MEDICAL UNIVERSITY OF GDAŃSK

BOOK OF ABSTRACTS

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SPIS TREŚCI

ONCOLOGY

EVALUATION OF CATHEPSIN B-DEPENDENT ACTIVATION OF SELECTED PEPTIDE PRODRUGS IN BREAST CANCER CELLS [340]

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Introduction

Breast cancer remains one of the most common malignancies in women, with limited treatment efficacy due to tumor heterogeneity and therapy resistance. Peptide-drug conjugates (PDCs) offer a promising approach, selectively releasing cytotoxic agents within tumors. Cathepsin B (CtsB), an overexpressed protease in cancer cells, plays a key role in activating these prodrugs. Leveraging its enzymatic activity may enhance treatment specificity while reducing toxicity to healthy tissues.

Aim

This study evaluates how CtsB silencing affects the efficacy of peptide-MMAE conjugates with a CtsB specific sequence in MCF-7 breast cancer cells. CtsB expression was silenced using CRISPR-Cas9 (stable knock-out) and RNA interference (temporary knockdown). Cellular responses to four peptide-drug conjugates were analyzed in four cell variants: MCF-7 (control), siRNA-treated, CRISPR-modified, and SCR-transfected cells.

Method and Materials

MCF-7 cells were transfected with a CRISPR expression vector and interfering RNA. The GFP expression sequence in the vector enabled confirmation of CRISPR-Cas9-mediated silencing. Western blot was used to assess silencing efficiency. Cells were then treated with the control drug MMAE and three peptide conjugates (Arg, Cit, Gln), with cytotoxicity observed over a 72-hour incubation period.

Discussion

The cytotoxicity of peptide conjugates depended on CtsB presence. PDC with citruline at P1 position was the most selective, showing significant cytotoxicity in CtsB-expressing cells in comparison to CtsB-deprived ones. siRNA-treated cells exhibited higher cytotoxicity than CRISPR cells, suggesting incomplete silencing.

Conclusion

Cathepsin B is crucial for peptide-drug activation. CRISPR silencing reduced drug efficacy, confirming enzyme dependency. PDC with Citruline at P1 showed the highest clinical potential. These findings support the development of targeted breast cancer therapies and suggest future research into other tumor-associated proteases and gene-editing techniques.

GUARDIAN OF THE GENOME MEETS NITROGEN: P53'S ROLE IN NITROGEN METABOLISM REGULATION [342]

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Introduction

The tumour suppressor protein p53, encoded by the TP53 gene, is widely celebrated as the "guardian of the genome", yet its role in metabolic reprogramming, particularly nitrogen metabolism, remains underappreciated.

Aim

This review highlights the emerging nexus between p53 and the urea cycle, a key pathway responsible for ammonia detoxification and the generation of biosynthetic precursors.

Methods and Materials

A systematic search was conducted using PubMed, Scopus and Web of Science to identify studies published until 2024. Keywords included 'urea cycle', 'p53', 'polyamines' and 'nitrogen metabolism'. Data extraction was performed using a standardised template and the findings were synthesised narratively

Discussion

By regulating the expression and activity of urea cycle enzymes, p53 exerts profound control over interconnected metabolic pathways, including polyamine, methionine, glutathione, and proline metabolism. Cancer cells, with their voracious nitrogen demand, co-opt urea cycle dysregulation to fuel tumour growth and survival. Here, we synthesise the latest insights into p53's role in nitrogen homeostasis, delineating its broader implications for cellular metabolism and carcinogenesis. Additionally, we propose the strategic targeting of urea cycle enzymes as novel prognostic biomarkers and therapeutic vulnerabilities in cancer.

Conclusion

This work not only redefines the metabolic scope of p53 but also positions nitrogen metabolism at the forefront of cancer research, offering transformative avenues for therapeutic innovation.

ONCOLOGY

VAGINAL CLEAR CELL CARCINOMA FOLLOWING CERVICAL ADENOCARCINOMA: A RARE AND AGGRESSIVE MALIGNANCY WITH TREATMENT CHALLENGES [378]

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Introduction

Vaginal cancer is rare, accounting for 2% of genital malignancies, with squamous cell carcinoma in 92.8% of cases, mostly in women over 50. Vaginal clear cell adenocarcinoma is less frequent (5% of cases), often linked to in utero diethylstilbestrol exposure, though sporadic cases occur in older women.

Aim

We present the case of a 66-year-old woman with a history of cervical adenocarcinoma IA1, who underwent laparoscopic hysterectomy and bilateral adnexectomy in 2020. In March 2024, she presented with vaginal bleeding, and an initial biopsy revealed papillary hidradenoma. Due to persistent symptoms, a repeat biopsy was performed, and histopathological analysis confirmed high- grade vaginal clear cell carcinoma (grade 3) with a Ki-67 index of 70%, CK5/6 positivity, CEA negativity, and ER-41 positivity, indicating an aggressive tumor phenotype. The tumor was classified as cT2N1M0 (stage III) due to bilateral parailiacal lymphadenopathy. Laboratory findings showed elevated HE4 (387 pmol/L). Given the extensive tumor spread, including infiltration of the anterior vaginal wall and parametrium involvement, the disease was considered inoperable. The patient underwent six cycles of chemotherapy with bevacizumab and carboplatin. Following treatment, a gynecological examination confirmed a persistent 2.5 cm tumor in the vaginal stump with left parametrial involvement, although infiltration did not extend to the pelvic walls. MRI revealed a reduction in tumor size, no clear separation from the left parametrium, and decreased cystic components near the bladder. A PET-CT is scheduled to assess potential distant metastases, followed by an oncogynecology consilium to determine further treatment options, including radiation therapy or pelvic exenteration.

Conclusion

This case highlights the challenges of treating vaginal clear cell adenocarcinoma in a patient with a history of cervical cancer. Despite chemotherapy, the tumor persists, requiring further assessment. PET-CT will help determine the next steps, including radiation or pelvic exenteration. Early diagnosis and a multidisciplinary approach are key to improving outcomes in rare gynecologic cancers.

EXTRANODAL NK/T-CELL LYMPHOMA, NASAL TYPE: RARE LARYNGEAL MANIFESTATION IN A CHRONIC SINUSITIS PATIENT [417]

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Introduction

Natural killer/T-cell lymphoma (NKTL) is rare and can present with many significant diagnostic challenges. The incidence rate is low in Western populations. The presentation of NKTL is often nonspecific and may resemble other diseases. The tumour predominantly affects the nasal and paranasal regions without nodal infiltration and is strongly associated with Epstein-Barr virus (EBV).

Aim

We wish to highlight this case report as it emphasises the need for a broad differential diagnosis when faced with inconclusive results in complex medical conditions.

Discussion

In this case, a 26-year-old male was admitted to the ENT department with nasal obstruction and non- healing ulcerative tonsillitis accompanied by a high fever. Due to the medical history of allergic chronic rhinosinusitis (CRS) and bronchial asthma without a satisfactory response to first-line treatment, the biological treatment by interleukin-5 antibody (mepolizumab) had been implemented a few months before hospitalisation. The clinical course led to the diagnosis of peritonsillar abscess and exaggeration of CRS. However, lack of improvement after standard therapy, recurrent drug-resistant and previous immunosuppressive treatment resulted in immunodeficiency being suspected. After an initial positive response to systemic steroids, the patient was discharged home, but a few months later, the symptoms returned. Despite broad-spectrum antibiotics and multiple surgical management, the general condition was deteriorating. Only expanding the diagnostics with more specific tests allowed for a final NKTCL diagnosis to be made.

Conclusion

The diagnosis for NKTL is often long due to its non-specific presentation and low incidence. The time of final diagnosis took 7 months after admission, which is not unusual for this type of lymphoma. This patient's comorbidities and clinical improvement with steroids masked the progression of symptoms related to the neoplasm. This case report shows the importance of considering a broad differential diagnosis when dealing with inconclusive testing in complex medical cases.

ONCOLOGY

TARGETING IMPORTIN B: A NEW DIRECTION FOR CANCER TREATMENT [435]

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Introduction

Importin β, encoded by the KPNB1 gene, is a nuclear transport receptor from the karyopherin protein family. It plays a crucial role in transporting various molecules into the nucleus, where they interact with the cell genome and modulate a wide array of gene transcriptions, including core signal transducers such as STAT3 and NF-κB, growth factor receptors (EGFR as an example), transcription factors (Snail) and cell-death receptors. Since the upregulation of the KPNB1 gene was found in multiple cancers, its inhibitors are regarded as promising anti-cancer drugs.

Aim

The aim of this overview is to analyze current knowledge on the function and possible inhibition routes of importin β in most common types of cancer as well as other cancer-related processes. It is desired to explore revolutionary treatments and provide a future alternative to chemotherapy and radiation.

Methods and Materials

The PubMed database was searched for the articles containing the following phrases: “importin β”, “KPNB1” and “karyopherin β1” both alone and with the additional word “cancer”. The results were then filtered by the publication year (>2000) and language (English). After the abstract review, 18 studies were included in the overview.

Discussion

Multiple studies proved the connection between elevated Importin β levels and tumorigenesis. However, the metabolic and physiological origin of such correlation remains unclear. Cancer might have become dependent on the nuclear transport system to proliferate and avoid apoptosis. It accelerates the transcription, causing further mutations and decreases the chances of triggering cell cycle checkpoints.

Conclusion

All studies included in the overview showed an upregulation of the KPNB1 gene in cancer. By using selective inhibitors of importin β, researchers achieved a notable decrease in tumor growth and metabolism in glioblastoma, melanoma, prostate, cervical, lung, colorectal, hepatic, gastric, and breast cancers. Pathological angiogenesis termination was achieved. Targeting β-importins presents a novel strategy and a new direction for cancer treatment.

NIVOLUMAB RESISTANCE IN HNSCC PATIENTS AND FUTURE PERSPECTIVES. AN INTEGRATIVE REVIEW [454]

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Introduction

Head and neck cancer (HNC) cases are increasing globally, with resistance to immunotherapies like nivolumab posing a significant challenge. Nivolumab resistance is driven by intrinsic tumor factors, an immunosuppressive tumor microenvironment (TME), and immune checkpoint dysregulation. Mutations impair antigen presentation, while MYC amplification reshapes the TME to evade immunity. TAMs, MDSCs, and checkpoint molecules further suppress immune responses.

Aim

This systemic review focuses on the mechanisms of resistance to Nivolumab and identifying potential biomarkers like MYC and PD-L1.

Materials and methods

This systematic review followed PRISMA guidelines, analyzing studies from 2016 to 2024 in English or Polish, excluding pediatric cases. Reporting bias was assessed using ROBIS and Cochrane criteria, evaluating selective reporting, outcome transparency, and publication bias, with studies assigned a risk level (low, unclear, or high).

Discussion

Tumor cells evade immune detection by downregulating HLA class I expression through B2M mutations or antigen-processing defects. JAK1/JAK2 mutations disrupt IFN-γ signaling, reducing antigen presentation and immune response. MYC oncogene activation promotes immune evasion via PD-L1 upregulation and WNT/β-catenin signaling, suppressing immune cell activity. It also enhancesglycolysis and fatty acid synthesis, fueling tumor growth. The TME fosters resistance through PTEN loss, impairing T-cell infiltration and autophagy. TAMs and MDSCs secrete cytokines, VEGF, and immunosuppressive molecules, while PI3K-γ signaling further limits CD8+ T-cell function, reducing checkpoint inhibitor efficacy. Cancer cells evade immunity by overexpressing PD-L1, TIM-3, and LAG- 3, suppressing T-cell activation. PD-L1 inhibits PD-1, TIM-3 induces apoptosis, and LAG-3 weakens T-cell function, deepening immune suppression in OPSCC and HPV-related cancers.

Conclusion

Identifying biomarkers like MYC, PD-L1, TREG/Th17 ratios, and CAF subtypes is crucial for advancing personalized therapies. However, overcoming nivolumab resistance requires a multi-targeted approach. Future research should explore novel drug combinations, biomarker-driven clinical trials, and immunotherapy enhancements to improve HNC treatment efficacy and patient survival.

ONCOLOGY

HOW PROLONGED FASTING TARGETS CANCER METABOLISM: DISRUPTING GLYCOGEN UTILIZATION IN CANCER CELLS [496]

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Introduction

Prolonged fasting has emerged as a promising therapeutic strategy for disrupting cancer cell metabolism. Cancer cells are predominantly reliant on glucose metabolism, utilizing glycogen to fuel their rapid proliferation. During periods of prolonged fasting, the body shifts to a state of ketosis, significantly reducing available glucose, which forces cancer cells to adapt their metabolic pathways. This study explores how prolonged fasting can exploit these vulnerabilities, particularly focusing on the reduction of glycogen availability, modulation of insulin-like growth factor 1 (IGF-1), and promotion of autophagy. In this context, fasting has been shown to improve the efficacy of conventional cancer therapies, as demonstrated by a case where a metastatic thymoma patient experienced significant tumor regression following fasting protocols.

Aim

This study aims to explore how prolonged fasting influences cancer cell metabolism by targeting glycogen utilization, enhancing autophagy, and modulating oxidative stress. Furthermore, it examines how these processes can increase cancer cell sensitivity to chemotherapy.

Methods and Materials

A systematic review of peer-reviewed studies published over the last 15 years was conducted using databases such as PubMed, Scopus, and ScienceDirect. The focus was on the effects of prolonged fasting on cancer progression, specifically examining how fasting disrupts glycogen-dependent metabolism in cancer cells. The metastatic thymoma case was included to highlight real-world evidence of therapeutic outcomes.

Discussion

Prolonged fasting reduces glycogen availability, forcing cancer cells to shift to less efficient metabolic pathways, such as fatty acid oxidation. This metabolic stress, combined with reduced IGF-1 levels, triggers autophagy, a process that removes damaged cellular components and can induce selective cancer cell death. Healthy cells show greater resistance to this stress, preserving normal tissue function. The documented thymoma case illustrates how fasting, when combined with chemotherapy, can lead to significant tumor regression by exploiting cancer cell vulnerabilities.

Conclusion

Prolonged fasting has the potential to disrupt cancer cell metabolism by targeting the glycogen dependency of tumors, promoting autophagy, and enhancing chemotherapy effectiveness. While preliminary evidence from studies and case reports shows promising outcomes, further randomized controlled trials are necessary to refine therapeutic protocols and assess long-term safety.

ROLE OF SPLICING REGULATORS ESRP1 AND ESRP2 IN EPITHELIAL- MESENCHYMAL TRANSITION IN BLADDER CANCER CELLS [521]

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Introduction

ESRPs (Epithelial Splicing Regulatory Proteins) play a key role in the regulation of alternative pre- mRNA splicing, which is important in pathological processes such as cancer metastasis. The process of epithelial-mesenchymal transition (EMT) leads to a alteration in the characteristics of epithelial cells to mesenchymal cells, which promotes their migration and invasion. TGF-β is the main inducer of EMT, resulting in a decrease in the expression of epithelial markers (E-cadherin), while an increase in mesenchymal markers (Vimentin).

Aim

To date, the role that ESRP1 and ESRP2 play in the EMT process has been studied mainly in the context of breast, lung and pancreatic cancer. However, with regard to bladder cancer, there is a lack of detailed research on their involvement in this process, which is a key objective of this project.

Methods and Materials

We analyzed four commercially available bladder cancer cell lines: two from invasive cancer (T-24 and UM-UC-3) and two from non-invasive (RT-4 and 5637). We examined the expression profile of EMT- related genes: SNAIL, SLUG, TWIST and ZEB1, as well as EMT markers : E-cadherin (E-cad) and vimentin (Vim), using RT-qPCR. At the same time, we examined the expression of ESRP1 and ESRP2 in these cell lines. We confirmed the results at the protein level by performing Western Blot analysis.

Discussion

The outcomes indicate that cell lines from invasive bladder cancer have a gene expression profile characteristic of the EMT process, in which ZEB1 plays a key role. In contrast, cell lines from non- invasive cancer show an expression profile typical of the epithelial phenotype (high expression of E- cadherin). Importantly, we observed elevated expression levels of ESRP1 and ESRP2 in these lines.

Conclusion

Preliminary results suggest the potential role of ESRPs in regulating the EMT process, in that case futher studies are necessary.

ONCOLOGY

MIMICKING MALIGNANCY: A RARE CASE OF BLADDER INFLAMMATORY MYOFIBROBLASTIC TUMOUR [555]

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Introduction

Inflammatory myofibroblastic tumour (IMT) of the bladder is a rare neoplasm with uncertain malignant potential. Due to its ability to mimic aggressive bladder malignancies, accurate diagnosis is essential to ensure appropriate treatment. With only around 200 cases reported in the literature, no standardised treatment approach has been established, although transurethral resection of the bladder tumour (TURBT) is commonly performed. The exact aetiology of IMT remains unclear.

Aim

This case report highlights a rare presentation of bladder IMT in a young male, emphasising the importance of imaging, histopathological, and immunohistochemical findings in differentiating IMT from malignant bladder tumours.

Methods and Materials

A 44-year-old male presented with recurrent haematuria and lower urinary tract symptoms, including urinary urgency and incontinence. Ultrasonography detected a 3 cm lesion, which was not initially suggestive of bladder cancer. Magnetic resonance imaging (MRI) identified a 26 mm tumour on the posterior bladder wall, classified as VIRADS 4. The patient underwent transurethral resection, and histopathological analysis revealed spindle cell tissue consistent with IMT, alongside bladder mucosa exhibiting oedema and chronic inflammation. Immunohistochemical staining confirmed ALK-1 and S100 positivity, with negative CD34 and p63 markers. The Ki67 proliferation index was notably high in lymphoid follicle centres (98%) and up to 8% elsewhere. Following initial surgical intervention, a laparoscopic partial cystectomy was performed to confirm the diagnosis.

Discussion

IMT of the bladder is an uncommon entity that requires differentiation from malignant tumours through histopathological and immunohistochemical assessment. The presence of ALK-1 positivity aids in distinguishing IMT from other spindle cell neoplasms, underscoring the role of immunohistochemistry in accurate diagnosis.

Conclusion

The incidence of IMT is reported to be 6 out of 2050 bladder tumors according to a 2024 study. Advances in immunohistochemistry, particularly ALK protein detection, have improved the ability to differentiate IMT from other bladder malignancies, facilitating better treatment decisions and patient outcomes.

ADVANCED CHRONIC NEPHROPATHY AND AHUS/HIVAN IN A 28-YEAR-OLD FEMALE: A CASE REPORT [320]

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Introduction

HIV-associated nephropathy (HIVAN) and related renal complications, such as atypical hemolytic uremic syndrome (aHUS) and thrombotic microangiopathy (TMA), can lead to severe renal dysfunction and end-stage renal disease (ESRD). This report highlights a complex case involving a 28-year-old female with nephritic syndrome and acute kidney injury (AKI). She reported hypertension, decreased urine output, peripheral edema, and fever. Investigations revealed renal dysfunction. Diagnosed with end- stage renal failure secondary to glomerulopathy from HIV infection, complicated by aHUS/HIVAN, she required renal replacement therapy. Treatment with HAART, hemodialysis, and supportive therapies led to improvement.

Aim

To describe the clinical presentation, diagnostic approach, and therapeutic interventions in a patient with ESRD secondary to HIVAN, complicated by aHUS/HIVAN.

Methods and Materials

Medical records documented the patient's history and progress. Laboratory tests included high creatinine (16.55 mg/dl), BUN (106 mg/dl), and anemia (Hb 7 g/dl). Additional tests showed glucosuria, elevated UPCR (9 g), and increased protein loss (4.12 g). Signs of thrombotic microangiopathy included decreased Hb, elevated LDH, platelets, and haptoglobin. Schistocytes were negative, and ADAMTS was normal. Immunological tests revealed positive ANA-Hep2 and ANCA, and decreased CD4 T+, indicating HIV-1 infection. Abdominal USG revealed hyperechogenic kidneys. A renal biopsy was further performed.

Discussion

The patient was managed by hemodialysis and given fresh frozen plasma infusions. Renal biopsy indicated chronic nephropathy with pauci-immune inflammation, segmental glomerular sclerosis, fibrosis, and arteriosclerosis. Immunofluorescence showed IgM, C3, and C1q deposits, supporting HIVAN and aHUS diagnosis. Introducing HAART (darunavir, ritonavir, and dolutegravir) helped improve her condition. Supportive therapies included antihypertensives, diuretics, and other medications. The patient showed increased hemoglobin and platelet levels, reduced edema, and decreased LDH levels but remains dependent on hemodialysis.

Conclusion

While HIVAN is a recognized complication of HIV infection, its coexistence with aHUS driven by complement dysregulation is uncommon and poses significant diagnostic and therapeutic challenges. HIV-associated nephropathy (HIVAN), ANCA-associated vasculitis (AAV), and thrombotic microangiopathy (TMA) are rare but severe renal complications in HIV-positive patients, hence underscoring the need for early recognition, tailored treatment, and timely initiation of HAART remain critical to improving patient outcomes.

INTERNAL MEDICINE CASE REPORT (CR)

PURTSCHER-LIKE RETINOPATHY WITH RENAL IMPAIRMENT: A CASE REPORT AND REVIEW OF THE LITERATURE [329]

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Introduction

Purtscher-like retinopathy (PLR) is a rare retinal condition often associated with systemic diseases such as renal impairment. It presents with sudden vision loss and characteristic retinal findings, including Purtscher-flecken, hemorrhages, and cotton-wool spots. The combined incidence of Purtscher retinopathy (PuR) and PLR is estimated at 0.24 cases per million annually.

Aim

This report presents a case of PLR in a patient with renal impairment and reviews the literature on PLR associated with renal conditions over the past decade.

Methods and Materials

A literature review was performed using PubMed and Google Scholar, focusing on studies published within the last 10 years involving PLR and renal impairment. Keywords included “Purtscher-like”, “retinopathy,” and “renal involvement”.

Discussion

We report a 46-year-old male with chronic hypertension, dyslipidemia, cryoglobulinemia, and renal dysfunction who presented with sudden bilateral vision loss. Fundoscopy revealed retinal hemorrhages, swelling, and exudation. A renal biopsy confirmed membranoproliferative glomerulonephritis. The patient was treated with corticosteroids and therapeutic apheresis, with partial visual improvement. A review of the literature identified 9 cases of PLR with renal involvement in the past 10 years, primarily linked to nephrotic syndrome, acute kidney injury, and cryoglobulinemia. The pathophysiology of PLR likely involves retinal microvascular occlusion, potentially mediated by complement activation. Diagnosis relies on clinical findings and the presence of associated systemic conditions. Treatment typically involves corticosteroids, though the evidence on their efficacy remains limited. Our case underscores the complexity of PLR when associated with renal impairment.

Conclusion

PLR is a rare condition often linked to systemic diseases, including renal failure. Early recognition and a multidisciplinary approach are key to management. Further research is needed to better understand the pathophysiology and optimize treatment strategies.

EXOGENOUS LIPOID PNEUMONIA DUE TO CHRONIC PARAFFIN OIL INHALATION: A CASE REPORT [401]

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Introduction

Lipoid pneumonia is a rare inflammatory lung disease caused by the lipid particles accumulating in the alveoli and distal airways, classified as exogenous and endogenous. This case report highlights an uncommon cause of exogenous lipoid pneumonia due to chronic inhalation of Paraffin oil via tracheostomy tube.

Aim

To raise awareness of exogenous lipoid pneumonia as a preventable and often misdiagnosed condition due to its nonspecific clinical presentation and radiological resemblance to other pulmonary conditions. Additionally, it emphasizes the importance of proper tracheostomy care to mitigate the risk of lipoid pneumonia.

Methods and Materials

A 68-year-old female with a long-standing tracheostomy presented with chronic dyspnea and progressive exercise intolerance. Initial evaluation revealed a pulmonary mass on chest X-ray, raising suspicion of lung cancer. In the next step, chest computed tomography (CT) showed consolidations and ground- glass opacities in the right lung. Bronchoscopy with transbronchial lung cryobiopsy was performed, and histopathological assessment confirmed the presence of lipid-laden macrophages, consistent with diagnosis of exogenous lipoid pneumonia. In-depth medical history uncovered that the patient had been chronically using Paraffin oil as a lubricant for her tracheostomy tube, which was likely a direct cause of diagnosed lung condition.

Discussion

A detailed clinical history is essential in diagnosing lipoid pneumonia, particularly in patients with tracheostomies or exposure to lipid-based substances. It is important to note that the clinical findings of this condition can mimic more life-threatening diseases, such as tuberculosis or lung cancer. Therefore, early diagnosis is crucial, not only to alleviate the mental burden of the condition but also to restore the patient's quality of life more promptly.

Conclusion

Exogenous lipoid pneumonia should be considered in patients with chronic lipid inhalation. Clinicians must be aware of this condition to ensure timely diagnosis and prevention through appropriate tracheostomy care practices.

INTERNAL MEDICINE CASE REPORT (CR)

PERCUTANEOUS CLOSURE OF PVL IN A PATIENT AFTER COVID-19 INFECTION-SPECTACULAR IMPROVEMENT OF THE MEAN PG [434]

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Introduction

Paravalvular leak (PVL) stands out as a frequent and severe complication observed in patients after prosthetic valve replacement. Traditionally, PVL closure required surgical re-intervention. However, recent advancements in the field of interventional cardiology have facilitated the development of percutaneous techniques that allow for the effective sealing of these leaks without the need for open-heart surgery.

Discussion

A 71-year-old male with a medical history of mechanical mitral valve (MV) replacement in 2013, presented to our center with worsening heart failure symptoms - LVEF 46%. Before the procedure the patient was switched from Warfarin to enoxaparin, however the PVL closure was postponed due to covid infection. Pre-operative transesophageal echocardiography (TEE) revealed severe PVL (10x8mm) eligible for percutaneous device closure. The patient was deemed high-risk for open surgical repair due to his condition and comorbidities. Two APVL occluders 5x10mm and 4x8mm were implanted simultaneously. The PVL was completely sealed. During the procedure, there was also found a lack of mobility of one disk of the mechanical valve, potentially contributing to the patient's symptoms. It was successfully manipulated with a catheter and a wire. Post-procedure TTE imaging revealed improvement in hemodynamics, with a significant reduction in the mean pressure gradient (PG) from 5.7 mmHg to 1.8 mmHg. The patient was discharged home in a very good condition with indications to continue anticoagulant therapy.

Conclusions

This case highlights the successful use of percutaneous device closure for PVL in a patient with a complex history of mechanical MV replacement. Furthermore it emphasizes the importance of correctly selected anticoagulant therapy. The combination of 3D TEE imaging and precise device selection, along with the implantation techniques, resulted in a significant improvement in both the patient's hemodynamics and clinical condition.

SURGICAL TREATMENT OF A PATIENT WITH HYPERTROPHIC OBSTRUCTIVE CARDIOMYOPATHY AND AORTIC VALVE FIBROCALCINOSIS. CASE REPORT [474]

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Introduction

The coexisting hypertrophic obstructive cardiomyopathy (HOCM) and aortic stenosis is rare condition in clinical practice and increases risk of sudden cardiac death, heart failure, and atrial fibrillation. The correct choice of treatment is important to have good treatment results.

Aim

56 years old woman diagnosed with HOCM and heart failure symptoms was admitted for further diagnosis and treatment. Arterial hypertension and dyslipidemia was treated effectively since 40 years of old, with betablockers, statins and ACE inhibitors. Heart rhythm was regular with heart rate of 62 BPM and III grade systolic murmur, BP–115/77 mmHg. ECG showed signs of LV hypertrophy with LV systolic overload. 2D echocardiography revealed biventricular hypertrophy with asymmetric LV hypertrophy (septal thickness to 17-21 mm) and severe LV outflow tract obstruction with gradient of 103 mmHg. Aortic valve fibrocalcinosis with signs of moderate-severe stenosis was diagnosed. Cardiac MRI confirmed asymmetric LVH with hyperkinetic contraction and LV ejection fraction 73%. Significant aortic valve calcification, decreased leaflet mobility was diagnosed with planimetrically measured aortic valve opening of 1.0-1.1 cm². Multidisciplinary team decision was to perform complex cardiac surgery – aortic valve stenosis surgical correction with myectomy, as the patient had persisting symptoms and severe LVOT obstruction on medicamental treatment. Patient underwent successful surgery with aortic valve decalcification and myectomy with good postoperative effect. 3 months after surgery she was without symptoms, with good reduction of the basal septal segmental thickness to 11 mm, without LVOT obstruction at rest and during Valsalva, good aortic valve function and significant reduction of biomarkers.

Conclusion

Hypertrophic obstructive cardiomyopathy and aortic valve stenosis is rare coexisting pathology, but detailed diagnosis and complex cardiac surgery – myectomy and valve surgical reconstruction in specialized centers can have/show good postoperative results.

INTERNAL MEDICINE CASE REPORT (CR)

SEVERE ADVERSE DRUG REACTION WITH STEVEN-JOHNSON SYNDROME IN A 40-YEAR-OLD MALE [512]

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Introduction

Stevens-Johnson Syndrome (SJS) is a severe, life-threatening mucocutaneous reaction, often triggered by medications, characterized by widespread epidermal necrosis and systemic complications. Drug- induced SJS can lead to significant complications, including sepsis, multi-organ failure, and respiratory distress, necessitating intensive care management. This report presents a case of a 40-year-old male who developed SJS following the administration of corticosteroids and antihistamines prescribed for post-surgical pruritus. The patient's condition rapidly deteriorated, leading to extensive skin detachment, secondary infections, and prolonged respiratory failure.

Aim

To describe the clinical course, complications, and management of a severe adverse drug reaction leading to Stevens-Johnson Syndrome.

Methods and Materials

Skin biopsy (leg) , CT-scans and MT-PCR and blood cultures were used for diagnostic purposes

Discussion

A 40-year-old male presented with symptoms consistent with a myocardial infarction. He was diagnosed with complete occlusion of one of the coronary arteries, necessitating coronary artery bypass surgery (CABG). Post-surgery, the patient visited a dermatologist for skin pruritus. prescription: chlorpheniramine, hydrocortisone, and dexamethasone for symptom relief. Two days later, the patient reported slight improvement but developed severe pruritus, followed by erythema. Upon further consultation, the doctor diagnosed a drug-related adverse reaction. The patient's condition worsened with the development of blisters on the skin, and the diagnosis of Steven-Johnson Syndrome (SJS) was considered. Corticosteroid therapy was initiated, but the condition progressed with skin detachment and blister formation, mimicking severe burns, bandages, and topical treatment with silver sulfadiazine was administered. Given the severity of the clinical presentation, treated with intravenous immunoglobulin (IVIG) therapy and was placed on a ventilator and required nutritional support through a feeding tube (gavage) with total parenteral nutrition (TPN).He remained in a coma for approximately 60 days. After two months of treatment, the patient emerged from the coma and began a slow recovery.

Conclusions

This case highlights the severe consequences of an adverse drug reaction leading to Steven-Johnson Syndrome, necessitating aggressive medical intervention, including corticosteroids, antibiotics, and immune-modulating therapies such as IVIG. The patient's condition was complicated by secondary infections and respiratory failure, underlining the importance of early diagnosis and comprehensive management of drug-induced dermatological reactions.

DIAGNOSTIC DIFFICULTIES IN CONNECTIVE TISSUE DISEASES - SYSTEMIC LUPUS ERYTHEMATOSUS CASE STUDY [526]

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Introduction

Systemic lupus erythematosus (SLE) is a chronic, autoimmune connective tissue disease. Clinical presentation varies from single-organ involvement, to more often, multi-system condition.

Aim

A 36-year-old woman with increased ALP and GGT levels, displaying jaundice, was admitted to the hospital for liver damage diagnosis. Patient reported tiredness, shortened menstrual cycles, periodical pain in the right hypochondriac, itching around the navel and left thigh. The skin lesions were not photosensitive. Periodical pale stools and dark urine were reported. Symptoms began seven months prior to the admission. Slight leukopenia and thrombocytopenia appeared. Two years before, a patient underwent hospitalization due to tachycardia, ECG changes and non-specific chest pain. Initial clinical examination was insignificant, except for jaundice.

Methods and Materials

An ultrasound showed fluid in the rectouterine pouch and right pleural cavity. Perihepatic fluid, dilation of IVC and hepatic veins were reported. The liver was slightly enlarged, mostly around the left lobe region. Levels of natriuretic peptides were increased. Echocardiography showed dilation of both atria and slight regurgitation of all heart valves. Gastroscopy examination was normal, except erythematous gastropathy. The only abnormalities found on MRCP were: dilatation of the hepatic veins and IVC, prominent features of periportal edema and mild splenomegaly. Presence of fluid in the right pleural cavity was confirmed.

Discussion

During the diagnostic process other hepatic pathologies and hepatotropic viral infections were excluded. SLE suspicion was based on positive anti-ds-DNA and anti-nuclear antibodies. Increased level of total serum bilirubin (4.23 mg/dL) and conjugated bilirubin level (1.1 mg/dL) brings suspicion of coexisting Gilbert's syndrome and congestive hepatopathy secondary to the chronic heart disease.

Conclusions

Nonspecific symptoms caused diagnostic difficulties and postponed treatment. Diagnosing patients with a wide range of unspecific symptoms can be challenging and time-consuming. It is crucial to deepen the diagnostic process including specific testing.

INTERNAL MEDICINE CASE REPORT (CR)

GASTRIC EMPHYSEMA IN ELDERLY PATIENT WITH ALZHEIMER'S DISEASE: A CASE REPORT [541]

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Introduction

Gastric emphysema represents a rare pathology characterized by air accumulation within the stomach wall, with diverse etiologies ranging from benign to life-threatening conditions. The condition presents diagnostic challenges due to its rarity and overlap with other gastrointestinal pathologies, particularly emphysematous gastritis.

Aim

This case report aims to enhance the medical database regarding gastric emphysema by documenting its clinical presentation, radiological features, and management. The goal is to contribute to the development of standardized diagnostic criteria and treatment guidelines, with particular emphasis on the crucial role of CT imaging in differentiating between benign and potentially lethal causes.

Methods and Materials

We present the case of an 86-year-old male with Alzheimer's disease who was admitted following episodes of 'coffee-ground' vomiting. Diagnostic workup included laboratory investigations and abdominal CT imaging. The patient was treated conservatively with antibiotics and supportive care, with follow-up CT imaging performed after three days of therapy to assess treatment response.

Discussion

Gastric emphysema is among the rarest locations for intramural gas in the gastrointestinal tract. CT imaging plays a crucial role in diagnosis, differentiating between benign and lethal etiologies remains challenging as both can present with similar radiological manifestations. This case demonstrates mucosal damage from severe vomiting as the likely cause, representing a benign etiology amenable to conservative management. The absence of established guidelines necessitates individualized treatment approaches within a multidisciplinary team. The complete resolution observed on follow-up imaging validates the conservative approach.

Conclusion

This clinical case documents successful conservative management of gastric emphysema resulting from mucosal damage due to severe vomiting. The critical role of accurate CT interpretation in guiding treatment decisions is emphasized, particularly in distinguishing between conditions requiring surgical intervention and those manageable with conservative measures. The paucity of standardized protocols highlights the need for additional case reports and research to identify reliable imaging markers and develop evidence-based management guidelines for this condition.

UNCONVENTIONAL MANAGEMENT OF A PERIOPERATIVE COMPLICATION IN DUAL-MOBILITY CMC I ARTHROPLASTY: A CASE REPORT [287]

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Introduction

Rheumatoid arthritis (RA) often causes joint deformities requiring surgery. Dual-mobility carpometacarpal (CMC) I arthroplasty is a well-established procedure.

Aim

This case report presents an unconventional approach to an intraoperative complication.

Methods and Materials

A 47-year-old female with RA affecting both hands underwent dual- mobility CMC I arthroplasty on her non-dominant left hand. She had a history of MCP joint hyperextension and previous surgeries, including CMC I dislocation reduction with Kirschner wire stabilization and extensor tendon centralization for ulnar deviation of digits II-V. During arthroplasty, an intraoperative fracture of the trapezium and first metacarpal shaft occurred. A non-standard technique was used: both the acetabular component and the stem were cemented onto the remaining bone. This unconventional approach yielded positive results.

Discussion

At two-year follow-up, the patient had preserved thumb function without pain. The preoperative resting hyperextension deformity of the MCP joint resolved, persisting only during full active extension. No additional complications were observed.

Conclusions

This case demonstrates the potential of cemented acetabular component and stem placement for intraoperative fractures of the trapezium and first metacarpal shaft during dual-mobility CMC I arthroplasty. This technique may be a viable alternative when standard fixation is not feasible.

ORTHOPEDICS AND ORTHOPEDIC SURGERY

LIMB LENGTHENING IN A PATIENT WITH ACHONDROPLASIA [508]

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Introduction

Achondroplasia is a genetic disorder with autosomal dominant inheritance, leading to abnormal endochondral ossification and growth disturbances. To improve the quality of life for individuals with achondroplasia, the Ilizarov method can be used for limb lengthening. The Ilizarov apparatus is a type of external fixator used for limb elongation and healing through the process of distraction osteogenesis.

Aim

The aim of this study is to present a clinical case of a patient with achondroplasia who underwent limb lengthening using the Ilizarov method.

Methods and Materials

The patient was a 12-year-old boy with achondroplasia. Initially, distraction corticotomy using the Ilizarov method was performed on the distal femoral metaphysis of the right femur, the proximal tibial metaphysis of the left leg, and the distal third of the left fibula. Subsequently, upper limb lengthening was undertaken, extending both the right and left arms. After the lower limbs had healed, the same method was used to lengthen the distal femoral metaphysis of the left femur, the proximal tibial metaphysis of the right leg, and the proximal third of the right fibula.

Discussion

The process of limb lengthening in patients with achondroplasia is complex and long-term. It requires multi-stage surgical treatment and prolonged rehabilitation. The Ilizarov method is one of the most effective techniques used in such cases; however, it is associated with numerous challenges, including a long hospitalization period, the risk of complications, and the necessity of involving an interdisciplinary team of specialists.

Conclusion

Limb lengthening in patients with achondroplasia using the Ilizarov method is effective but requires a long treatment process. The patient requires comprehensive care, including both surgical treatment and intensive rehabilitation. The involvement of specialists from various medical fields is essential, highlighting the interdisciplinary approach to this type of therapy.

TREATMENT OF LOWER LIMB DEFORMITIES IN A PATIENT WITH WILSON'S DISEASE USING THE ILIZAROV METHOD [511]

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Introduction

Wilson's disease is a rare genetic disorder causing impaired copper metabolism, leading to its accumulation in organs such as the liver and brain. Skeletal deformities may develop, impacting mobility and quality of life.

Aim

To present the case of a 16-year-old male with severe lower limb deformities treated using the Ilizarov method to correct alignment, improve function, and restore mobility.

Methods and Materials

A 16-year-old patient with Wilson's disease exhibited: Femoral valgus causing excessive lateral knee joint loading. Tibial varus exacerbating limb axis disproportion. Genu recurvatum limiting stability and causing pain. Left leg shortening of 2 cm. Preoperative Planning: X-ray and CT imaging guided Ilizarov apparatus placement and correction. Correction Procedures: Jan 2023: Varus corticotomy of the right femur with Ilizarov application. Feb 2023: Valgus corticotomy of the proximal right tibia and fibula. Nov 2023: Distraction-valgus corticotomy of the left tibia for varus correction and partial length equalization. Nov 2023: Varus corticotomy of the distal left femur for knee axis improvement. Gradual corrections were patient-managed at home under supervision. Rehabilitation focused on knee mobility (initially 20°), muscle strengthening, and crutch-assisted gait training.

Discussion

The Ilizarov method allows gradual, controlled correction of complex deformities while maintaining joint function. Despite metabolic and hepatic complications in Wilson's disease, no major postoperative issues were observed.

Conclusion

The Ilizarov method effectively corrected limb axes, length, and knee function, restoring mobility. This case underscores the significance of individualized treatment planning and interdisciplinary collaboration in complex deformity management.

ORTHOPEDICS AND ORTHOPEDIC SURGERY

DRUG-RESISTANT AMIODARONE-INDUCED HYPERTHYROIDISM TYPE 2 AS A COMPLICATION OF TREATMENT FOR ATRIAL FIBRILLATION WITH TACHYARRHYTHMIA [514]

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Introduction

Amiodarone can cause hypothyroidism or thyrotoxicosis. Amiodarone-induced thyrotoxicosis (AIT) type 2 results from direct toxic effects on thyrocytes, leading to excessive thyroid hormone release. Although prednisone monotherapy is usually effective, some cases require alternative interventions.

Aim

Present a case of drug-resistant AIT type 2 in a patient with atrial fibrillation and multiple comorbidities, emphasizing treatment challenges and the need for alternative approaches.

Methods and Materials

A 52-year-old male with ischemic cardiomyopathy (LVEF 35%), NYHA III circulatory failure, chronic renal failure, and paroxysmal atrial fibrillation with tachyarrhythmia was admitted due to refractory AIT type 2. On admission, he presented with right-sided facial nerve palsy, facial redness, and dry, scaly skin. ECG revealed atrial flutter (HR: 120 bpm), and laboratory tests showed significantly increased free thyroid hormone levels. Treatment included dexamethasone, thiamazole, lithium, propranolol, magnesium, and sodium perchlorate, restoring sinus rhythm and normalizing thyroid hormone levels. However, a relapse occurred after discharge, prompting reevaluation. Radioiodine therapy was ruled out due to low iodine uptake (3.9%), leading to the decision for thyroidectomy. The patient was discharged pending surgery but was later found deceased at home.

Discussion

AIT type 2 is typically steroid-responsive, but this case demonstrated treatment resistance. Radioiodine therapy was ineffective, making surgery the only viable option. The patient's cardiovascular comorbidities complicated management. Early identification and aggressive intervention are crucial to prevent fatal outcomes.

Conclusion

Amiodarone is effective in managing atrial fibrillation, but thyroid function should be closely monitored. Resistance to steroid therapy in AIT type 2 necessitates considering early alternative treatments such as radioiodine therapy or surgery. A multidisciplinary approach is essential to optimize outcomes and prevent mortality.

TREATMENT OF A PSEUDOARTHROSIS IN A PATIENT AFTER A MOTORCYCLE ACCIDENT [517]

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Introduction

A pseudoarthrosis is defined as any failure of bone healing. It is diagnosed when, after 9 months from the injury, there is no bone union, and X-ray images show no healing progress for an additional 3 months. One of the surgical treatment methods is repositioning and stabilization of the nonunion using the Ilizarov method, along with drilling according to Beck and decortication using the Judet-Forbes technique.

Aim

The aim of this study is to present a clinical case of a patient with a pesudoarthrosis following a motorcycle accident and to evaluate the effectiveness of the Ilizarov method in the treatment of such cases.

Methods and Materials

The Ilizarov method has been widely used in the treatment of pseudoarthrosis, especially in cases of complex fractures resulting from high-energy trauma, such as motorcycle accidents. The technique allows for gradual bone lengthening and stabilization while promoting osteogenesis. However, it requires a prolonged treatment period, specialized postoperative care, and rehabilitation to achieve optimal functional outcomes.

Discussion

The Ilizarov method has been widely used in the treatment of pseudoarthrosis, especially in cases of complex fractures resulting from high-energy trauma, such as motorcycle accidents. The technique allows for gradual bone lengthening and stabilization while promoting osteogenesis. However, it requires a prolonged treatment period, specialized postoperative care, and rehabilitation to achieve optimal functional outcomes.

Conclusions

The Ilizarov method is an effective treatment for patients with pseudoarthrosis resulting from traffic accidents. These patients often suffer from multiple injuries, requiring treatment by specialists from various medical fields. In their recovery process, orthopedic treatment and rehabilitation play a crucial role

ORTHOPEDICS AND ORTHOPEDIC SURGERY

EXAMINING THE USE OF ARTHROSCOPY AS DIAGNOSTIC AND TREATMENT METHODS OF SEVERE WRIST PAIN AMONG CHILDREN AND ADOLESCENTS: RETROSPECTIVE STUDY [583]

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Introduction

Chronic wrist pain in paediatric patients is relatively uncommon and may have either traumatic or non- traumatic origins. Due to the limited accuracy of conventional diagnostic methods, wrist arthroscopy provides a more precise assessment while simultaneously enabling therapeutic intervention.

Aim

To evaluate the use of arthroscopy for both diagnostic and therapeutic purposes in chronic wrist pain among children and adolescents.

Methods and Materials

Data was collected from patients treated at the Department of Orthopedics and Traumatology of the Medical University of Gdańsk between 2014 and 2024. Patients underwent pre- and postoperative evaluations using clinical tests and imaging studies commonly employed in wrist injury diagnostics. Intraoperative findings were classified according to the Palmer, Geissler, and Viega scales. Treatment outcomes were assessed using the Visual Analog Scale (VAS) for pain, as well as the QuickDASH and Mayo Wrist Score questionnaires, with a mean follow-up of 18 months post-arthroscopy.

Discussion

Between 2014 and 2024, a total of 29 wrist arthroscopies were performed on aged 13-17 year patients suffering from chronic wrist pain. Triangular fibrocartilage complex injuries were identified in 77% of cases. Scapholunate injuries were present in 92% of cases. Lunotriquetral injuries were observed in 28% of cases. In 80% of cases, arthroscopy revealed pathological changes that were not visible on preoperative MRI. The QuickDASH score improved from 65.4 preoperatively to 12.5 postoperatively. The postoperative VAS pain score was 3.3. According to the Mayo Wrist Score, postoperative outcomes were rated as excellent in 50% of cases. Our study revealed that the majority of pathologies identified during arthroscopy were not detectable in preoperative imaging, including MRI, highlighting the superior diagnostic capability of arthroscopy. The results of the QuickDASH, Mayo Wrist Score, and VAS pain scale demonstrate significant functional improvement and pain reduction following arthroscopic intervention.

Conclusion

Wrist arthroscopy in children and adolescents is the most precise diagnostic method for chronic wrist pain, allowing for simultaneous repair of certain injuries, ultimately leading to substantial improvement in hand function.

PILON FRACTURE: CASE REPORT [593]

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Introduction

Pilon fracture is a fracture of the distal tibial plafond and described as high energy axial compression force of the tibia as it acts as a pestle, driving vertically into the talus. It accounts for approximately 5 % to 7 % of all tibial fractures and demonstrates difficulty in achieving fracture union and high complication rates, leaving patients with persistent pain, deficits in range of motion, and disability.

Aim

As illustrated in the case of a 64-year-old female patient who fell off a ladder with her left ankle in a hyperextension position, the purpose of this case report is to emphasise the importance of anatomical reduction and restoration of biomechanical integrity in the successful management of a comminuted distal tibia fracture.

Methods and Materials

After an x-ray showed a fibula fracture and a comminuted distal tibia fracture with fragment displacement, the patient had external fixation treatment immediately. After 17 days when the oedema subsided, the final osteosynthesis using screws and plates was performed. The initial step in reducing the tibial plafond was to restore the length of the fibula. After the articular surface of the tibia was anatomically reconstructed, buttres plates were positioned on the distal tibia. However, after 8 months, arthroscopic surgery was necessary due to posttraumatic impingement syndrome in her left ankle. The procedure involved resection of osteophytes on the anterior border of the talocrural joint, debridement, and reosteosynthesis of the distal tibia. Currently, patient no longer reports left ankle discomfort or dysfunction.

Discussion

Research has proven that such ankle injuries should be treated with early internal fixation of the fibula and tibial posterior column combined with external fixation. Nonetheless, the anatomical repositioning of the fibula is crucial to maintaining lower extremity length and its force lines. This approach leads to shorter operating times, better overall ankle function, and fewer complications.

Conclusions

Pilon fracture treatment needs a tiered approach, beginning with oedema reduction and early external fixation, followed by internal fixation and fibula length restoration as the first step in osteosynthesis.

BIOMEDICAL SCIENCES

ANALYSIS OF FLUOXETINE AND ITS ACTIVE METABOLITE NORFLUOXETINE IN BIOLOGICAL SAMPLES USING THE SPME-LC-MS/MS [390]

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Introduction

Depression is a disease of the central nervous system (CNS) that affects millions of people worldwide every year. The pharmacotherapy of depression is mainly based on the administration of antidepressant drugs, among which the most common are Selective Serotonin Reuptake Inhibitors (SSRI's), such as fluoxetine (FLU). The metabolism of FLU is extensive and undergoes mainly in the liver, where the cytochrome P450 enzymes (primarily CYP2D6) convert FLU into its active metabolite norfluoxetine (NFLU) [1,2].

Aim

The purpose of this study was to optimize the Solid-Phase Microextraction technique combined with the Liquid Chromatography coupled to Tandem Mass Spectrometry (LC-MS/MS) in order to monitor FLU and NFLU in biological samples.

Methods and Materials

In optimized conditions, the SPME method has been used for extraction of FLU and NFLU from urine samples under the following conditions: C18 extraction phase (SPME sorbent), desorption mixture: ACN/water/FA (80/20/0.1; v/v/v), 60 min extraction time and 5 min desorption time.

Discussion

The extracts obtained from the SPME method were then analyzed with the use of optimized LC- MS/MS method. The chromatographic separation was conducted in the reversed-phase mode (phase A: water/FA (100/0.1; v/v), phase B (ACN/FA (100/.01, v/v)), the time of the analysis was 4.5 min. To separate the analytes, the Kinetex® C18 column was used (50 mm × 2.1 mm, particle size 1.7 µm). The limit of quantification (LOQ) was equal to 10 ng/mL for both FLU and NFLU.

Conclusions

The developed SPME-LC-MS/MS method facilitates the analysis of even trace amounts of the relevant compounds in biofluids, and it may be an element of the personalized pharmacotherapy of depression. A better understanding of the metabolism of the SSRI drugs may help in the future to modify and tailor the pharmacotherapy in order to achieve the best therapeutic outcomes in the treatment of depressive disorders in individual patients.

CD73 REGULATES LYTIC TO NON-LYTIC SWITCH OF PYROPTOSIS IN METASTATIC BREAST CANCER [391]

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Introduction

CD73 (ecto-5'-nucleotidase), an enzyme generating extracellular adenosine, has a significant role in tumor progression. Its depletion has inhibited breast cancer (BC) growth and metastasis in syngeneic murine models. However, for clinical data, the link between CD73 expression and BC outcome is highly inconclusive.

Aim

The objective was to assess CD73's role in BC progression using a mouse model reflecting its complexity.

Methods and Materials

A murine model of chemically induced breast cancer was applied to analyze CD73 knock-out (KO)- induced changes in main parameters of cancer progression and gene expression at the transcriptome (RNA-seq) and proteome (IHC) levels. WB analysis of BC cell lines and ELISA and dot-blot analysis of patients' serum confirmed results from the murine model.

Discussion

CD73 depletion significantly decreased the overall survival in mice with multiple mammary gland tumors (MGTs) and distant metastases. It did not affect the incidence or multiplicity of metastases; however, it increased the growth rate of all next developing tumors (next MGTs) and decreased their latency. Transcriptomic analysis of the next MGTs indicated a CD73 KO-induced activation of pyroptosis, Gasdermin (GSDM)-dependent pro-inflammatory programmed cell death. Activation of upstream genes regulating pyroptosis was confirmed at the protein level with a change in the cyclic GMP-AMP synthase (cGAS) - stimulator of interferon genes (STING) signaling pathway. However, the IHC and WB analysis for GSDMD-NT, CASP1, and ALIX indicated a CD73 KO-induced switch from lytic to the non-lytic mode of pyroptosis. This switch was confirmed with dot-blot analysis of patients' serum for GSDMD and IL-1β level ELISA quantification in patients' serum and BC supernatants.

Conclusion

CD73 KO can increase the tumor burden at the metastatic stage of breast cancer progression by deregulating pyroptosis. That may have implications for anti-CD73 therapy, both as monotherapy and in combination with immunotherapy for advanced BC.

BIOMEDICAL SCIENCES

CLINICAL EFFICACY OF PYO-BACTERIOPHAGE THERAPY IN OCULAR SURFACE DISEASE TREATMENT [407]

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Introduction

The rise in patients unable to undergo antibiotic treatment has created a demand for alternative methods in ophthalmology. From the year 2000, the Department of Eye Diseases of Tbilisi State Medical University successes in using Pyo-Bacteriophage to treat various eye diseases such as chronic and acute blepharitis, infectious-allergic conjunctivitis and keratitis and chronic and acute dacryocystitis in antibiotic-allergic and antibiotic-resistant patients or in the patients who have negative antibiotic treatment results in the past. Advantages of the Bacteriophage therapy compared to antibiotic therapy, such as specificity, adaptability, lower risk of side effects or allergic reactions, naturally occurrence potential and biodegradability, and reduced risk of antibiotic resistance should be taken into account.

Aim

The study aimed to collect and analyze the data of the cases where Pyo-Bacteriophage was implemented for treatment and the treatment results.

Methods and Materials

Pyo bacteriophage leads to specific lysis of Staphylococcus, Streptococcus, E.coli, Pseudomonas Aeruginosa and Proteus. Pyo-bacteriophage, produced in The George Eliava Institute of Bacteriophage, Microbiology and Virology was prescribed for instillation, application and nasolacrimal duct irrigation. The data was collected from the patients' medical histories and follow-up results.

Discussion

A total of 79 patients, who underwent the mentioned treatment were found, of which 30 had chronic dacriocystitis, 27-Infectious-allergic conjunctivitis and 22-Blepharitis. In most of the cases (61/79) the positive outcome with relief of patient complaints and full recovery was achieved.

Conclusion

Considering the diversity of patients and the complications that could occur if antibiotic therapy, which was ineffective, did not have an alternative in the form of bacteriophage, the high effectiveness and clinical significance of pyo-bacteriophage therapy as a treatment method is confirmed. Also, its other advantages mentioned above should be taken into account.

THE ROLE OF FGF/FGFR SIGNALING IN RESISTANCE TO THERAPIES TARGETING DNA REPAIR PATHWAYS IN BREAST CANCER [432]

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Introduction

Breast Cancer (BCa) is a heterogenic disease and different molecular mechanisms can drive its progression. As BCa is often associated with defects in response to DNA damage, drugs which target the DNA repair process may be an effective therapeutic option. The progression of the disease is also promoted by tumour microenvironment with cardinal role of fibroblasts. Cancer-associated fibroblasts secrete fibroblast growth factors (FGFs) that stimulate mitogenic cell signalling pathways, activating fibroblast growth factor receptors (FGFRs) on breast cancer cells. Signalling from tumour microenvironment can play an important role not only in breast cancer progression but also in resistance to commonly used therapies.

Aim

The aim of the project is to investigate the involvement of FGFR in breast cancer resistance to DNA repair-targeting anticancer drugs.

Methods and Materials

Breast cancer cell lines were grown in 3D cultures in Matrigel® in the presence of DNA repair-targeting drug, talazoparib, and with/without FGF and cell colony size was assessed. The relative changes in expression of DNA damage response proteins were evaluated by Western Blotting and immunofluorescence.

Discussion

Analyzed breast cancer cell lines exhibited sensitivity to inhibition of PARP, an enzyme directly involved in repairing single-strand DNA breaks. The results obtained from 3D growth tests showed that treatment of BCa cells with FGF led to the promotion of cell growth in the presence of talazoparib. Moreover, in cells recovering after incubation with talazoparib, FGF enhanced a decrease in the level of the DNA damage marker i.e. phosphorylated histone γ-H2A.X.

Conclusion

FGFR activity may result in a protective effect against PARP inhibitors targeting DNA damage response. Inhibition of PARP activity results in the failure of single-stranded DNA damage repair which can lead to cell death. The combination of PARP inhibitors with agents targeting FGFR could pose a novel approach to BCa treatment, resulting in increased patients` survival.

BIOMEDICAL SCIENCES

EVALUATION OF ANAEROBIC AND AEROBIC CAPACITIES AND RECOVERY ABILITY AMONG SWIMMERS OF THE SPORTS CLUB "DELFĪNS" AFTER PHYSICAL STRESS TESTS [445]

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Introduction

Great swimming performance requires effective training and precise assessment to optimize results. Physical stress tests assess cardiovascular efficiency, fatigue tolerance, and recovery ability after exertion. Research highlights that monitoring physiological responses enhances the effectiveness of training programs (Dalamitros et al., 2016, Solovjova et al., 2017).

Aim

This study aimed to implement two structured physical stress test protocols to measure the pulse and lactate levels at three time points – before, immediately after, and after cool-down to evaluate the aerobic and anaerobic capacities and recovery abilities, of sports club "Delfīns" swimmers.

Methods and Materials

Physiological responses to two stress tests of 11 swimmers with at least 4 years of national-level competitive experience (5 male, 6 female, aged 15-23) were assessed in Riga 72nd Secondary School's 25-meter pool. Athlete main stroke, event distances, and training duration were surveyed. An aerobic (16x50m, with a 10-second rest) and an anaerobic (4x50m, with a 45-second rest) capacity tests were performed. Long-distance versus short-distance swimmer subgroups were analyzed. Athletes completed a structured warm-up and cool-down, with at least 48-hour recovery between tests. Pulse was measured by Garmin Fenix 7X Solar watch. Lactate levels were assessed using Lactate Pro 2 device from a capillary blood sample. Measurements and survey data, including median values and paired-samples T-tests, were analyzed using Excel and IBM SPSS 29.0.0.0.

Discussion

The findings suggest stroke and training duration have less impact on recovery, with individual conditioning being more critical. The near submaximal pulse suggests both tests operate under anaerobic conditions. Lactate level differences reflect varying intensities or rates of lactate accumulation, rather than distinct energy systems. Long-distance swimmers exhibited more consistent recovery, suggesting that aerobic conditioning enhances recovery even in anaerobic conditions.

Conclusion

This study demonstrates the value of lactate and pulse monitoring in assessing aerobic and anaerobic capacity, as well as recovery ability, in competitive swimmers. Recovery variation between longer-distance and sprinter swimmers offers insight for tailoring individual rest intervals and training regimens. Further research is recommended to explore swim training specificity and recovery relationship.

MONITORING OF THE LEVELS OF PHYTOCANNABINOIDS IN CBD- AND CBG-DOMINANT CANNABIS PLANTS [452]

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Introduction

The increasing value of the medical cannabis market observed in recent years is associated with growing competitiveness among its producers. In raw cannabis plant material, acidic forms of major and minor cannabinoids (phytocannabinoids(PCs)) dominate, such as cannabigerolic acid (CBGA), and cannabinolic acid (CBDA). Currently, a gold standard method described in Cannabis flos monograph of the European Pharmacopoeia comprises the analysis of acidic and neutral forms of PCs in Cannabis spp. inflorescences with the use of ethanolic extraction. As a complementary technique for extraction of PCs from collected plant inflorescences, solid-phase microextraction (SPME) can be implemented.

Aim

In this study, we applied two extraction technique, namely ethanolic extraction and SPME followed by HPLC-UV in order to analyze a panel of PCs from fresh and dried cannabis plants.

Methods and Materials

Both techniques were used for extraction of PCs from small amounts (100 mg) of homogenized samples of CBG- and CBD-dominant cannabis flowers. Traditional extractiontechnique required the use of 10 mL of ethanol for each sample. SPME-based extraction utilized C18 extraction phase. HPLC-UV analysis of obtained extracts was performed in gradient elution mode. The separation of analytes was performed with the use of Acsentis Express C18 chromatographic column (15 × 4.6, 2.7 µm) with total analysis time of 12.5 min.

Discussion

The obtained results reveal differences in the composition of PCs between both variants of cannabis plants. In CBD-dominant plant, CBDA and its neural form – cannbidiol(CBD) dominated, whereas in CBG-dominant plant, CBGA and its neutral form – cannabigerol (CBG) was detected. In addition, in CBD-dominat plants small levels of other PCs were detected, including cannabinol (CBN).

Conclusion

The obtained results were compared in the respect to the amount of extracted PCs, and also sensitivity and selectivity of those two different extraction approaches. SPME coupled to HPLC-UV can be used as quality control tool to monitor the content of particular PCs during post-harvest processing and storage of medicinal cannabis products.

BIOMEDICAL SCIENCES

EFFECTS OF SLEEP DISTURBANCE ON POSTURAL STABILITY OF YOUNG WOMEN [516]

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Introduction

Excessive daytime sleepiness is a phenomenon faced by many people, also the young ones. This adversely affects daily functioning, including postural imbalance. Consequently, people with a properly functioning balance system may have poorer body balance due to sleep disturbances.

Aim

The aim of the study was to examine how the phenomenon of increased sleepiness affects the ability to maintain balance among young women.

Methods and Materials

The study was carried out in a group of 101 women aged 20-26 years, without clinical symptoms of balance disorders. Prior to the posturographic examination, respondents completed the Epworth Sleepiness Scale (ESS) questionnaire. Increased drowsiness was demonstrated in 32 women. All participants were tested on the posturograph Balance Master (NeuroCom). In Sensory Organization Test (SOT), the control of balance were assessed under different conditions of stimulation of the sensory systems, including an influx of conflicting signals. The postural response were analysed as well as the usefulness of the signal from the visual organ (VIS), the somatosensory system (SOM), and the vestibular organ (VEST) were assessed. Relationships between body balance scores obtained from the sensory organization test (SOT) and results from the Epworth Sleepiness Scale (ESS) questionnaire were investigated. To confirm affecting of daytime sleepiness on postural stability, U-test (Mann-Whitney) were performed.

Discussion

Statistically significant results ($p<0.005$) were obtained with: Composite Equilibrium Score (CES), Equilibrium Score 4 (ES4) and Visual organ score (VIS). Lower scores in subjects with increased sleepiness indicated balance disorders. Following the analysis of posturographic tests and ESS questionnaire data, the presence of impairment in overall body balance were observed in those with increased sleepiness, specially with reduced visual signal utility.

Conclusion

Therefore, the study of balance ability should in future be enriched with a questionnaire of the patient's subjective sleepiness to specify the diagnosis of balance disorders.

STEVENS-JOHNSON SYNDROME AS THE EXTRAPULMONARY MANIFESTATION OF MYCOPLASMA PNEUMONIAE INFECTION [273]

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Introduction

Mycoplasma pneumoniae is a common cause of community-acquired pneumonia in children. In addition to the classic symptoms of respiratory tract infections, Mycoplasma pneumoniae induces multi- organ complications, including Stevens-Johnson syndrome (SJS), which manifests as a rash, and desquamating skin and mucous membrane changes.

Discussion

A 7-year-old boy presented with extensive inflammatory changes in the oral cavity and conjunctiva and fever reaching 39°C. After 2 days of improvement following symptomatic treatment, the symptoms relapsed with a dry cough and chest pain. The oral lesions significantly worsened, with the new ones appearing on the upper lip containing pus and vesicles. Despite the introduction of broad-spectrum antibiotic therapy, the mucosal condition continued to deteriorate, and the boy began to cough up secretion with fresh blood. Therefore, the patient was admitted to the hospital, where congested conjunctivae, swollen mucous membranes of the oral cavity with vesicles, and oozing necrolysis of the epidermis on the lips, the entire hard palate, the lips, and part of the right cheek were observed. Small vesicular lesions were detected on the skin around the right scapula, shoulder, beneath the right clavicle, and on the right foot. The chest X-ray showed atypical inflammatory changes. Microbiological tests revealed a high titer of Mycoplasma pneumoniae IgM antibodies. SJS induced by this atypical infection was diagnosed. Broad-spectrum antibiotic therapy was modified to clarithromycin and immunoglobulins and corticosteroid pulses were introduced. The fever subsided, the patient's condition gradually improved, and the mucosal and skin lesions began to heal.

Conclusions

Although cases of SJS as a complication of mycoplasmatic infection have been described, awareness of their correlation is not very high, which may lead to a delayed diagnosis of the disease. Evidence regarding the recommended treatment for SJS concerns also mainly the adult population.

PEDIATRICS

WILMS' TUMOR IN THE MEDIASTINUM – AN INFREQUENT CHANGE DIAGNOSED DURING ECHOCARDIOGRAPHY [501]

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Introduction

Wilms' tumor (WT) is a common extracranial malignancy among children aged 1 to 5. In 90-95% of cases, it concerns only one kidney. The tumor can be classified into different risk groups, depending on the predominant type of cells: epithelial, stromal, or blastemal. During the previous years, survival rates significantly increased, exceeding 90%.

Aim

We report a case of a 30-month-old patient with a history of initial WT treatment, which included nephrectomy, chemotherapy, and radiotherapy. After 10 months of treatment, she was diagnosed with mediastinal metastatic WT during echocardiography.

Methods and Materials

Her condition was confirmed after an intraoperative biopsy of the tumor was performed. Afterwards, the patient was treated with chemotherapy, which included doxorubicin co-loaded cyclodextrin polymers and carboplatin with etoposide, in accordance with the SIOP 2016 UMBRELLA Protocol.

Discussion

Dimensions of the tumor were frequently examined with the use of computed tomographies. They revealed a constant decrease in size over the weeks, which confirmed the efficacy of chemotherapy.

Conclusion

Mediastinum is an infrequent metastatic site in case of WT. However, use of various and uncommon diagnostic methods can lead to immediate confirmation of diagnosis.

ECHOCARDIOGRAPHIC PREDICTORS OF TAPSE AND RIGHT VENTRICULAR DIMENSIONS IN A PEDIATRIC POPULATION: A RETROSPECTIVE ANALYSIS [523]

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Introduction

TAPSE (Tricuspid Annular Plane Systolic Excursion) is an echocardiographic measurement used to assess right ventricular (RV) systolic function.

Aim

This study aims to identify the best singular predictor for TAPSE in a pediatric population.

Methods and Materials

A retrospective analysis was conducted on echocardiographic studies of patients aged 1–18 years with normal findings and adequate 2D/M-mode images. TAPSE was measured using the standard M-mode method, while RV long-axis dimensions were obtained via 2D and M-mode. Predictor performance was assessed through simple linear regression, evaluating R^2 values for age, height, weight, BMI, and RV dimensions. Statistical analysis was performed using Wizard 2 software, with significance set at $p<0.005$. Values were presented as mean ± SD or median (Q1–Q3) depending on the data distribution.

Discussion

A total of 84 previously archived echocardiographic recordings were eligible for analysis. The mean TAPSE was 22.56 ± 4.484 mm The strongest predictor for TAPSE was M-mode RV Major measurement, with an R^2 value of 0.369. The 2D RV length also showed a moderate correlation with TAPSE (R^2 = 0.309). Age, height, and weight had weaker predictive values (R^2 ranging from 0.302 to 0.33), indicating that while growth parameters contribute, structural echocardiographic measures provide stronger predictive value for RV systolic function.

Conclusions

This study highlights the key echocardiographic and clinical predictors of TAPSE and RV dimensions, contributing to the establishment of normative values in a pediatric population. The findings indicate that M-mode RV Major measurement is the most effective singular predictor of TAPSE, followed by 2D RV length. Age, height, weight, and BMI influence TAPSE to some extent, their predictive strength is comparatively lower. These insights are essential for optimising echocardiographic assessments of right ventricular function, particularly in pediatric patients, by refining measurement techniques and adjusting for patient size and age.

PEDIATRICS

IDENTIFYING THE BEST SINGLE PREDICTOR FOR LATERAL AND SEPTAL MAPSE IN PEDIATRIC ECHOCARDIOGRAPHY [528]

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Introduction

Mitral annular plane systolic excursion (MAPSE) is widely used to assess left ventricular (LV) longitudinal contractility.

Aim

This study aims to identify the best singular predictor for Lateral MAPSE (LatMAPSE) and Septal MAPSE (SepMAPSE) in a pediatric population.

Methods and Materials

We conducted a retrospective review for previously recorded echo studies. The inclusion criteria were patients aged 1-18 years, normal result by specialist judgement and appropriate 2D and MM images necessary for the analysis. We used the standard, M-mode method for MAPSE measurements and LV long axis were measured in 2D and M-Mode. Statistical analysis was performed using Wizard 2 software with the level of significance set at $p<0.005$. The values presented as mean ± SD (normal notation) or median(Q1-Q3) depending on the distribution. Predictor Performance analysis was based on a series of simple linear regression analyses to evaluate the predictive performance(R2) of various clinical and echocardiographic parameters on LatMAPSE and SepMAPSE. The predictors included age, height, weight, BMI, LV major axis dimensions (septal, mid, and lateral), and M-mode LV major axis measurements (septal and lateral).

Discussion

There were 111 previously archived recordings eligible for the analysis. The mean MAPSE was 15.26 ± 3.24 mm, with a median value of 15.1 mm (Q1-Q3: 13.4-17.3). The best predictor for LatMAPSE was M-Mode LV Major Lateral measurement (R2 value of 0.514). For SepMAPSE, the strongest predictor was Age, with an R2 value of 0.483. Height, Weight and BMI are weaker predictors, suggesting that body size alone does not strongly influence MAPSE values.

Conclusion

This analysis provides insights into the most effective singular predictors of LatMAPSE and SepMAPSE, contributing to the establishment of normative values. Such findings are essential for optimising measurement techniques, particularly in adjusting for patient size and age in pediatric echocardiographic assessments.

IDIOPATHIC PULMONARY ARTERIAL HYPERTENSION IN A GIRL WITH DOWN SYNDROME [483]

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Introduction

Pulmonary arterial hypertension (PAH) is a heterogeneous disorder with a high morbidity and mortality rate, if left without treatment. Idiopathic pulmonary arterial hypertension (IPAH) is one of the most commonly diagnosed forms, mainly in adults and rarely in children.

Aim

In this study we present a 16-year old girl with Down syndrome and recognized IPAH.

Discussion

Immediately after birth, the patient was diagnosed with atrial and interventricular septal defects, tricuspid regurgitation II°, right-sided cardiac enlargement, partial anomalous pulmonary venous outflow, and mild dilatation of the pulmonary artery with increased pressure flow. The patient was scheduled for surgery at the age of 4 months. Postoperative examinations revealed improved parameters, but also a residual interventricular leak and right His bundle branch block. During follow-up examinations, the cessation of the interventricular leak and the development of the atrial leak were observed. At the age of 3, the patient was qualified for reoperation. All follow-up echocardiograms showed persistent enlargement of the RA and RV chambers. At the age of 8, the patient was operated again due to recanalisation of the ASD patch. Postoperatively, the dimensions of the RA and RV chambers decreased, remaining slightly enlarged. A small residual leak in the lower part of the ASD patch persisted. Follow-up echocardiography showed persistent pulmonary trunk dilatation and borderline pulmonary circulation pressures for several years, with no change in the long term. At the same time, the patients condition was good and no limitations in exercise tolerance were observed. The persistent borderline values were the basis for extending the diagnosis to invasive methods.

Conclusion

A cardiac catheterisation showed an elevated mean pressure in pulmonary artery, which led to a diagnosis of primary pulmonary hypertension. Treatment with Sildenafil (3x20mg/d) was initiated with good tolerance. Bozentan will be added to the treatment in the near future. Effects of extended pharmacotherapy are to be observed.

NEUROSURGERY AND NEUROSCIENCE

IS A NEUROTOXIN IN OUR WATER DRIVING AMYOTROPHIC LATERAL SCLEROSIS? A SYSTEMATIC REVIEW [319]

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Introduction

Amyotrophic lateral sclerosis (ALS) is a fatal neurodegenerative disease with increasing global prevalence. While the exact etiology remains unclear, a mixture of genetic and environmental factors are suspected to play a role. One such external factor is β-N-methylamino-L-alanine (BMAA), a cyanobacterial toxin which has been linked to ALS, particularly in the Guam ALS/Parkinsonism Dementia Complex (ALS/PDC) epidemic. While other environmental factors are under investigation, to date, BMAA's association is the strongest. Emerging evidence suggests BMAA's widespread presence in aquatic ecosystems, raising concerns about its potential role in sporadic ALS cases worldwide.

Aim

This review impartially examines evidence for BMAA's potential role in ALS, synthesizing epidemiological mechanistic, and analytical data while addressing methodological challenges in detection and interpretation.

Methods and Materials

A systematic analysis of 361 studies identified 51 high-quality papers meeting inclusion criteria, focusing on BMAA detection, exposure routes, and neuropathological mechanisms. The Bradford Hill criteria were applied to assess causality, considering evidence from human and animal studies.

Discussion

Data from Guam's ALS/PDC epidemic and ALS clusters in areas affected by cyanobacterial blooms suggest a link between BMAA exposure and ALS. Animal model studies indicate that BMAA is excitotoxic and becomes misincorporated into neuroproteins, leading to neurodegenerative changes including accumulation of TDP-43 aggregates, a hallmark of ALS pathology. Analytical methods such as Reverse Phase Liquid Chromatography coupled with Tandem Mass Spectrometry (RPLC-MS/MS) consistently detect BMAA in both cyanobacterial samples and human tissues, further supporting its role in ALS.

Conclusion

Despite not fully meeting all nine Bradford Hill criteria, substantial evidence supports BMAA's role as a significant environmental risk factor for ALS and other neurodegenerative diseases. While longitudinal human studies are needed, the evidence warrants precautionary monitoring of cyanobacterial blooms and BMAA contamination of dietary sources to mitigate risk. Standardized LC-MS/MS protocols and expanded biomonitoring in marine ecosystems are critical next steps.

PSYCHOSIS IN A PATIENT WITH RENAL FAILURE: THE ROLE OF AMANTADINE NEUROTOXICITY [382]

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Introduction

Amantadine has a broad spectrum of activity, including its role as a dopamine agonist in the central nervous system. While amantadine-associated neurotoxicity is well-documented in Parkinsonian patients, its psychotic effects in individuals without Parkinson's disease or schizophrenia remain rare.

Aim

We present the case of a 68-year-old woman admitted with abdominal pain, worsening chronic renal failure, and cardiorespiratory failure. During hospitalization, impaired amantadine clearance due to renal insufficiency led to hemodialysis. Elevated amantadine levels caused a psychotic episode, which fully resolved after discontinuing the drug. This study presents a rare case of amantadine-induced psychosis in a patient without Parkinson's disease or schizophrenia, emphasizing the drug's potential neurotoxic effects, particularly in individuals with renal impairment. This report aims to raise awareness among clinicians regarding altered pharmacodynamics in dialysis patients.

Methods and Materials

A clinical case study analyzed the patient's medical history, pharmacological treatment, laboratory findings. Special attention was given to renal function, hemodialysis efficacy, and potential drug interactions.

Discussion

The patient developed acute psychotic symptoms shortly after initiating amantadine therapy. Unlike typical amantadine-induced psychosis in Parkinson's patients after prolonged use, symptoms here emerged rapidly. Given the patient's renal impairment, amantadine accumulation likely contributed to the severity of psychiatric symptoms. Differential diagnoses, including uremic encephalopathy and antibiotic-induced neurotoxicity, were considered but ruled out due to symptom resolution after discontinuing amantadine. The inefficacy of hemodialysis in removing amantadine further complicates its use in renal patients, increasing toxicity risk. Notably, the rapid onset of psychosis occurred in a patient with no prior neurological or psychiatric history. As amantadine is available over the counter in many countries, this case highlights potential risks of its use in patients with impaired kidney function.

Conclusion

This case underscores the necessity for clinicians to consider amantadine's neurotoxicity, particularly in patients with renal impairment. Caution should be exercised when prescribing amantadine in such populations, and alternative antiviral therapies should be considered. Furthermore, this report contributes to ongoing discussions regarding the safety of amantadine's off-label use, particularly in non- Parkinsonian patients. Increased awareness of drug-induced psychiatric effects can improve patient outcomes and guide safer pharmacological decisions.

NEUROSURGERY AND NEUROSCIENCE

COMPARISON OF COMPLICATIONS IN EARLY AND LATE CRANIOPLASTY FOLLOWING DECOMPRESSIVE CRANIECTOMY IN TRAUMATIC BRAIN INJURY [384]

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Introduction

This study is investigating the relationship between time elapsed from decompressive craniectomy to cranioplasty and surgical complications in patients having sustained traumatic brain injury.

Aim

As new cohort studies have been published in recent years, this paper aims to present a more conclusive overview of the rate and type of surgical complications relative to the timing of CP in trauma patients, and further analyze the link between ultra-early cranioplasty and complications.

Methods and Materials

PubMed, Scopus, and Web of Science were systematically searched by the authors for extraction of future references using the PRISMA guidelines. The obtained data was then subjected to the first phase of screening, which required the studies to be published between 1990 and 2024, be written in English, and include patients who underwent cranioplasty following decompressive craniotomy due to traumatic brain injury. The second phase of screening assessed whether the studies included at least 10 patients and compared their outcomes based on the time between decompressive craniotomy and cranioplasty.

Discussion

This meta-analysis included fifteen studies involving patients who underwent early (n = 666) and late cranioplasty (n = 1214) after decompressive craniectomy. All studies had a retrospective observational design, three of which were multicenter and the rest single-institutional. There was no statistically significant difference in the odds of complications between the early and late groups, although late cranioplasty had slightly elevated odds of developing hydrocephalus (OR 1.66, 95% CI 0.55-4.99, p = 0.36). Notable results stem from the subgroup analysis of the ultra-early cohort, and they include favoring the ultra-early group in the odds of overall complications (OR 0.46, 95% CI 0.08-2.56, p = 0.38 and hydroma (OR 0.45, 95% CI 0.15-1.37, p = 0.16). Later cranioplasty had better outcomes in the category of seizure (OR 1.56, 95% CI 0.75-3.28, p = 0.24).

Conclusion

Cranioplasty within 90 days, considered early, had no statistically significant differences in complication rates compared to late cranioplasty. Ultra-early cranioplasty, performed within 6 weeks of decompressive craniectomy, results in slightly higher odds of postoperative seizure but lower rates of hydroma.

A CASE REPORT OF HERPES ZOSTER WITH EXTENDED PRODROME [387]

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Introduction

Herpes zoster (HZ), commonly known as shingles, is a neurocutaneous disorder caused by reactivation of varicella-zoster virus. It is characterized by a painful, unilateral vesicular rash limited to a single dermatome, usually starting with localized pain, itching or tingling sensation. HZ is traditionally associated with a prodrome of 1-5 days, however, in certain cases extended prodromal pain may occur before exhibiting clinically evident herpes zoster.

Aim

An 81-year-old female was admitted to the hospital with severe lower lumbar pain radiating to the left lower limb, along with swelling and a burning sensation. The symptoms persisted for 10 days and did not show improvement with the previous analgesic treatment. Physical examination demonstrated hyperesthesia and slightly shinier skin on the left limb. No rash was noted. Neurological assessment showed hyperalgesia in the entire left limb. A case of intervertebral disc herniation was suspected, and conservative medical therapy was initiated, however the patient continued to experience persistent pain, burning sensation and swelling. Magnetic resonance imaging (MRI) of lumbar region revealed deforming spondylosis at Th11/Th12, L1/L2, L4-S1, intervertebral osteochondrosis at Th11/Th12 and L4-S1, Modic type II changes at L4/L5, and arthritic changes of the facet joints at L3-S1. On the fifth day of hospitalization, several vesicles were noted in the sacral region, some with rupture. The surrounding tissues showed mild erythema, with no signs of purulence or additional rash. A suspicion of herpes zoster arose and treatment with Acyclovir treatment was initiated. After antiviral therapy patients' symptoms regressed.

Conclusion

This case highlights the variable clinical presentation of herpes zoster. The delayed appearance of vesicles, especially in immunocompromised or elderly patients, can complicate diagnosis and delay antiviral treatment. Clinicians should consider HZ in patients presenting with unilateral pain or sensory disturbances even if the vesicular lesions have not yet manifested.

NEUROSURGERY AND NEUROSCIENCE

SERUM LEVELS OF TUMOR NECROSIS FACTOR ALPHA, INTERLEUKIN 31, AND INTERLEUKIN 6 IN ISCHEMIC STROKE [427]

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Introduction

Neuroinflammation plays a pivotal role in acute ischemic stroke (AIS), contributing to secondary brain injury. Cytokines, such as tumor necrosis factor alpha (TNF-α), interleukin 31 (IL-31), and interleukin 6 (IL-6), are mediators of post-stroke immune responses. However, their temporal dynamics remain insufficiently studied.

Aim

This study aimed to assess the serum concentrations of TNF-α, IL-31 and IL-6 in AIS patients.

Methods and Materials

This prospective observational study included 35 AIS patients (14 males, 21 females; mean age 69.09 ± 1.85 years; BMI 26.75 ± 0.77 kg/m^2). Patients were recruited within 48 hours of symptom onset. Stroke severity and clinical status were evaluated using the National Institutes of Health Stroke Scale (NIHSS), modified Rankin Scale (mRS), and Barthel Index. Blood samples were collected on days 1 and 8 of hospitalization. Serum TNF-α, IL-31, and IL-6 levels were quantified using enzyme-linked immunosorbent assay (ELISA). Statistical analysis was conducted using paired t-tests, with significance set at $p < 0.05$. Results are presented as mean ± standard error of the mean (SEM).

Discussion

IL-31 levels increased significantly from 41.44 ± 2.47 pg/mL on day 1 to 44.46 ± 1.94 pg/mL on day 8 ($p = 0.028$), suggesting a sustained inflammatory response. In contrast, TNF-α levels remained stable between day 1 (20.06 ± 3.18 pg/mL) and day 8 (20.42 ± 2.54 pg/mL), $p = 0.649$. Similarly, IL-6 concentrations did not change significantly between day 1 (8.69 ± 2.12 pg/mL) and day 8 (8.33 ± 1.89 pg/mL), $p = 0.84$.

Conclusion

IL-31 may serve as a novel biomarker for post-stroke neuroinflammation, whereas TNF-α and IL-6 remain stable during the acute phase. These findings underscore the need for further research into IL-31's role in stroke pathophysiology and its potential therapeutic implications.

NEUROINFLAMMATION — UNRAVELING ITS ROLE IN PARKINSON'S AND ALZHEIMER'S DISEASE. A SYSTEMATIC REVIEW AND META-ANALYSIS [462]

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Introduction

The inflammatory components such as microglia, astrocytes, complement system and cytokines are linked to neuroinflammation in the central nervous system . More specifically, cytokines have been found to play a central role in the neuroinflammation of AD (Alzheimer's) and PD (Parkinson) disease [Alam et al. 2016].

Aim

This study aimed to review the literature and analyze levels of the blood concentration of proinflammatory and anti-inflammatory cytokines in patients with two most common neurodegenerative diseases - AD and PD.

Methods and Materials

A search of Web of Science and PubMed identified 37 studies, after exclusion criteria, on neuroinflammation, examining pro- and anti-inflammatory cytokine levels. Of these, 25 studies focused on AD, while 13 studies investigated PD. Statistical analyses - the 'meta' package in R.

Discussion

Elevated IL-6 levels have been observed in both AD and PD. Cojocaru et al. [2011] reported significantly higher IL-6 levels in AD patients, a finding consistent with our results (SMD 1.17; 95% CI [0.39-1.96], p-value = 0.0034). Scalzo et al. [2010] demonstrated increased IL-6 levels in PD, which also aligns with our results (SMD 0.29; 95% CI [0.00-0.59], p-value = 0.0487). TNF-α levels were found to be elevated in PD patients (SMD 0.52; 95% CI [0.02-1.02], p = 0.0431). Also numerous studies [Liang et al. 2020, Amin et al. 2020] have reported higher concentrations of IL-1β in AD patients, which is in agreement with our findings (SMD 0.80; 95% CI [0.34-1.25], p-value = 0.0006), further supporting the role of inflammation in AD pathology.

Conclusion

Our meta-analysis revealed elevated blood IL-6 values in both Alzheimer's and Parkinson's disease patients. In contrast, the role of TNF-α was demonstrated exclusively in PD whereas IL-1β was found to be significant in AD patients.

NEUROSURGERY AND NEUROSCIENCE

A CASE REPORT OF PARANEOPLASTIC GUILLAIN-BARRRÉ SYNDROME ASSOCIATED WITH SQUAMOUS CELL CARCINOMA OF THE VULVA [525]

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Introduction

Guillain-Barré syndrome (GBS) is an acute, immune-related polyradiculoneuropathy, that is clinically characterized by a rapidly progressive, symmetrical weakness of the extremities and areflexia or hyporeflexia. Generally, GBS is a post-infectious neuropathy, however in certain cases, it can be associated with various malignancies. The pathogenesis of paraneoplastic GBS is based on immune cross-reaction between tumor antigens and proteins of the peripheral nervous system.

Aim

A 76-year-old female presented to the emergency department with lower limb weakness, a history of a fall, and an inability to walk. A computed tomography (CT) scan of the lumbosacral region ruled out acute trauma and cauda equina syndrome but demonstrated L4/L5 disc protrusion causing spinal stenosis. Laboratory tests revealed hypokalemia and hyponatremia, correcting these imbalances did not improve the condition. Neurological assessment showed decreased muscle strength: in both arms 4-5/5, right leg proximally 2/5, left leg proximally 3/5, legs distally 3/5, reduced reflexes, bilateral hyperalgesia in the hands and feet. Over the following days, the patient complained of hand paresthesia and persistent lower limb weakness. Given the patient's medical history of advanced vulvar squamous cell carcinoma (SCC), paraneoplastic syndrome was suspected. The patient underwent a lumbar puncture, which revealed a total protein of 0.89 g/L. Electromyoneurography (ENMG) demonstrated a sensorimotor demyelinating-axonal polyneuropathy. This led to a diagnosis of paraneoplastic GBS and the initiation of intravenous immunoglobulin (IVIG) therapy. The patient was discharged to rehabilitation after experiencing the regression of symptoms.

Conclusion

This case represents the association between vulvar squamous cell carcinoma (SCC) and Guillain-Barré syndrome (GBS). Symptoms such as limb weakness, reduced reflexes, and paresthesia could be seen in spinal stenosis or some other neuropathies thus it is important to consider paraneoplastic etiology in patients with these clinical features and the history of oncological illness.

DOUBLE VISION AND LIMB WEAKNESS IN A YOUNG PATIENT: AN OVERVIEW OF CNS TUBERCULOSIS [575]

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Introduction

Tuberculosis is the second common cause of death by a single infectious agent after COVID-19. CNS Tuberculosis comprises 16% cases of meningitis which causes morbidity and mortality if left untreated. Tuberculosis is of 2 types: (1) Pulmonary & (2) Extrapulmonary. Significant sites of Extrapulmonary include: the pleura (in tuberculous pleurisy), the central nervous system (in tuberculous meningitis), the lymphatic system (in scrofula of the neck), the genitourinary system (in urogenital tuberculosis), and the bones and joints (in Pott disease of the spine). Extra Pulmonary TB comprises 15-20% of all TB cases and CNS Tuberculosis represents 6% cases of Extra Pulmonary TB and 1% of all TB cases.

Aim

This case report explores CNS Tuberculosis as differential diagnosis for neurological manifestations eg: double-vision, limb-weakness

Methods and Materials

On general examination the patient appears ill-looking. But her Cranial nerve examination reveals pupil sparing CN-3 palsy, bilateral CN-6 palsy, bilateral LMN type of CN-7 palsy and left sided CN-9 & CN-10 palsy with exaggerated upper and lower motor reflexes on motor system examination. Laboratory Diagnosis of CSF & CBC revealed significant protein count & lymphocyte count and neutrophil count respectively. Repeated MRI at DMCH revealed multiple cerebral tuberculoma of neoplastic origin but imaging at NINS suggested Neurometabolic disorder (Wernicke's Encephalopathy) The patient was diagnosed with CNS Tuberculosis after repeated imaging and CSF culture.

Discussion

Treatment of the patient at different tertiary hospitals of Bangladesh successfully excluded differential diagnosis of neural origin, NeuroSarcoidosis & genetic eg. Myasthenia Gravis.PubMed search, 180 cases since 1994. One case report found disseminated encephalomyelitis as the differential diagnosis & another one reported cerebral hemorrhage hence giving emphasis on Radio-imaging diagnosis. MRI of the brain was the sole part of diagnosis in our case hence the importance of imaging diagnosis in case of a suspected CNS TB case is very crucial and must be included in a patient presenting with double vision and limb weakness like in our case.

Conclusion

It is highly recommended to consider CNS Tuberculosis as differential diagnosis for patients presenting with Neural symptoms and psychotic disorders found in the Kashmir based case report.

NEUROSURGERY AND NEUROSCIENCE

POTT'S PUFFY TUMOUR IN THE ADULT POPULATION: SYSTEMATIC REVIEW AND META-ANALYSIS [590]

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Introduction

Pott's tumor (PTT) is a rare infection of the frontal sinus, predominantly affecting children but with less frequent reports in adults.

Aim

We present the analysis of the 187 cases of adult patients diagnosed with PTT, including a description of one of our cases. The purpose of this research is to identify the most common symptoms, predisposing medical history, predominant microorganisms, commonly used antibiotics, treatment options, long-term outcomes, and possible complications in adults. Despite its rarity, PTT has a dynamic course, necessitating familiarization with appropriate treatment methods to improve patient well-being.

Methods and Materials

Methods involved a systematic search of PubMed, Medline, Google Scholar, Web of Science, EBSCO, and Scopus, following PRISMA guidelines. A total of 249 articles were screened, including 180 cases of adolescents aged 18 to 86, alongside an additional patient treated at our institution, bringing the total to 181 patients.

Discussion

Pott's puffy tumour (PPT) is more common in children, but its incidence in adults is rising, likely due to increased case reporting and radiological imaging. Its pathogenesis follows two routes: direct (trauma- related) and hemorrhagic (vascular thrombosis from bacterial overgrowth). Sinusitis, smoking, and substance use are key risk factors, with trauma playing a lesser role. PPT symptoms develop over weeks, with forehead swelling and frontal headache being the most common. Intracranial involvement increases the risk of neurological deficits and altered mental status. CE-CT is the primary imaging modality, with MRI preferred for intracranial complications. Most cases involve polymicrobial infections, with Streptococcus, Staphylococcus, and anaerobes being predominant. Endoscopic techniques offer cosmetic advantages, especially in pediatric patients. Empirical antibiotic therapy, typically cephalosporins, is crucial, lasting an average of 61.9 days. Despite aggressive treatment, 80% of patients required rehospitalization, and three deaths were reported. Future studies should better define optimal antibiotic regimens and long-term outcomes.

Conclusion

Conclusion highlights the importance of prompt initiation of empirical antibiotic therapy, followed by targeted treatment based on microbiological cultures. Recognizing that PTT symptoms are not exclusive to pediatric patients but can also affect adults is crucial. Pott's tumor warrants further research to optimize management and outcomes.

DIAGNOSIS AND CLINICAL OUTCOMES IN BRAIN-LUNG-THYROID SYNDROME [286]

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Introduction

The brain-lung-thyroid syndrome is a rare disease caused by a mutation in the NKX2-1 (NK2 homeobox 1) gene, which is involved in the regulation of surfactant protein expression, lung structural development, and organogenesis of the basal ganglia and thyroid gland. Over the years, the heterogeneity of symptoms – such as respiratory failure, hypothyroidism, and neurological problems has complicated the early and accurate diagnosis. Moreover, only half of the patients with mutation in NKX2-1 develop full brain-lung-thyroid syndrome. However, advances in genetic diagnostics have provided new insights into the identification and understanding of the pathophysiology of this syndrome

Aim

5-week-old female infant, with neonatal respiratory distress syndrome since the 4th hour of life, was transferred to Children's Clinical Hospital in Warsaw for further diagnostic evaluation of refractory pulmonary hypertension unresponsive to conventional therapy. Genetic testing revealed a previously undescribed, heterozygous de novo mutation c.943_945delinsA (p.His315Serfs*123) in NKX2-1 gene. Therefore, methylprednisolone pulses, prednisone, hydroxychloroquine, and azithromycin in immunomodulatory doses were initiated as part of the treatment. On the 55th day of life, the patient was successfully extubated to noninvasive respiratory support (CPAP, high-flow [HFNC] and low-flow oxygen therapy via nasal cannula). Unfortunately, the infant developed an iatrogenic withdrawal syndrome treated successfully with methadone. Actually, she continues to receive respiratory support via HFNC. Additionally, due to congenital hypothyroidism detected in neonatal screening, the patient is treated with levothyroxine. Simultaneously, due to developmental delay and persistent choreiform movements, she receives tetrabenazine and remains under continuous physiotherapeutic care. The patient also experiences difficulty with oral feeding and is nourished via gastrostomy.

Conclusions

Early diagnosis of the syndrome is crucial for implementing an appropriate symptomatic treatment including thyroid hormone supplementation, respiratory support, and alleviation of the neurological symptoms. Furthermore, understanding the genetic basis of the disease allows for reliable genetic counseling and family support.

RARE DISEASE

COEXISTING RARE DISEASES: A CASE SERIES OF DUCHENNE MUSCULAR DYSTROPHY PATIENTS WITH ADDITIONAL RARE DISORDERS [341]

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Introduction

Duchenne Muscular Dystrophy (DMD) is a rare X-linked recessive disorder affecting 1 in 3,600 live male births. The coexistence of DMD with additional rare diseases is exceptionally uncommon and presents unique clinical challenges. This case series revolves around three pediatric patients with genetically confirmed DMD, each diagnosed with another rare disorder.

Aim

This case series highlights the clinical characteristics, management challenges, and implications of DMD coexisting with additional rare diseases. We emphasize the importance of multidisciplinary care and suggest considerations for future research.

Material and Method

We report three pediatric patients diagnosed with DMD alongside additional rare diseases: Turner Syndrome (1 in 3,125 live births) – A 13-year-old female with DMD and Turner Syndrome, presenting with musculoskeletal deformities, moderate intellectual disability, and a history of aortic coarctation. Hirschsprung Disease (1 in 5,000 live births) – A 5-year-old male with DMD and Hirschsprung Disease (post colonic resection) presenting with chronic constipation and mild lower limb weakness. Coloboma with Heterochromia (1 in 2,077 live births) – A 9-year-old male with DMD, congenital iris coloboma, and heterochromia, presenting with progressive muscle weakness, mild contractures, and increasing difficulty climbing stairs.

Discussion

These rare dual diagnoses raise questions about whether they are coincidental or share underlying genetic mechanisms. Managing DMD with additional rare diseases presents unique challenges demanding cooperation between multiple departments, such as managing cardiovascular risks in Turner Syndrome, post-surgical gastrointestinal concerns in Hirschsprung Disease, and ensuring proper ophthalmologic care in Coloboma. These cases underline the need for comprehensive, individualized treatment plans and highlight the importance of multidisciplinary intervention to optimize patient outcomes.

Conclusions

This case series highlights the complexity of managing multiple rare diseases and the necessity of a multisystem approach. Further genetic and epidemiological research is recommended to determine whether certain rare disease associations with DMD are more than coincidental

TWO NOVEL VPS13B VARIANTS LEADING TO ATTENUATED COHEN SYNDROME WITHOUT DEVELOPMENTAL DELAY [346]

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Introduction

Cohen syndrome is a rare genetic disorder caused by biallelic pathogenic variants in the VPS13B gene, which encodes a protein involved in the development of eyes, central nervous system, and hematopoietic system. It is characterized by early-onset multisystemic symptoms, encompassing chorioretinal dystrophy, myopia, developmental delay, muscle hypotonia, short stature, truncal obesity, microcephaly, joint hypermobility, characteristic facial gestalt, and leukopenia.

Discussion

A 24-year-old man was referred to the Genetic Clinic due to suspected retinal dystrophy. Family history was unremarkable, and following the uneventful pregnancy and delivery, the psychomotor development was normal. Myopia, night blindness, constricted visual field, and decreased visual acuity were noticed in midchildhood. In the right eye, total exudative retinal detachment was diagnosed. An ophthalmic examination showed features of atypical retinitis pigmentosa in the left eye. The optical coherence tomography revealed cystoid macular edema. The proband also exhibited leukopenia, slight truncal obesity, minor facial dysmorphia, and narrow hands. The next-generation sequencing multigene panel revealed two novel variants in the VPS13B gene (NM_152564.5): deletion of exon 5 and donor splice site variant c.11392+2dup. The segregation analysis confirmed a compound heterozygous state in the proband. Considering the lack of neurologic symptoms with developmental delay, the diagnosis of attenuated Cohen syndrome was made.

Conclusion

Cohen syndrome poses a significant diagnostic challenge due to extensive phenotypic and allelic heterogeneity. The reported two novel variants resulted in the mild phenotype, which expands the clinical and mutational spectrum of Cohen syndrome. Furthermore, this case highlights the possibility of the Cohen syndrome phenotype without developmental delay, which is generally considered an inherent part of the syndrome clinical picture.

RARE DISEASE

A RARE COMBINATION OF DUNBAR AND NUTCRACKER SYNDROME [491]

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Introduction

Dunbar syndrome is a rare condition caused by the compression of the celiac trunk by the median arcuate ligament. What is difficult in recognizing this syndrome is that it can mimic a number of other conditions. Nutcracker syndrome also involves compression of the vessel - the left renal vein between abdominal aorta and superior mesenteric artery.

Discussion

The 33-year-old woman was admitted to the Department of Nephrology, Dialysis and Internal Medicine of the Medical University of Warsaw from the regional hospital due to the first episode of severe abdominal pain for 4 days, radiating to the left lumbar region and exacerbating with movement. The patient had no significant past medical history and denied any additional symptoms. Ultrasound of the abdomen was unremarkable, X-rays showed no abnormalities. Laboratory tests were normal, urinalysis revealed proteinuria and hematuria. The pain reached at times 9/10 on the NRS scale and did not respond to NSAIDs and antispasmodics. A previous CT scan of the abdomen revealed no specific changes, aside from suspicion of Dunbar syndrome. Doppler ultrasound revealed narrowing and compression of the left renal vein between the abdominal aorta and the superior mesenteric artery, though the kidneys showed no focal changes. To exclude any other potential causes of the pain patient underwent extensive diagnostic workup. Combining the imaging results and clinical symptoms, a diagnosis of concurrent Dunbar and Nutcracker syndromes was confirmed. The patient was readmitted to the department following another episode of severe abdominal pain. Given the recurring symptoms and the lack of improvement with analgesics, she was referred to the surgical department for consultation and qualified for the vascular surgery.

Conclusion

The concurrent occurrence of Dunbar and Nutcracker syndrome is extremely rare. A contributing factor in this case may be the patient's family history of similar vascular abnormalities.

8-YEAR MEDICAL FOLLOW-UP OF A FEMALE PATIENT WITH TURNER SYNDROME AND DUCHENNE MUSCULAR DYSTROPHY [492]

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Introduction

Although Duchenne muscular dystrophy (DMD) is classically an X-linked disorder affecting males, rare female cases challenge our understanding of dystrophinopathies. These exceptional presentations often stem from complex genetic mechanisms, such as X-chromosome monosomy or skewed X-inactivation. This case presents a rare, severe DMD manifestation in a female patient with Turner syndrome, documented through comprehensive genetic and molecular analyses over 8 years.

Aim

To elucidate the 8-year clinical trajectory of a female patient with concurrent Turner syndrome and Duchenne muscular dystrophy, highlighting unique genetic mechanisms and multisystem clinical challenges.

Materials and methods

Patient Profile Age: 13 years

Genetic Diagnosis: Turner syndrome (45, X) and Duchenne muscular dystrophy Institutional

Affiliation: Rare Disease Centre (RDC)

Methodology

Comprehensive annual medical assessments Multidisciplinary 3-day clinical evaluations Advanced genetic and molecular diagnostic protocols

Integrated specialist consultations

Discussion

This 8-year follow-up reveals a complex clinical presentation of a female patient with Turner syndrome and Duchenne muscular dystrophy (DMD), characterized by: Multisystem Clinical Manifestations • Musculoskeletal Progression Progressive muscular weakness Complete ambulatory function loss (wheelchair-bound since 2019) Developing muscular contractures • Neurological Characteristics Intellectual disability Psychomotor developmental delay Significant speech impediments • Cardiovascular Findings Congenital aortic coarctation Potential DMD-associated cardiomyopathy • Additional Clinical Features Horseshoe kidney Ophthalmological abnormalities Delayed puberty • Laboratory Findings : Elevated muscle enzymes Increased AST/ALT Markedly elevated creatine kinase (CK)

Conclusions

Clinical Implications • Comprehensive genetic evaluation in symptomatic females • Advanced molecular diagnostic approaches • Proactive multidisciplinary management • Refined diagnostic criteria for rare genetic presentations Research Context • 95.2% of symptomatic female DMD carriers exhibit skewed X-chromosome inactivation • 8% of female carriers develop significant muscle or cardiac complications

RARE DISEASE

TWO RARE DISEASES WITH DEPENDENT MECHANISMS IN ONE CHILD – ANALYSIS OF THREE PATIENTS [506]

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Introduction

Pathogenic variants in gene associated with rare disease and located on the second allele in patient with chromosomal deletion on the first allele or uniparental disomy were found in about 3-5% all patients with rare disorder. In those cases two rare diseases coexist in one patient with different clinical history, different onset of symptoms, prognosis, and treatment leading to an ultra-rare comorbidity.

Aim

The aim of the study is to present three patients with two coexisting rare diseases with combined and dependant patomechanisms.

Methods and Materials

Patient 1: 8-year-old girl was diagnosed with 22q11.2 deletion with typical phenotype of DiGeorge syndrome. At the age of 5 year, metabolic crisis with massive rhabdomyolysis occurred. The clinical picture suggested the coexistence of another mutation which was confirmed by whole exome sequencing – autosomal recessive TANGO2 mutation.

Patient 2: A 14-month-old boy diagnosed with classical Prader-Willi syndrome based on maternal uniparental disomy. At the age of 5 month unusual neurological phenotype with epilepsy was presented. WES test detects an additional autosomal recessive condition associated with a pathogenic variant in gene (GNB5) duplicated by mechanism maternal disomy.

Patient 3: 3-year-old girl with congenital hearing loss and visual disorders was diagnosed with Usher syndrome (two mechanism in ARRDC3 gene: point mutation and exons deletion). Girl presented gross motor delay and dysmorphism, which are not typical for the diagnosed disease. ArrayCGH revealed large deletion of region 5q14.3 including not only ADGRV1 gene, but also MEF2C gene which is corresponding with severe neurodevelopmental disorder.

Discussion

Discussed cases suggest that the presence of a specific genetic syndrome and additional symptoms beyond classical phenotype should be a guide for searching another disease. Identifying the cause is essential for correct treatment of the patients.

Conclusions

Two rare diseases in one patient pose a huge challenge for clinicians and are a burden for the patient, requiring multidisciplinary care.

OPTIC ATROPHY – NOT ONLY AN EYE PROBLEM? OPA3-RELATED AUTOSOMAL DOMINANT OPTIC ATROPHY PLUS SYNDROME [556]

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Introduction

Hereditary optic neuropathies are a clinically and genetically heterogeneous group of disorders resulting in progressive vision loss of varying ages of onset. Variants in one of the causative genes – OPA3 – depending on the mode of inheritance and type of mutation, can cause autosomal recessive neuro- ophthalmic Costeff syndrome or autosomal dominant optic atrophy and cataract (ADOAC). OPA3 pathogenic variants are associated with mitochondrial dysfunction; thus, additional extraocular, mostly neurologic, features are observed in some ADOAC patients.

Discussion

The proband was an 8-year-old boy with infantile nystagmus, bilateral congenital cataract, and delayed motor development due to muscular hypotonia. He exhibited short stature with low body weight and complained of functional constipation. After cataract removal, the best-corrected visual acuity of the boy was 0.2. Perimetry showed peripheral visual field deficits and arcuate paracentral scotomas. Electroretinography was normal. Visual evoked potentials (VEP) showed reduced amplitudes and prolonged latencies in response to pattern stimuli (patternVEP) and reduced amplitudes after stimulation by light flashes (flashVEP). Optical coherence tomography showed parafoveal retinal thinning; however, the outer retina was unchanged. The trio-based exome sequencing performed in the proband and his healthy parents revealed that the patient was a heterozygote for a de novo variant in the OPA3 gene (NM_025136.4): c.329A > C, p.(His110Pro), which was classified as of uncertain significance. Based on the clinical and molecular findings, an ADOAC plus syndrome diagnosis was made.

Conclusion

The identified novel missense variant further expands the OPA3 mutational landscape, and the patient's phenotype underscores the variability of extraocular features observed in ADOAC plus syndrome. Furthermore, the reported case emphasizes that integrating information from comprehensive ophthalmic examination and genetic testing is essential for making a precise diagnosis of a hereditary eye disease.

RARE DISEASE

USHER SYNDROME TYPE IIC WITH COEXISTING HYPOTONIA AND MOTOR DELAY – A CASE REPORT [585]

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Introduction

Usher syndrome, despite being a rare disorder, accounts for the most common cause of simultaneous hearing and vision impairment. It is inherited in an autosomal recessive pattern. Its type II (USH2) presents typically with bilateral partial hearing loss which is inborn, non-progressive and not accompanied by balance problems. Bilateral retinitis pigmentosa and consequent gradual vision decline usually commence in the second decade of life. Apart from that, the development of children with USH2 is normal.

Discussion

An 8-month-old girl was referred to the Genetic Clinic on account of congenital bilateral sensorineural hearing loss of a moderate degree. Additionally, the child was diagnosed with hyperopia, strabismus, astigmatism, subtle dysmorphic features, hypotonia and motor delay. The patient's family history was unremarkable. The tests initially performed at the Clinic comprised cytogenetic karyotyping and analysis of the entire coding region of the GJB2 gene. The results revealed a 46,XX karyotype and a heterozygous pathogenic variant, c.313_326del, in GJB2. Detection of only a monoallelic pathogenic mutation in GJB2 was insufficient to diagnose deafness related to that gene. Subsequently, whole exome sequencing (WES) was conducted for the patient and her parents. The child's WES analysis showed a pathogenic variant in the ADGRV1 gene, c.15602del, p.(Val5201Glyfs*10), inherited from her mother. There was no previous record of it in the literature. Moreover, a de novo heterozygous 989 kb deletion was found in 5q14.3, which encompassed the entire ADGRV1 gene. The biallelic ADGRV1 change allowed a diagnosis of Usher syndrome type IIC (USH2C).

Conclusions

USH2C explains only a part of the girl's symptoms. The rest of them, most notably hypotonia and motor delay, require further evaluation. The patient is recommended to undergo regular ophthalmological examinations since some complications of USH2C involving the eyes are manageable.

LEARNING CURVES IN LAPAROSCOPIC TRAINING: COMPARATIVE ANALYSIS OF TRAINING MODELS [290]

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Introduction

Laparoscopic techniques are essential in modern surgery for their minimal invasiveness, reduced recovery times, and enhanced visualization. However, mastering these skills requires structured training.

Aim

Our study aimed to evaluate the efficacy of intensive versus distributed laparoscopic training models in developing and retaining surgical skills among medical students.

Methods and Materials

A prospective study was conducted from July to December 2024, involving 10 medical students (6 females, 4 males, aged 20-26 years) with no prior laparoscopic experience. Participants were divided into two training groups: intensive (daily sessions over 10 days) and distributed (twice weekly sessions over 5 weeks) training groups. Training was performed using the Laparo Advance box trainer with a Full HD USB camera and standard laparoscopic tools. Exercises followed the European Basic Laparoscopic Urological Skills (E-BLUS) program, including peg transfer, circle cutting, and needle guidance. The laparoscopic suturing exercise in the original E-BLUS program was replaced with a ball allocation task, where participants placed balls on posts using laparoscopic graspers. Performance metrics included task completion time, error rates, and Objective Structured Assessment of Technical Skills (OSATS) scores. A follow-up exam was conducted one month post-training to evaluate skill retention.

Discussion

Both models enhanced skills, but the distributed group demonstrated superior long-term retention and consistency. Follow-up comparisons showed significantly shorter task times for the distributed group in peg transfer ($p = 0.014$, $d = 1.97$) and circle cutting ($p = 0.036$, $d = 1.74$). The distributed group also maintained lower error rates and higher OSATS scores, particularly in precision-demanding tasks like cutting a circle ($p = 0.043$, $r = 0.64$).

Conclusion

Distributed laparoscopic training outperformed intensive models in skill retention, error reduction, and consistent performance, particularly in tasks requiring precision. Adopting distributed training in laparoscopic education may enhance the effectiveness of surgical education and better prepare trainees for clinical practice.

SURGERY — ORIGINAL RESEARCH (OR)

THORACOLAPAROSCOPY IN PATIENTS WITH THORACIC ENDOMETRIOSIS SYNDROME [302]

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Introduction

Thoracic endometriosis syndrome (TES) is the most common form of extrapelvic, deep infiltrating endometriosis, presenting with chest pain, cough, dyspnea, and pneumothorax related to menses. Video- assisted thoracoscopic surgery has a high recurrence rate for both pneumothoraces and pain, largely due to diaphragmatic endometriosis. The role of thoracolaparoscopy in treating TES is not well- documented.

Aim

The aim of study was to prove the effectiveness of thoracolaparoscopy as a surgical treatment of TES.

Methods and Materials

A retrospective analysis was conducted on clinical data from consecutive patients with TES operated on in the Thoracic Surgery Department of the Medical University of Gdańsk, Poland.

Discussion

Three women, aged 41.7 years on average, were operated on between July 1, 2024, and September 18, 2024. All had endometriosis of the diaphragm and underwent thoracolaparoscopy. Each patient experienced severe, recurring chest pain related to menstruation, and two of them had recurrent right-sided catamenial pneumothoraces. Abdominopelvic endometriosis had been previously diagnosed in two patients. The patients underwent simultaneous laparoscopy and videothorascopy while positioned in lateral decubitus position. During surgery, dominant diaphragmatic lesions were visualized on the abdominal side in three patients, with diaphragmatic perforations in two cases. Each patient underwent local ablation and full-thickness resection of diaphragmatic lesions, alongside wedge excision of pulmonary lesions and pleurectomy for those with a history of pneumothorax. The mean surgery time was 117 minutes. One patient required reoperation due to a pleural hematoma. The mean postoperative hospital stay was 5 days.

Conclusion

Thoracolaparoscopy appears to be a feasible surgical treatment for diaphragmatic endometriosis with a reasonable safety margin. The efficacy of this approach in TES needs further establishment.

ASSOCIATIONS BETWEEN HAND GRIP AND RESULTS OF REVASCULARIZATION IN PATIENTS WITH PERIPHERAL ARTERIAL DISEASE (PAD) [398]

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Introduction

Peripheral arterial disease (PAD) is a common condition characterized by narrowed arteries, resulting in reduced blood flow to upper and lower limbs. In patients with PAD, muscle strength may indicate systemic vascular health and correlate with the condition of peripheral arteries. Hand grip strength is a simple, non-invasive measure that reflects overall muscular strength and has been associated with various health outcomes, including cardiovascular disease, mobility, and functional status. In patients with PAD, muscle strength may indicate systemic vascular health and correlate with the condition of peripheral arteries.

Aim

The aim of this study was to elucidate the potential relationship between hand grip strength and revascularization outcomes in patients with PAD, contributing valuable insights to vascular surgery.

Materials and methods

This prospective cohort study was conducted from December 2023 to February 2025 at the Vascular Surgery Unit in Gdańsk. The study evaluated the association between hand grip strength and revascularization outcomes in patients diagnosed with PAD. The study included adult patients (≥ 18 years) diagnosed with PAD, confirmed by clinical assessment and imaging studies. Patients scheduled for revascularization procedures were eligible for participation. Exclusion criteria included patients with contraindications for surgery, those with acute limb ischemia, and individuals with significant comorbidities affecting functional status.

Discussion

Of the 78 patients in the study, 40 demonstrated hand grip strength values either within or above the normal range (< 30 kg for men, and < 20 kg for women), accounting for the majority of the group. Fourteen patients required surgical re-intervention due to late complications, with 8 of these showing significantly reduced hand grip strength values compared to the normal range. Additionally, 7 patients died within six months following the procedure, and in each case, the hand grip strength value was found to be below normal.

Conclusion

Understanding the associations between hand grip strength and revascularization results could provide clinicians with additional tools for risk stratification and managing PAD patients. Furthermore, it may highlight the importance of incorporating strength training and rehabilitation programs in the overall treatment strategy for patients with PAD.

SURGERY — ORIGINAL RESEARCH (OR)

ASSESSMENT OF ASCENDING AORTIC MICROCIRCULATION USING LASER DOPPLER PERFUSION MONITORING [485]

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Introduction

Etiology of ascending aortic aneurysms is still being discussed, and criteria for surgical intervention has been clearly defined, but our team asked ourselves a question, whether these criteria are right and accurate for every patient. In current literature, there is no example of using Laser Doppler Perfusion Monitoring (LDPM) in assessing microcirculation in ascending aortic wall. In terms of which cardiac operation should be performed, many decisions are being made after careful examination of patient's surgical and anatomical conditions. We believe that LDPM may be very useful tool in intraoperative evaluation whether given patient should also have his aorta replaced, as an associated cardiac surgery.

Aim

Our goal is to study microcirculation in wall of ascending aorta in patients with normal and enlarged ascending aorta, to study pathophysiology of ascending aortic aneurysms and establishing repeatable intraoperative method for assessing microcirculation in ascending aortic wall using LDPM technique.

Methods and Materials

Patients waiting for their cardiac surgery, where no procedure on aorta is performed, are being included in our research, after giving written consent. After opening patient's mediastinum with median sternotomy and exposing their aorta, LDPM probe is being sewn on anterior wall of aorta, using 5-0 suture. Each measurement was performed with use of PeriFlux 5000 (Perimed) system, paired with Probe 404-1 laser doppler probe.

Discussion

It is important to mention, that this is basic science study, with intent to examine pathophysiology of aortic aneurysms. Our study group is small (n=25) and this is the biggest limitation of our study. We still have a lot of work to do in terms of establishing a proper method, as even the producent was uncertain if such study is possible with use of their equipment.

Conclusion

Our results show that measuring microcirculation in ascending aortic wall is possible and safe. No patient experienced any complication, that could be associated with our method. Further studies are required, especially in terms of how microcirculation parameters affects the risk of developing ascending aortic aneurysms.

AN ADVANCED APPROACH TO ARRHYTHMIA RISK PREDICTION FOLLOWING VENTRICULAR SEPTAL DEFECT REPAIR USING MACHINE LEARNING [502]

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Introduction

Postoperative arrhythmias following ventricular septal defect (VSD) repair remain a critical complication, affecting 15-25% of patients. Traditional risk assessment methods rely on static clinical variables, failing to capture dynamic interactions between preoperative, intraoperative, and postoperative factors. Early recognition of high-risk patients enables timely interventions, potentially improving clinical outcomes.

Aim

To develop a clinically interpretable machine learning (ML) tool for arrhythmia risk prediction after VSD repair, integrating multifactorial perioperative data into an actionable framework.

Methods and Materials

A four-model stacking ensemble was implemented, combining logistic regression (linear relationships), random forest (non-linear interactions), XGBoost (gradient-boosted trees), and support vector machine (SVM; kernel-based patterns). The model was trained on a simulated clinical dataset (n = 3,000), incorporating eight key predictors across three surgical phases: preoperative: age/weight Z score, existing arrhythmias, pulmonary artery systolic pressure (PASP) and other congenital cardiac defects intraoperative: cardiopulmonary bypass time (CBP) and surgical complexity postoperative: hemodynamic instability and electrolyte disturbances Performance was evaluated using the area under the receiver operating characteristic curve (AUC-ROC) with stratified cross-validation. A PyQt5-based graphical user interface (GUI) was used, enabling real-time risk stratification ranging from very low to critical.

Discussion

The ensemble achieved an AUC-ROC of 0.92, demonstrating robust discriminative power. Key innovations include phase-specific weighting of predictors. For instance, an increased intraoperative cardiopulmonary bypass duration amplified postoperative electrolyte-related risks, a relationship undetectable by linear models alone. The ensemble leverages diverse learning paradigms to overcome the limitations of single-algorithm models, while using simulated data to mitigate privacy concerns during preliminary validation.

Conclusion

This study presents a clinically deployable tool for arrhythmia risk prediction after ventricular septal defect (VSD) repair, balancing accuracy with interpretability. Future work should validate the model using multicenter, prospective data and integrate electrocardiogram biomarkers to refine time related risk patterns.

SURGERY — ORIGINAL RESEARCH (OR)

LAPAROSCOPIC SLEEVE GASTRECTOMY – FEWER TROCARS, BETTER OUTCOMES [543]

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Introduction

Laparoscopic sleeve gastrectomy, the most common bariatric procedure in Poland, is the optimum method of treatment for obesity, regarding long term results measured by % excess weight loss and remission of co-morbidities. The conventional surgical procedure demands five trocars to insert surgical tools. The novel technique includes use of only three trocars.

Aim

The study aimed to compare outcomes between patients treated with conventional five-trocar laparoscopic sleeve gastrectomy and three-trocar laparoscopic sleeve gastrectomy.

Methods and Materials

We analyzed the course of treatment in a group of 50 patients who had undergone a five-trocar sleeve gastrectomy and 50 patients who had undergone a three-trocar procedure within the time frame of twelve months (between 2022 and 2023), with 1-year follow-up. The main endpoints included surgery duration, early postoperative complications and length of hospital stay. The additional endpoints were % excess weight loss, postoperative incidence of gastroesophageal reflux disease and other late complications.

Discussion

No significant differences were observed between the two groups regarding age, weight, BMI, and sex distribution. Related health conditions were comparable between the two groups. The patients treated with the three-trocar technique had a shorter surgery duration and comparable length of hospital stay, lower rate of early postoperative complications. Additionally, the % excess weight loss was higher in the three-trocar group and the incidence of postoperative late complications was comparable between the two groups.

Conclusion

The three-trocar sleeve gastrectomy is a feasible, safe, and effective alternative to conventional five- trocar procedure, with shorter surgery duration, lower rate of early postoperative complications and higher % excess weight loss.

CAN MRI QUALITY AFFECT PROSTATE BIOPSY OUTCOMES? THE ROLE OF PI-QUAL SCORES [546]

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Introduction

Prostate biopsy remains the gold standard for diagnosing prostate cancer (PCa), with multiparametric MRI (mpMRI) important for detection and targeting. However, the quality of mpMRI images is not routinely assessed, potentially affecting diagnostic accuracy.

Aim

Our study aimed to evaluate the quality of mpMRI using the PI-QUAL score of patients with a high risk of PCa based on initial parameters but were negative on biopsy.

Methods and Materials

We conducted a retrospective analysis of MRI and biopsy data from 2021-2022 (n = 456). Patients with PIRADS 4 or 5, PSA density > 0.1 ng/mL^2, and negative biopsy results (Group 1, n = 12) were propensity score-matched with patients who had positive biopsy results (ISUP ≥ 2, Group 2, n = 12) based on age, PIRADS, PSA, and prostate volume.

Discussion

Propensity score matching resulted in balanced groups (n = 12 each) for age (66.42 vs. 66.67 years), PSA levels (13.45 ng/mL^2 vs. 13.55 ng/mL^2), and PIRADS distribution (Group 1: 5 patients with PIRADS 5, 7 with PIRADS 4; Group 2: 6 patients with PIRADS 6, 6 with PIRADS 4). Group 2 had a slightly larger prostate volume (41.8 ml vs. 34.1 ml). Both groups had similar air presence in the rectum (5 patients each). PI-QUAL scores were lower in Group 1 (3.92 vs. 4.58, p = 0.067), with Group 1 having lower scores (4 patients with score 3, 4 with score 4, 3 with score 5) compared to Group 2, which had the majority of scans with the highest scores (8 with score 5, 3 with score 4, 1 with score 3).

Conclusions

Our findings suggest a link between lower PI-QUAL scores and negative biopsy results in high-risk patients. Standardizing PI-QUAL evaluation as a standard prebiopsy procedure could help identify cases where biopsy might be less effective due to suboptimal image quality.

SURGERY — ORIGINAL RESEARCH (OR)

THE IMPACT OF FAILED SURGERY ON QUALITY OF LIFE AFTER PILONIDAL DISEASE TREATMENT [548]

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Introduction

Pilonidal disease (PD) is a common acute or chronic condition most often found in the sacrococcygeal region. Surgery is the primary treatment for PD, with various techniques used worldwide. However, no surgical method is entirely risk-free or can prevent risks to the patients' quality of life (QoL). Unsuccessful surgery outcomes are one of the factors that can significantly impact patients' QoL and should be carefully considered when selecting the most appropriate treatment method.

Aim

This study aimed to compare the quality of life between patients with successful surgical outcomes and those with unsuccessful outcomes following surgical treatment for pilonidal disease.

Methods and Materials

A total of 90 patients who underwent surgical treatment for pilonidal disease were included in the study. They were divided into two groups: those with successful surgical outcomes and those with failed surgeries, defined by the presence of new openings, wound discharge after complete healing, or persistent non-healing wounds. Quality of life was assessed six months postoperatively using the QoL questionnaire, evaluating four key domains: pain, physical activity, wound-related symptoms, and psychosocial well-being.

Discussion

The primary treatment for chronic pilonidal disease is surgery, with various methods and modifications used worldwide. However, a major challenge is the absence of a standardised classification system. Without such a system, treatment selection is prone to unacceptable levels of selection bias. Another issue is the lack of a clear definition for recurrence. Without a clear definition, comparing outcomes – especially the impact of the disease or the treatment on QoL – across different studies becomes unreliable.

Conclusion

A comparison of QoL outcomes between healthy patients and those with unhealed wounds revealed statistically significant differences in pain, wound subscales, and overall QoL.

SURGERY — CASE REPORT (CR)

SUBCUTANEOUS PENILE NEOPLASM — ATYPICAL PRESENTATION WITH UNCERTAIN HISTOPATHOLOGY [371]

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Introduction

Penile epithelial neoplasms are relatively rare with an overall incidence of approximately 0.94 per 100000 males in Europe, the most common being squamous cell carcinomas (SCC) accounting for 95% of all penile cancers. The typical presentation is slow growing and manifests with skin changes, commonly around the glans. Epithelial tumors can arise from different primary site typically from different sites in the pelvic area and metastasize to the penis, however this is more uncommon. Typically, diagnosis is based on clinical suspicion, characteristic appearance and confirmed with histopathological examination.

Aim

This case report aims to showcase an atypically presenting penile neoplasm.

Methods and Materials

A 40-year-old male presented with a painless, firm, small, movable tumor of the dorsal surface near the root of the penile shaft . The tumor was insidious in onset with no prior history of trauma or sexually transmitted diseases. On examination, the swelling was approximately 1 × 1 cm in size and present in the subcutaneous plane. No inguinal lymph node involvement was noted. The tumor was completely removed. Excised mass was sent for histopathological examination with a result of malignant epithelial penile cancer with no origin specified. PET CT was performed to rule out possible primary lesion site and exclude metastasis. No abnormalities found.

Discussion

The most common types of penile epithelial-origin neoplasms typically present with skin manifestations absent in this case, furthermore they were excluded on the basis of negative immunohistochemical tests. This poses the possibility of a primary lesion at a different site with this as a metastatic lesion, however no sites of increased activity were detected on PET CT. Patient needs to be under routine clinical supervision to rule out other tumors or recurrence.

Conclusions

While SCCs represent an overwhelming majority of malignant penile lesions, further diagnostic evaluation should be undertaken. This is especially important when evaluating lesions that present atypically or with lesions in unusual locations.

SURGERY — CASE REPORT (CR)

THORACOLAPAROSCOPIC APPROACH IN BOCHDALEK HERNIA SURGICAL TREATMENT [377]

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Introduction

Bochdalek hernia (BH) is a posterolateral diaphragmatic hernia usually diagnosed among pediatric patients. BH can be identified in adulthood, sometimes after surgery or trauma, and may also occur when associated with mechanical or congenital factors. Surgical treatment of BH includes open surgeries and minimally invasive procedures - laparoscopy or thoracoscopy. The combination of minimally invasive surgeries during one procedure may improve the safety and efficacy of BH treatment.

Discussion

We analyzed a 31-year-old female, with a left-sighted Bochdalek hernia, operated in the Thoracic Surgery Department of the Medical University of Gdansk. In June 2024 she presented shortness of breath with concomitant abdominal pain. History of medical treatment included operation in the 6th month of life for congenital atrial septal defect and three cesarean sections. The computed tomography revealed a significant hernia in the posterior part of the left dome of the diaphragm. Simultaneous laparoscopy and video-assisted thoracoscopy, while placed in the supine position with her legs apart and left-sighted chest elevation, were performed. During the laparoscopic approach, the herniated ileum and colon were visualized. Through the Bochdalek hernial orifice, which was estimated to be 50 x 20 mm, the visceral organs were reduced. Subsequently, thoracoscopically the loops of the small and large intestine were ultimately freed and drawn out from the pleura to the abdominal cavity and the orifice was directly closed. The operation time was 133 minutes. The patient required reoperation on the 1st postoperative day. Patient was discharged home on 7th postoperative day.

Conclusion

Thoracolaparoscopy is a potentially effective surgical approach that may be considered in Bochdalek hernia treatment. The reported procedure provides successful visualization of viscera with subsequent diaphragmatic hernial repair.

MIDDLE FOSSA APPROACH FOR RECURRENT CHOLESTEATOMA: A CASE REPORT ON SURGICAL MANAGEMENT AND OUTCOMES [486]

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Introduction

Cholesteatomas are abnormal growths of keratinised squamous epithelial cells that form a cyst- like structure, which can occur as a result of chronic otitis media. Surgical intervention is necessary for cholesteatomas to prevent progressive destruction and other serious complications like intracranial infections. The risk of recurrence of a cholesteatoma post operative is highest within the first five years of removal.

Aim

This case report aims to highlight an uncommon presentation of recurrent cholesteatoma, review the role of advanced imaging in their detection, and discuss the importance of vigilant long- term monitoring in patients with a history of otologic procedures.

Methods and Materials

This case review examines a patient's clinical presentations and complications following surgical intervention.

Discussion

We present the case of a 70-year-old male with a history of chronic otitis media who underwent radical revision mastoidectomy of the right ear 15 years ago, aimed at the complete removal of the cholesteatoma and the creation of a cavity for monitoring any potential recurrence. During this surgery, the patient sustained a significant injury to the facial nerve, resulting in severe dysfunction classified as grade 5 on the House- Brackmann Facial paralysis scale, which was rehabilitated well. Following the procedure, routine follow-up appointments showed no other abnormalities. However, in 2024 the patient's wife noticed a recurrence of facial weakness, which, interestingly, the patient himself did not observe. Despite no visible signs of recurrence during a conventional otolaryngological examination of the postoperative cavity, a non- EPI- DWI MRI scan of the temporal bone was performed as a precautionary measure. This scan revealed a 22x6x15 mm cholesteatoma extending to the skull base. Based on these findings, the patient was deemed a candidate for surgical intervention. The middle fossa approach was chosen due to the anatomy of the petrous part of the temporal bone being optimally visualised, allowing for precise surgical access.

Conclusions

This case highlights the importance of vigilant long-term monitoring in patients with a history of otologic surgeries and the role of advanced imaging in detecting subtle, yet critical, complications like recurrent cholesteatomas.

SURGERY — CASE REPORT (CR)

SILENT DANGER: SPONTANEOUS SPLENIC RUPTURE CAUSED BY SPLENIC VEIN THROMBOSIS — A CASE REPORT [490]

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Introduction

Spontaneous splenic rupture (SSR) is a rare but life-threatening condition often misdiagnosed due to its nonspecific presentation. While SSR secondary to splenic vein thrombosis remains exceedingly rare. This case highlights the diagnostic and management complexities of SSR in a 46-year-old woman, emphasizing the need for clinical vigilance and timely intervention.

Aim

This case report highlights the approach to spontaneous splenic rupture (SSR) by emphasizing early recognition, resuscitation, imaging (FAST, CT angiography), surgical decision-making (splenectomy in instability), and postoperative care (OPSI prevention, thrombosis risk assessment). It underscores the importance of structured trauma management to improve patient outcomes in SSR.

Methods and Materials

The patient underwent systematic evaluation, including hemodynamic assessment, and imaging with FAST and CT angiography to confirm SSR and splenic vein thrombosis. Laboratory tests assessed anemia and coagulopathy, guiding resuscitation with crystalloids, blood transfusion, and broad-spectrum antibiotics. An emergency laparotomy with splenectomy was performed, followed by postoperative stabilization, OPSI prophylaxis, and thrombosis risk evaluation for optimal recovery.

Discussion

Spontaneous splenic rupture (SSR) is a rare but life-threatening condition requiring rapid diagnosis and intervention. Splenic vein thrombosis as a cause is exceptionally uncommon. Including hemodynamic stabilization, imaging (FAST, CT angiography), and urgent laparotomy, is critical in preventing mortality. This case underscores the importance of early recognition, as delayed diagnosis can lead to profound hemorrhagic shock. Postoperative management, including OPSI prophylaxis and thrombosis evaluation, remains essential for long-term patient outcomes. Increased awareness of SSR in atraumatic cases can significantly improve clinical decision-making and survival rates.

Conclusion

Splenic rupture (SSR) represents about 7% of splenic injuries, commonly due to infections and malignancies. A notable yet uncommon cause is splenic vein thrombosis, particularly in patients experiencing hypercoagulability from severe undernutrition. This case underscores the need to consider SSR in patients who present with atraumatic abdominal pain and hemodynamic instability. This case highlights the need for ongoing research to improve management strategies for SSR, particularly those stemming from vascular thrombosis, to better understand risk factors and enhance diagnostic and treatment approaches.

BILATERAL DIAPHRAGM EVENTRATION: A CASE REPORT [504]

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Introduction

Diaphragm eventration – a rare condition characterised by a persistent elevation of one or both diaphragm domes due to muscular or nerve dysfunction arising from congenital or acquired defects. Its incidence is below 0.05 %, more common in men and typically affects the left hemidiaphragm. In adults, it is usually asymptomatic, detected incidentally. This case report highlights the imporatance of recognizing diaphragmatic eventration as a potential cause of dyspnea and the efficacy of a staged surgical approach in restoring respiratory function.

Aim

A 62-year-old man presented with progressive dyspnea at rest, sleep disturbances and exercise intolerance worsening over two months. The patient's detailed medical history included thorasic and back trauma 5 years prior, thoracic spinal hernia surgery, abdominal wall hernia repair, and 2 years of obstructive pulmonary disease managed with bronchodilators. A chest X-ray, a CT scan and spirometry were ordered upon admission to the Department of Thoracic Surgery. Imaging revealed bilateral diaphragmatic elevation with reduced lung volumes. Spirometry confirmed restrictive ventilatory impairment. Based on these findings and impaired quality of life, surgical intervention was planned. The patient first underwent left diaphragmatic plication via thoracotomy, followed by continued physiotherapy to enhance respiratory function and exercise tolerance. The post-operative recovery was uneventful, with the expected clinical effect and reduced breathlessness. 6 months later, right-sided diaphragmatic plication was performed. Postoperatively, he experienced significant improvement in quality of life, improved respiratory function and enhanced sleep quality.

Conclusion

This case underlines the importance of recognizing diaphragm eventration as a rare but significant cause of respiratory impairment, particularly in patients with a history of thoracic trauma and underlying pulmonary conditions. A staged surgical approach, combined with physiotherapy, resulted in substantial symptom relief, improved respiratory function, and enhanced quality of life. Thus, this underscores the value of a multidisciplinary approach in maximising results and the efficacy of surgical intervention in patients with bilateral diaphragm eventration.

SURGERY — CASE REPORT (CR)

ADRENOCORTICAL CARCINOMA PRESENTING WITH ACTH-INDEPENDENT CUSHING'S SYNDROME: A CASE REPORT [581]

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Introduction

Adrenocortical carcinoma (ACC) is a rare malignancy that can occur at any age. With a frequency of 3-10% of human population. ACC frequently produces hormones, often presenting with Cushing's syndrome. However, early diagnosis is challenging.

Aim

Highlighting the importance of early diagnosis and surgical management of ACC in improving patient outcomes.

Methods and Materials

A 58-year-old woman with a history of type 2 diabetes mellitus (DM) and thromboembolic events exhibited persistent hypertension, hyperglycemia, and obesity. She was diagnosed with ACTH- independent Cushing's syndrome due to a right adrenal tumor. CT imaging revealed a 47 × 51 × 41 mm right adrenal mass, calcified and highly suspicious for malignancy. A comparison with prior imaging confirmed tumor progression. Laparoscopic right adrenalectomy was performed. Histopathology of the surgical specimen confirmed ACC (pT2NxMx, R0) with a Weiss score of 4, capsular invasion, necrosis, and a mitotic count of 9/50 HPF. Immunohistochemistry showed Melan-A positivity, while chromogranin and S100 were negative, consistent with adrenocortical carcinoma.

Discussion

Cortisol-secreting ACC is often diagnosed late due to nonspecific symptoms. CT and Weiss score facilitated differentiating between malignant and benign adrenal tumors. Surgical resection remains the cornerstone of treatment, and long-term follow-up is crucial due to the high risk of recurrence. Early detection and complete resection significantly improve patient outcomes.

Conclusion

Although early diagnosis of ACC is challenging, it is crucial for improving patient prognosis. Early identification and prompt surgical treatment are essential. ACTH-independent ACC management should involve a multidisciplinary approach, including medical therapy, surgery, and thromboembolic prevention.

AORTOMITRAL CURTAIN RECONSTRUCTION TECHNIQUE WITH AORTIC AND MITRAL VALVE REPLACEMENT IN NATIVE BI-VALVULAR ENDOCARDITIS — CASE REPORT [599]

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Introduction

The treatment of extensive bi-valvular endocarditis involving the aortomitral curtain (AMC) poses a significant challenge, often necessitating highly complex surgical intervention. The gold-standard surgical approach, first described and popularised by David et al. in 1997, has since been given the name 'The Commando Procedure'. Here, we present a case in which a novel surgical technique was employed, demonstrating a successful and innovative strategy for managing this severe condition.

Aim

A 64-year-old man with a history of poorly controlled type 2 diabetes and arterial hypertension presented with anuria, increasing fatigue, dyspnoea, nausea, and an unintentional 25kg weight loss, without fever. He was admitted due to severe anaemia and acute kidney failure, with suspicion of rapidly progressive glomerulonephritis secondary to vasculitis. Shortly after admission, he was diagnosed with septicemia due to Streptococcus mutans. Echocardiography revealed extensive aortic and mitral valve destruction, an abscess in the AMC, and a 13 mm vegetation on the aortic valve, resulting in valvular insufficiency and a LVEF of 45%. Aggressive antibiotic treatment was initiated, and the patient was qualified for surgical intervention. Surgical excision included the aortic valve cusps, the superficial surface of the AMC, and the adjacent aortic annulus, along with the anterior mitral valve cusp and its associated annulus. However, intraoperative assessment determined that complete excision of the AMC was unnecessary, allowing for a more conservative approach and therefore, less extensive reconstruction, compared to the traditional Commando Procedure.

Conclusions

This operative technique offers a superior reconstruction method in patients in which complete excision of the AMC is deemed unnecessary. Thorough debridement of infected tissue should not be avoided to replicate this technique. The approach utilised offers a less complex and extensive reconstruction, leading to shorter cross-clamp and bypass duration, fewer postoperative complications, better postoperative heart function, and should be considered as an alternative to the traditional Commando Procedure when viable in similar patient disease presentations and severity.

INTERNAL MEDICINE — ORIGINAL RESEARCH (OR)

POSSIBLE PANCREATIC DUCT ANOMALIES, THEIR FREQUENCY, AND ASSOCIATION WITH PANCREATITIS COMPARING DIFFERENT RADIOLOGICAL METHODS [475]

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Introduction:

Pancreatic duct anomalies are clinically significant group of conditions that are often identified incidentally during radiological investigations. Although many anomalies remain asymptomatic, conditions, such as pancreas divisum and ansa pancreatica are associated with increased risk of pancreatitis. Accurate diagnosis relies heavily on imaging techniques.

Aim

To investigate the frequency of pancreatic duct anomalies, their association with pancreatitis, and the diagnostic accuracy of various radiological methods.

Methods and Materials

A systematic review was conducted following PRISMA guidelines, analyzing 18 studies sourced from PubMed database. Keywords included “pancreatic duct anomalies,” “pancreatitis,” and related terms. Studies released by June 11th, 2024, that met the selection criteria, were retrieved and reviewed.

Discussion

Systematic review included 18 studies analyzing 5,858 patients, comprising 48% males and 52% females, with an average age ranging from 36.9 to 63.5 years. The most common pancreatic duct anomaly was pancreas divisum (4-10% prevalence in the general population, higher rates among those undergoing imaging for pancreatitis). Studies utilizing MRCP with secretin demonstrated a diagnostic sensitivity of 84.5% and specificity of 88.1% compared to ERCP. While MRCP is less invasive, ERCP was more effective for direct visualization. It was followed by ansa pancreatica (0.5-1.2% prevalence). This anomaly was predominantly diagnosed using MRCP, with sensitivity and specificity values exceeding 80% when secretin-enhanced sequences were included. A Japanese study with 587 patients revealed a significant association with recurrent acute pancreatitis (11.1% of cases). Lastly, for annular pancreas CT and MRI were effective for visualization. In symptomatic cases, annular pancreas often causes pancreatitis. Imaging studies identified coexisting pancreas divisum in 25% of these cases. MRCP with secretin emerged as the most sensitive and non-invasive imaging modality for detecting pancreatic duct anomalies, offering enhanced ductal visualization.

Conclusion

MRCP with secretin offers a non-invasive, highly sensitive diagnostic option, while ERCP and EUS remain essential tools for complex or therapeutic cases.

DEEP-ACS: A HARDWARE-ACCELERATED ALGORITHM FOR PREDICTING COMPOSITE ADVERSE EVENTS IN ACUTE CORONARY SYNDROME PATIENTS [596]

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Introduction:

Acute Coronary Syndrome (ACS) remains a principal cause of morbidity and mortality worldwide. Timely risk stratification is critical to guide therapeutic interventions, potentially preventing life- threatening complications. Composite adverse events – encompassing cardiogenic shock, malignant arrhythmias, and acute kidney injury – pose a significant challenge for clinicians managing ACS.

Aim

This study introduces Deep-ACS, a hardware-accelerated deep learning algorithm designed to predict composite adverse events in ACS patients. The overarching goal is to enable multimodal, real-time, data-driven decision-making within acute cardiac care settings.

Methods and Materials

Utilising international multicenter retrospective cohorts from Europe, Asia and the US, data including demographic profiles, clinical evaluations, vitals signs, waveform signals, and laboratory biomarkers from ACS patients at admission and throughout hospitalization. An ensemble model was employed to integrate the result of multiple models through a meta learner. Convolutional neural networks (CNN), extreme gradient boosting (XGBoost) and novel transformer infrastructures were employed to integrate these heterogeneous inputs. To achieve near real-time inference, Deep-ACS was deployed on a field-programmable gate array (FPGA) platform, reducing latency and power consumption compared to conventional CPU-based approaches. Model performance was assessed using sensitivity, specificity, and area under the receiver operating characteristic curve (AUC), and compared against standard logistic regression models. Statistical significance was determined using appropriate tests for each performance metric, and all modeling procedures adhered to cross-validation best practices.

Discussion

Deep-ACS demonstrated superior predictive accuracy (AUC: 0.92 vs. 0.68-0.83 for benchmarks) and real-time inference (<20 ms per prediction), outperforming conventional models. Key predictors included dynamic troponin trends and heart rate variability. Limitations include reliance on retrospective data and lack of prospective validation.

Conclusion

Our findings underscore the promise of hardware-accelerated deep learning in real-time risk prediction for ACS populations. Future research will explore scalability in larger, more diverse cohorts and investigate real-world clinical deployment, paving the way for proactive, precision-based cardiac care.

INTERNAL MEDICINE — ORIGINAL RESEARCH (OR)

CLINICAL EFFICACY OF PYO-BACTERIOPHAGE THERAPY IN OCULAR SURFACE DISEASE TREATMENT [407]

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Introduction:

The rise in patients unable to undergo antibiotic treatment has created a demand for alternative methods in ophthalmology. From the year 2000, the Department of Eye Diseases of Tbilisi State Medical University successes in using Pyo-Bacteriophage to treat various eye diseases such as chronic and acute blepharitis, infectious-allergic conjunctivitis and keratitis and chronic and acute dacryocystitis in antibiotic-allergic and antibiotic-resistant patients or in the patients who have negative antibiotic treatment results in the past. Advantages of the Bacteriophage therapy compared to antibiotic therapy, such as specificity, adaptability, lower risk of side effects or allergic reactions, naturally occurrence potential and biodegradability, and reduced risk of antibiotic resistance should be taken into account.

Aim

The study aimed to collect and analyze the data of the cases where Pyo-Bacteriophage was implemented for treatment and the treatment results.

Methods and Materials

Pyo bacteriophage leads to specific lysis of Staphylococcus, Streptococcus, E.coli, Pseudomonas Aeruginosa and Proteus. Pyo-bacteriophage, produced in The George Eliava Institute of Bacteriophage, Microbiology and Virology was prescribed for instillation, application and nasolacrimal duct irrigation. The data was collected from the patients' medical histories and follow-up results.

Discussion

A total of 79 patients, who underwent the mentioned treatment were found, of which 30 had chronic dacriocystitis, 27-Infectious-allergic conjunctivitis and 22-Blepharitis. In most of the cases (61/79) the positive outcome with relief of patient complaints and full recovery was achieved.

Conclusion

Considering the diversity of patients and the complications that could occur if antibiotic therapy, which was ineffective, did not have an alternative in the form of bacteriophage, the high effectiveness and clinical significance of pyo-bacteriophage therapy as a treatment method is confirmed. Also, its other advantages mentioned above should be taken into account.

ASSOCIATION BETWEEN PHYSIOLOGICAL VARIABLES AND MORBIDITY OF GASTROJEJUNAL ULCERS IN ADULT PATIENTS [288]

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Introduction:

Gastroduodenal ulcers are erosive lesions that develop in the gastric or duodenal mucosa due to an imbalance between protective and aggressive factors within the gastrointestinal tract. Many factors such as systemic, anatomical, resistance to H. pylori infection could be significant in the etiology such as age, gender and body mass index.

Aim

To assess the prevalence, morbidity pattern and dependence of age and gender among patients with gastrojejunal ulcers in the hospital of the Lithuanian university of health science from 2018 to 2023.

Methods and Materials

Data of study was used from the Health Information Center of the Institute of Hygiene. 1530 cases of gastrojejunal ulcers were detected in the period from 2018 till 2023 in Kaunas Hospital. IBM SPSS 29.0 was used for data analysis.

Discussion

From 2018 to 2023 statistically significant difference was found between age groups ($p < 0.05$) in the overall trend of morbidity of the condition. 18 – 64 aged group accounted for 39.16%, of which 29.01% were men and 10.26% women ($p = 0.000$). Gastrojejunal ulcer morbidity is more common among the group of men than the group of women. There was a statistically significant difference between women and men groups ($p < 0.05$). 65+ aged group accounted for 60.71%, of which 21.96% were men and 38.75% women ($p = 0.000$). Gastrojejunal ulcers morbidity is a more common occurrence among the group of senior women. There was a statistically significant difference between senior women and men ($p < 0.05$).

Conclusions

The senior group have the greatest morbidity rate of gastrojejunal ulcers and women made up the majority of the patients diagnosed with it.

INTERNAL MEDICINE — ORIGINAL RESEARCH (OR)

COLONOSCOPY RECURRENCE RATE, COLORECTAL POLYPS DETECTION AND BOWEL PREPARATION IMPACT ON CLINICAL OUTCOMES [350]

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Introduction

Colonoscopy is considered the gold standard for screening, diagnosis, and therapeutic intervention through the removal of premalignant polyps. Inadequate bowel preparation compromises mucosal visualization, potentially prolonging procedure time and necessitating earlier repeat examinations.

Aim

To evaluate the impact of bowel preparation on the quality and frequency of colonoscopy procedures, highlighting its crucial role in improving outcomes.

Methods and Materials

This retrospective analysis included 420 patients underwent colonoscopy in 2024. Data on demographics, procedure frequency, polyp detection, and bowel preparation were analyzed. Bowel cleanliness was assessed using the Boston Bowel Preparation Scale (BBPS) to evaluate its impact on colonoscopy efficiency and results. Statistical analysis was performed using IBM SPSS Statistics, version 29.

Discussion

The study involved 420 patients, of whom 50.5% (n = 212) were male. The largest group 48.1% consisted of patients aged 50–70 years.The distribution of colonoscopy procedures by frequency was as follows: 75.7% (n = 318) underwent the procedure once, 21.4% (n = 90) had it 2–3 times, and 2.9% (n = 12) had more than three colonoscopies.Colonoscopy for polyp removal was performed for the first time in 81.1% (n = 340) of patients, while 18.9% (n = 80) underwent repeat procedures.During the procedure, polyps were classified as follows: 11% (n = 47) presented with a clearly malignant tumor, 65% (n=275) had 1–3 polyps, 18% (n=74) had more than three polyps, and 6% (n = 24) had more than six polyps. Bowel preparation was categorized as follows: 47.4% (n = 199) had no documented preparation, 42.8% (n = 180) used macrogol-based preparation (PEG), 6.7% (n = 28) used sodium picosulfate with magnesium citrate, 1.4% (n = 6) used sulfate-based preparation, and 1.7% (n = 7) underwent enema-based preparation.Bowel cleanliness was assessed using BBPS, with data missing for 2.4% (n = 10) of patients. Poor preparation (score 0-3) was noted in 7.9% (n = 33), moderate preparation (score 3-6) in 34.5% (n = 145), and good preparation (score 6-9) was achieved by the majority, 55.2% (n = 232).

Conclusion

This study highlights that inadequate bowel preparation impairs polyp detection, prolongs procedures, and increases repeat exams, potentially delaying diagnosis.Optimizing bowel preparation is key to improving procedural success, reducing repeat exams, enhancing diagnostic reliability and ensuring better patient care.

EARLY MORTALITY AND KIDNEY FAILURE IN PATIENTS WITH MULTIPLE MYELOMA: A SINGLE-CENTER ANALYSIS [428]

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Introduction

Multiple myeloma (MM) remains an incurable disease despite novel drugs considerably improving survival rates. Over the past 10 years, median overall survival (OS) has increased from 3–4 years to 5–7 years. Nevertheless, it is estimated that 25% of patients die within two years after diagnosis. The rate of early (< 6 months from diagnosis) mortality ranges from 10% to 14% posing as a significant challenge in clinical practice.

Aim

Our objectives were to assess early mortality, kidney failure and overall survival in MM patients.

Methods and Materials

This retrospective study included 413 MM patients treated at the Department of Hematology in Rydygier Hospital in Kraków, Poland, between 2006 and 2017. The study group included 234 women (56.7%) and 179 men (43.3%) with a mean age of 66.9 years (range 27–89 years). Following prognostic factors assessment, patients received various causative treatments.

Discussion

Death was reported in 204 of the 413 patients, including 57 early deaths (27.9%). The most common causes of death were infectious complications, progression of primary disease, and multi-organ failure. Mortality rates were higher in men [odds ratio (OR) = 1.4] ($p = 0.015$), in patients with kidney failure ($p = 0.001$), and in patients with significant proteinuria and immunoglobulin A secretion (OR = 1.3). Kidney failure was associated with a 9-fold higher risk of early death (OR = 9.1).

Conclusion

Our study showed that kidney failure and significant proteinuria are associated with lower OS. It is noteworthy that in our study, kidney failure was associated with a 9-fold higher risk of early death. Therefore, efforts should be made to restore normal kidney function, and patients should be referred for renal replacement therapy early enough to prevent further kidney damage during initial therapy, and to increase the chance of improving kidney function.

INTERNAL MEDICINE — ORIGINAL RESEARCH (OR)

RELATIONSHIP BETWEEN SIMPLE RENAL CYSTS AND HYPERTENSION: A META ANALYSIS [467]

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Introduction

Simple renal cysts (SRC) are the most common incidentally found cystic lesions in the kidney. While their association with hypertension (HT) has been explored in various studies, the findings remain inconsistent.

Aim

This meta-analysis aims to systematically evaluate the relationship between SRC and HT.

Methods and Materials

We conducted searches in PubMed, Web of Science Core Collection and Scopus to identify observational studies from that examined the association between SRC and hypertension. All articles containing animal or pediatric (< 18 years old) study populations, or having < 10 patients in total and/or lacking a control group that did not develop HT were excluded. Two reviewers independently screened the studies and extracted the data. Quality of each included study was assessed using the Newcastle- Ottawa Scale. The meta-analysis was performed using Review Manager 5.4.

Discussion

In total, 12 studies (10 cohort and 2 case-control studies) with 147 310 participants were included in this meta-analysis. Presence of SRC was associated with an over 2-fold higher likelihood of having hypertension (OR 2.04, 95%CI 1.70-2.45, P < 0.0001). Moreover, multiple SRCs were more strongly associated with HT (aOR 1.36, 95%CI 1.26-2.42, p = 0.0008), just as SRCs with bilateral kidney distribution (aOR 2.26, 95%CI 1.12-4.59, p = 0.02).

Conclusion

This study provides the first and most reliable review on the topic, showing an established link between SRC and HT even after adjustment for major confounding factors such as age, sex, and cardiovascular disease.

AI-DRIVEN ADHD MANAGEMENT: MULTIMODAL TRACKING, PREDICTIVE ANALYTICS, AND PERSONALIZED INTERVENTION [298]

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Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) significantly impairs academic performance and daily functioning in students, with traditional management strategies–such as medication and behavioral therapy often fragmented or suboptimal. Current tools fail to integrate multimodal health data or leverage AI-driven insights for personalized care, resulting in over-reliance on pharmacotherapy and inconsistent outcomes.

Aim

To develop and validate an AI-powered ADHD management platform that synthesizes multimodal health data including cognitive function, mood, sleep, vitals, and productivity metrics to deliver personalized recommendations, reduce medication dependency, and improve symptom control.

Methods and Materials

Our application aggregates data from validated instruments: the Cognitive Function Tracker (ESQ-R), mood assessments (PHQ-9, GAD-7), medication logs, sleep/vitals monitoring, and productivity tools (e.g., Pomodoro timers). Multimodal data is processed through hybrid AI architectures, combining large language models (LLMs) for qualitative analysis and machine learning algorithms (Random Forest, XGBoost) for predictive analytics. The ADHD Data-driven Analysis and Precision Treatment (ADAPT) Framework employs synthetic data stress-testing, longitudinal user studies, and tiered intervention protocols. Risk stratification flags trigger personalized recommendations (e.g., sleep optimization, dose adjustments) while preserving user autonomy in low-risk scenarios.

Discussion

The system demonstrated a 92% accuracy in predicting symptom exacerbation (F1-score: 0.89) and reduced self-reported ADHD impairment by 38% in an 8-week trial with 10 students. LLM-driven insights achieved 94% concordance with clinician evaluations for mood disorder screening (PHQ- 9/GAD-7). The Random Forest model outperformed logistic regression (AUC 0.91 vs. 0.78) in forecasting medication efficacy, enabling a 30% average dosage reduction. Productivity metrics correlated strongly with academic improvement ($r = 0.67$, $p < 0.01$), while ADAPT reduced unnecessary clinician alerts by 65% through risk-tiered autonomy.

Conclusion

This platform bridges critical gaps in ADHD care by unifying multimodal data, AI-driven analytics, and precision interventions. Future work will integrate real-time neurofeedback and expand validation across diverse populations.

PSYCHOLOGY AND PSYCHIATRY

EXAMINING THE RELATIONSHIP BETWEEN PERFECTIONISM AND PROCRASTINATION AMONG STUDENTS [376]

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Introduction

Existing literature suggests that the link between perfectionism and procrastination is indisputable. However, the complexity of this phenomenon remains unknown.

Aim

This article aimed to test the relationships between specific dimensions of perfectionism and particular dimensions of procrastination. Three hypotheses were tested. It was assumed that there is a relationship between Personal Standards, Time Organisation, Systematicity of Work and Procrastination Awareness. It was also suggested that Concern Over Mistakes and Doubts About Actions would be related to Procrastination Recognised as a Permanent Personality Trait, and Parental Expectations would correlate negatively with Willpower.

Methods and Materials

A total of 105 students between the ages of 18 and 26 participated in the study. An online questionnaire was used to collect data. It consisted of a demographic survey, two self-report questions and two questionnaires: Frost's Multidimensional Perfectionism Scale and the Procrastination Questionnaire.

Discussion

The results of the study present a multitude of significant relationships between dimensions of perfectionism and procrastination. Two of the three hypotheses were confirmed. Thus, it was assumed that having high personal standards is associated with better organisation of one's work and with greater awareness of one's procrastination. There are also reasons to believe that a constant fear of making a mistake and doubting the quality of the activities performed are linked to procrastination as a permanent personality trait.

Conclusions

The results of the study indicate that people who are more demanding of themselves have better control over their actions and are less likely to procrastinate. On the other hand, concern over one's mistakes and doubts of one's actions seem to promote chronic procrastination, which may result in avoiding situations that require evaluation. Due to certain methodological limitations, replication of the above study is recommended to verify the results and assess their repeatability.

WORKING MEMORY PERFORMANCE DURING DIFFERENT PHASES OF THE MENSTRUAL CYCLE: PRE-OVULATORY AND MENSTRUAL PHASES IN YOUNG WOMEN [438]

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Introduction

The literature indicates that the prefrontal cortex is a significant site of estrogen activity in the adult female brain. Estrogen receptor alpha has been found in the dorsolateral PFC, an area of the brain responsible for working memory (Hatta, T., and Nagaya, K., 2009). There is an evidence that cognitive function deteriorates with age, particularly working and episodic memory, and that age-related atrophy is most pronounced in prefrontal areas (Daselaar S., Cabeza R., 2013), particularly those associated with working memory and executive control, as this is when the natural decline in the steroid hormones: oestrogen and progesterone occurs (Pataky MW et. al., 2021).

Aim

The aim of this study was to test whether cognitive performance would vary between the phases of the menstrual cycle, with improved performance during the pre-ovulatory phase compared to the menstrual phase in working memory in young women.

Methods and Materials

Forty-two women (aged 20 to 36 years, mean age 23.64 ± 3.53) participated in the study. Prior to cognitive examination, blood samples were taken from the participants to determine hormone levels - progesterone and oestradiol. The cognitive tests used in the study were: backward versions of Digit Span from the Wechsler Adult Intelligence Scale and Corsi block - tapping test and Trail Making Test Version B, which measures working memory (de Paula JJ et. al., 2016; Sánchez-Cubillo, I. et. al., 2009).

Discussion

We noticed statistically significant better results in the preovulatory phase in the digit span backward max ($T = 2.324$; $p = 0.002$, $r = 0.3$), and in the TMT B test time ($T = 2.608$; $p = 0.009$, $r = 0,3$).

Conclusion

The conclusion is that women's cognitive function varies with the menstrual cycle. We observed better working memory during the high oestradiol phase compared to the low phase in the same women. This aligns with studies linking higher oestrogen levels to improved working memory (Rosenberg L., Park S., 2002; Hampson E., Morley E.E., 2013). Our findings also support reports that during peri-menopause, when estrogen and progesterone decline, working memory deteriorates (Weber et al., 2012), suggesting that PFC-related cognitive demands contribute to perceived cognitive difficulties in menopause.

PSYCHOLOGY AND PSYCHIATRY

ASSOCIATION BETWEEN ATTENTION-DEFICIT HYPERACTIVITY DISORDER AND HIGHER RISK OF SOCIAL MEDIA ADDICTION [443]

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Introduction

ADHD (Attention-Deficit/Hyperactivity Disorder) is a common neurodevelopmental and behavioral disorder that emerges in early childhood and often impacts adulthood. It is known for a short attention span, which contributes to having trouble focusing on complex, time-consuming tasks due to becoming easily distracted. Another feature of ADHD is impulsivity, which results in a tendency to choose immediate rewards over long-term rewards, even if they are more beneficial. One example of such an immediate reward could be the use of social media. Firstly, due to a prompt and low-effort opportunity to fulfill social and informative needs while also providing entertainment. Secondly, because of a very easy full-time smartphone access.

Aim

This study aimed to investigate the relationship between ADHD and social media addiction risk.

Methods and Materials

The study was conducted on a sample of 1,081 high-school students (666 females; 61.6%) with a mean age of 16.96 (SD = 82) years. Relationships between ADHD symptoms, gender, and problematic social media use were examined. Participants filled-in Adult ADHD Self-Report Scale (ASRS) and Bergen Social Media Addiction Scale (BSMAS).

Discussion

The results of hierarchical regression analysis showed that both ADHD components (inattention and hyperactivity) were positively associated with problematic social media use, with inattention exhibiting a stronger link. Also, females showed a higher risk of social media addiction.

Conclusions

Journal article: Balcerowska JM, Bereznowski P, Biernatowska A et al. Is it meaningful to distinguish between Facebook addiction and social networking sites addiction? Psychometric analysis of Facebook addiction and social networking sites addiction scales. Curr Psychol. 2022 Feb;41:949–96 Available from: https://link.springer.com/article/10.1007/s12144-020-00625-3 Journal article: Buźniak A, Woropay-Hordziejewicz N, Bereznowska A, Atroszko P. Alarmingly high prevalence and lack of gender differences in ADHD among high school students: Screening for ADHD with ASRS among adolescents and working adults. Current Problems of Psychiatry. 2022 Dec;23(4).

PRELIMINARY INSIGHTS INTO SEXUAL ABUSE IN RELATIONSHIPS: UNDERSTANDING THE HIDDEN REALITY [481]

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Introduction

Rape is commonly defined as any non-consensual sexual act, including vaginal, oral, or anal penetration. While many associate rape with attacks by strangers, research shows that sexual abuse more often occurs within relationships, perpetrated by intimate partners.

Aim

This study examines the prevalence of sexual abuse in relationships, with a focus on marital and intimate partner rape.

Methods and Materials

An anonymous online survey with 38 questions was distributed via social media (Facebook, Instagram). A total of 250 individuals participated (84.4% female, 14% male, 1.2% transgender, 0.4% non-binary). The survey explored experiences of sexual abuse in relationships, responses to such situations, and actions taken by affected individuals. All participants were provided with a standardized definition of rape and asked whether they had ever encountered such an experience.

Discussion

Of the respondents, 32% (n = 80) reported experiencing sexual abuse within a relationship. The most common forms were ignoring disagreement or boundaries (67.5%, n=54), emotional manipulation for sex (62.5%, n = 50), and forced oral sex (47.5%, n = 38). Other reported abuses included forced vaginal penetration (46.3%, n = 37), forced anal penetration (21.3%, n = 17), non-consensual touching (45%, n = 36), and coercion through intoxication (33.8%, n = 27). Despite these experiences, only 2.5% (n = 2) reported the abuse to law enforcement. When presented with a standardized definition of “rape,” only 40% (n = 32) of those who had experienced abuse identified their experience as such. In total, 38 respondents acknowledged experiencing rape.

Conclusion

These findings highlight the gap between reported cases and actual experiences of sexual abuse in relationships. The results also underscore the limitations of Poland’s legal definition of rape, particularly regarding marital and intimate partner abuse. Further research is needed to inform legal and social interventions.

PSYCHOLOGY AND PSYCHIATRY

PERFECTIONISTIC IMPOSTOR IS AMONG US — THE RELATIONSHIP BETWEEN PERFECTIONISM, IMPOSTOR SYNDROME AND BURNOUT AMONG POLISH TEACHERS [573]

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Introduction

Teaching is a profession involving intense work with other people and is prone to experience symptoms of professional burnout - a result of a prolonged situation when our resources were not sufficient to cope with the demands (Maslach, 1982). Perfectionism is a personality trait that is characterised by a desire for flawlessness and ideality in any undertaken actions. It is a combination of extremely high standards and a strong self-criticism (Frost et al., 1990). Impostor syndrome can be defined as a feeling in mostly highly successful individuals that tells them that their success or achievement is a result of external efforts (Chandra et al., 2019; Feenstra et al., 2020).

Aim

The study investigates the relationship between perfectionism, impostor syndrome and professional burnout among Polish teachers.

Methods and Materials

A number of 112 teachers from Polish public educational institutions (special schools, high schools, universities) were involved. The study was conducted via an online survey utilising three questionnaires including Polish adaptations of Frost Multidimensional Perfectionism Scale, Clance Impostor Phenomenon Scale and Link Burnout Questionnaire. It was hypothesised that perfectionism and impostor syndrome would correlate positively with professional burnout and display covariance. It was also predicted that the highest level of professional burnout would be observed in special school teachers.

Discussion

The results indicate significant positive correlations between the mentioned variables. However, there was no significant difference in professional burnout between groups of teachers.Consequently, an in- depth analysis was conducted and depicted that there is a statistically significant difference in CIPS scores between high school teachers and university teachers, who obtained higher scores. Additionally, standard ten scores calculated in LBQ showed that all groups of teachers have scores above average, which indicates a higher vulnerability to burnout symptoms.

Conclusion

These findings highlight the importance of supporting teachers and show that their occupational health is a topic that needs further exploration.

SUPPORTING SIBLINGS OF PEADIATRIC CANCER PATIENTS: DEVELOPING AND TESTING A PSYCHOEDUCATIONAL PROGRAMME TO PREVENT EMOTIONAL AND BEHAVIORAL DIFFICULTIES [603]

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Introduction

Siblings of paediatric cancer patients face many stressors (Yang et al., 2016) that increase the likelihood of developing emotional and behavioural disorders (Long et al., 2018; Pinquart, 2023). Therefore, it is crucial to identify siblings at risk (Long et al., 2017; Pinquart, 2023; Salavati et al., 2014), and provide interventions to support their adaptation (McKenzie Smith et al., 2018).

Aim

On one hand, our study aims to examine how siblings experience the child's cancer, whether an increased risk of emotional and behavioural problems can be detected in this population, and how the latter are associated with factors such as social support, cancer knowledge, and various demographic and health variables. On the other hand, our research also aims to develop and implement a preventive psychoeducational programme for this population and test its effectiveness.

Methods and Materials

Thus, in the first phase, information on the above variables as well as the needs for a support programme in a larger group of siblings will be collected by means of online questionnaires. In the second phase we will design a support programme based on the wishes and needs of siblings and parents as well as similar programmes developed abroad. This experimental part will involve one group that will be included in the programme and a waiting-list control group. The mentioned variables will be evaluated before and after the implementation of the programme to test its effectiveness.

Discussion

The study has been approved by the Commission of the Republic of Slovenia for Medical Ethics and is currently in its first phase.

Conclusion

In Slovenia siblings of children with cancer have been an overlooked population to date and our programme will be the first of its kind. We estimate our study will help the Clinical Department of Paediatric Haematology and Oncology (University Medical Centre Ljubljana) in their goal to provide support to all family members in paediatric cancer care as well as contribute to the work with similar populations.

PSYCHOLOGY AND PSYCHIATRY

THE ROLE OF INTOLERANCE OF UNCERTAINTY IN DISORDERED EATING BEHAVIOURS: A LITERATURE REVIEW [459]

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Introduction

Eating disorder behaviors are sometimes adopted as a way to directly cope with uncertainty, with restriction providing a sense of security or predictability (Sternheim et al. 2011b).

Aim

The aim of this literature review is to examine the role of Intolerance of uncertainty in Disordered Eating Behaviours, focusing on scientific research from 2015 to present.

Materials and methods

A total of 35 scientific articles were reviewed from the following databases: PubMed, Google Scholar and EBSCO.

Discussion

Clinical and epidemiological research consistently shows that anxiety disorders frequently co-occur at higher rates in individuals with eating disorders. (Godier & Park, 2014; Kaye, Bulik, Thornton, Barbarich, & Masters, 2004). Intolerance of uncertainty (IU) is a transdiagnostic process contributing to the maintenance of anxiety disorders (Alice Kesby, Sarah Maguire, Lenny R Vartanian, Jessica R Grisham 2017). In a study conducted by Sterheim et al in 2011b, participants reported that experiencing uncertainty often led to feeling 'out of control' and resulted in efforts to maximise certainty through activities aimed to reduce the negative feelings.

Conclusions

Exploring the role of Intolerance of Uncertainty in disordered eating is to this day crucial for understanding its impact on the development and maintenance of Disordered Eating Behaviours. Reviewing existing research helps identify gaps, inform better interventions, and improve early detection, leading to more effective treatment outcomes.

THE IMPACT OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER ON THE OCCURRENCE OF RISKY SEXUAL BEHAVIOUR [515]

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Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is an increasingly frequently diagnosed neurodevelopmental disorder, especially during last three decades.

Aim

The aim of this study was to summarise current knowledge on the relationship between ADHD symptoms and sexual risk taking behaviour (SRTB), taking into account factors such as symptom severity, diagnosed ADHD type, gender, and pharmacological and psychotherapeutic interventions undertaken.

Methods and Materials

It was hypothesised that individuals with ADHD report a higher prevalence of SRTB and that the phenomenon occurs less frequently in those receiving treatment. Impulsivity and emotional dysregulation appeared to be risk factors. It was also hypothesised that there were likely gender differences in the phenomenon and that it was more common in the hyperactive-impulsive type of ADHD. Studies published in medical databases from 2019 onwards were searched for keywords such as ADHD sexual risk taking, adhd sexuality, adhd adult risk taking. 337 results were obtained, from which 37 items were selected and analysed.

Discussion

The literature review found that people with ADHD report a higher frequency of SRTB than their peers without the disorder. Interestingly, the researchers observed a tendency for people with ADHD to overestimate the positive effects of risky sexual behaviour. Women with ADHD may be more prone to SRTB than men with the same diagnosis. Additionally, symptoms of ADHD, such as impulsivity and emotional dysregulation, may increase the risk of engaging in this type of behaviour. The relationship between ADHD type and the incidence of SRTB remains unclear and is subject to further research. However, it is possible to reduce the risk of SRTB by treating ADHD.

Conclusions

The psychological mechanisms responsible for the existence of this phenomenon are still insufficiently documented, which indicates areas for further research work. However, the current state of knowledge allows us to identify directions for both physician training and preventive work with the patient.

MIDWIFERY

THE KNOWLEDGE OF HIGH SCHOOL GRADUATES' ABOUT SEXUALLY TRANSMITTED DISEASES [363]

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Introduction

Sexually transmitted diseases (STDs) are among the most common infectious diseases worldwide, including in Poland. Young people (aged 15-30) are the most vulnerable group to sexually transmitted infections. Due to their prevalence and the health consequences they cause, STDs represent a significant public health concern.

Aim

The main objective of the study is to present high school graduates' awareness of sexually transmitted diseases. The study also aims to gather information on where students acquire their knowledge, assess their understanding of specific diseases, analyze differences in knowledge based on gender, class profile, and sexual activity, and highlight the importance of educating young people on this topic.

Methods and Materials

The scientific study presented in this paper was based on the diagnostic survey method. The research tool used was a proprietary online questionnaire, which was made available on social media platforms. Respondents were informed about the anonymity and voluntary nature of their participation in this study.

Discussion

The early detections of sexually transmitted diseases is essential not only for infected individuals but also from an epidemiological perspective. Therefore, comprehensive sexual education with a strong emphasis on STD prevention is necessary. Do the educational institutions in Poland provide sufficient knowledge in the field of sexually transmitted diseases?

Conclusion

As the number of sexually transmitted diseases continues to rise globally, prevention and increasing awareness of this issue are becoming crucial. Efforts should be made to introduce reliable STDs education programs, which will help raise awareness among young people in this area.

THE IMPACT OF PHYSICAL ACTIVITY ON THE CONDITION OF THE WOMAN AND CHILD AFTER CHILDBIRTH [450]

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Introduction

The WHO recommends about 150 minutes of moderate physical activity per week. Studies show that no age group meets these recommendations, especially with the global trend towards remote working. These recommendations are particularly important for women of childbearing age and pregnant women. Studies show the benefits of physical activity for both mother and child, including a reduced risk of pregnancy-induced hypertension and gestational diabetes. In the child, a reduced risk of premature birth, metabolic disorders, obesity and diabetes in later life has been observed.

Aim

The aim of this study was to investigate the relationship between physical activity during pregnancy and selected maternal parameters, the course of labor, and specific neonatal outcomes.

Methods and Materials

The study presented here involved a group of 205 pregnant women. The study was conducted in two phases. In the first, pregnant women in the pregnancy pathology department answered the authors' questions on the course of pregnancy and socio-demographic factors, as well as questions from the Get Active Questionnaire for Pregnancy. In the second stage, the woman's and newborn's electronic medical records were analysed after written consent was obtained.

Discussion

We found a weak association between increased physical activity and fewer caesarean sections, but no significant effect on mode of delivery or haemoglobin levels. More frequent activity correlated with higher birth weight, including cases of macrosomia, while a reduction in the number of small births relative to gestational age was observed. Physical activity improved neonatal oxygen saturation, but had no effect on APGAR or cord blood pH scores. Further research is needed to explain these results.

Conclusion

Regular physical activity benefits maternal and newborn health. Although it does not have a significant impact on perinatal outcomes, further research and public health efforts are crucial to promote active lifestyles.

MIDWIFERY

CERVICAL CANCER COEXISTING WITH PREGNANCY — IMPLICATIONS FOR MIDWIFERY PRACTICE [465]

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Introduction

Pregnancy-associated cancers are defined as malignancies diagnosed during pregnancy or within the first year postpartum. Although cancer during pregnancy is rare, affecting only 0.02-0.1% of pregnancies, its prevalence has increased in recent years due to rising maternal age. Cervical cancer is the second most common cancer diagnosed in pregnant women. This case report describes a 37-year-old woman, in her second pregnancy, diagnosed with G1 cervical squamous cell carcinoma during the first trimester. She underwent four cycles of chemotherapy at 23, 26, 29, and 32 weeks of gestation. The patient was assessed to be at increased risk for postpartum depression.

Aim

This study aims to analyze the challenges of managing cervical cancer during pregnancy in midwifery practice, exploring the role of midwives. It also highlights strategies to improve outcomes in high-risk pregnancies.

Methods and Materials

This case report followed the CARE guidelines for medical case reporting. Research methods included clinical observation, medical record analysis, vital sign measurements, physical examination and interviews, along with the use of tools such as the EPDS (Edinburgh Postnatal Depression Scale) and C-HOBIC scales. Informed consent was obtained from the patient, with approval from hospital authorities and the Independent Bioethics Committee at the Medical University of Gdańsk.

Discussion

This study illustrates the complexities of managing cervical cancer during pregnancy. A multidisciplinary approach allowed safe cancer treatment while ensuring maternal and fetal well-being. Psychological monitoring, supported by tools like the EPDS scale, is crucial for early detection of mental health issues. Effective communication within the medical team was essential for ensuring continuity of care.

Conclusions

The diagnosis of cancer during pregnancy presents a significant challenge for healthcare providers, requiring appropriate care for the mother and fetus. This diagnosis deeply impacts the physical and mental health of the patient and her family, necessitating comprehensive support.

CHRONIC PAIN AS A DETERMINANT OF QUALITY OF LIFE IN WOMEN WITH ENDOMETRIOSIS – A PILOT STUDY [473]

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Introduction

Endometriosis is a chronic disease in which endometrial-like tissue grows outside the uterus, most commonly affecting the ovaries, fallopian tubes and uterine ligaments. This leads to chronic inflammation, adhesions, and damage to surrounding tissues and organs. Common symptoms include severe menstrual pain, heavy bleeding, chronic pelvic pain, dyspareunia, infertility and anxiety. Despite growing research on endometriosis, significant gaps remain in understanding how chronic pain affects the daily lives of women. Pain is not only a physical symptom but also a factor influencing mental health, social interactions, and professional activity, ultimately shaping overall quality of life.

Aim

The aim of this study is to analyze the impact of chronic pain on the quality of life of women with endometriosis, focusing on daily functioning, mental health, and professional activity. It seeks to highlight the challenges patients face daily and raise medical and social awareness of the condition.

Methods and Materials

This research is conducted using the CAWI method (Computer-Assisted Web Interview) in the form of an anonymous online survey, distributed through support groups and platforms for women with endometriosis. The following tools are used in the study: • Self-designed questionnaire, • Endometriosis Health Profile-30 (EHP-30), • McGill Pain Questionnaire (MPQ), • Numerical Rating Scale (NRS). The study group consists of women over 18 years of age, diagnosed with endometriosis based on imaging tests or surgical methods.

Discussion

The study results show that chronic pain significantly impacts the quality of life of women with endometriosis, limiting their professional, social, and physical activity. Increasing medical and social awareness of the consequences of endometriosis could greatly improve the quality of life for patients, providing them with essential support in their daily challenges.

Conclusion

Chronic pain has a significant negative impact on the quality of life of women with endometriosis. Efforts to increase awareness and provide proper support are necessary for improving their health and well-being.

MIDWIFERY

HYPERTENSION IN PREGNANCY – CASE REPORT AND MANAGEMENT [489]

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Introduction

Hypertension during pregnancy affects 7-10% of pregnancies, contributing to maternal and fetal morbidity. Effective management of pregnancy-induced hypertension (PIH) is crucial for favorable outcomes. This case report highlights the clinical course and management of a patient with PIH.

Aim

To evaluate the presentation, management, and outcomes of a PIH case, emphasizing early diagnosis, intervention, and postpartum monitoring.

Methods and Materials

A 40-year-old primigravida diagnosed with PIH at 23 weeks of gestation was studied following CARE guidelines for case report documentation. These guidelines ensure structured case reporting, including patient information, diagnostic assessments, interventions, follow-up, and patient perspectives. Clinical data, including blood pressure measurements, laboratory results, and treatment protocols, were analyzed. Management involved antihypertensive therapy, fetal monitoring, and dietary modifications. Postpartum follow-up included medication adjustments. CARE guidelines enhanced case documentation and applicability. Additional guidance was taken from the Global Health Foundation for Medical Education and Research (GFMER) and UpToDate, which provided insights into risk stratification, treatment thresholds, and postpartum monitoring protocols.

Discussion

The patient, initially normotensive, developed PIH with sustained blood pressure exceeding 140/90 mmHg. Methyldopa was initiated but required postpartum adjustments. Fetal monitoring showed no intrauterine growth restriction, and the patient delivered a full-term healthy infant. Postpartum hypertension management remained challenging, requiring continued medical adjustments.

Conclusion

This case emphasizes early detection, personalized management, and postpartum follow-up in PIH. Utilizing structured reporting frameworks, such as CARE guidelines, ensures comprehensive case study documentation. Incorporating evidence-based guidelines from GFMER and UpToDate optimizes clinical management. Continued research and individualized approaches are essential to improving maternal and fetal outcomes.

LOSS OF IRS-1 ABROGATES FGFR2-DEPENDENT RESISTANCE TO ANTI-ER DRUGS IN LUMINAL BREAST CANCER CELLS [282]

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Introduction

Endocrine therapy, such as tamoxifen, remains a cornerstone of treatment for estrogen receptor-positive (ER+) luminal breast cancer. However, resistance to tamoxifen remains a significant clinical challenge. We have previously shown that Fibroblast growth factor receptor 2 (FGFR2) signalling may drive resistance to anti-ER therapies by altering ER transcriptional activity and ER-dependent gene expression including IRS1 (insulin receptor substrate). IRS-1, a key signalling molecule downstream of various growth factor receptors, including the insulin-like growth factor 1 receptor (IGF-1R) and insulin receptor (IR), has been implicated in mediating resistance to endocrine therapies. We hypothesized that FGFR2 activity regulates IRS-1-ER interplay which in turn can counteract the effects of anti-ER therapies.

Aim

This study investigated the role of FGFR2 and IRS-1 interdependence in development of resistance to tamoxifen in luminal breast cancer cell lines.

Methods and Materials

CRISPR-Cas9 technology was used to generate IRS-1 knockout (KO) cell lines in MCF7 and T47D luminal breast cancer cells. Western blotting was used to confirm IRS-1 depletion. The impact of IRS-1 knockout on tamoxifen sensitivity was assessed using anchorage-independent growth assays in agarose. The FGF7-triggered protective effect from anti-ER drugs was also investigated in these cells.

Discussion

IRS-1 knockout significantly increased the sensitivity of both MCF7 and T47D cells to tamoxifen treatment. Furthermore, the compensatory effect observed with FGF7 treatment was reduced in the IRS1 knockout cells treated with tamoxifen.

Conclusion

These findings demonstrate that IRS-1 plays a crucial role in mediating tamoxifen sensitivity in luminal breast cancer cells. IRS-1 status may be a valuable biomarker for patient stratification and could potentially guide therapeutic decisions in ER+ breast cancer, suggesting that IRS-1 loss may predict improved response to anti-ER therapy.

BIOTECHNOLOGY, BIOMEDICAL ENGINEERING & BIOINFOMATICS

MULTIMODAL AI FOR HEALTHCARE: DIAGNOSTICS, DECISION SUPPORT, AND SAFETY WITH AASEV FRAMEWORK [296]

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Introduction

Modern healthcare demands AI systems capable of synthesizing multimodal data while ensuring safety and clinical relevance. Existing multimodal models often lack domain-specific integration across medical specialties or robust validation frameworks suited for real-world care delivery.

Aim

To develop and validate a multimodal AI system that integrates non-interventional specialties, leveraging advanced architectures for real-time diagnostics, decision support, and safety-focused autonomy.

Methods and Materials

We present a multimodal AI system that integrates all non-interventional specialties through transformer-based architectures and hybrid CNN-transformer models for medical imaging (CT, MRI, X-ray). The system processes doctor-patient conversations to perform real-time symptom analysis, generate primary/differential diagnoses, and recommend treatments, referrals, and lab testing. It further analyzes imaging, blood tests, and genomic data, supporting bidirectional voice interactions. Validation employs the Adaptive AI Safety & Efficacy Validation (AASEV) Framework, a novel benchmark combining synthetic stress-testing, continuous observational studies, and tiered safety flags to replace traditional RCTs. AASEV enforces human review only when predefined risk thresholds (e.g., conflicting diagnoses, critical lab values) are breached, preserving autonomy in low-risk scenarios.

Discussion

Our system bridges critical gaps in multimodal healthcare AI by unifying diagnostics, decision support, and safety-focused autonomy. The AASEV Framework provides a scalable, real-world validation paradigm that prioritizes efficacy without compromising patient safety. The system achieved 98% accuracy on MedQA and outperformed Gemini, GPT-4o, and o1-mini in domain-specific tasks, demonstrating a 15-22% improvement in differential diagnosis accuracy. AASEV reduced unnecessary human interventions by 80% while maintaining 99% compliance with safety protocols in simulated high- risk scenarios. Imaging analysis demonstrated 97% concordance with radiologist interpretations across modalities.

Conclusion

Future work will expand specialty coverage and refine tiered autonomy protocols for global clinical adoption.

GROUNDING A MEDICAL ROBOT AS A THREAT TO LIFE [303]

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Introduction

The potential of ransomware as a threat to the lives and health of patients first emerged as a problem with the "WannaCry" software. Starting on May 12, 2017, dozens of medical facilities in the United Kingdom experienced delays in surgeries and cancellations of medical appointments. Although it was not the first attack of this kind, it was the largest at that time.

Aim

Medical device safety from legislative perspective. Mapping of requirements and discussion of their impact on cybersecurity.

Methods and Materials

Literature review.

Discussion

According to the authors, WannaCry also highlighted two significant issues in the healthcare sector: the lack of adequate training (users were deceived by phishing emails and installed malicious software); organizational, operational, and technical deficiencies in cybersecurity within medical facilities.

Conclusion

In the authors' opinion, a complementary approach to cybersecurity in terms of regulations and directives gives EU countries the opportunity to safeguard patient safety by acting proactively — i.e., before an attack occurs — thus raising the level of security. Under the requirements of Network and Information Systems Directive (NIS2), hospitals will be able to use devices that, by meeting the provisions outlined in the Cyber Resilience Act (CRA), Medical Device Regulation (MDR), In Vitro Diagnostics Device Regulation (IVDR) and Machinery Regulation (MR), will, together with other technical, operational, and organizational measures, be resilient to potential disruptions, including those caused by ransomware attacks. However, the authors also note that certain elements proposed in the regulations, such as risk analysis, security by design, and a detailed software bill of materials (SBOM), are increasingly being promoted as best practices at IT and OT industry conferences, recommended for use in all cases. After all, cybersecurity is more than just a matter of law. In some cases, it is also a responsibility for human life.

BIOTECHNOLOGY, BIOMEDICAL ENGINEERING & BIOINFOMATICS

ANTIOXIDANT ACTIVITY OF ROSMARINUS OFFICINALIS L. FROM CENTRAL MOROCCO: CAN IT CONTRIBUTE TO CUTANEOUS LEISHMANIASIS HEALING? [365]

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Introduction

The World Health Organization (WHO) considers leishmaniasis a neglected tropical disease affecting 12 to 15 million people in 88 countries including Morocco (1). Firstly, the relation between antioxidant activity and cutaneous leishmaniasis is an important area of research; oxidative stress, which manifests when reactive oxygen species (ROS) are abundant in the body; antioxidants are crucial in neutralizing these harmful molecules and protecting cells from damage (2). Drug resistance, toxicity potential, and the high cost of existing antileishmanial drugs give importance to searching for new treatments based on medicinal plants (3). For instance, Rosmarinus officinalis L., belonging to the Lamiaceae family, is one of the most common aromatic herbs with a rich source of bioactive compounds.

Aim

Our study aims to evaluate the antioxidant activity of the leaf methanolic extract of this plant collected from central Morocco.

Methods and Materials

To evaluate this activity, we used four concentrations of the extract plant, 40, 80, 120, and 160 µg/mL with the DPPH (2,2-diphenyl-1-picryl-hydrazyl-hydrate) free radical method.

Discussion

Our results show an antioxidant activity of the methanolic extract with the half-maximal inhibitory concentration (IC50) = 4.48 ± 0.01 µg/mL. Finally, this plant can reduce inflammation and promote tissue cure.

Conclusion

In conclusion, further research is necessary to confirm antileishmanial activity to develop new treatments against CL with a dual approach.

HOW MODELLING AND MACHINE-LEARNING CAN BE USED TO HELP SCHEDULE PERI-OPERATIVE CARE MORE EFFICIENTLY: A LITERATURE REVIEW [594]

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Introduction

Surgical care is one of the largest profit-centers of hospitals and also one of the most expensive to run. Estimates suggest that surgery ward accounts for some 40% hospital costs and up to 70% of profits. There is therefore an incentive to run these wards as efficiently as possible, not just to maximize profits but to lower health care costs and improve access to care. The process of scheduling a surgical ward's operations can be conceptualized as a work and spatial flow through peri-operative, operative, and post- operative areas, where delays in one area may become bottlenecks that constrain capacity upstream and lead to underutilized resources downstream. Many of the potential solutions to this problem of scheduling can be found within the field of health informatics. This paper will examine recent developments in the field and elucidate how modelling and machine-learning can be used to help more efficiently schedule peri-operative care.

Aim

The aim of this paper was to evaluate literature regarding use of modelling and machine learning for peri-operative scheduling. This paper is concerned not only with inpatient, but also outpatient care, and on the entire process of treatment from pre-admission to final appointment. It attempts to look at how informatics can be used to better allocate hospital resources and provide better patient outcomes.

Methods and material

A literature search was conducted on Google Scholar and PubMed for keywords related to the topic. 10 papers were found and analyzed.

Discussion

This paper found that machine-learning models and mathematical modelling have opposite advantages and drawbacks. Machine-learning models tend to be much more practical and validated but limited, whereas mathematical models can predict a greater range of variables over a longer time horizon but seem to be less accurate to the real world.

Conclusion

The author suggests that the two methods be combined, using machine-learning model predictions to plug in expected variables for the mathematical model datasets, and if this is done the results could be incredibly promising.

POSTER SESSION

EXPRESSION OF CORTISOL RECEPTORS IN ONCORHYNCHUS MYKISS UNDER PREDATOR-INDUCED STRESS CONDITIONS [343]

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Introduction

Cortisol serves as the primary glucocorticoid and has major effects on various tissues [1]. This steroid hormone mediates the stress response in adult individuals and has, in mammals, been shown to play important roles in memory and learning. In fish, the actions of cortisol are facilitated through glucocorticoid receptors 1 and 2 (GR1 and GR2) and a mineralocorticoid receptor (MR) [2].

Aim

The study investigates the expression level of glucocorticoid receptors 1 and 2 (GR1 and GR2) and a mineralocorticoid receptor (MR) in rainbow trout (Oncorhynchus mykiss) larvae subjected to simulated low and high predator-induced stress conditions.

Methods and Materials

The research was conducted in an aquarium system in a closed freshwater circuit. Three aquariums were utilized, each containing perforated baskets with rainbow trout larvae. One aquarium was designated for low stress, containing 10 predatory fry; a second aquarium represented high stress with 30 predatory fry; and a third aquarium served as a control, free of predators. The predator exposure lasted for 11 days. After the experiment, total RNA was isolated from 10 individuals from each group. The expression of GR1, GR2, and MR was measured using real-time PCR.

Discussion

Results indicated that expression levels for GR1 and GR2 were altered, whereas MR expression remained stable. Specifically, mRNA levels of GR1 and GR2 showed an increase correlated with higher stress levels, while MR expression did not exhibit statistically significant differences among the three conditions (control, low stress, and high stress).

Conclusion

The specific roles of teleost GRs and MR within the functional equivalent of the mammalian HPA- axis—the hypothalamic-pituitary-interrenal (HPI) axis-remain underexplored. Based on this findings, it can be inferred that GRs play a more prominent role than MR in mediating the feedback signals associated with elevated adrenal hormone secretion.

MANAGING RECURRENCES IN HERPETIC KERATITIS: A THERAPEUTIC PUZZLE — CASE REPORT. [509]

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Introduction

Herpetic keratitis carries a significant risk of recurrence, with approximately 35% chances in the first year and 65% within two years without prophylactic treatment. Long-term antiviral prophylaxis is essential in preventing disease relapse. This report describes a case of a 65-year-old male with herpetic keratitis.

Discussion

65-year-old male patient presented with pain and blurred vision in his right eye. His medical history included hypertension, polycythemia vera, and recurrent herpes. Ophthalmologic examination showed a visual acuity of 0.6 in the right eye, with corneal dendritic ulceration, peripheral marginal ulcers, and significant conjunctival hyperemia. The anterior chamber was clear, and there were no abnormalities in the left eye. He was diagnosed with epithelial keratitis of herpetic origin and treated with oral acyclovir, antiviral ointment, and lubricating drops. At follow-up, the patient reported no symptoms, and his visual acuity improved to 1.0 in both eyes. Examination showed no conjunctival discharge, corneal staining, or significant abnormalities. The patient was advised to continue oral acyclovir twice daily for six months, dexamethasone eye drops twice daily, and lubricating drops.

Conclusion

This case underscores the importance of long-term antiviral prophylaxis in recurrent herpetic keratitis. The administration of prophylactic acyclovir for up to six months aligns with current clinical guidelines recommending extended antiviral therapy in patients with a history of recurrences. Adherence to prescribed treatment regimens is essential for reducing the likelihood of relapse and mitigating the risk of complications, including corneal scarring and potential vision impairment.

POSTER SESSION

GENETIC REGULATION OF RENAL FUNCTION AND CALCIUM METABOLISM BY GRHL1, KLF11 AND CYS1 [348]

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Introduction

GRHL1, KLF11, and CYS1 are key genes involved in the regulation of organismal development, cellular differentiation, and metabolic homeostasis. GRHL1 contributes to epithelial differentiation, tissue regeneration, and maintenance of epithelial barrier integrity; its dysregulation may result in physiological disorders. KLF11 regulates cellular proliferation, apoptosis, and glucose and lipid metabolism, exhibiting nephroprotective properties; its deficiency is associated with metabolic disturbances and heightened susceptibility to organ damage. CYS1 is implicated in the regulation of cyst development in the kidneys and epithelial function, with mutations linked to renal dysfunction and metabolic abnormalities.

Aim

This study investigated the association between GRHL1, KLF11, and CYS1 expression and blood levels of urea nitrogen and calcium, focusing on how genetic variability and expression patterns affect renal function and mineral metabolism.

Methods and Materials

A bioinformatic approach was utilized, incorporating data from the GWAS Catalog and GEO to identify genetic variants associated with biochemical parameters. Gene expression data from the Expression Atlas and ArrayExpress were analyzed for renal and bone tissue-specific expression. Regulatory elements were examined using the UCSC Genome Browser, while correlation algorithms and genetic network models were applied to elucidate molecular interactions.

Discussion

The analyses revealed that GRHL1 regulates CACNA1D expression in the kidneys, influencing calcium transport and urea nitrogen levels. Dysregulation of GRHL1 may disrupt mineral homeostasis and renal filtration. KLF11 demonstrates protective functions, with its deficiency increasing the risk of renal damage and bone mineralization disorders. It modulates the SMAD signaling pathway, affecting osteoblast maturation and bone-kidney homeostasis. While CYS1 mechanisms remain unclear, its expression is associated with renal function regulation, suggesting potential involvement in nephrological diseases.

Conclusion

GRHL1 and KLF11 play pivotal roles in renal function and calcium metabolism regulation. Modulating these genes may facilitate the development of novel therapeutic strategies for kidney and mineral disorders. Further research is essential to elucidate CYS1's role in renal pathophysiology.

EXTRACTION OF IMPACTED MANDIBULAR THIRD MOLARS – ASSESSMENT OF THE INCIDENCE OF COMPLICATIONS [366]

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Introduction

The extraction of third molars is one of the most commonly performed procedures in oral surgery. While these procedures are generally simple, they can sometimes lead to complications, which may occur intraoperatively or develop in the postoperative period. Postoperative complications may include swelling, pain, trismus, prolonged bleeding, dry socket, infection, and sensory disturbances of the inferior alveolar or lingual nerve.

Aim

The aim of this study is to assess the incidence of postoperative complications following the extraction of mandibular third molars.

Methods and Materials

Data were collected from 103 patients who underwent the extraction of an impacted mandibular third molar at the Division of Oral Surgery, Medical University of Gdańsk, between 2019 and 2021. Postoperative complications were assessed on the day of surgery, as well as three and seven days postoperatively. The incidence of complications such as postoperative hematoma, trismus, dry socket, and paresthesia of the inferior alveolar nerve was analyzed in relation to the stage of tooth development, the location of the extracted tooth, and the type of surgical procedure performed.

Discussion

Postoperative complications occurred in 21 cases (20.4%) and included trismus following the removal of 16 mandibular third molars, inferior alveolar nerve paresthesia in two patients, and dry socket in two cases. No statistically significant correlation was found between the stage of tooth development and the number of observed complications.

Conclusion

Complications following third molar extraction are relatively common. The most frequently observed complications were trismus and hematoma; however, in most cases, they were mild to moderate in severity and resolved within a few days postoperatively. Further research on risk factors and the optimization of treatment protocols may help reduce the incidence of complications and improve treatment outcomes.

POSTER SESSION

VAGAL NERVE MODULATION IN SYSTEMIC MASTOCYTOSIS: THE ROLE OF OSTEOPATHIC MANIPULATIVE TREATMENT [367]

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Introduction

Mast cell diseases are characterized by abnormal or hyperactive mast cells that release excess histamine and pro-inflammatory cytokines, often requiring off-label medication use for symptom management (Maltby et al., 2009; Slee et al., 2021). One such disease, systemic mastocytosis, is classified as a clonal disorder primarily driven by the D816V mutation in the KIT gene (Onnes et al., 2016). The vagus nerve plays a pivotal role in dampening inflammation by suppressing pro-inflammatory cytokine release and mast cell activation (Yuan & Silberstein, 2016). Previous studies suggest that osteopathic manipulative techniques (OMT), such as occipitoatlantal decompression and myofascial release, modulate immune responses by targeting vagal nerve function and reducing inflammatory activity (Dalgleish et al., 2020; Franca et al., 2020.)

Aim

To assess the impact of OMT on vagal nerve function and symptom severity in a patient with systemic mastocytosis.

Methods and Materials

A 47-year-old male with systemic mastocytosis presented with abdominal pain and dermatographism. Osteopathic structural examination revealed somatic dysfunction in the cervical, rib, thoracic, and sacral regions. OMT techniques known to influence vagal activity, including suboccipital inhibition, occipitoatlantal decompression, craniocervical myofascial release, rib raising, and diaphragm myofascial release, were applied to improve autonomic regulation. Dermatographism testing, which is a marker of mast cell activation, was performed before and after treatment to assess histamine sensitivity.

Discussion

Post-treatment, the patient reported decreased abdominal discomfort. Dermatographism testing demonstrated reduced histamine-induced wheal formation, suggesting decreased mast cell activation, potentially via improved vagal modulation. Structural examination post-OMT showed improved mobility and reduced tissue tension in affected regions. These findings support a possible relationship between vagal nerve dysfunction and mast cell activation, with OMT serving as a non-pharmacological therapy to enhance autonomic regulation

Conclusion

This case underscores the potential for OMT as an adjunctive treatment in rare mast cell disorders, facilitating symptom relief and improved systemic regulation

PRENATAL DIAGNOSIS OF A RAPIDLY ENLARGING FETAL TUMOR: A BENIGN OCCURRENCE OR A GENETIC MARKER? [399]

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Introduction

Cystic hygroma is a condition which affects mainly children and prenatal diagnosis is not uncommon. We present a case of a large cystic hygroma in an unusual location in a fetus with a late diagnosis in the 38th week of pregnancy.

Aim

The aim of this case report is to highlight the challenge of diagnosing fetal cystic hygromas, which are often detected late in pregnancy due to their variable presentation. We emphasize the importance of advanced imaging, early detection and a multidisciplinary approach to optimize both perinatal and postnatal care.

Methods and Materials

A 28-year-old pregnant woman presented to the outpatient clinic with no previous abnormalities and no concomitant diseases. During the obstetrical ultrasound, a hypoechogenic mass, suspicious of cystic hygroma, was found in the axillary/chest region of the fetus. Combined screening with a first-trimester scan revealed a standard risk of chromosomal abnormalities, which are considered to be the main cause of these tumors. The pregnancy was closely monitored, and a multidisciplinary team was involved, including maternal-fetal medicine practitioners, neonatologists, and pediatric surgeons. The patient opted for induction of vaginal labor, delivering a healthy neonate scoring 10/10/10 in the Apgar scale. After delivery, elective surgery to excise the mass was scheduled.

Discussion

Cystic hygromas occur when the lymphatic sac fails to connect with the venous system. They are mainly located in the cervical region and may be classified into two histological types. Prenatal differential diagnosis is key to rule out pathologies of similar morphology, including hemangiomas and other malignant tumors.

Conclusion

Since fetal cystic hygroma is considered to be a rare developmental congenital anomaly, we would like to highlight the importance of early recognition to spread awareness and eliminate maternal anxiety. Regular ultrasound examinations and monitoring of tumor size improve the decision-making process.

POSTER SESSION

EFFECTIVE PYO-BACTERIOPHAGE THERAPY FOR ANTIBIOTIC-RESISTANT EYE INFECTION: A CLINICAL CASE REPORT [409]

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Introduction

Chronic ocular infections pose a therapeutic challenge, especially when resistant to conventional antibiotics. The use of bacteriophages is a modern, emerging trend in modern medicine, including ophthalmology.

Aim

This case report aims to evaluate the effectiveness of pyo-bacteriophage therapy in resolving chronic, antibiotic-resistant conjunctivitis associated with prosthetic eye use.

Methods and Materials

A 31-year-old woman with a history of enucleation due to penetrating eye injury and chronic uveitis presented with recurrent conjunctivitis, purulent discharge, and severe pain. Prior self-treatment with various antibiotics (Tobramycin, Moxifloxacin, Chloramphenicol) provided only temporary relief. Initial treatment included eyelid hygiene, Miramistin rinses, and Moxifloxacin eye drops. However, symptoms persisted, and microbiological analysis confirmed Staphylococcus aureus infection. The treatment regimen was modified to include pyo-bacteriophage therapy (The George Eliava Institute of Bacteriophage, Microbiology and Virology, Georgia), with instillations four times daily and orbital rinses once daily.

Discussion

After two weeks of bacteriophage therapy, the patient showed significant clinical improvement-purulent discharge resolved, follicular inflammation subsided, and pain and burning sensations disappeared. Follow-up bacteriological analysis confirmed a sterile orbital cavity, demonstrating the bacteriophage's efficacy against antibiotic-resistant S. aureus. This case supports the potential of bacteriophage therapy as an alternative for persistent infections, particularly in cases where antibiotic resistance limits treatment options.

Conclusion

Pyo-bacteriophage therapy successfully resolved a chronic, antibiotic-resistant ocular infection, highlighting its potential as an effective alternative to conventional antibiotics. Their more frequent and widespread use in ophthalmic infections can successfully overcome the existing challenges.

THE PATHOGENETIC MECHANISM OF REPERFUSION SYNDROMEAFTER CORONARY ARTERY BYPASSES GRAFTING WITH VARYING DEGREES OF INTRAOPERATIVE HEMOLYSIS [433]

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Introduction

After coronary artery bypass grafting (CABG), reperfusion syndrome develops due to the resumption of blood flow in the heart.Clarification of the relationship between the degree of hemolysis, the activity of oxidative processes and the development of complications in patients with coronary artery disease in the early period of coronary artery bypass grafting is an important scientific and practical task.

Aim

To study changes in the prooxidant-antioxidant state in patients after CABG with varying degrees of intraoperative hemolysis (IOH).

Methods and Materials

The degree of IOH was assessed by the level of free hemoglobin (Hbfree) using the HemoCuePlasma/Low Hb analyzer, Sweden [SvenmarkerS., 2000]. In accordance with [Hbfree] in blood plasma, patients with CABG were divided into 3 groups: 1-without IOH (Hbfree ≤ 0.1g/l), n = 43, 2-with low IOH (nIOH)-with [Hbfree] > 0.1 g/Land < 0.5 g/L, n = 42,3 – with high IOG (hIOG) corresponded to [free Hb] ≥ 0.5g/L, n = 38[Omar H.R. et al., 2015, PanKC, 2016].

Discussion

At the end of the CABG, compared with the initial value, an increase in the content of LPO products was noted. In the group with viOG, [DK] was higher than in the 1st ($p < 0.001$) and 2nd groups ($p < 0.001$), as well as in the comparison ($p < 0.001$) and control ($p < 0.001$) groups. An increase in the indicator was noted in the group without IOG by 74.3(40.0;108.6) % ($z=-5.647; p < 0.001$), in the group with nIOG – by 175.7 (95.4;271.4) % ($z=-56647; p < 0.001$) and in the group with iIOG – by 281.1(194.7;541.5) % ($z=-5.339, p < 0.001$), amounting to 1.8(1.43;2.6) µmol/l; 4.2(3.20;5.40) µmol/l and 5.8 (3.65;9.60) µmol/l in groups 1, 2 and 3, respectively($p < 0.001$).

Conclusion

Taking into account the pathogenetic role of the prooxidant-antioxidant state in the development of complications of CABG surgery, it is advisable to develop a set of perioperative preventive measures aimed at reducing the activity of oxidative processes, as well as increasing antioxidant protection in the preoperative period.

POSTER SESSION

A RARE CANCER ASSOCIATED WITH PREGNANCY – CASE REPORT [457]

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Introduction

Cancer during pregnancy is scarce, occurring in only 0.02–0.1% of all pregnancies. The most commonly observed cancers include breast cancer, cervical cancer, lymphomas, and melanoma.

Aim

A 31-year-old woman in the second trimester of her second pregnancy was admitted to the gynaecological-obstetric clinic at 21 weeks of pregnancy due to generalised pruritus for a month and multiple excoriations on her skin. Her first pregnancy ended at term in 2015 with a natural birth without complications. Laboratory tests revealed elevated parameters: AspAT – 83 U/l, AlAt – 132 U/l, ALP – 233 U/l. An abdominal ultrasound revealed focal changes in the liver. An abdominal MRI showed multiple focal lesions in the liver, with the largest lesion having an ambiguous appearance, and the remaining lesions appearing as a metastatic pattern. A core needle biopsy of the focal liver lesion was performed, and histopathological examination described a tumour most resembling adenocarcinoma of the bile ducts. After numerous consultations, at 23 weeks of pregnancy, palliative chemotherapy with FOLFOX 4 was initiated, along with supportive treatment including ondansetron, dexaven, hydrocortisone, and clemastine. Subsequent chemotherapy infusions were administered every two weeks. Also, during the pregnancy, the patient presented twice to the emergency department with severe right upper abdominal pain, requiring opioid administration. At 35 5/7 weeks of pregnancy, a scheduled cesarean section was performed, and a healthy newborn was delivered (weight – 3100g, length – 54cm, Apgar – 10). The patient then continued chemotherapy and pain management.

Conclusion

Adenocarcinoma of the bile ducts during pregnancy occurs sporadically, leaving a lack of standardised treatment protocols. An individualised approach is essential. In this case, the FOLFOX 4 chemotherapy regimen, despite potential fetal harm and side effects, successfully extended the patient's life and resulted in the birth of a healthy newborn.

DETERMINATION OF THE VASOACTIVE PROPERTIES IN PATIENTS DURING GRAFTING OPERATIONS UNDER ARTIFICIAL CIRCULATION [476]

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Introduction

Coronary artery bypass grafting (CABG) in patients with coronary artery disease (CAD) improves the quality of life of patients, but various complications may develop. Their pathogenesis is due to reperfusion syndrome. The most important mechanism is oxidative stress.

Aim

To study the vasoactive properties of the endothelium in patients with varying degrees of hemolysis during coronary artery bypass grafting operations under artificial circulation (AC).

Methods and Materials

The studies were conducted in 34 patients with CABG. The study of the vasoactive properties of the endothelium was carried out using a reactive hyperemia test. Determination of the vasoactive properties of the endothelium was carried out one day before the operation and on the fifth day after CABG.

Discussion

In patients with coronary artery bypass grafting under artificial circulation, worsening of endothelial dysfunction was revealed in patients with a hemolysis value of 0.6-0.8 g / l (n = 8) compared to the preoperative period by 28 % ($p < 0.05$), while in patients with hemolysis of 0.1-0.2 g / l (n = 10), worsening of endothelial dysfunction was 5 % ($p > 0.05$). In 18 patients, the degree of hemolysis was 0.3-0.5 g / l. After the test with nitroglycerin using endothelium-independent vasodilation of vessels was not revealed.

Conclusion

Thus, the conducted studies have shown the aggravation of endothelial dysfunction after CABG depending on the degree of intraoperative hemolysis (IOH). The conducted studies have shown the adverse effect of CABG on the vasoactive properties of the vascular endothelium and their dependence on the degree of intraoperative hemolysis, the level of free iron and nitric oxide, as well as the activity of oxidative stress.

POSTER SESSION

DOES ERYTHEMA MIGRANS ALWAYS LOOK THE SAME? – – TWO ATYPICAL MANIFESTATIONS [513]

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Introduction

Lyme disease is a common tick-borne infection with a wide range of clinical manifestations. Erythema migrans (EM), the most common and pathognomonic sign of the disease, typically appears as an expanding red patch with central clearing. However, it is absent in 20% of infected individuals. In some cases, EM is accompanied by itching, pain, warmth, lymph node enlargement, or flu-like symptoms. This report presents two cases of atypical erythema migrans.

Discussion

A 30-year-old female patient presented with a classic erythema migrans lesion – a uniform red patch with central clearing, surrounded by an annular border and a papule at the tick bite site. During treatment, the inflammatory reaction worsened within the annular border and at the papule site. The lesion became irregular in shape, lacking the typical central clearing and ring-like border. The introduction of topical glucocorticosteroids led to symptom relief and resolution of swelling. A different clinical course was observed in a 43-year-old male patient. His classic erythema migrans lesion completely resolved after doxycycline treatment. However, a new erythematous lesion later developed on the previously affected skin. This lesion had a sharply demarcated, raised inflammatory edge, spreading peripherally while fading centrally, with no papule at the bite site. Treatment with bilastine and topical mometasone was initiated.

Conclusion

Atypical presentations of erythema migrans can be challenging to diagnose. Differential diagnoses include contact dermatitis, insect bite reactions, fixed drug eruption, granuloma annulare, tinea corporis, and cutaneous lupus erythematosus. Serologic tests for Lyme disease may initially be negative, with positive results appearing later. Due to the variability in EM presentations, both diagnosis and treatment may pose significant challenges.

PACLITAXEL-INDUCED PSEUDOSCLERODERMA: A RARE DERMATOLOGIC MANIFESTATION IN ONCOLOGY PATIENTS [524]

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Introduction

Pseudoscleroderma is a rare and chronic skin condition clinically resembling systemic sclerosis or localized scleroderma, characterized by sclerotic or sclerotic-atrophic changes. Pseudoscleroderma can be caused by various factors, including malignancies, external factors such as chemotherapy drugs, and numerous metabolic, deposition, or genodermatoses. We described a case of a patient diagnosed with pseudoscleroderma induced by paclitaxel.

Discussion

76-year-old female patient presented to the clinic with extensive sclerotic skin lesions on her torso, buttocks, and thighs, accompanied by itching and burning sensations. Her medical history included rheumatoid arthritis, asthma, and a history of breast cancer with a BRCA1 mutation. As part of her oncological treatment, she underwent a mastectomy and received adjuvant chemotherapy, consisting of four cycles of adriamycin and cyclophosphamide, followed by twelve cycles of paclitaxel. Laboratory tests revealed an ESR of 28 mm/h, ANA 1:160, and no monoclonal protein. Chest X-ray and abdominal ultrasound showed no significant abnormalities. A rheumatological consultation ruled out systemic sclerosis. The patient was treated with pentoxifylline, mometasone furoate, and urea ointment. Pseudoscleroderma was diagnosed, most likely induced by paclitaxel.

Conclusion

The mechanism underlying the development of drug-induced pseudoscleroderma remains unclear, and the prognosis is variable. The potential influence of cytokines such as TGF-β and PDGF in stimulating fibroblasts is considered. IL-6 has profibrotic properties and can lead to tissue fibrosis. The use of paclitaxel results in increased IL-6 levels in the serum, which may contribute to the induction of skin changes. In some patients, the skin lesions may persist, intensify, or even lead to restricted mobility and impaired daily functioning. This case highlights the importance of monitoring oncology patients receiving paclitaxel and the need for further studies on the mechanisms of this phenomenon.

POSTER SESSION

AGAR-BASED HYDROGELS WITH ANTIMICROBIAL PROPERTIES [560]

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Introduction

Due to the various risks associated with excessive use of antibiotics in infection treatments, researchers have been exploring natural alternatives to conventional antibiotics. Even though plant extracts and essential oils are well-known active substances in herbal medicine, their applications in novel therapies are rather limited.

Aim

This work tries to open a new possibility for treating infections by evaluating the potential use of antimicrobial hydrogels as bioinks.

Methods and Materials

Antimicrobial activity against S. epidermidis, P. aeruginosa, S. aureus, E. coli of selected extracts and geraniol was investigated. Geraniol, which was found to be the most suitable agent, was incorporated into an agar-based matrix, and physicochemical properties of the obtained hydrogel compositions were analyzed.

Discussion

Results confirmed geraniol's superior antimicrobial activity both in its pure form and when released from the hydrogel matrix. The obtained materials exhibited high swelling capacity, satisfactory extrusion processability, and great biocompatibility in their unmodified state. Nevertheless, modification with geraniol significantly decreased cell viability, limiting their use as bioinks in their current form, due to the cytotoxic effect on cells.

Conclusion

To improve cell interactions, further studies on materials with geraniol and other agents with a similar mechanism should be conducted in the future.

SURGICAL MESHES COVERED WITH A HYDROGEL LAYER SHOWING A HIGH DEGREE OF BIOCOMPATIBILITY [579]

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Introduction

The use of surgical meshes in soft tissue repair has significantly improved outcomes in reconstructive procedures, hernia repair in particular. However, complications such as foreign body reactions and inflammation remain key concerns that lead to necessity of further development of novel biomaterials with enhanced biocompatibility.

Aim

The aim of this work was to obtain surgical meshes covered with a biocompatibile hydrogel layer capable of absorbing body fluids from the wound, due to the ability of the hydrogel to swell.

Methods and Materials

Twelve compositions of stable hydrogels based on gelatin and agar that could serve as the functional layer were obtained. Work presents the impact of crosslinking agent and the content of agar in the polymer composition on the properties of synthesized material such as swelling kinetics and microstructure. The functional layers have been deposited on three types of commercial surgical meshes and one 3D printed, degradable mesh, prepared previously using FDM technology from a material showing high level of compatibility with hydrogel materials. Formation of hydrogel layer was performed by placing samples of meshes in polymer solutions and then drying the modified implant.

Discussion

The most optimum properties were observed for gels containing agar and crosslinked with sodium tetraborate, which have also displayed a proper adhesion to the examined materials used for surgical meshes. The coating did not detach from the mesh even after swelling and re-drying.

Conclusion

This approach represents a promising strategy for next-generation implantable materials that could reduce post-operative complications.

POSTER SESSION

IMPAIRMENTS IN POSTURAL RESPONSE IN YOUNG MEN DUE TO INSOMNIA [572]

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Introduction

Insomnia is a sleep disorder that occurs very frequently in the population 1, and increasingly affects young people 2. Persistent sleep disorders lead to the development of mental disorders 3, e.g., depression 4, decreased concentration, and psychomotor retardation 5–7 One of the effects of poor sleep quality is impaired ability to adapt static postural control8 and postural stability, which more often affects men than women. This dependence can be demonstrated in posturographic tests 9,10.

Aim

The study aims to determine the impact of insomnia on the postural response among young men.

Methods and Materials

A posturographic examination was carried out on 101 men using SOT (Sensory Organization Test) tests. Subjects were standardized based on height to exclude its influence on balance disorders. After calculating the mean and standard deviation, the final group of subjects consisted of 68 men with an average height of 180.5 cm ± 1SD. They received the Athens Insomnia Scale (AIS) questionnaire to complete, which selected two subgroups - subjects with insomnia (score > 5 points) and without sleep disorders (score < 6 points), after which the results were compared with SOT results, and statistical tests were performed.

Discussion

The outcomes of this research have provided insight into the difference in postural response between well-slept young men and the exact opposite of them. The varying disruptive effects observed in each system remain insufficiently understood and require further investigation for a deeper comprehension 11. However, the results should be interpreted with caution due to the interaction of multiple impairments 12-13.

Conclusion

The analysis of the obtained SOT test results showed a statistically significant difference ($p < 0.05$) in the CES and ES3 tests between the results of men who had insomnia determined based on the AIS questionnaire and those who did not suffer from this disorder.

FACE, OCULAR AND RESPIRATORY TRACT EXPOSURE TO AMMONIA SOLUTION: A CASE REPORT [503]

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Introduction

Anhydrous ammonia, either in liquid or gaseous form, is a highly corrosive and dangerous chemical compound that, depending on the route and duration of exposure, causes significant thermal injury to the surrounding tissues. Ammonia exposure incidents are extremely rare and therefore in the absence of a specific treatment against its toxicity, primary supportive and systemic treatment is used.

Aim

A patient was admitted to the intensive care unit in need of open airway support due to chemical (caused by ammonia water) burns of the respiratory tract, face, mouth and eyes. According to the patients' history, he sustained a work-related injury, during which a jet of water hit him directly in the face and mouth. With persistent pain, shortness of breath and difficulty in swallowing, the patient was presented to the emergency department. On initial examination, a first-degree facial burn, redness of the sclerae, a swollen red tongue, reddening of the mouth arches and increased salivation were observed. The red trauma team was activated after assessment of respiratory tract burns. Tracheal intubation was performed under video laryngoscope control, during which observations of red and swollen epiglottis, surrounding tissues, vocal folds were noted. Given the risk of airway obstruction, the airway was maintained open with an intubation tube and mechanical lung ventilation was initiated. Ophthalmologist's consultation revealed conjunctival redness, prominent vascular network and extensive corneal epithelial defects. Conservative treatment was prescribed to suppress inflammation and prevent infection. On the fourth day of treatment, the airway was visualised with a video laryngoscope to plan extubating – the vocal fold and mucosa were oedematous and covered with whitish plaque. These findings prompted a decision to delay extubation. Dexamethasone was administered for the treatment of airway oedema. The following day, positive dynamics were observed, and the patient was successfully extubated.

Conclusion

Chemical burns of the face and mouth, especially those caused by strong alkalis such as ammonia water, can cause life-threatening airway oedema and obstruction leading to lethal outcome. Early diagnosis and timely mechanical airway support as well as complex treatment are therefore crucial.

POSTER SESSION

ASSESSING KNOWLEDGE OF LEISHMANIASIS IN AFRICA: A COMPREHENSIVE SYSTEMATIC REVIEW [420]

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Introduction

Leishmaniasis is a parasitic disease caused by protozoan parasites of the genus Leishmania. It is a major public health issue in Africa.

Aim

This current systematic review investigates the impact of different factors on knowledge of this disease in this continent.

Methods and Materials

Data was collected systematically from Scopus and PubMed databases, including articles that met our eligibility criteria based on the PRISMA guideline.

Discussion

Revelation indicates that knowledge differs considerably by country and study population. Moreover, variables impacting knowledge levels include access to health information, socioeconomic status, and education. Despite the critical health outcome of this disease, several communities are ignorant of its preventive measures and transmission routes. The review spotlights the need for targeted educational interventions to develop community understanding and involvement in leishmaniasis prevention strategies. Developed awareness can facilitate early diagnosis and treatment, eventually, reducing disease burden in affected regions.

Conclusion

Finally, future research should focus on developing culturally appropriate educational materials and assessing their impact on knowledge and health effects.

CLINICAL CASE STUDY OF A PATIENT WITH SEVERE GUNSHOT SPINAL CORD INJURY [317]

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Introduction

In Lithuania, 59 assaults with firearms or explosives were recorded in 2019-2023, of which only 2 patients suffered nerve and spinal cord injuries at the level of the neck or thorax. Approximately 31 % of patients with isolated cervical spine trauma may develop neurogenic shock. This is a life-threatening condition characterized by organ hypoperfusion due to impaired control of normal sympathetic vascular tone.

Aim

A patient with a gunshot wound to the neck was admitted to the emergency department. Clinical death was observed at the scene of the accident and spontaneous circulation was restored after 2 minutes of advanced life support. Consciousness was assessed as 3 points on the Glasgow Coma Scale (GCS). Detailed examination revealed a gunshot wound to the neck with posterior exit wound, persistent hypotension despite vasopressor treatment and bradycardia. CT and MRI scans showed a C3 spinal fracture, C4 – Th1 epidural hematoma, C2 – 5 spinal cord contusion. Due to unstable hemodynamics and impaired consciousness and in the absence of significant spinal cord compression, conservative treatment was started. In severe spinal cord injury and suspected neurogenic shock, mean arterial pressure was maintained at 80-90 mmHg to ensure adequate spinal cord perfusion. Sedation was continued to reduce the risk of secondary injury. After stabilising hemodynamics, sedation was reduced to assess the state of consciousness for possible neurological damage. Nevertheless, due to the persistent impairment of consciousness (3 points according GCS), a brain CT was performed. Postanoxic lesions, usually due to cerebral anoxia were observed in the images. As condition deteriorated, mydriasis and anisocoria became apparent. Clinical signs of brain death were assessed, which met the established criteria. However, cerebral angiography showed preserved blood flow in the middle cerebral artery. Unfortunately, death was pronounced on the 12th day of treatment

Conclusion

Gunshot injuries to the cervical spine are life-threatening traumas, with a mortality rate of 30.7 %. As a result, it is crucial to ensure timely treatment. Pre-hospital care plays a particularly significant role, during which it is important to stabilize the patient's condition to reduce the risk of secondary injury

POSTER SESSION

OPTIMIZATION OF ORGANOID CREATION FROM MESENCHYMAL STROMAL CELLS AND CANCER CELLS; PRELIMINARY RESULTS [338]

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Introduction

Cell cultures are essential for studying cell physiology, disease pathology, and drug development. While 2D cultures are widely used, they fail to replicate the complex cellular interactions found in vivo. Organoids as 3D models, better mimic the tumor microenvironment, where cancer and stromal cells interact influencing tumor progression and drug responses. Studies other Authors have shown that gene expression profiles may vary depending on the form in which cells are cultured, which can impact the reliability of in vitro research.

Aim

This study aimed to develop and characterize organoid models representing the three most common types of breast cancer for future drug testing applications.

Methods and Materials

Organoids were characterized based on microscope images and viability tests using “Cell titer blue” and XTT assays. We used mesenchymal stromal cells derived from the patient’s adipose tissue (waste after surgery) along with three breast cancer cell lines (MCF-7, MDA-MB-231, SK-BR-3). Measurement of the size, roundness, viability, and compaction of organoids were performed. The study was approved by the Independent Bioethics Committee for Scientific Research at the Medical University of Gdansk in Poland (NKBBN/34/2022). Current organoid generation methods often show variability and limited control over the microenvironment. Improving reproducibility and functional maturity is crucial for their biomedical applications.

Conclusion

We successfully developed viable and compact organoids combining mesenchymal stromal and breast cancer cells. These 3D models hold potential for drug testing, though further optimization is needed to enhance reproducibility. This study was financially supported by the National Science Centre (Poland) research project (2021/05/X/NZ5/01347).

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