suggested type 2 RCD due to the characteristic T-cell receptor γ/δ gene rearrangements and loss of surface CD4 and CD8 on the intraepithelial lymphocytes.

The patient's condition worsened, with several cases of ileus and significant weight loss. Control MRE, performed after two years, visualized a large obstructive small intestinal mass, which was resected surgically with a histopathological diagnosis of enteropathy-associated T-cell lymphoma (EATL). The patient received chemotherapy with no improvement and was qualified for a stem cell transplantation. Unfortunately, she died due to the dynamic progression of the disease.

Discussion: Type 2 RCD is an extremely rare autoimmune disorder. A multistep diagnostics approach, including molecular methods, is needed to confirm the diagnosis. Commonly accepted therapeutic guidelines are not known. The prognosis for type 2 RCD is poor since more than half of patients develop EATL irrespectively of the treatment introduced.

Obesity not always so „simple" – case report of an 8-year-old boy.

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An 8-year-old boy was referred for diagnosis of the causes of rapid weight gain accompanied by a decrease in growth velocity (body height 122 cm, < 3rd percentile, weight 30 kg, BMI 20 kg/m2, 88th percentile BMI). In addition, persistent headaches with impaired visual acuity and transient polyuria and polydipsia were present. The secondary adrenal insufficiency (ACTH 20.6 pg/mL, cortisol 49.4ng/ml) and secondary hypothyroidism (TSH 5.829 µIU/mL, fT4 7.5pmol/L) were diagnosed. Magnetic resonance imaging revealed a well-circumscribed lesion in the hypothalamus region (17x10x17mm,) with the morphology typical for a low-grade glioma - hamartoma. Substitution treatment with levothyroxine and hydrocortisone was introduced, achieving improvement in growth velocity. Despite the introduced dietary treatment, obesity increased (at the age of 11 years and 10 months, height 141.7 cm, 10th percentile, weight 66 kg 95th percentile, BMI 32.9 kg/m2, 99th percentile. Biochemical tests revealed: dyslipidemia (HDL cholesterol 0.82 mmol/L, LDL 2.66 mmol/L, triglycerides 3.07 mmol/L), hyperinsulinemia (fasting insulin 27.5 µIU/mL, at 120' post standard glucose load >300.0 µIU/mL) and insulin resistance (HOMA 5.4), with normal glucose values (fasting blood glucose 4.4 mmol/L, 120' 6.0 mmol/L). The boy was also diagnosed with hypertension and fatty liver. The treatment used a complex intervention: personalized diet, increased controlled daily physical activity and liraglutide. Conclusion: rapid weight gain accompanied by growth retardation is an alarming symptom that may indicate diseases of the hypothalamus and pituitary gland. In each case of hypothalamic obesity, treatment should include a complex intervention tailored to the individual needs and capabilities of the patient.

Insidious peritoneal rupture of infected liver hydatid cyst – a rare case report.

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[1]Faculty of medicine, Medical University of Plovdiv, Bulgaria;
[2]Department of surgery, Medical University of Plovdiv, Bulgaria

Introduction

Rupture of the liver hydatid cyst in the peritoneal cavity is a rare complication of liver hydatid disease. The cysts may rupture spontaneously, due to the increased intracystic pressure, or as a consequence of abdominal trauma.

Aim

The aim of this presentation is to report a rare case of insidious peritoneal rupture of infected liver hydatid cyst with acute peritonitis.

Case presentation

We present a young male (36 years old) with sudden onset of severe abdominal pain. Physical examination established rigidity of abdominal wall with rebound tenderness. Abdominal ultrasound revealed peritoneal free liquid. Laparotomy on emergency was performed. Peritoneal perforation of infected liver hydatid cyst with diameter more than 10 cm was established. Curiously, multiple daughter cysts were seen in the peritoneal cavity.

Conclusion

The presenting case confirms the attitude that younger age and cyst diameter more than 10 cm are risk factors of liver hydatid cysts perforation. This case is interesting due to the insidious peritoneal rupture with multiple daughter cysts disseminated into peritoneal cavity.

Melanocytes from human skin induce angiogenic in the avian chorioallantoic membrane in a light independent manner

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Introduction: Melanocyte have an important protective function against UV light. The role of melanocytes in tissues without light exposition (e.g. inner ear or the choroid) is unknown. A lack of melanocytes in the inner ear leads to deafness, a lack in the choroid of the eye to microphthalmia, hence the relationship between melanocytes and these pathologies is not known. We hypothesize that the development of these organs is dependent on angiogenesis in presence of melanocytes.

Aim of this study: The aim of this work is to verify whether melanocytes can induce angiogenesis independently of light.

Material and Methods:

We used chick chorioallantoic membrane (CAM) assay as am angiogenesis model. Primary melanocytes from human foreskin are grafted on CAM for 4 days (A control group the dark, the second group is daily exposed for 10 hours with 1000 lux. Generated Tissue is analyzed by immunostaining for the endothelial cell-specific marker vWF.

Results and discussion:

Melanocytes on CAM formed tissues with many blood vessels. No significant difference can be detected between the two groups.

It has been shown by others that melanocytes express pro-angiogenic factors. Specific melanocyte mediated factors for the development of the choroid or inner ear remain to be investigated.

This research can be used to better explain or treat the occurrence of human diseases such as leucism, myopia, and deafness.

Saturday

Preclinical & Surgery Poster Session

Assessing the Current Trends and Techniques of Primary Stump Formation in Digit Amputation Injuries at the level of the interphalangeal joints: A Survey among Hand Surgeons

A. Draschl[1,2], W. Girsch[2], A. Kogler[1], H. Luze[2], S. P. Nischwitz[2]

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Introduction: Traumatic digit amputations can necessitate surgical amputation and primary stump formation. However, various techniques for primary stump formation are still performed by different hand surgeons.

Aim: This study aimed to detect any inequalities and reach a potential agreement on the techniques of primary stump formation among German-speaking hand surgeons.

Material and Methods: Members of the Austrian Society of Surgery for the Hand (ÖGH), the German Society for Hand Surgery (DGH), and the Swiss Society for Hand Surgery (SGH) were invited to participate in our survey. We analyzed the participants' responses (n = 213, response rate: 12.75%), using a threshold of ≥ 75% to define consensus.

Results: Consensus was reached regarding the smoothing of bony edges during resection, removal of articular cartilage during disarticulation, and management of flexor ("pull and resect" technique) and extensor tendons (no further shortening). No consensus was observed on the technique of surgical bone transection, reduction of the phalangeal head during disarticulation, and treatment of digital nerves, including neuroma prevention.

Discussion: This study provides valuable insights into the current trends and techniques of primary stump formation in digit amputation injuries at the level of the IP (interphalangeal) joints. Overall, there is a broad consensus on most aspects, with few differences between nations or levels of surgical experience. However, the lack of consensus on the treatment of digital nerves and neuroma prevention is a notable area of ongoing debate in the current literature, as various techniques exist without clear evidence for one being superior.

Unravelling the Mystery of O'Donnel-Luria-Rodan Syndrome: Novel Gene Variant Identified in Romania

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Introduction

O'Donnel-Luria-Rodan (ODLURO) syndrome is a neurodevelopmental disorder with autosomal dominant inheritance, first reported in 2019. It appears more frequently in males during the first decade of life and is associated with developmental delay, low intelligence quotient (IQ), autism spectrum disorders, epilepsy, speech delay, facial and skeletal deformities, gastrointestinal symptoms and hypotonia.

Aim

Our aim is to increase the understanding of ODLURO, a newly defined genetic condition, by exploring its etiopathogenesis and adding to the limited information available in the literature on rare genetic diseases.

Case presentation (Patients, Methods, and Results)

The present study reports the case of a 5-year-old male patient with delayed gross motor development, incapacity of verbal communication, behavioural anomalies, intellectual disability (IQ=52), severe gastrointestinal symptoms, macrocephaly, and mild facial dysmorphia. Due to the heterogeneous, non-specific clinical manifestations,

whole-exome sequencing (WES) was performed. Molecular analysis identified a new mutation in the lysine methyltransferase 2E (inactive) (KMT2E) gene, which was classified as a variant with unknown significance (VUS). Because of that, WES was also performed in the case of the father due to his non-specific and undiagnosed psychiatric manifestations. The result indicated the presence of the same mutation in his genetic code. After the second WES, the new mutation of the KMT2E gene, which was initially catalogued as VUS, changed its classification to pathogenic.

Discussion and Conclusion

The presented research highlights a new inherited KMT2E gene mutation present in both father and son, leading to unique phenotypic expressions, making it noteworthy.

The antiviral activity of zinc oxide nanoparticles against SARS-CoV-2 in cell culture-based virus neutralization assays

S. Wolfgruber[1], J. Rieger[1], O. Cardozo[2,4], B. Punz[3], M. Himly[3], A. Stingl[2], P. Farias[2,4], P. Abuja[1], K. Zatloukal[1]

[1]Medical University Graz, Austria; [2]PHORNANO Holding GmbH, Korneuburg, Austria; [3]Paris Lodron University of Salzburg, Austria; [4]Federal University of Pernambuco, Brazil

Introduction

The highly contagious virus SARS-CoV-2 is mainly transmitted via respiratory droplets and aerosols, as well as contaminated surfaces.

To reduce infections, not only the use of antiviral drugs, but also the decontamination of surfaces and personal protective equipment (PPE) is crucial. Most of the disinfection methods like ultraviolet radiation, vaporized hydrogen peroxide, heat and liquid chemicals damage materials or do not reliably disinfect all parts of the surface.

Alternatives are the use of more material-friendly methods, such as ozone or nanomaterial coatings.

Aim

The antiviral activity of two novel zinc-oxide nanoparticles (ZnO-NP), ZnO-NP-45 and ZnO-NP-76, against SARS-CoV-2 was investigated in cell culture-based virus neutralization assays.

Material and Methods

The nanomaterials differ in size, with ZnO-NP-45 consisting of particles from about 30 nm to 60 nm, while ZnO-NP-76 contains particles ranging from about 60 nm to 92 nm.

Calu-3 cells were infected with SARS-CoV-2, and then treated in suspension with increasing ZnO-NP concentrations.

Results

Inactivation of the two SARS-CoV-2 variants Delta and Omicron by a factor of more than 10^6 was shown after treatment with ZnO-NP-45, which was more active than ZnO-NP-76 indicating increased virus inactivation activity of smaller particles.

Discussion

The findings of this study clearly demonstrate a high antiviral activity of ZnO-NP against SARS-CoV-2, which is based on adsorption and an additional not yet defined antiviral effect.

Possible applications could be the coating of filters or PPE to create antiviral surfaces that could strongly increase the protection of users compared to uncoated materials.

Features of microsurgical anastomoses in difficult recipient vessels (peripheral occlusive arterial disease (POAD), infection and trauma)

A. Vasilyeva, M. Schintler, L. Kamolz, A. Gaggl

MedUni Graz, Austria

Microsurgical anastomoses of the atherosclerotic, inflammatory/postinflammatory, and traumatic/posttraumatic altered recipient vessels in the reconstruction area are difficult, have a high complication rate and are associated with increased flap loss rates and limited alternatives of reconstruction.

A venous interponate helps to manage the mismatch of different vascular diameters of flap and recipient vessels.

The recipient artery is "not sacrificed" for the blood supply of the flap and remain properly functioning without impairing or reduce the blood supply to the distal parts of the recipient region.

An alternative to venous interponate is an arterial "T-piece" of the flap artery or a "T-shaped" flap artery for anastomosis, which supports the terminal flow path and blood supply to the local and distal anatomical recipient regions.

Flap arteries have different calibres and not every flap artery can be obtained with a corresponding "T-shaped" anastomosis without the risk of impairing the blood flow in the donor region.

"T-shaped" anastomoses allow to preserve the blood flow in pathologically altered vessels in general, due to the preservation of a valuable final path of blood flow and supply to the recipient area.

These techniques with venous interponates and T-shaped flap arteries should be used as a primary technique in patients with sclerosed vessels, since these patients have a high risk of thrombosis of microanastomoses, and revision interventions with secondary necessary venous interponates often come too late in high-risk polymorbid patients.

OPTIMIZING THE ANTI-TUMOR EFFECTS OF CHIMERIC ANTIGEN RECEPTOR EXPRESSING MACROPHAGES

A. T. Gerencsér, P. Á. Tóth, D. Vígh, E. Kókai, L. Virág

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Introduction: The development of cell therapy opened new horizons in the treatment of cancer. Chimeric antigen receptor T-cell (CAR-T) therapy is already available for the treatment of some types of leukemia but has proven ineffective against solid tumors. CAR expressing macrophages (CAR-M), however, may have the potential to also fight solid tumors. Through chimeric antigen receptors, CAR-Ms can recognize tumor-specific antigens, triggering the activation of cytotoxic signaling pathways. To model this process, THP-1 human monocyte-derived cells were transduced with CARs that recognize HER2 on the surface of cancer cells and activate signaling pathways of the Dectin-1 or FcγR2A receptors (CAR-Dectin-1, CAR-FcγR2A) upon binding to JIMT-1 tumor cells expressing HER2.

Aim: Our aim was to study and optimize the effect of CAR-Ms on tumor cell killing.

Methods: CAR-M cells were primed with different concentrations of lipopolysaccharide (LPS, 0.01-1000 ng/ml), and co-cultured with mCherry-expressing JIMT-1 cells. Tumor cell death count was measured using high-content analysis (HCA). TNF-α, as an M1 polarization marker was determined by ELISA. Tumor cell death mechanism was monitored by fluorescent caspase-3,7 apoptotic markers and cell membrane integrity was measured by SytoxGreen fluorescent staining followed by HCA.

Results: CAR-M-JIMT-1 co-cultures showed significantly decreased JIMT-1 cell count and elevated production of TNF-α compared to un-transduced THP-1-JIMT-1 co-culture. Tumor cells did not show signs of caspase-3,7-dependent apoptosis, but showed increased SytoxGreen positive staining.

Conclusion: Our results showed that CAR-Dectin-1 or CAR-FcγR2A expressing macrophages are effective against breast carcinoma cells and killed tumor cells by regulated necrosis rather than apoptosis.

Support: NTP-HHTDK-22-0051

Effect of human papillomavirus on gene expression in cervical cancer

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Introduction: Virus infection is a risk factor for most cancers, including cervical squamous carcinoma (CESC). The molecular features of human papillomavirus (HPV)-positive CESC can be used as biomarkers in risk assessment, prognosis, and choosing therapy options.

Aim: This study aimed to evaluate the effect of HPV on gene expression in CESC.

Material and Methods: Cancer and HPV-associated differentially expressed genes (DEGs) in CESC with $|log2FC| \geq 0.5$ and p-value < 0.001 were retrieved from the public OncoDB database. Enrichr database was used for the functional evaluation of genes.

Results: 628 (615 upregulated and 13 downregulated) genes showed differential expression between HPV-positive and HPV-negative CESC. 325 HPV-associated upregulated genes were among the CESC-related upregulated ones with enriched pathways such as DNA replication and cell cycle. 10 downregulated genes were common in HPV and CESC-associated DEGs. HPV infection reversed the expression of 51 CESC-associated downregulated genes which enriched in some pathways like necroptosis and JAK-STAT signaling. We found three downregulated genes (i.e., TEX264, DNAJC30, and MRPS17) that were especially associated with HPV-positive CESC. Moreover, 239 upregulated HPV-associated DEGs were not among the CESC-associated DEGs.

Discussion: 4.8% of CESC-associated DEGs were modified by HPV infection of which 4.6% was upregulated and contributed to cancer through pathways such as DNA replication, DNA repair, cellular senescence, apoptosis, cell cycle, TNF signaling, and JAK-STAT signaling pathway. 13 downregulated genes in HPV-positive CESC can be applied to the development of targeted therapy for HPV-positive patients. Overall, gene expression profiling disturbance is an underlying cancer-promoting mechanism of HPV.

Saturday

Neurology
Oral Session

A Brain-Computer Interface with high Accuracy using EEG-base Features

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Introduction

A Brain-Computer Interface (BCI) is an interface between a human brain and a machine such as a wheelchair, prosthesis, or computer. It enables a human brain to issue commands, using only its brain waves. To develop a BCI, a classification accuracy of at least 70% is needed.

Aim

The aim of this project was to implement the classification of two motor imageries (MI) acquired by electroencephalogram (EEG) using a support vector machine (SVM) with a classification accuracy above 70%:

1. imaginary movement of the right hand
2. imaginary movement of the left hand

Materials and Methods

The training and test data for the classification model was recorded with the EEG DSI-24. As a pictorial instruction for the subject and to mark the beginnings of MIs during data acquisition, a presentation was programmed in PsychoPy.

The recorded data were pre-processed with the following methods: filtering, ICA, epoching, baseline correction, normalization.

The extracted feature was the subtraction of the event-related potentials (ERPs) on the motor cortex of the right and left brain-hemisphere, occurring during a MI.

A SVM was trained and tested with the pre-processed data.

Results

Preliminary results of offline data show a classification accuracy score of 76.19%. For real-time feedback a GUI was developed, which allows a graphical interpretation of the MIs.

Discussion

For communication via BCI a classification accuracy of at least 70% is required. Since the trained classification model has reached this classification accuracy offline, it can be used for real-time classification which is the next step.

Association of leukocytosis, inflammatory markers, depression and anxiety in acute pulmonary patients during COVID-19 pandemic: a cross-sectional study

G. Ostaņevičs
Rīga Stradiņš University, Latvia

Introduction

Previous studies suggest that systemic inflammation is linked to anxiety and depression. However, no research was conducted to describe this connection in acute pulmonary patients in Latvian hospitals.

Aim

To examine the prevalence of depression and anxiety in acute pulmonary patients and evaluate the connection between the severity of the symptoms and levels of inflammatory markers and leukocytosis.

Patients and Methods[1]

Patients receiving treatment in pulmonary department of Pauls Stradiņš Clinical University Hospital in Riga, aged 18 or older, who were able to sign the informed consent, were selected for assessment. Symptoms of anxiety and depression were evaluated using the 9-item Patient Health Questionnaire (PHQ-9) and the 7-item Generalized Anxiety Disorder Scale (GAD-7). Medical records were accessed to determine leukocyte (Leu), procalcitonin, and C-reactive protein levels.

Results

Of 51 assessed patients, 30 (59%) experienced symptoms of depression (median PHQ-9 score=6, IQR=7); 13 (25%) experienced symptoms of anxiety (median GAD-7 score=3, IQR=4). Negative correlation was discovered ($r=-0.405$, $p=0.004$) between the level of leukocytes and PHQ-9 score; median PHQ-9 score for patients with leukocytosis ($Leu>9.8$) was 4 (IQR=4); for patients without leukocytosis median score was 6 (IQR=9). Correlations between levels of procalcitonin, C-reactive protein and PHQ-9 or GAD-7 score were considered statistically insignificant ($p>0.05$).

Discussion

Prevalence of depression and anxiety symptoms is high in acute pulmonary patients. In our study, levels of inflammatory markers and leukocytosis were not directly connected to severity of depression or anxiety symptoms in patients with pulmonary disease.

1. Rīga Stradiņš University Research Ethics Committee Approval 2-PĒK-4/366/2022.

Visual snow – survey about the quality of life of the patients and awareness about the disease among healthcare professionals.

W. Stańska, A. M. Torbus, P. Rusztyn, P. Maciejewicz
Students' Scientific Association in the Department of ophthalmology, Medical University of Warsaw, Poland

Introduction:

Visual snow (VS) is a rare condition, manifested as the bilateral presence of dynamic, flickering dots affecting the whole visual field. Patients often compare it to snow or pixelated television static. Unfortunately, VS is still not widely known, and doctors have difficulty diagnosing it.

Aim of the study:

We aimed to assess whether the visual symptoms are disturbing for patients and the awareness of VS among healthcare professionals.

Patients and methods: An online survey was shared in the international support group for visual snow patients via social media channels between 18th July and 30th November 2022. The form contained questions about VS symptoms, the diagnostic process, and quality of life.

Results:

99 individuals completed the survey and met the study conditions: 66 women and 33 men, with an average age of 34. Although 34,34% of respondents have had the condition since they remember, acute onset VS can be an alarming symptom for many patients, impairing daily life, e.g., ability to focus (22,22%), study (21,21%) or drive the car (17,17%).

Therefore, 76,8% of individuals reached out for a medical consultation. The most often visited specialty was ophthalmologist (59,49%), followed by neurologist (20,3%). Unfortunately, 53,54% of doctors couldn’t recognize it as visual snow, 18,18% referred patients to another specialist, and only 11,1% made the diagnosis.

Discussion: Expanding the knowledge about visual snow can have a real impact on the comfort of patients. Making a quick and proper diagnosis by doctors lets patients avoid stress and shortens the diagnostic path.

“Visual snow – systematic review on etiology and treatment.

W. Stańska, A. M. Torbus, P. Rusztyn, P. Maciejewicz
Students' Scientific Association in the Department of Ophthalmology, Medical University of Warsaw, Poland

Introduction:

Visual snow (VS) is a rare clinical entity, described as the bilateral presence of dynamic, flickering dots affecting the visual field, often compared by patients to snow or pixelated television static. Moreover, it is a relatively new term in medicine, and the nature of the condition is subjective and elusive, lowering the quality of life. Unfortunately, little is known about VS.

Aim of the study:

This systematic review aims to describe the updates in the etiology and treatment of visual snow.

Materials & Methods:

We searched for articles in English, presenting original data and published after December 2019.

Results:

Different studies show inconsistent data. Neuroimaging found, among others, hypermetabolism of the lingual gyrus, changes in the occipital cortex, increased gray matter in different brain areas, and altered connectivity in visual pathways. However, these findings are not present in all patients. Interestingly, they often do not have abnormalities in the ophthalmic examination.

According to the literature, among the most effective drugs are lamotrigine and topiramate. Unfortunately, they also carry a risk of worsening the symptoms. It's crucial to remember that visual snow can be worsened or induced by alcohol, recreational drugs, and particular medication like antidepressants. In terms of treatment, nonpharmacological approaches like color filters and repetitive Transcranial Magnetic Stimulation are also made.

Discussion:

Further studies are needed to fully understand VS's nature. Nevertheless, expanding the knowledge about visual snow can impact patients' comfort, as a quick and proper diagnosis lets patients avoid stress and shortens the diagnostic path.

Saturday

Radiology & Public Health Oral Session

Not obvious cause of drug-resistant epilepsy – case report

A. Kopystecka[1], I. Kopeć[1], Ł. Lipiński[1], J. Mitek-Palusińska[2], M. Woźniak[2]

[1]Student Scientific Society at the Department of Pediatric Radiology, Medical University of Lublin, Poland; [2]Department of Pediatric Radiology, Medical University of Lublin, Poland

Introduction:

The term "drug-resistant epilepsy" refers to seizures that persist in spite of treatment with two antiepileptic drugs and are unlikely to cease with further adjustments to antiepileptic drug therapy. Among the most common structural causes of drug-resistant epilepsy in children are developmental abnormalities of the cerebral cortex, such as gray matter heterotopia, focal cortical dysplasia, or polymicrogyria. Among the higher risk factors for drug resistance are early onset, a high frequency or number of seizures early in the disease's course, and structural causes.

Aim:

Showing the importance of finding the structural cause of epilepsy.

Patients and Methods:

A 12-year-old girl with drug-resistant epilepsy diagnosed in her second year of life was admitted to the Pediatric Neurology Department for expanded diagnosis of epilepsy and evaluation of treatment. Daily epileptic seizures occurred despite the medication used, and the parents observed a deterioration of the child’s functioning. No epileptogenic changes were observed in CT examination. Magnetic resonance imaging revealed extensive accumulation of the abnormal grey matter in both hemispheres, subependymal in the occipital and temporal horns of lateral ventricles.

Results:

A partial reduction in the number of epileptic seizures was achieved through the use of a ketogenic diet combined with drug treatment. Heterotopia is a result of interrupted neuronal migration in which clusters of neurons are in abnormal locations. Magnetic resonance imaging plays an important role in diagnosis in patients with epilepsy.

Discussion:

Ketogenic diet is one of the alternative treatment options which can be used in case of drug-resistant epilepsy.

How often medical errors are reported by health care providers at the Emergency Center in Pristina

E. Gorani, G. Demjaha

University of Business and Technology - UBT, Kosovo

Purpose: Safety is a fundamental principle in patient care, as well as a key component of quality management of healthcare services. Improving patient safety requires continuous energy, including all persons who have direct or indirect contact with the patient.

Research method: For this research, two questionnaires were compiled: One was compiled in order to address patients who sought health services at the Emergency Center. The second questionnaire is designed for the Emergency Center personnel, in order to identify the relationships between the workers, the managerial staff, the problems of reporting errors, and similar.

Results: The results of this study show that the majority of patients who come to the Emergency Center are transported either by family members or by a passerby. These patients can suffer many unintentional injuries from inadequate and unprofessional transport. Also, the many patients come directly from the accident site or from respective homes: They are signs that there are problems in the referral system from the levels of Primary Health Care (PHC).

Conclusions: It is noticeable the need to reorganize the working hours for the workers of the Emergency Center. Raising the capacities of the primary care level would reduce the load of the Emergency Center from interventions, which can be handled without a problem at the lower levels.

Keywords: Patient Safety, Emergency Center, Research (study and analysis), Questionnaire, Medical errors, Adverse events, Safe procedures, Non-punitive reporting.

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