

# ORAL SESSION: INTERNA

## INTRAHEPATIC SPLENOSIS: A CASE REPORT

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**INTRODUCTION:** The term splenosis refers to the autotransplantation of splenic tissue in heterotopic location, most commonly on serosal or peritoneal surfaces and even the thoracic cavity. Splenic trauma or surgical interventions to the spleen (e.g., splenectomy) predispose to the condition. Splenosis is a rare condition which requires regular medical follow ups.

**CASE DESCRIPTION:** A 55-year old male patient, without previous complaints, underwent a routine abdominal ultrasound (US) scan. A large, nodular mass, 15–16 cm in diameter, was detected. Contrast-enhanced US (CEUS) was performed and revealed similar findings. The patient lacked significant clinical manifestation and denied history of previous splenic trauma.

The patient has been admitted to the hospital multiple times for monitoring. During one of those admissions enlargement of the mass and lymph nodes was detected. This led to further testing and the hypothesis of lymphoproliferative disease.

**RESULTS AND DISCUSSION:** Blood test results demonstrated hyperproteinemia, elevated GGT and AP. Ultrasound imaging indicated a focal, hypoechoic, homogeneous mass, 15–16 cm in diameter. Computed tomography (CT) scan detected a large, rounded mass with smooth, sharp margins, identifiable vessels, and density of 57 HU and 68 in portal phase CE. Abdominal magnetic resonance imaging (MRI) showed the same intensity of the spleen and the lesion in all sequences. PB was performed, which confirmed the presence of mature lymphoid tissue with follicular structure and sinusoid vessels, verifying intrahepatic splenic tissue.

**CONCLUSION:** This case report shows that the rare intrahepatic seeding of splenic tissue may cause unexpected complications, which is why it should be monitored closely.

**Keywords:** *splenosis, CEUS, CECT, percutaneous biopsy, lymphoproliferative*

## CHALLENGES IN DIAGNOSIS AND MANAGEMENT OF MICROSCOPIC POLYANGIITIS: A CASE REPORT

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**CASE DESCRIPTION:** We report a 45-year-old male patient with an 18-month history of anemia, dyspnea, chest heaviness, cough, hemoptysis, and fatigue, resulting in multiple treatments for pneumonia, all with limited success.

Due to an exacerbation, he was admitted to an internal medicine department of an outside hospital where nephrotic proteinuria was observed. It necessitated a percutaneous renal biopsy, presenting a crescentic glomerulonephritis. Consequently, a computed tomography scan had been appointed, detecting bilateral lung ground-glass opacities, suggesting a systemic vasculitis. Therefore, the patient was transferred to the Department of Rheumatology at St. Ivan Rilski University Hospital, Sofia. The diagnosis was confirmed by immunological and biochemical assays: elevated perinuclear ANCA (p-ANCA) titers (1:1280) and high anti-myeloperoxidase (MPO) levels (72.40 U/mL), and significantly elevated serum creatinine (570 µmol/L) and urea (46.79 mmol/L), respectively.

**RESULTS:** Treatment included pulse therapy with 1 g methylprednisolone for three consecutive days and 500 mg cyclophosphamide, considering the severe renal impairment. Despite the therapy, the renal function declined, necessitating hemodialysis. Recurrent flares led to hospital readmissions, with concurrent lung infections preventing the 3<sup>rd</sup> application of cyclophosphamide on the 30<sup>th</sup> day of induction. Remission still remains elusive, and the patient requires 64 mg of methylprednisolone daily as maintenance therapy, including hemodialysis.

**CONCLUSION:** This case highlights the diagnostic intricacies and the need for early recognition in microscopic polyangiitis (MPA), stressing the importance of a multidisciplinary approach. It underscores the delicate therapeutic balance between the risks of potential relapses and the contraindications of the most effective immunosuppressive regimens. Therefore, intense efforts should focus on researching this specific subgroup of conditions, with the aim of improving quality of life and minimizing relapse-associated risks.

**Keywords:** *microscopic polyangiitis, methylprednisolone, immunosuppressive regimens*

## TIME IS GROWTH – CONCURRENT T1DM AND GHD IN A SEVEN-YEAR-OLD CHILD. A CASE REPORT

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**INTRODUCTION:** The concurrent presence of growth hormone deficiency (GHD) and type 1 diabetes mellitus (T1DM) represents an uncommon occurrence. Growth hormone is produced by the pituitary gland. Its deficiency often presents with various physical and metabolic manifestations, including short stature and altered body composition. In contrast, T1DM primarily involves disturbances in glucose homeostasis due to autoimmune destruction of pancreatic beta cells.

**AIM:** The objective of this case report is to illustrate how the presence of T1DM can obscure the clinical manifestations of GHD resulting in a delayed diagnosis.

**CASE DESCRIPTION:** We report a case of an adopted seven-year-old girl's admission over the course of 2 years at the First Pediatric Clinic at the St. Marina University Hospital in Varna, Bulgaria. She initially presented with a 2-week history of polydipsia and nocturia. Tests on admission confirmed the diagnosis of T1DM and the patient was started on insulin therapy. The following check up on the growth curve showed growth restriction (SDS -2.8) and weight gain below the 3rd percentile (SDS -2.9) despite well-controlled diabetes. The successive admissions established she had only grown 3.8 cm in the past 14 months and had no weight gain. Coeliac disease and other diabetes-associated autoimmune disorders were ruled out.

**RESULTS:** Bone age was determined by X-ray. The girl was found to have a delayed bone age (SDS -1.54). Growth hormone stimulation tests were performed and a deficiency was confirmed by two positive results. The child was subsequently started on rGH.

**CONCLUSION:** While each of these conditions independently poses significant clinical challenges, their simultaneous presence can complicate the diagnostic process and affect patient management. Therefore, a timely recognition of short stature is crucial.

**Keywords:** *type-1 diabetes, growth hormone, hypopituitarism*

## KETO DIET AS AN OPPORTUNITY TO INFLUENCE CHILDREN WITH AUTISM

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**INTRODUCTION:** Autism is a neurodevelopmental disorder (most often in children), which is characterized both by the inability to communicate with other people and to develop and maintain relationships.

**AIM:** The study aimed to check available literature showing the effects of keto diets on autism symptoms.

**MATERIALS AND METHODS:** A search was conducted in the period May–June 2023 from the databases Google Scholar and PubMed for the 2018–2023 period with the following keywords: ketogenic diet, autism, children. As many as 90 titles were found of which 87 were excluded because most of them were reviews, others examined only food selectivity in children with autism, still others reviewed the effect of the diet only on epilepsy (comorbid condition), and many of them only showed the effect of ketogenic diet on animals. Finally, 3 full-text articles were considered for the study.

**RESULTS:** Results from the three research papers showed improvements in different symptoms of autism. According to the first study, in which 45 children, aged from 3 to 8 years, were included, there was progress in cognitive skills and sociability. A total of 45 children, aged 4 to 10 years, participated in the second study for 6 months. The results showed that 40% failed to comply with the keto diet. The remaining 60% who managed to comply with the diet showed improvement in some parameters measured with the Childhood Autism Rating Scale. The main outcome from the last investigation, where 15 children, aged 2–17, were studied for three months, was that there was improvement in the main autism characteristics assessed with the ADOS-2 tool for cognitive skills, but there was no significant improvement in the restrictive and repetitive behavior score.

**DISCUSSION:** According to most reviews there is no definitive dietary treatment of autism, but symptoms can be improved by various nutritional interventions. The ketogenic diet may have a beneficial effect on autistic behavior, but the mechanism by which it works is still unknown. What is more, there are not enough clinical trials, which may prove effect of a keto diet on autism symptoms. Some studies show that a keto diet affects gut microbiota, which could have a beneficial effect on epilepsy—a comorbid condition of autism. However, the ketogenic diet can have adverse side effects, such as ketoacidosis and renal calculosis, which can endanger the health of the child.

**CONCLUSION:** More studies are needed to examine the effect of the keto diet on autism symptoms to definitely conclude whether it has a positive effect.

**Keywords:** *keto diet, autism, children*

## ANALYSIS OF THE TREATMENTS OF PEMPHIGUS VULGARIS

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**INTRODUCTION:** Pemphigus vulgaris is a chronic, rare, type 2 hypersensitivity autoimmune disease. It causes mucocutaneous blistering, usually beginning with oral lesions. It is associated with a high rate of morbidity and there is even a significant mortality rate.

**AIM:** The aim of this research is to analyse the effectiveness of the current treatments of pemphigus vulgaris in terms of reducing morbidity and mortality.

**MATERIALS AND METHODS:** Data on a significant number of patients who have pemphigus vulgaris was accessed on PubMed and other journals via Google Scholar, from the last 50–60 years, and only the data that has been mentioned in the English literature was used for this study.

**RESULTS:** First-line treatments such as corticosteroids were the most effective in reducing mortality initially. However, significant side effects were experienced and in some patients these agents failed to provide a clinical response. Mycophenolate mofetil, a corticosteroid-sparing ISA, achieved remission in 71% of the patients and partial remission in 3%. Rituximab, an anti-CD20 chimeric monoclonal antibody, caused a rapid remission in 9 out of 11 patients. Other treatments such as azathioprine and cyclophosphamide were used adjuvantly.

**CONCLUSION:** We can conclude by saying treatments such as corticosteroids and immunosuppressive agents revolutionised the treatment of pemphigus vulgaris, decreasing mortality and morbidity considerably. However, there are now newer forms of treatment, which are quite effective without causing the same side effects, such as rituximab.

**Keywords:** *pemphigus vulgaris, rituximab, autoimmune, monoclonal antibody*

## OFF-LABEL DOSING NON-VITAMIN K ANTAGONIST ORAL ANTICOAGULANTS (NOACS) IN A PATIENT WITH ATRIAL FIBRILLATION

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**INTRODUCTION:** Although non-vitamin K antagonist oral anticoagulants (NOACs) do not require frequent laboratory monitoring, each compound requires dose adjustments on the basis of certain clinical criteria. In our study, we will present a 76-year-old woman with long-term established well-controlled hypertensive disease and an episode of atrial fibrillation a year ago, restored sinus rhythm with digoxin therapy.

**MATERIALS AND METHODS:** The patient has presented with orthopnea, bendopnea, and fatigue for a month. ECG found atrial fibrillation. The laboratory results showed renal impairment (creatinine: 96  $\mu\text{mol/L}$ , and CrCl: 51 mL/min). The calculated risk according to CHA<sub>2</sub>DS<sub>2</sub>-VASc was 6 points, HASBLED was 1 point. She was discharged from the hospital with extended therapy, including the recommended full-dose NOAC and advised to check the creatinine in 4 months.

**RESULTS:** Eight months later the patient was hospitalized with melena and the fibrogastroscopy (FGS) showed acute hemorrhagic gastritis. The laboratory tests established that the creatinine had doubled and the CrCl had decreased in the settings of urological infection. The used dose of NOACs was already inappropriately high. Recalculating the risk showed increase in the HASBLED score, which at that moment was 3. Because of the risk of a new bleeding and the kidney disease, NOACs were stopped for 3 days and a subcutaneous therapy with fraxiparine, 2\*0.4 s.c., for 30 days was prescribed, followed by oral therapy with half-dose NOAC (inappropriately low dose). Forty-five days later the patient was admitted with thromboembolic stroke in the left main coronary artery. The therapy was changed and NOAC in reduced dose was prescribed, adjusted for the renal function. Three months later the patient was stable without embolic or bleeding events and without neurological deficits.

**CONCLUSION:** In conclusion, off-label dosing (higher or lower) of NOACs in patients with atrial fibrillation and kidney disease is associated with increased risks of stroke or systemic embolism, increased risk of bleeding and all-cause death. Non-vitamin K antagonist oral anticoagulants should be prescribed with the dosing based on clinical trial criteria and guideline recommendations.

**Keywords:** atrial fibrillation, NOACs, acute hemorrhagic gastritis

**POSTER SESSION:  
DENTAL MEDICINE &  
PHARMACY**



## CONTEMPORARY DENTAL ASPECTS OF DIVES HYALURONIC FILLERS. APPLICATION IN PATIENTS OF V1 DENTAL CLINIC

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**INTRODUCTION:** For the first time, hyaluronic fillers were applied in 1977 by American doctors and were used exclusively for addressing skin defects (wrinkles). Hyaluronic acid stands as one of nature's most effective hydrating agents. With the advancement of aesthetic and dental medicine, nowadays, hyaluronic fillers are applied not only to address skin imperfections but also to correct facial contours, restore lost volume in facial bones and subcutaneous fat, rejuvenate the skin, and provide a youthful and radiant complexion.

**MATERIALS AND METHODS:** We have analyzed the accessible science literature on the topic and have conducted a clinical research.

**RESULTS AND CONCLUSION:** In the dental practice of V1 Dental Clinic, hyaluronic fillers are used for periodontal treatment and gingival smile correction. We place our trust in the products of the German manufacturer Dives, which has demonstrated a higher therapeutic effect and bioavailability, minimal allergic reactions, symmetrical distribution, and stimulation of fibroblasts to naturally produce collagen for a flawless appearance!

**Keywords:** *hyaluronic fillers, dental practice V1 Clinic, Dives*

## MICROBIOLOGY OF ENDODONTIC INFECTIONS

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**INTRODUCTION:** Microorganisms play a key role in infecting the root canal system with more than 700 bacterial species that can be found in the oral cavity. Microbiota are found in highly organized and complex entities, known as biofilms, which mediate the infections of root canals.

**AIM:** The purpose of the poster is to present the most common bacteria that play a role in endodontic infection and to introduce the disinfecting agents used to combat these bacteria.

**MATERIALS AND METHODS:** This review of the literature examines pertinent publications and published research findings in order to provide a summary about the microbiota which mediate the infections of root canals, the battle to eradicate these microorganisms with different solutions, and their activation.

**RESULTS:** Researched materials on the various bacteria in root canals and the availability of several solutions demonstrate how challenging it is for clinicians to provide effective mechanical and chemical root canal therapy.

**CONCLUSION:** The multi-species nature of biofilms, combined with the complexity and variability of the root canal system, makes disinfection of this system extremely challenging. Microbial persistence appears to be the leading factor in root canal treatment failure, which may have an impact on pain. Specific instruments, disinfecting agents, such as irrigants and intracanal medicaments, are required to inhibit and remove the biofilm, an uneasy task that combines chemical and mechanical processing of pathologically altered structures.

**Keywords:** *review, bacteria, root canal, disinfection, irrigation*

## MICROLEAKAGE OF TEMPORARY FILLING MATERIALS USED IN ENDODONTICS

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**INTRODUCTION:** Coronal leakage is an important factor contributing to the failure of endodontic treatment. Adequate temporary seal of the access cavity can improve the outcome of such treatment by preventing the contamination of the root canal with oral fluids and bacteria, and avoiding the leakage of intracanal medicaments between the visits.

**AIM:** The aim of the review is to investigate the effectiveness of the temporary filling materials in avoiding microleakage between the appointments during root canal treatment.

**MATERIALS AND METHODS:** In this review of the literature relevant articles and published results of various studies are analyzed in order to provide an overview of the mechanism of microleakage and to answer the question of how to prevent bacterial contamination of the root canal system until the definitive restoration is ready.

**RESULTS:** The studied materials about temporary filling of cavities exhibit different levels of microleakage after a certain time in the mouth of the patient. Various factors can influence the choice of material for temporalization of the endodontium.

**CONCLUSION:** There is no perfect material that can completely prevent bacterial microleakage. To avoid endodontic failure, the clinician needs to choose the temporary filling material with best sealing properties for the particular clinical case.

**Keywords:** *temporary filling materials, microleakage, endodontics*

## THE MORPHOLOGY OF MANDIBULAR AND MAXILAR MOLARS, ANALYZED BY CBCT

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**INTRODUCTION:** Maxillary and mandibular molars are the teeth with the most complex roots and root canal system anatomy, also possibly the most treated and least understood teeth. Identifying and locating all of the root canals, along with a proper chemomechanical preparation and a hermetic seal with an inert obturation material, are key for a successful endodontic therapy.

**AIM:** The aim of this article is to investigate and summarize the main types of root canal system anatomy conducting a CBCT study.

**MATERIALS AND METHODS:** For the purposes of this study, we examined different groups of teeth - maxillary first molars, maxillary second molars, as well as mandibular first and second molars.

**RESULTS:** Analysis of the results for the group of maxillary first molars revealed a high frequency of available additional second mesiovestibular root canal, located in the mesiovestibular root. In 43% of the cases studied by us, the configuration of the RCS in the mediovestibular root is more complex, with mergers and/or bifurcations of the root canal at different levels. An analysis of the results for the group of maxillary second molars revealed a lower frequency of available additional root canal in the mediovestibular root than in the first. Analysis of the results for the group of mandibular first molars revealed a 29.1% incidence of the presence of a second distal root canal.

Our results regarding the frequency of the presence of additional root canals in the different studied groups of teeth and the distribution by types of RCS configuration differ to different degrees from the results of other studies affecting other populations.

**CONCLUSION:** We can say that CBCT allows detailed diagnosis of the presence of an additional root canal and its configuration, but due to the increased radiation dose, the use of this test as a routine one before endodontic treatment is limited.

**Keywords:** CBCT, molars, morphology, roots

## CHARACTERIZATION OF AMINOPHENAZONE AFTER 18 YEARS OF STORAGE

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**INTRODUCTION:** Aminophenazone belongs to the group of non-opioid analgesics and has expressed analgesic, anti-inflammatory, and antipyretic effects. Despite its high efficiency, its use is banned in many countries (including Bulgaria) due to the presence of serious side effects, such as agranulocytosis, allergic reactions, dysuria, dyspnea, etc.

**AIM:** The purpose of the study is to prove whether the test substance, which expired 18 years ago, meets the pharmacopoeial requirements for aminophenazone published in Russian Pharmacopoeia X.

**MATERIALS AND METHODS:** The substance aminophenazone (Chimtex) was used. It was stored for 18 years in dark glass, at a temperature between 20°C and 22°C and a humidity of about 50%. All reagents used (FeCl<sub>3</sub>, HCl, AgNO<sub>3</sub>, CH<sub>3</sub>OH) were purchased from Sigma-Aldrich®. Various qualitative reactions described in Russian Pharmacopoeia X, as well as analytical techniques (melting point, UV-Vis, and IR spectroscopic methods) were applied.

**RESULTS:** The determined melting temperature of the sample was 109°C, with an interval of 107–109°C allowed by the pharmacopoeia. The conducted qualitative color reactions with FeCl<sub>3</sub>, HCl, AgNO<sub>3</sub> were positive. The UV-Vis and IR spectra completely matched those of the literature data for pure aminophenazone.

**CONCLUSION:** As a result of the conducted tests, we can conclude that the active substance aminophenazone retains its structure and characteristics for 18 years.

**Keywords:** *aminophenazone, qualitative reactions, characterization*

## ANTIOXIDANT EFFECT OF LOVAGE (*LEVISTICUM OFFICINALE*). A MINI REVIEW

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**INTRODUCTION:** Lovage (*Levisticum officinale*) is a perennial aromatic plant from the Apiaceae family spread in Europe, Asia, and North America. Many other culinary and medicinal plants such as dill and parsley belong to the same family. The leaves of lovage are used as a seasoning in the Mediterranean and Middle-Eastern cuisine. Lovage extracts are included in some cosmetic products. The process of oxidation in the human body produces unstable chemicals called free radicals, damaging cell membranes and other structures. Antioxidants are a group of biologically active compounds that delay or stop this process.

**AIM:** The aim of the present study was to gather information about the antioxidant activity of lovage.

**MATERIALS AND METHODS:** The review was conducted by searching available internet-based databases like PubMed, Scopus, Google Scholar etc.

**RESULTS:** Lovage extracts revealed a good antioxidant capacity when studied by different methods—ferric reducing ability of plasma (FRAP) analysis, DPPH and ABTS radical scavenging capacity assays, thiobarbituric acid reacting substances (TBARS) assay. It is interesting to note that lovage extracts have demonstrated an increased antioxidant activity in an *in vitro* digestion model and also can prevent the lipid peroxidation in plant oils subjected to heating. The potent antioxidant potential of *L. officinale* is linked to the high content of polyphenols, mainly flavonoids (quercetin, rutin, kaempferol, anthocyanins) and phenolic acids (gallic, ellagic, chlorogenic, ferulic, vanillic), which remain stable even after several months of storage.

**CONCLUSION:** Lovage is a culinary and medicinal plant rich in polyphenols contributing to a potent antioxidant activity. More experiments are required to reveal the *in vivo* antioxidant activity of this useful herb.

**Keywords:** *lovage, Levisticum officinale, antioxidant*

## VITAMIN B12 DEFICIENCY AND THE ENIGMA OF PERNICIOUS ANEMIA

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Vitamin B12 is among the most essential compounds in maintaining the healthy human metabolism. Normally it is used in a cobalamin form to support the central nervous system function as well as the gastrointestinal (GI) tract and the thyroid gland.

The mechanism of cobalamin absorption starts in the stomach due to the pepsin and HCl actions releasing vitamin B12 from the vitamin-protein complex. It is then transported to the small intestine bound to cobalophilin. The intrinsic factor (IF) binds to B12 and transports it to the ileum where it is absorbed by endocytosis and transported to the internal organs through the bloodstream. The endocytosis is made possible by the IF-CBL receptors localized on the surface of enterocytes. In the blood Cbl binds to transcobalamin-2 and enters into the somatic cells. B12 absorption is reduced due to conditions like atrophic gastritis of the fundus and corpus of the stomach.

The catabolism of some amino acids (valine, isoleucine, methionine) as well as degradation of fatty acids with an odd number of carbon atoms produces propionyl-CoA. The propionyl-CoA is converted to succinyl-CoA, which enters to the tricarboxylic acid cycle. L-methylmalonyl-CoA is an intermediary product using the enzyme L-methylmalonyl-CoA mutase, requiring the cofactor 5'-deoxyadenosylcobalamin. Vitamin B12 deficiency prevents the proper functioning of these enzymes, leading to an accumulation of their substrate in plasma.

Pernicious anemia is a relatively rare autoimmune disorder decreasing the dietary vitamin B12 absorption, resulting in B12 deficiency and subsequent megaloblastic anemia.

**Keywords:** *vitamin B12, cobalamin, intrinsic factor, pernicious anemia*

## TECHNOLOGICAL APPROACHES FOR OPTIMIZED STABILITY AND IMPROVED THERAPEUTIC EFFICIENCY OF LEVODOPA

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**INTRODUCTION:** Levodopa (L-DOPA) is widely accepted as the gold standard tool for the treatment of Parkinson's disease (PD). Unfortunately, there is intense enzymatic degradation of the amino acid precursor in the gastrointestinal tract, resulting in a low midbrain concentration (~1%). Another challenge is the increased risk of adverse drug reactions and its susceptibility to autoxidation, which can lead to the production of reactive oxygen species, potentially contributing to oxidative stress and brain neuroinflammation, which may worsen symptoms.

**AIM:** This work aims to assess the impact of drug delivery systems co-loaded with L-DOPA and different antioxidants on the effectiveness and stability of L-DOPA.

**MATERIALS AND METHODS:** An overview of scientific publications addressing the use of L-DOPA-loaded drug delivery systems, alone or in combination with various antioxidants, was performed in the available databases (ScienceDirect, Scopus, PubMed, and Web of Science).

**RESULTS:** In summary, numerous studies are investigating the simultaneous delivery of various antioxidants (e.g., curcumin, quercetin, ascorbic acid, and glutathione) along with L-DOPA. This approach has been shown to mitigate the harmful effects of autoxidation and potentially enhance the therapeutic benefits of the treatment while reducing the side effects associated with long-term monotherapy.

**CONCLUSION:** The utilization of alternative approaches (such as nanosystems) for L-DOPA delivery may result in improved central nervous system targeting, and its combination with antioxidants may reduce the autoxidation processes and increase overall therapeutic efficacy.

**Keywords:** *Parkinson's disease, levodopa, drug-delivery systems*



**ORAL SESSION:  
NEUROSCIENCES, INFECTIOUS  
DISEASE, EPIDEMIOLOGY,  
GENERAL HEALTHCARE**

## APELIN RECEPTOR EXPRESSING CELLS IN THE ADULT HUMAN SUBVENTRICULAR ZONE

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**INTRODUCTION:** Adult neurogenesis is the process of generating new functional neurons from pluripotent neuronal stem cells, located in two “canonical” areas: the subventricular zone (SVZ), composed of an ependymal layer, a gap zone and an astrocytic ribbon, and the hippocampal subgranular zone. The apelin receptor (APLNR) and its ligands participate in many physiological and pathological conditions. In this ongoing study, we are trying to elucidate the functions of the apelinergic system in the human SVZ.

**AIM:** The aim of this article is to confirm the presence of APLNR in the adult human SVZ and identify which cells from the neurogenic niche express it.

**MATERIAL AND METHODS:** Fluorescent immunohistochemistry was performed on coronal sections of the SVZ from 3 human brain tissue samples without evidence of neuropathology and neuropsychiatric patient history, provided by the Clinic of General and Clinical Pathology at the St. Marina University Hospital in Varna, Bulgaria.

**RESULTS AND DISCUSSION:** We found that APLNR is present in all layers and diverse cell types of the SVZ in the adult human brain, including proliferating cells. While in the gap zone the predominant cell populations, expressing APLNR, are microglia and neuroblasts or immature neurons, in the astrocytic ribbon, the majority of APLNR+ cells represent astrocytes and most probably TAPs.

**CONCLUSION:** Here we confirm the expression of APLNR in the adult human SVZ and demonstrate the variety of the associated cell types ranging from astrocytes and neural stem cells to neuroblasts.

**Keywords:** *adult neurogenesis, subventricular zone, apelinergic system*

## UPREGULATION OF ZBTB20 EXPRESSION IN THE SUBVENTRICULAR ZONE OF NON-HUMAN PRIMATES UNDER ISCHEMIC CONDITIONS

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**INTRODUCTION:** ZBTB20 is a transcriptional factor with an important role in neurodevelopment. The subventricular zone (SVZ) is a major neurogenic area in the adult mammalian brain, where neuroblasts are produced by neural stem cells via transit-amplifying progenitors. Additionally, brain ischemia is a strong promoter of progenitor proliferation.

**AIM:** The aim of this article is to study the expression pattern of ZBTB20 in the SVZa and the rostral migratory stream (RMS) of non-human primates and the expression changes in a primate model of cerebral ischemia.

**MATERIAL AND METHODS:** Adult monkeys underwent either sham surgery or transient global cerebral ischemia. Sections were processed for fluorescent immunohistochemistry. Manual cell counting was done using ImageJ, statistical analysis using R. Images from the digital atlas Monkey Niche were analyzed in cell-Detekt.

**RESULTS:** In the adult primate SVZa and RMS, the ZBTB20+ cells account for nearly all DCX+ and GFAP+ cells and the majority of the Ki67+ cells, representing neural stem cells, neuroblasts, and transit-amplifying progenitors, respectively. Our data reveal noticeable enhancement of ZBTB20 mRNA expression and higher co-expression of the protein with DCX and Ki67 following transient global ischemia.

**DISCUSSION:** The results suggest a role for ZBTB20 in regulating the activity of neural stem cells and progenitors. This may have implications for stroke treatment and brain tumour biology.

**CONCLUSION:** The expression of ZBTB20 in all stages of adult neurogenesis suggests that it could regulate the proliferation of neural progenitors in the primate SVZa. Moreover, ZBTB20 may be implicated in the postischemic activation of adult neurogenesis.

**Keywords:** ZBTB20, non-human primate, subventricular zone, neural progenitor

## DEEP BRAIN STIMULATION AS THE LAST INNOVATIVE METHOD FOR TREATMENT OF PARKINSON'S DISEASE

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**INTRODUCTION:** Parkinson's disease (PD) is a progressive neurodegenerative disorder characterized by motor symptoms such as bradykinesia, rigidity, tremors, and postural instability. It remains a substantial global burden, affecting millions of people worldwide. Traditional pharmacological treatment for PD helps with symptomatic relief but often leads to adverse side effects and limited long-term efficacy. Deep brain stimulation (DBS) is an innovative method for the treatment of PD, which involves the implantation of electrodes into deep brain regions and the delivery of electrical impulses to them. This technique modulates neuronal activity within the basal ganglia circuitry, which plays a major role in the pathogenesis of PD.

**AIM:** The aim of this article is to present the key aspects of DBS treatment, including patient selection, pre-operative planning, and step-by-step surgical procedure.

**MATERIALS AND METHODS:** The study involved patients operated on in the Clinic of Neurosurgery at St. Marina University Hospital in Varna between 2019 and 2023.

**RESULTS:** While DBS is a highly effective treatment option (provides substantial symptom relief, improved quality of life, and reduction in medication-related side effects), it is essential to acknowledge its potential risks and limitations like surgical complications, patient selection, serious preoperative planning and maintenance.

**CONCLUSION:** Deep brain stimulation represents an innovative approach to managing PD, offering a therapeutic strategy that may help those patients who do not respond satisfactorily to pharmacological treatment and develop side effects. The technique continues to refine the intricacies of DBS and find its broader applications. The future of DBS promises improved patient outcomes and enhanced quality of life.

**Keywords:** *Parkinson's disease, DBS, neurodegenerative disorder, tremor*

## NEUROPSYCHIATRIC DISORDERS IN A PATIENT WITH FOCAL ENCEPHALITIS: A CASE REPORT

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**INTRODUCTION:** Encephalitis is an acute infection of the brain parenchyma that clinically results in fever, headache and altered level of consciousness. Brain parenchymal inflammations are mostly viral: herpes simplex virus (HSV), Epstein-Barr virus (EBV), cytomegalovirus (CMV), etc., but can also be autoimmune (anti-NMDAR). Mainly, it presents with neurological deficits, focal or generalized seizure activity, etc. In our case, we report a patient who first presented with quantitative and then qualitative disturbances of consciousness.

**AIM:** The aim of this article is to emphasize the ability to make the correct distinction between organic and functional disorders and the benefits of the swLORETA qEEG.

**MATERIALS AND METHODS:** We used medical documentation, swLORETA qEEG protocol of the patient and articles on neuropsychiatric disorders in patients with focal encephalitis.

**RESULTS:** A previously healthy 66-year-old man was brought to the emergency department because of loss of consciousness with tonic-clonic seizures provoked by exposure to high temperatures. The initial examination revealed an extremely high blood pressure (RR: 220/110). The patient was admitted to the local hospital for imaging and management of his condition. During his stay, the patient experienced continuous derealization and xanthopsia. The CT scan revealed a hyperdense area in the right thalamus, which was initially interpreted as hemorrhage, but the MRI denied it. The differential diagnostic plan became extremely broad. A wide range of procedures including swLORETA qEEG were carried out to assess his condition. Due to regression of the lesion and reversibility of the symptoms, focal encephalitis was the most likely diagnosis.

**CONCLUSION:** The clinical palette of a focal encephalitis can vary. Psychiatric disorders are like a mask in front of an organic pathology in the brain. Although it is a difficult task, neurologists have to pay attention to these encephalitis manifestations because of their neuropsychiatric reversibility.

**Keywords:** *focal encephalitis, neuropsychiatric disorders, swLORETA qEEG*

## THE NIPAH VIRUS OUTBREAK IN KERALA, INDIA, IN 2018 AND ITS IMPACT

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**INTRODUCTION:** In May of 2018, an outbreak of the highly dangerous and contagious Nipah virus occurred in the Kozhikode district of Kerala, India. At this time, due to the timely intervention of both the local authorities, as well as international aid, the outbreak was contained within weeks with minimal casualties and spread.

**MATERIALS AND METHODS:** Analysis of reports made recording the events of the 2018 outbreak were included in this article, as well as records of previous outbreaks of the virus.

**RESULTS:** The outbreak was traced back to fruit bats native to the area and the entire event was contained within the span of several weeks. Only 18 cases were reported in total, with 2 survivors. Health authorities were able to rally together quickly and effectively, greatly reducing the death toll and protecting the district of origin, and also surrounding districts.

**CONCLUSION:** The efficiency of the health authorities allowed for timely intervention, but the disease is still quite elusive. Therefore, further studies into its prevention and transmission are necessary.

The Nipah virus is highly contagious, with great risk to the global community, especially due to the current outbreak in the Kozhikode district. Early studies into the disease would be helpful in preventing another global crisis.

**Keywords:** *Nipah virus, Kerala, encephalitis, Henipavirus*

## UNPRECEDENTED FLOODING IN LIBYA, 2023

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**INTRODUCTION:** The year 2023 brought an unprecedented natural disaster to Libya's arid landscapes, unaccustomed to severe flooding. This epidemiological analysis explores the catastrophic flooding incident's consequences on public health, resulting from a convergence of climatic anomalies, environmental factors, and infrastructural vulnerabilities.

**MATERIALS AND METHODS:** Libya's arid climate, unprepared for torrential rains, led to widespread devastation and a dire public health crisis. The resurgence of waterborne diseases, including cholera and hepatitis A, struck hard as floodwaters contaminated drinking sources and overwhelmed sanitation systems. Vector-borne illnesses, like malaria and dengue, resurged with stagnant water providing breeding sites for disease-carrying mosquitoes. Respiratory ailments surged due to mold infestations and compromised sanitation infrastructure.

**RESULTS:** This analysis underscores the vital role of epidemiologists and public health professionals in confronting disaster-related health ramifications. It emphasizes the need for robust disaster preparedness plans, resilient infrastructure, and safeguarding vulnerable populations. Vulnerable groups, including children, the elderly, and displaced individuals, bore the brunt of the health impact, highlighting the need for tailored interventions and support systems.

**CONCLUSION:** The 2023 flooding incident in Libya serves as a poignant reminder of the importance of ongoing monitoring, proactive preparedness, and innovative strategies to protect citizens in the face of nature's unpredictability. This analysis provides a roadmap for future disaster response and public health preparedness in Libya and beyond.

**Keywords:** *Libya, flood, natural disasters, climate change, mitigation and resilience*

## EXPLORING THE EPIDEMIOLOGICAL CONSEQUENCES IN POST-NATURAL DISASTER SETTINGS: LESSONS FROM HURRICANE KATRINA

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**INTRODUCTION:** Natural disasters can lead to complex public health challenges, and this study investigates the epidemiology of infectious diseases in the aftermath of Hurricane Katrina, focusing on the New Orleans area. The research provides insights into the dynamics of disease spread and emphasizes the significance of preparedness and response strategies.

**MATERIALS AND METHODS:** This study analyzed the epidemiological data related to infectious diseases in the wake of Hurricane Katrina. It examined reports, interviews, and health department records to assess the risk of epidemics and the influence of environmental conditions and shelter overcrowding on disease transmission. The study also evaluated vaccination recommendations and health surveillance methods employed during this period.

**RESULTS:** The study found that the risk of epidemics of diseases such as cholera, typhoid, malaria, and yellow fever in the affected areas was overestimated. Local reservoirs for these diseases were limited, and cases were sporadic and mostly imported. Overcrowded shelters posed the greatest public health threat, leading to an increased risk of communicable gastrointestinal diseases due to challenges in maintaining proper hygiene and isolation procedures.

**CONCLUSION:** Lessons from Hurricane Katrina highlight the need for practical approaches to health surveillance, emphasizing symptom-based screening for diseases like tuberculosis. Maintaining vaccination practices, particularly in crowded environments like shelters, is crucial. Relying on expert recommendations from public health authorities and the importance of effective surveillance systems are vital for mitigating the impact of infectious diseases in post-disaster scenarios.

**Keywords:** epidemiology, natural disasters, public health, vaccination



# ORAL SESSION: DENTAL MEDICINE

# EVALUATING THE CLINICAL SUCCESS OF MONOLITHIC ZIRCONIA IN FULL-ARCH IMPLANT-SUPPORTED PROSTHETIC CONSTRUCTIONS. A SYSTEMATIC REVIEW

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**INTRODUCTION:** Full-arch implant-supported prosthetic constructions are a popular choice for edentulous patients. Clinically, among the most stable are the fixed full-arch prostheses, with the highest survival rates, compared to their alternatives. Their high patient satisfaction rates are due to the normal chewing function and the pleasing aesthetics of the zirconia.

**AIM:** This systematic review evaluates the clinical performance and patient outcomes of complete-arch implant-supported monolithic zirconia fixed dental prostheses, identifying research gaps and the potential for further investigation.

**MATERIALS AND METHODS:** This systematic review was conducted through a search through electronic scientific databases, including PubMed, Science Direct, and Cochrane Library, to find clinical studies focusing on complete-arch implant-supported monolithic zirconia fixed dental prostheses. Studies were specifically selected and involved patients with at least 1 year of follow-up of the treatment performed.

**RESULTS:** The search yielded 50 titles. After careful evaluation, 18 studies were found, which met the criteria set. Of them, ten studies were systematically analyzed. A limited number of scientific articles on the subject of monolithic zirconia in full-arch implants were found.

**CONCLUSION:** The use of complete-arch dental implant restorations using monolithic zirconia shows promising results in the treatment of patients with complete adentia. The masticatory function is restored. The natural appearance and general well-being of the patient are improved.

**Keywords:** *monolithic zirconia, dental implants, edentulous*

## C-SHAPED ROOT CANAL CONFIGURATION: A REVIEW OF LITERATURE

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**INTRODUCTION:** Successful root canal treatment requires a thorough understanding of root canal anatomy and its changes, as well as diagnosis, treatment planning, and clinical expertise. One variation of the root canal system is the C-shaped root canal configuration. The name comes from the C-shaped cross-section of the tooth root and root canal anatomy.

The C-shaped tube configuration is a racially predisposed variant commonly seen in mandibular second molars. The complexity of this variable root canal morphology creates challenges for the clinician during negotiation, debridement, and obturation. Understanding the C-shaped root canal structure is critical to the success of endodontic treatment. Radiographic and clinical diagnosis aid in identifying and managing the subtleties of sectorial and C-shaped anatomy.

**AIM:** The purpose of this study is to review and discuss the etiology, incidence, anatomical characteristics, classification, diagnosis, and treatment of C-shaped root canal morphology.

**MATERIALS AND METHODS:** This abnormal root canal structure can be effectively treated using sound- and ultrasound-assisted rotational and manual instruments.

**RESULTS:** Modifications to the filling technique ensure three-dimensional filling of the root canal system, and chamber-preserving restorations such as amalgam or composite can serve as satisfactory post-endodontic restorations.

**CONCLUSION:** In conclusion, the C-shaped root canal configuration has an ethnic predilection and a high prevalence rate in mandibular second molars. Understanding the anatomical presentations of this variation will enable the clinician to manage these cases effectively.

**Keywords:** *C-shaped canals, mandibular molar, canal configuration*

## EFFECTS OF XEROSTOMIA ON THE RETENTION OF CONVENTIONAL COMPLETE DENTURES

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**INTRODUCTION:** In contemporary prosthetic dental medicine, treatment with total dentures often happens to be the only way to achieve full rehabilitation of the masticatory apparatus. For the purposes of such a treatment the quantity and quality of the saliva is essential. The reduction in salivary flow (hyposalivation) or its complete absence (xerostomia) is a challenge for the specialist when attempting such treatment.

**AIM:** This study aims to investigate the importance of saliva for the retention of conventional removable complete dentures, based on literature sources.

**MATERIALS AND METHODS:** A research was conducted in the period from August 2023 until October 2023 in the electronic databases PubMed, Google Scholar, and ReserchGate, using the following keywords in English: xerostomia, hyposalivation, removable partial dentures, complete denture, edentulous patient.

**RESULTS:** The analysis of the results shows that there is a relationship between hyposalivation and denture retention. The different etiology of the disease may direct the specialist to a different treatment approach. There are many studies that report that using denture adhesive with new dentures improves the masticatory performance of complete denture wearers and the denture adhesives provide the patients with comfort, confidence, and improved fit.

**CONCLUSION:** The use of medication to relieve xerostomia has a beneficial effect on total denture retention. This leads to a higher quality of life and satisfaction from the treatment in patients. The appearance of new materials and technologies for full denture fabrication requires in-depth research on the topic and update of scientific information.

**Keywords:** *xerostomia, hyposalivation, complete denture, edentulous patient*

**ORAL SESSION:  
SURGERY, OBSTETRICS,  
AND GYNECOLOGY**

## NEUROGLIAL HETEROTOPIA IN THE NASOPHARYNX OF AN INFANT: A CASE REPORT

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**INTRODUCTION:** Nasopharyngeal neuroglial heterotopia (also known as nasal glioma) is an extremely rare developmental abnormality classically presenting at birth or in early childhood. It is composed of benign ectopic neural tissue with no intracranial connection, unlike encephalocele. Preoperative imaging is crucial in characterizing these lesions, determining their extent and excluding any intracranial communication.

**AIM:** We report a 6-week-old infant twin who presented with symptoms of upper airway obstruction, dyspnea with apneic pauses, severe hypoventilation, and difficulty feeding since birth. The symptoms were slowly progressing.

**MATERIALS AND METHODS:** Flexible fiberoptic laryngoscopy under general anesthesia revealed a homogeneous mass in the epipharynx. The mass originated from the right lateral wall of the nasopharynx and extended to the right nasal choana. No connection to the central nervous system was discernible neither at the CT scan, nor at the operation done subsequently. The patient underwent resection by combined transoral and transnasal endoscopic approach.

**RESULTS:** Pathology report revealed nasopharyngeal neuroglial heterotopy. Following the surgery, the infant was successfully extubated, showed improved oxygen saturation and managed to gain weight.

**CONCLUSION:** Tumors and tumor-like lesions in the nasopharyngeal region can cause severe respiratory symptoms and are potentially life-threatening. Neuroglial heterotopias should be considered as differential diagnoses for masses causing airway obstruction in neonates and toddlers. A surgical procedure shows the most effective results in the treatment of such cases.

**Keywords:** *infant, heterotopia, neural tissue, nasopharynx, surgery*

## FOURNIER'S GANGRENE AND ITS CLINICAL APPROACH

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**INTRODUCTION:** Fournier's gangrene is a rare life-threatening urological emergency characterized by a rapidly progressive necrotizing fasciitis that affects the deep and superficial tissues of the perineal, perianal, lower abdominal, and genital regions.

**AIM:** In this article, we intend to outline the etiology, epidemiology, pathogenesis, diagnostic measures in the early course of disease, differential diagnosis and treatment of Fournier's gangrene.

**MATERIALS AND METHODS:** In this scientific research paper, we reviewed numerous research articles pertaining to the mortality rate of Fournier's gangrene using data gathered from notable research databases such as PubMed, New England Journal of Medicine, and BMC.

**RESULTS:** Through analyzing data collected from 173 published peer-reviewed articles between 1993–2018, a stable mortality rate of around 40% was observed. The main contributing factor for the high mortality rate has been identified as delayed diagnosis of Fournier's gangrene and its subsequent surgical treatment, which in some cases can increase the mortality rate to upwards of 88%. Early surgical intervention remains the most critical factor in reducing mortality rate by as much as 50%. The disease has a predilection to occur in patients with a multitude of comorbidities such as type 2 diabetes mellitus, obesity, cardiovascular disease, renal disease, and in immunocompromised settings which significantly increases the patient's risk of death.

**CONCLUSION:** Once diagnosis has been confirmed, immediate management is of paramount importance to prevent mortality. It includes the gold-standard triad therapy of surgical debridement, broad-spectrum antibiotic therapy, and intravenous fluid resuscitation.

**Keywords:** *Fournier's gangrene, necrotizing fasciitis, sepsis*

## INTUSSUSCEPTION IN AN ADULT: THE PUZZLE BEHIND AN UNFORESEEN ABDOMINAL “TWIST”

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**INTRODUCTION:** Intussusception, initially described by Paul Barbette, represents a prevalent paediatric gastrointestinal condition. It is notably infrequent in the adult patients, often serving as an indicative sign of an underlying etiological factor.

**AIM:** The aim of this article is to report the case of a 28-year-old female patient who came in with complaints of severe abdominal pain, obstipation, and symptoms of anaemic syndrome.

**MATERIALS AND METHODS:** An abdominal ultrasound examination was conducted, and the results indicated the presence of intestinal loops in the right iliac fossa, raising concerns about the possibility of an intussusception. The patient was admitted to the surgical department. A contrast-enhanced computed tomography (CECT) scan confirmed the existence of an ileocaecotransversal intussusception, with no signs of ischemia or subileus. Additionally, colon polyposis and multiple cysts in the peripheral soft tissues were revealed.

In response to these findings, the patient underwent laparoscopic desinvagination and an appendectomy. During the surgery, a mobile caecum and dolichosigma were incidentally discovered.

Given the previous CECT results and the patient's anaemic condition, fibrocolonoscopy and fibrogastrosco-  
py were performed. They revealed diffuse adenomatous polyposis in the colon and rectum, as well as in the gastric fundus, corpus, the duodenal bulb, and the post-bulbar space.

**RESULTS:** Histologically, colon lesions were identified as tubular adenomas with low-grade dysplasia. In contrast, the formations in the gastric and duodenal mucosa were classified as hamartomatous polyps. A hereditary gastrointestinal cancer panel test was administered, which provided confirmatory evidence of familial adenomatous polyposis (FAP) due to an unusual mutation in the adenomatous polyposis (APC) gene.

**CONCLUSION:** Intussusception in adults is uncommon, especially without a perceivable leading point, even more with the addition of FAP. Any unspecified, refractory to treatment anaemias, require a detailed diagnostic work-up, yet taking in concern the presence of gastrointestinal symptoms in some patients.

**Keywords:** *intussusception, FAP*



## CASE OF SUPERFICIAL BRACHIAL ARTERY CONTINUING INTO THE FOREARM AS RADIAL ARTERY

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**INTRODUCTION:** The brachial artery is a continuation of the axillary artery and supplies blood to the upper limb. Its course is characterized by numerous forms of anatomical variation, including a superficial path corresponding with high risk of injury and bleeding. Knowledge of muscular and neurovascular variations is important for both surgeons and radiologists, which may prevent diagnostic errors, complications with intravenous drug administration and venipuncture.

**AIM:** This study aims to inform about the existence of a rare superficial course of the brachial artery and elevate the level of awareness for such variations.

**MATERIALS AND METHODS:** This study was carried out in the Department of Anatomy and Cell Biology at the Medical University of Varna, Bulgaria, in April 2023 on one cadaver. During a routine tutorial, a case of bifurcation from the axillary artery (AA), forming two large-sized blood vessels, had been found in a new cadaver and later dissected.

**RESULTS:** A rare case of superficial brachial artery (SBA) was identified unilaterally on the right upper limb of an 80-year-old male cadaver. The SBA was formed from the AA between the medial and lateral roots of the median nerve (MN). The artery descended medially to MN then it passed laterally in the cubital fossa to form the radial artery. A direct continuation of AA was the deep brachial artery (DBA). The DBA moved laterally to MN and formed interosseus and ulnar arteries.

**CONCLUSION:** Attention has to be given to the anatomical position of the brachial artery while performing cardiac catheterization, intra-arterial injections, and angiographic procedures via the brachial artery. An abnormal superficial course of arterial variation like the one presented is often mistaken for superficial veins and accidental injection of certain drugs in these arteries may lead to conditions like gangrene or loss of hand.

**Keywords:** *superficial brachial artery, brachial artery variations*

## SHORT-TERM EFFECTS OF CESAREAN SECTION ON GROWTH IN ATOPIC CHILDREN: A STUDY OF BIRTH MODE AND ANTHROPOMETRY IN EARLY CHILDHOOD

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**INTRODUCTION:** Child growth is often delayed in atopic children, and the mode of delivery has been related to child growth. However, few studies have investigated the relationship between the type of birth and growth in children from atopic families.

**AIM:** The aim of this article is to examine the relationship between birth mode and early growth of children from atopic families.

**MATERIALS AND METHODS:** A total of 42 children from atopic families were observed from birth to age 5 in Varna, Bulgaria. Demographic characteristics, parental habits, and dietary practices were described. Weight and height were measured at 1, 2, and 5 years, and z-scores for weight-for-age (WAZ), body mass-for-age index (BMIAZ), height-for-age (HAZ), and weight-for-height (WHZ) were calculated. Children were divided into those born via cesarean section (group A) and those born naturally (group B).

**RESULTS:** The age of the children in group A was  $60.2 \pm 1.7$  m., male  $n=12$  (60%), group B:  $59.8 \pm 1.7$  m., male  $n=11$  (50%) ( $p=0.516$ ). After adjusting for controllable factors, including maternal and paternal education and atopy data, cesarean section was positively associated with WHZ ( $r=0.252$ ,  $p=0.057$ ), HAZ ( $r=-0.295$ ,  $p=0.025$ ), and BMIAZ ( $r=0.281$ ,  $p=0.033$ ) at 1 year and HAZ ( $r=-0.233$ ,  $p=0.078$ ) at 2 years. When controlling for both parents' age and atopy data, cesarean section was positively associated with WHZ ( $r=0.244$ ,  $p=0.065$ ), HAZ ( $r=-0.287$ ,  $p=0.029$ ), and BMIAZ ( $r=0.271$ ,  $p=0.040$ ) at 1 year and HAZ ( $r=-0.264$ ,  $p=0.046$ ) at 2 years. When controlling for all previous factors, the associations were weaker but still present for HAZ ( $r=-0.260$ ,  $p=0.053$ ), BMAZ ( $r=0.226$ ,  $p=0.093$ ) at 1 year, and HAZ at 2 years ( $r=-0.243$ ,  $p=0.072$ ). At 5 years of age, no such associations were found.

**CONCLUSION:** Cesarean section has a short-term relation to the growth of children from atopic families. A longer-term study of the effect of controllable factors on the growth and development of atopic children is needed in order to optimize them.

**Keywords:** *mode of birth, cesarean section, anthropometry, growth, atopy*

## FETAL HYDROCEPHALY: A CASE REPORT AND REVIEW OF LITERATURE

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**INTRODUCTION:** Hydrocephaly is a condition of excessive cerebrospinal fluid (CSF) buildup within the brain ventricles, caused by increased production, decreased absorption, or impaired circulation of CSF. Fetal hydrocephaly is defined as any hydrocephaly diagnosed prenatally, with reported frequency of 0.2–0.8/1000 births and higher incidence in lower income countries. Authors present a case of pregnancy termination after a diagnosis of early fetal growth restriction and additional structural abnormalities.

**AIM:** The aim of this article is to raise awareness about congenital central nervous system anomalies, one of the most common of which is fetal hydrocephaly, and to emphasize the importance of early screening and diagnosis and their relation to further treatment opportunities.

**MATERIALS AND METHODS:** Our work includes a systematic review (which is based on reliable sources such as Science Direct, PubMed), providing fundamental data regarding to fetal hydrocephaly, and a case report: 41-year-old primigravida, status post IVF-ICSI fertilization (frozen embryo transfer). During early fetal morphology sonography screening (12 weeks of gestation), asymmetrical fetal growth retardation and brain and posterior cranial fossa maldevelopment were observed. Non-invasive prenatal testing did not identify any genetic syndrome and chorion biopsy was rejected by the patient. At 16 weeks of gestation hydrocephaly was diagnosed and, as the patient was referred to a prenatal medicine specialist, Fallot tetralogy and septo-optic dysplasia were additionally diagnosed.

**RESULTS:** Due to the complicated medical condition, pregnancy termination was performed.

**CONCLUSION:** Hydrocephaly can be sonographically observed with its main morphological feature—ventriculomegaly, characterized by the transverse diameter of the lateral ventricular atrium greater than 10 mm. Higher degree of ventriculomegaly, progression, early onset, and association with other malformations indicate worse prognosis. Therefore, early recognition and intervention can prevent permanent damage to the fetus.

**Keywords:** *hydrocephaly, cerebrospinal fluid, ventriculomegaly, CNS anomalies, pregnancy termination*

## IMMUNOHISTOCHEMISTRY OF DECIDUAL NK CELLS IN EARLY AND LATE SPONTANEOUS ABORTIONS

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**INTRODUCTION:** The scientific problem which is discussed, immunohistochemistry and decidual natural killer (dNK) cells in spontaneous abortions, can be determined as significant both in medical and in social aspect globally.

According to WHO, every fourth pregnancy worldwide ends in abortion.

An abortion is defined as loss/termination of pregnancy before the fetus(es) reach potential viability. Immune cells have been found to be a key factor in the interaction between the mother and the implanting embryo.

**AIM:** The aim of the study is to determine the expression of dNK cells in early and late spontaneous abortions by performing immunohistochemistry tests on abortive material and to determine if there is a link between the results from their expression, the age of the patients, the gestational age of the abortion, the parity of patient, as well as the mode of birth.

**MATERIALS AND METHODS:** A total of 81 women were tested, 56 of them with early spontaneous abortions and 23 with late spontaneous abortions.

**RESULTS:** The study shows a significant relation between the age of patients and levels of CD56 (under and over 12.9% expression). Women with spontaneous abortions under the age of 35 show high expressions of CD 56+, demonstrating an increased immune response of the mother to the embryo.

**CONCLUSION:** Immunohistochemistry is a method rarely used in obstetrics. Proving dNK cells in abortive material can be used as a screening method for prevention of spontaneous abortions. Due to the small number of women tested, results from the study cannot be accepted as highly credible. Therefore, more studies in this area are needed.

**Keywords:** *spontaneous abortions, immunohistochemistry, decidual NK cells*

## ULTRASOUND CRITERIA FOR DIAGNOSIS OF EARLY AND LATE SPONTANEOUS ABORTIONS

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**INTRODUCTION:** The most common reasons for performing ultrasound examination during the first trimester of pregnancy are connected to complaints of pain in the lower abdomen and waist, with or without genital bleeding. In most cases those symptoms could be a sign of a spontaneous abortion. The incidence of spontaneous abortion during the first trimester of pregnancy vary between 15% and 20%. However, if we add the preclinical abortions (those proven only by a positive b-hCG test), the number rises up to 50% of all pregnancies. One of the main types of examination done in such cases is transvaginal and transabdominal ultrasound.

**AIM:** The aim of this study is to analyze different ultrasound criteria for spontaneous abortions (both on a national and international scale), to find the common points in them, and to introduce them to the public combined in a single research.

**MATERIALS AND METHODS:** The ultrasound criteria for spontaneous abortions of both the Society of Radiologists in Ultrasound and of the Bulgarian Society in Obstetrics and Gynecology are observed. Material obtained through transabdominal and transvaginal ultrasound scans in the Specialized Hospital of Obstetrics and Gynecology for Active Treatment were used as examples of some of the points being discussed.

**CONCLUSION:** The ultrasound criteria of both organizations are found to be applicable in practice. As such they should be regularly applied and used to diagnose, treat, and prevent the possible adverse outcomes of pregnancy.

**Keywords:** *spontaneous, early, late abortions, ultrasound criteria*

## ULTRASOUND DIAGNOSIS OF CONGENITAL CYTOMEGALOVIRUS INFECTION

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**INTRODUCTION:** Cytomegalovirus (CMV) is the primary viral pathogen resulting in perinatal infection. It has been identified as a potential cause of congenital anomalies with widespread effects on multiple systems of organs.

**AIM:** Congenital CMV in many cases is asymptomatic at birth but in later childhood periods neurological abnormalities of varying severity can develop. The newborn can be delivered with a severe hemorrhagic syndrome, generalized petechial purpura, hemorrhages, ecchymoses with hepatosplenomegaly and neurological manifestations. Microcephaly, microphthalmia, and chorioretinitis are often observed.

**MATERIALS AND METHODS:** An ultrasound scan of the fetus can indicate potential congenital CMV infection through findings such as ventriculomegaly, hydrops, intracranial calcifications, and hyperechogenic bowel. The most common and typical sign of central nervous system damage are interventricular and periventricular calcifications. If an infant shows signs of prematurity despite having a normal gestational age, CMV infection should be suspected.

**RESULTS:** Specific criteria for the ultrasound diagnosis of CMV are: brain lesions (including calcifications), hydrops (pleural effusion, ascites, subcutaneous and prefrontal edema, increased nuchal translucency), hepatomegaly, splenomegaly and abdominal calcifications, myocarditis, anemia, cataracts. The diagnosis of CMV is made by direct isolation of the virus—the cytopathic effect on cell cultures takes 3–4 weeks, or via serological methods. There is no definitive method for treating cytomegalovirus acquired congenitally in utero. For the treatment of CMV ganciclovir and foscarnet are used and immunomodulating therapy as well.

**CONCLUSION:** An ultrasound scan can provide clear indications in the diagnosis of CMV.

**Keywords:** *ultrasound, cytomegalovirus, hydrops, calcifications*

# POSTER SESSION: GENERAL MEDICINE

## A CASE REPORT OF A 58-YEAR-OLD WOMAN WITH ATYPICAL SPINAL SCHWANNOMA CAUSING CAUDA EQUINA SYNDROME

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**INTRODUCTION:** Spinal schwannomas are slow-growing spinal nerve sheath benign tumors that are generally asymptomatic. These are diagnosed by either imaging studies incidentally or, in this case, after manifesting symptoms like a backache and progressive neurological deficit.

**CASE PRESENTATION:** We present a 58-year-old woman with a 2-month history of severe low back pain, worsening neurological deficits, a 2-day period of acute onset of lower extremity numbness and urinary incontinence. Physical and neurological examination revealed significant lower extremity weakness, tenderness on palpation of the spine, positive straight leg test bilaterally, decreased sensation below the L4 dermatome, reduced sphincter tone, saddle anesthesia, decreased deep tendon reflexes, and loss of sphincter control, consistent with compression of the cauda equina.

**RESULTS:** Magnetic resonance imaging revealed a large mass of heterogeneous composition at the level of the L3 lumbar vertebral body, intruding into the cauda equina. Wide decompression was successfully performed and based on intraoperative observation, a provisional diagnosis of compressive intradural extramedullary schwannoma was made. The histopathological examination confirmed the diagnosis. With rehabilitation, there was some recovery of lower extremity motor function.

**CONCLUSION:** It is important for clinicians to have an awareness of the possible association between spinal schwannoma and cauda equina syndrome and to complete a comprehensive assessment of patients with back pain. Early recognition and intervention can prevent permanent damage and improve patient outcomes.

**Keywords:** schwannoma, cauda equina syndrome, MRI scanning, spinal neoplasm, case report



## TRANSFORAMINAL PERIRADICULAR INJECTION— A METHOD FOR DEFINING THE CORRECT SPINAL LEVEL FOR SURGERY IN MULTIPLE LEVEL STENOSIS

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**INTRODUCTION:** Transforaminal periradicular injection of either steroid or anesthetic is a method for pain management in chronic pain syndromes. The procedure consists of image-guided placement of needle into the neuroforamen of interest and injecting the desired medication. In addition to the classic use for pain alleviation, it could also be used as a diagnostic tool for defining the specific nerve root that is causing the individual's pain.

**MATERIALS AND METHODS:** Seven patients with multiple level stenosis at the lumbar spine were subjected to x-ray guided transforaminal periradicular injection of dexamethasone and 3% lidocaine to the suspected nerve root. The pain level was assessed at 1<sup>st</sup>, 6<sup>th</sup>, 12<sup>th</sup>, and 24<sup>th</sup> hour after the procedure using visual analogue scale (VAS). Six patients had reduction of pain at 1<sup>st</sup>, 6<sup>th</sup>, and 12<sup>th</sup> hour and three of them reported increase (but not to the initial level) at the 24<sup>th</sup> hour. One patient had no change to the pain level after the procedure. The six patients were then subjected to operative treatment for stenosis at the level of the injection. In addition to VAS, Oswestry Disability Index (ODI) was assessed pre- and postoperatively.

**RESULTS:** The operated patients had normal postoperative period with no complications. The VAS and ODI scores showed reduction in pain and decreased disability for all patients.

**CONCLUSION:** Multiple level stenosis is a challenging pathology that requires an expensive and complex surgery for a prolonged operative time and greater risks for the patient. Image-guided transforaminal periradicular injection of steroid and anesthetic is a safe, easy to perform, and fast method for defining the symptomatic nerve root and correct spinal level that could be subjected to less invasive operation.

**Keywords:** *spinal pathology, vertebrology, minimally invasive procedure, periradicular injection, pain management, multiple level stenosis*

## **ALOBAR HOLOPROSENCEPHALY AND ASSOCIATED ANOMALIES. A CASE REPORT**

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**INTRODUCTION:** Alobar holoprosencephaly is a complex brain malformation, and its association with other anomalies can present clinical challenges.

**AIM:** The aim of this poster is to present the clinical course of an infant who had a prenatal diagnosis of alobar holoprosencephaly and associated cleft lip and palate.

**CASE PRESENTATION:** A female infant, born from parents with a third-degree consanguineous relationship, was studied. She was diagnosed prenatally and was, after birth, monitored for growth parameters, in particular head circumference (HC).

**RESULTS:** The child was born at 37 weeks of amenorrhea with a birth weight of 3120 g and an initial HC of 39 cm (HC-for-age >P98). She demonstrated a rapid increase of HC reaching 50.5 cm (HC-for-age >P98) at three months of age, prompting the decision for a ventriculoperitoneal shunt (VPS) placement. Four days postoperatively, HC decreased to 48.7 cm. Clinical suspicion of epileptic seizures led to an increase in levetiracetam dosage. The recommended postoperative care regimen included paracetamol and levetiracetam administration, with potential consideration for valium at home, subject to discussion with the neurologist. A follow-up examination, conducted three months after VPS insertion, revealed stable condition and a notable deceleration in HC growth with an anterior fontanelle in the process of closing.

**CONCLUSION:** We discuss the clinical specificities, etiologies and risk factors of anencephaly, with a brief overview of the literature on the subject.

**Keywords:** *holoprosencephaly, anencephaly, neural tube defects*

## A CASE OF PULMONARY LANGERHANS CELL HISTIOCYTOSIS (PLCH) AND ITS CONSEQUENCES ON THE RESPIRATORY TRACT

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**INTRODUCTION:** Histiocytosis is characterized by abnormal function and accumulation of specific cells and could affect a single organ or have disseminated life-threatening presentations. Pulmonary Langerhans cell histiocytosis (PLCH) is characterized by the infiltration and destruction of bronchiolar walls by specialized dendritic cells organized into granulomas.

**AIM:** The aim of this case report is to highlight the importance of the relationship between Langerhans cell histiocytosis (LCH) and the respiratory tract, and to present a treatment with a favorable effect on a patient with this disease.

**CASE PRESENTATION:** A 47-year-old patient was admitted to a pulmonology clinic with complaints of cough and dyspnea during physical exertion. The patient had proven PLCH in 2018 (lung biopsy). He had not undergone basic treatment. He has quit smoking.

During the hospital stay:

- ◆ A chest scan was performed, showing centrilobular emphysema and peribronchial reticulations in both lungs with slight signs of progression.
- ◆ A functional breathing test was conducted, showing reduced FEV1 and FEV1/FVC ratio. A bronchodilator test with salbutamol was then performed (negative). DLCO was also reduced. These changes are consistent with the presence of emphysema.
- ◆ Consultation with a hematologist was done with a referral for follow-up at a hematology clinic after receiving a PET/CT result.

Therapy:

- ◆ methylprednisolone x40 mg with dose reduction;
- ◆ infusions of water-salt solutions;
- ◆ Carsil 90 mg 2 x 1 t.;
- ◆ Ventolin 3 x 0.3 mL inh.;
- ◆ Famotidine 40 mg x 1.;
- ◆ Valsacor 160 mg 2 x ½ t.;
- ◆ Spiolto Respimat x 2 inh.

**RESULTS:** After the therapy, a reduction of respiratory complaints and improved spirographic indicators were reported.

**CONCLUSION:** Lung involvement should not be underestimated in cases of LCH. This case demonstrates that with similar symptoms from the respiratory tract, PLCH should be taken into consideration.

**Keywords:** *histiocytosis, pulmonary, lung*

## A CASE OF A PERSISTENT PLEURAL EMPYEMA

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**INTRODUCTION:** Empyema is defined as a collection of pus in the pleural cavity, which is usually associated with pneumonia. During an inflammatory process there is an increase in fluid production in the pleural cavity and, as the disease progresses, microorganisms can colonize the fluid and generate an empyema. After the resolution of the infection, there is a process of fibrosis, which can lead to restriction of the lung parenchyma.

**AIM:** The aim of this abstract is to highlight the fact that pleural empyema could be hard to treat and to propose a possible way of treatment.

**CASE PRESENTATION:** A 35-year-old man was admitted to a pulmonology clinic because of an obstructed and inactive pleural drain. The drain was placed during a previous hospitalization due to a severe pulmonary infection in the right lung and finding a fluid component. The patient had severely weakened to absent breathing in the right base and a short percussion tone in the right base.

During the hospital stay, lung and heart x-rays were performed, showing an encapsulated pleural effusion on the right side.

The therapy consisted of saline infusions, cefazolin MIP flac. 2 g, metamizole inj. sol. 500 mg 2 mL, lidocaine amp. 2% 10 mL, clindamycin amp.

The patient's drain was repositioned and the man was discharged with the pleural drain, having to continue antibiotic therapy in an outpatient setting.

**RESULTS:** After the stay in the hospital, the patient was discharged with improvement, and regular preventive examinations were recommended

**CONCLUSION:** Pleural empyema is a condition which seriously puts at risk the respiratory system; therefore, appropriate and early intervention is vital to decrease complications and mortality.

**Keywords:** *empyema, pleura, pulmonary, lungs*

# BRAIN NEUROPLASTICITY DURING PREGNANCY AND POSTPARTUM DEPRESSION AND PSYCHOSIS

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**INTRODUCTION:** Functional magnetic resonance imaging (fMRI) analysis of published data demonstrate changes in the brain structure of pregnant women. There is a significant reduction in gray matter (GM) volume, which primarily affects certain regions of the brain. These reductions are symmetrical and accompanied by reductions in cortical thickness and extensive changes in the surface area of the cortical sheet. Women can be correctly classified as pregnant or not based on changes in surface area and cortical thickness detected by fMRI. The reduced volume of GM is thought to be due to the phenomenon of “synaptic pruning.” The mother’s brain exhibits a compensatory stronger survival instinct that aids in her evolutionary process. Regions with reduced GM volume also show increased neuronal activity in response to mothers interacting with their own fetuses. These regions also coincide with the brain’s Default Mode Network (DMN). The latter’s dysfunction is associated with melancholic depression, anxiety, and/or insomnia.

**AIM:** The aim of the present study is to analyse the fMRI published data, the possible correlation between brain neuroplasticity during pregnancy and postpartum associated depression or other psychoses. The study utilized a documentary method to survey scientific publications of current studies on this topic from PubMed, Web of Science, Scopus, used over 12 publications by keywords: neuroplasticity, brain changes, maternal-fetus bonding, postpartum depression and ect.

**RESULTS:** Default Mode Network activity during pregnancy is significantly associated with maternal-fetal bonding. Stronger DMN changes are correlated with stronger maternal-fetal bonding. These changes during pregnancy are related to reduced risk for postpartum depression and psychosis, infant rejection, and pathological disorders.

**CONCLUSION:** Areas where brain neuroplasticity is observed during pregnancy are also those with increased neuronal activity. Dysfunction of such a neuroplasticity is associated with increased risk of postpartum depression or psychosis.

**Keywords:** DMN, fMRI, neuroplasticity, pregnancy, postpartum depression, postpartum psychosis

**Acknowledgments:** The author expresses her gratitude to George N. Chaldakov, MD, PhD, FIACS for his expert and stimulating advices.

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## BLADDER EXSTROPHY AS A COMPLEX BIRTH DEFECT. A CASE REPORT

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**INTRODUCTION:** Bladder exstrophy is a rare condition, mainly observed in males and clinically presenting together with several abnormalities, which include the pelvic region, external genitalia, other organs of the urinary system, and the abdominal wall in the lower abdominal region. Although the etiology remains for further discussion, the main hypothesis is that impaired mesenchymal cell migration, due to overgrown cloacal membrane, leads to inadequate closure of the inferior abdominal wall and underdevelopment of the pelvic bones. These embryological events result in the above-mentioned defects, known as bladder exstrophy-epispadias-complex. It is proven that genetic factors could also refer to predispositions for bladder exstrophy. Significant pubic diastasis is the main problem and is related to the bony defects of the pelvis. Commonly reported are upper urinary tract infections, which can lead to nephrectomy.

**AIM:** The aim of this case report is to present a patient, born with bladder exstrophy, and to evaluate the importance of proper preoperative care, surgical treatment and multidisciplinary specialists.

**CASE PRESENTATION:** We present a newborn at Shumen Hospital, who was diagnosed with bladder exstrophy immediately after birth by a pediatric surgeon, without further examination needed. It is first, full-term pregnancy for the mother. The baby's first cry was immediately after birth (February 2018). Exposed bladder and urethra, short phallus, and non-related palatum fissum were examined. The newborn's urine contained bacteria.

**RESULTS:** Preoperatively bandages with sterile gauze and physiological solution were done at home. On the 15<sup>th</sup> day the baby was operated on as an emergency for inguinal hernia on the right side. The operative treatment of the bladder exstrophy was performed in Belgrade (in May and September). In January the baby was operated on for inguinal hernia on the left side. Today, the child is alive and bladder neck reconstruction is about to be performed.

**CONCLUSION:** Bladder exstrophy remains one of the main challenges for pediatric surgeons because of the complex pathology and serious possible follow-up complications. Timely diagnosis and early bladder closure are crucial for proper preservation of the bladder tissue, achievement of adequate urine continence, and restoration of the sexual function.

**Keywords:** *bladder exstrophy, urine continence, abnormalities, hernia*

# THE COW'S MILK-RELATED SYMPTOM SCORE (COMISS) IN INFANTS: A COMPREHENSIVE ASSESSMENT TOOL

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**INTRODUCTION:** Cow's milk protein allergy (CMPA) is a prevalent condition among infants. Its diverse symptoms complicate the accurate diagnosis. The Cow's Milk-Related Symptom Score (CoMiSS) emerges as an innovative diagnostic and awareness tool, comprehensively addressing respiratory, gastrointestinal, dermatological, and general distress symptoms in young patients.

**AIM:** This structured review is geared towards evaluating the practicality and effectiveness of the CoMiSS tool in the context of diagnosing infants with CMPA.

**MATERIALS AND METHODS:** Employing a meticulous approach, relevant studies published between 2015 and October 2023 were sieved from four electronic databases. An expansive initial search yielded 268 promising titles. Following a careful review of abstracts and titles, 18 were earmarked for further exploration. Upon deeper scrutiny, a final selection of 9 studies met the stringent inclusion criteria, becoming the backbone of this review.

**RESULTS:** Among the key findings, infants diagnosed with CMPA consistently showed heightened tendencies for respiratory complications, constipation, and extended crying periods. In an interesting revelation, 25–36% of these infants grappled with digestive challenges. The CMPA group exhibited intensified symptoms like rectal bleeding and pronounced vomiting. A compelling correlation emerged between fecal calprotectin levels and CoMiSS scores ( $r = 0.931$ ;  $p < 0.0001$ ). Further, after embracing a 2–4-week cow's milk-free regimen, there was a notable dip in the CoMiSS scores, endorsing its value.

**CONCLUSION:** While the CoMiSS tool offers invaluable insights to healthcare professionals, it should not be the sole diagnostic measure for CMPA. The push for continued research to refine this tool is undeniable.

**Keywords:** *cow's milk allergy, infant, score, CoMiSS*

## INCIDENTAL FINDING OF LEFT ATRIAL MYXOMA PRESENTING WITH ABDOMINAL DISCOMFORT AND BLOATING. A CASE REPORT

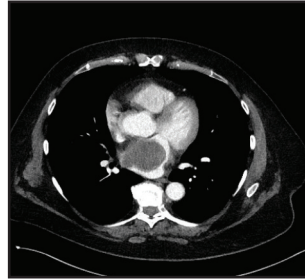
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**INTRODUCTION:** Atrial myxoma is the most common of the rare benign primary cardiac tumours. They are commonly found in the left atrium. This disease presentation can vary from being asymptomatic to presenting as a stroke or pulmonary embolism.

**MATERIALS AND METHODS:** A 59-year-old female presented to the clinic with abdominal discomfort and bloating. The patient reported a band-like pain across the top of her abdomen, associated with dizziness and increased fatigue usually alleviated by sleep. The patient stated that these attacks, which initially started four years ago, have been getting progressively worse in the last few weeks. Significant medical history included breast carcinoma and gallstones. Given these worsening symptoms, the patient was advised to get a CT TAP. The CT TAP showed a large left atrial mass, which involved the orifice of the right superior pulmonary vein as shown in Fig. 1.



*Fig. 1. CT-TAP showing very large left atrial myxoma.*

However, given the symptoms, and significant medical history the differentials included atrial myxoma, cardiac sarcoma, metastatic disease, or cardiac lymphoma.

**RESULTS:** This lesion carries a risk of systemic arterial embolisation. Immediately a successful surgical intervention was undertaken, and a biopsy confirmed it was an atrial myxoma.

**CONCLUSION:** To conclude, we present a case with a very large left atrial myxoma with very vague symptoms. With multiple differentials and severe consequences that this condition can present, it is essential to diagnose and treat it promptly.

**Keywords:** *atrial myxoma*



## INTEGRATION OF ARTIFICIAL INTELLIGENCE AND EMERGING TECHNOLOGIES IN MEDICAL DEVICES: POTENTIAL FOR HEALTHCARE IMPROVEMENT

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**INTRODUCTION:** Artificial intelligence (AI) and other emerging technologies have the potential to revolutionize the development of medical devices. AI-powered medical devices can analyze large amounts of data to identify patterns and trends that would be difficult or impossible for humans to detect. This can lead to more accurate and timely diagnoses, as well as more personalized and effective treatments.

**AIM:** The aim of this article is to review the latest developments in the field of AI-powered medical devices and discuss the potential for these devices to improve healthcare.

**MATERIALS AND METHODS:** A literature review was conducted to identify relevant studies on AI-powered medical devices. The search was limited to English-language studies published in the last five years.

**RESULTS:** A variety of AI-powered medical devices are currently in development, including AI-powered imaging devices, surgical robots, wearable devices, and implantable devices. These devices have the potential to improve healthcare in a variety of ways, including more proactive and preventive healthcare, empower patients to take greater control of their own health, providing more accurate and timely diagnoses, more personalized and effective treatments, reduced risk of complications, improved patient outcomes, increased access to healthcare, reduced healthcare costs, reduced workload on healthcare professionals.

**CONCLUSION:** The development of AI-powered medical devices is a rapidly growing field with the potential to significantly improve healthcare for patients around the world. However, it is important to note that AI-powered medical devices are still under development, and there are several challenges that need to be addressed before they can be widely adopted. It is important to carefully consider the ethical and social implications of such devices. For example, it is important to ensure that AI-powered medical devices are used in a way that respects patient privacy and autonomy. It is also important to ensure that they are not used to perpetuate existing health disparities.

**Keywords:** *artificial intelligence, medical device, healthcare*

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6. The text of the manuscript must be submitted as a file which does not contain any images, diagrams, graphs, author names, affiliations and references. The text of manuscript should be submitted in Microsoft Word .doc/.docx format;
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The text of the manuscript must be submitted as a file which does not contain any images, diagrams, graphs, author names, affiliations and references. The structure of the body of the manuscript should include the following sections:

**Introduction:** Should concisely state the main objective of the study and should provide a background for the study.

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**Results:** should be summarized with relevant statistical indices, following the requirements for tables and figures.

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Pages should be single-spaced, Times New Roman should be used throughout, sized at 12 pt. Captions should be used within the body of the manuscript to outline important points. The text of the manuscript should be submitted in Microsoft Word .doc/.docx format.

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#### **Journal article**

Iwamoto Y, Koide H, Ogita K, Nishizuka Y. The protein kinase C family for the regulation of cellular functions. *Biomed Rev.* 1992;1:1-6.

### Journal article with more than 6 authors

Rose ME, Huerbin MB, Melick J, Marion DW, Palmer AM, Schiding JK, et al. Regulation of interstitial excitatory amino acid concentrations after cortical contusion injury. *Brain Res.* 2002;935(1-2):40-6.

### Book

Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. *Medical microbiology*. 4<sup>th</sup> ed. St. Louis: Mosby; 2002.

### Book chapter

Thornton T. On the interface problem in philosophy of psychiatry. In: Broome MR, Bortolotti L, editors. *Psychiatry as Cognitive Neuroscience: Philosophical Perspectives*. Oxford: Oxford University Press; 2009. p. 121-137.

### URL

American Medical Association [Internet]. Chicago: The Association; c1995-2002 [updated 2001 Aug 23; cited 2002 Aug 12]. AMA Office of Group Practice Liaison; [about 2 screens]. Available from: <http://www.ama-assn.org/ama/pub/category/1736.html>

### DOI, PMID

Zhang M, Holman CD, Price SD, Sanfilippo FM, Preen DB, Bulsara MK. Comorbidity and repeat admission to hospital for adverse drug reactions in older adults: retrospective cohort study. *BMJ.* 2009 Jan 7;338:a2752. doi: 10.1136/bmj.a2752. PubMed PMID: 19129307; PubMed Central PMCID: PMC2615549

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