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for students and young doctors

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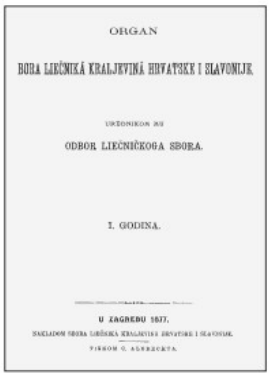
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Opis

Liječnički vjesnik je najstariji hrvatski medicinski časopis koji neprekidno izlazi od 1877. te redovito bilježi sva važna stručna i strukovna dostignuća u hrvatskoj i svjetskoj medicini. U *Liječničkom vjesniku* objavljuju se uvodnici, stručni i znanstveni radovi, pregledni članci, prikazi bolesnika, lijekova i metoda, preliminarna znanstvena i stručna priopćenja, osvrti, pisma uredništvu, prikazi knjiga, referati iz literature i drugi prilozi. Svi rukopisi podvrgnuti su procesu recenzije.

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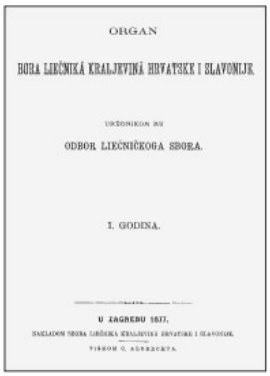

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Description

The Croatian Medical Association started publishing its professional journal *Liječnički Vjesnik* in 1877. *Liječnički Vjesnik* is one of only about a hundred international journals that were coming out in the late 19th century, maintained continuity during the 20th century, and then entered the 21st century. It is also the oldest Croatian medical journal and regularly captures all important achievements, professional and trade events. Editorials, professional and scientific papers, review articles, patient reviews, medications and methods, preliminary scientific and expert papers, reviews, letters to the editor, book reviews, literature papers and other contributions are published in the journal *Liječnički Vjesnik*. Through publishing original scientific and professional papers by local authors, *Liječnički Vjesnik* has contributed to the overall health care improvement. All manuscripts are subjected to a review process. All articles should be addressed to the Croatian Medical Association, Office of Liječnički Vjesnik, Zagreb, Šubićeva 9, tel. (01) 46-93-300, e-mail: lijecnicki-vjesnik@hlz.hr.

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CONTENTS:

CASE REPORT:

ORIGINAL RESEARCH:

WORKSHOP:

LECTURE:

CASE REPORT:

Traumatic brachial artery dissection following a supracondylar humerus fracture in a pediatric patient

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2 Department of Pediatric Surgery, University Hospital Centre Zagreb, Zagreb, Croatia

Keywords:

brachial artery dissection, ischemia, supracondylar fracture

Background:

Supracondylar fractures are the most common humeral fractures in children, comprising 55-80% of all pediatric elbow fractures, with a higher incidence among 5 to 7-year-old boys. A typical mechanism of injury is a fall onto the outstretched hand with hyperextension at the elbow. Due to the humerus's proximity to the brachial artery and anterior interosseous nerve, neurovascular complications occur in 5-15% of cases.

Case presentation:

A 5-year-old male was admitted to the ER after a slip and a fall at a kindergarten , landing on his right arm. Clinical examination revealed redness, swelling and visible deformity in the distal upper arm with a complete absence of peripheral pulsations distal to the injury along with signs of ischaemia. Subsequent X-ray imaging unveiled a Gartland III supracondylar fracture, indicating the need for surgical intervention. Successful repositioning of the fractured fragments was carried out under the control of X-ray in general anesthesia. Following repositioning, stabilization was achieved through the percutaneous insertion of Kirschner wires. However, the arm remained cold and pale, prompting an exploration of the brachial artery. During surgery, a dissection of the brachial artery was identified, leading to a resection of the injured segment and reconstruction using a cephalic vein graft. Post-reconstruction assessment revealed palpable distal pulsations, indicating restoration of blood flow. Subsequent postoperative check-ups revealed ulnar nerve neuropraxia as a complication of the operation. Nevertheless, full recovery occurred three months after the injury.

Conclusion:

Vascular injuries are not uncommon with grade III supracondylar humeral fractures in children. The spectrum of injuries include thrombus formation, complete rupture, thrombosis, partial tear, and brachial artery entrapment, requiring varied treatments. A post-traumatic brachial artery dissection due to supracondylar fracture is an extremely rare cause of limb ischaemia with only a couple of reported cases . Early diagnosis and prompt intervention in cases of vascular complications are vital for ensuring optimal outcomes and preventing severe consequences, such as limb ischemia.

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Infant with ileal duplication cyst and ectopic gastric mucosa

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Keywords:

abdominal cyst, congenital anomaly, ectopic gastric mucosa, intestinal duplication

Background:

Intestinal duplications are congenital anomalies that may occur throughout the gastrointestinal tract with an incidence of 1/4500 live births. The duplications are often located on the mesenteric side of the bowel and can either be cystic or tubular. Therefore, they most often appear as mesenteric cysts on radiology imaging. Most intestinal duplications are diagnosed within the first two years of life, either as accidental findings or they present as abdominal pain and intestinal obstruction. Surgically treated intestinal duplications have a good prognosis.

Case presentation:

A male newborn was prenatally diagnosed with an intra-abdominal cyst by fetal ultrasound at 20 weeks of gestation and confirmed by a magnetic resonance scan (MR). The cyst (34x30 mm) showed no communication with the adjacent intestine. The child was delivered at full gestational age and without any symptoms. Over the following months, subsequent ultrasonographies demonstrated no significant changes in cyst size, until the seventh month, when a sudden increase in cyst size (42x70 mm) was confirmed by MR, indicating the need for surgical intervention. Elective surgical resection of the cystic formation was performed even though asymptomatic. During laparoscopic exploration, the cystic formation was inseparable from the adjacent bowel, initiating the resection of 4 cm of the small intestine with the cystic formation. Histologically, the diagnosis of cystic intestinal duplication with ectopic gastric mucosa was confirmed. The patient had an uneventful postoperative recovery with a two-year follow-up period.

Conclusion:

A rare form of intestinal duplication cyst with ectopic gastric mucosa is a possible differential diagnosis in children with prenatal abdominal cysts, and complete surgical removal before developing symptoms is the treatment of choice.

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Bilateral rupture of the patellar ligament in a patient with chronic renal insufficiency

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Keywords:

knee, patellar ligament, rupture

Background:

The rupture of a patellar ligament, although rare, usually occurs due to a sudden and strong contraction of the extensor system of the knee, most often during sports activities. It typically has a unilateral presentation. Bilateral presentation is even scarcer and is usually a consequence of systemic conditions and steroid use, alongside additional risk factors such as lupus erythematosus, hyperparathyroidism and hyperuricemia. It occurs after minor trauma or rarely, spontaneously. Chronic renal insufficiency is a rare but often overlooked cause of this condition.

Case presentation:

A 37-year-old male was brought to the emergency room after slipping and falling on his back. The patient's knees were bent at a 90-degree angle, edematous and difficult to extend. The medical history was significant only for chronic kidney disease for which he is currently on hemodialysis. The combination of clinical presentation and the fact the accident occurred after a minor trauma raised suspicion of a pathological background. An ultrasound was performed, revealing a bilateral avulsion of the patellar ligament on the distal pole of the patellae. An X-ray revealed no fracture. A surgical treatment was indicated. The refixation of patellar ligaments to their attachment was performed with 2 bone anchors, followed by sutures of the surrounding retinaculum. It successfully achieved the continuity of the knee's extensor mechanism. In the postoperative rehabilitation period, knee- stabilizing orthotics were used, succeeded by a progressive weight bearing of both legs for 8 weeks. Along with advised physical therapy, the patient returned to normal daily activities in 6 months.

Conclusion:

Bilateral rupture of the patellar ligament is a rare, yet urgent musculoskeletal complication in individuals with chronic renal insufficiency, demanding immediate attention. It is often misdiagnosed and can lead to a series of complications such as longer hospitalization, additional surgical procedures and long-term disability if not recognized on time.

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Merkel cell carcinoma appearing 9 years after kidney transplantation

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Keywords:

immunosuppression, kidney transplantation, Merkel cell carcinoma

Background:

Merkel cell carcinoma (MCC) is a rare, highly aggressive skin cancer with neuroendocrine features. Immunosuppressants that are administered after transplantation can increase the risk of Merkel cell carcinoma.

Case presentation:

A 52 -year-old woman presented with an asymptomatic nodule in the left gluteal region 9 years after kidney transplantation. Surgical excision of the nodule was performed. Histopathologic and immunohistochemistry examinations confirmed the nodule to be an MCC. No residual MCC cells were detected at the surgical margins after surgical resection. No metastases were detected in an inguinal sentinel lymph node biopsy (SNLB) specimen. Staging showed no signs of metastatic disease. Since the concentration of serum chromogranin A remained elevated, it was decided to start octreotide treatment in a dose of 90 mg. However, after 2 years of remission, another nodule appeared on the skin of the left infrascapular region. Surgical excision of the lesion was performed, combined with an SNLB of the left axilla. Histopathologic examination confirmed it to be a metastasis of MCC. Surgical margins were clear and no metastases were detected in sentinel lymph nodes. Then, she underwent postsurgical adjuvant radiotherapy of left infrascapular region, consisting of 3000 cGy in 10 fractions. The cancer is currently in remission; the most recent whole body PET CT showed no signs of active disease. Before the cancer diagnosis, immunosuppression therapy consisted of tacrolimus, mycophenolate mofetil (1080 mg daily), and prednisone(5 mg daily). After the diagnosis, the decision was made to replace tacrolimus with everolimus (0.5 mg daily). Throughout the entire treatment, the function of the graft remained intact, with a glomerular filtration rate estimated to be 56 ml/min/1.73 m^2.

Conclusion:

This case highlights the importance of early tumor diagnosis and the complexity of the treatment in transplanted patients with the aim of achieving tumor remission while simultaneously preserving graft function.

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Challenges and complications in the diagnosis and treatment of arteriovenous fistula following renal allograft biopsy

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Keywords:

arteriovenous fistula, endovascular procedure, kidney transplantation

Background:

A renal allograft biopsy is the gold standard diagnostic method for evaluating the extent of acute and chronic renal transplant dysfunction, offering vital diagnostic and prognostic insights. A recognized post-procedural complication is the formation of an arteriovenous fistula (AVF).

Case presentation:

A 53-year-old male, who had undergone a simultaneous pancreas-kidney transplant six years ago due to diabetic end-stage kidney disease, was admitted to the hospital after presenting at the emergency department with symptoms of fever, dysuria, and a deterioration in kidney allograft function. The patient had undergone a kidney allograft biopsy two days earlier. Upon admission, serum creatinine was 293 µmol/L. He was administered broad-spectrum parenteral antibiotics which rapidly improved his symptoms. However, allograft dysfunction only partially improved, with creatinine levels of 180 µmol/L. Ultrasound showed a hemodynamically significant AVF in the upper pole of the graft, which was confirmed on MSCT angiography. His condition worsened, showing signs of high-output heart failure. After stabilization of his clinical status, endovascular closure of the AVF was attempted, resulting in an iatrogenic dissection of the allograft artery. The procedure was aborted. MSCT angiography a week later showed no signs of dissection, and a second attempt at endovascular treatment was recommended, as kidney function was significantly affected by the „steal" syndrome from the AVF. The final procedure was performed two weeks later. Two microvascular occluders and four detachable coils were placed in the feeding artery. Post-embolization angiography confirmed the absence of flow in the fistula. Graft function subsequently improved, reaching the previous baseline creatinine.

Conclusion:

The case demonstrates the complexity and challenges associated with renal allograft biopsies. AVFs can have a severe impact on kidney function. However, they can be effectively treated with endovascular procedures, using microvascular plugs as the method of choice, and coils or liquid agents as alternatives.

https://doi.org/10.26800/LV-145-supl8-5

A late diagnosis of MEN 1 Syndrome in a young patient initially presenting with nephrolithiasis

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Keywords:

hyperparathyroidism, MEN-1 Syndrome, nephrolithiasis, neuroendocrine tumors

Background:

Multiple Endocrine Neoplasms Type 1 (MEN 1), originally called Wermer Syndrome, is a rare hereditary condition caused by mutations in the MEN1 tumor suppressor gene. It is characterized by tumors of the parathyroid glands, the anterior pituitary gland and pancreatic islet cells. Hyperparathyroidism is the most common manifestation of this syndrome. MEN1 can also be associated with other endocrine and non – endocrine tumors.

Case presentation:

A male patient presented with nephrolithiasis at the age of 31 and was regularly followed up by a nephrologist. At the age of 35, he was diagnosed with hyperparathyroidism and underwent partial parathyroidectomy. After almost 8 years the patient reported severe heartburn, diarrhea and significant weight loss. A CT scan showed multiple liver lesions, spinal osteoblastic lesions and pancreatic head and tail lesions. Liver biopsy revealed neuroendocrine tumor (NET), Ki-67 8%. Subsequently, genetic testing was performed and MEN1 syndrome was confirmed. The patient was initially treated with octreotide. Nevertheless, the disease had progressed. Peptide receptor radionuclide therapy (PRTT) was not an option as the majority of metastases were negative for somatostatin receptors. Consequently, several treatment options were attempted such as transarterial chemoembolization, everolimus and combined chemotherapy which included capecitabine and temozolomide. However, due to acutization of renal failure, the treatment was stopped and the patient had to undergo hemodialysis. Unfortunately, four months later, the patient developed hemodynamic shock and died despite treatment.

Conclusion:

Despite the rare occurrence of MEN1, early diagnosis is crucial for a favorable outcome of these patients. Therefore, in every young patient presenting with hyperparathyroidism one should always suspect MEN1 and follow-up because of the risk for developing neuroendocrine tumors.

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Early onset obstructive hypertrophic cardiomyopathy in a physically active male treated with alcohol septal ablation

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Keywords:

alcohol septal ablation, left ventricular outflow tract obstruction, obstructive hypertrophic cardiomyopathy, systolic anterior motion

Background:

Obstructive hypertrophic cardiomyopathy (oHCM) is a condition typically associated with a gene mutation that causes hypertrophy of the myocardium. It presents with symptoms that worsen as the condition develops, causing severe dyspnoea, chest pain, palpitations, and syncope. Untreated and undiagnosed oHCM is a significant cause of sudden cardiac death in young people, including athletes.

Case presentation:

A 28-year-old, physically active male presented with abnormal ECG findings during a routine physical exam. ECG showed left axis deviation and signs of left ventricular hypertrophy. He noted worsening dyspnoea, chest pain, and palpitations during physical activity. These symptoms lasted two years, and during the second year, dyspnoea started developing at rest. His echocardiogram showed left ventricular outflow tract obstruction as well as an increase in left ventricular outflow tract pressure gradient, indicative of hypertrophic cardiomyopathy. The mitral valve showed significant systolic anterior motion and mild to moderate mitral regurgitation. The interventricular septum measured significant hypertrophy, later confirmed with magnetic resonance imaging (MRI). MRI also showed large zones of non-ischemic fibrosis of the septum and an intact ejection fraction of the left ventricle with morphological changes as part of asymmetric hypertrophic cardiomyopathy. In the family history, the patient's father had oHCM and died of heart failure. The patient was diagnosed with oHCM, with an HCM risk score of 4,66%. To avoid septal myectomy, alcohol septal ablation was done. 95% alcohol was infused into the first septal branch, creating an iatrogenic infarction to reduce left ventricular outflow tract obstruction. The patient had a successful procedure and was let out of the hospital eight days after admission.

Conclusion:

Because of the nature of the disease, oHCM can sometimes go undiagnosed and have lethal repercussions. The key to avoid worsening of the conditions are comprehensive initial patient evaluations, complete with risk stratification, and the right choice of treatment.

https://doi.org/10.26800/LV-145-supl8-7

Liver failure in newborn – mind galactosemia

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Keywords:

classic galactosemia, galactose, jaundice, neonatal liver failure

Background:

Classic galactosemia is a rare autosomal recessive disease caused by galactose-1-phosphate uridylyltransferase (GALT) deficiency. GALT converts galactose to glucose, if deficient, galactose-1-phosphate and other metabolites accumulate in the body. The main signs of GALT deficiency are liver failure, susceptibility to E. coli sepsis, and cataracts during the neonatal period. Untreated disease causes early death. Restriction of galactose prevents life-threatening complications. Still, the majority of patients experience long-term chronic complications, such as delayed speech, movement disorders, and ovarian insufficiency in women.

Case presentation:

A male newborn developed jaundice on the third day of life. Phototherapy was started and conducted for five days, with satisfactory results. On the ninth day, septic-like deterioration occurred. Laboratory findings revealed high inflammatory markers and signs of acute liver failure. Metabolic disease was suspected, therefore enteral nutrition was replaced with an intravenous infusion of dextrose. The patient received antibiotics, immunoglobulins, and blood derivatives (fresh frozen plasma and erythrocyte concentrate). High galactose in blood and urine pointed to galactosemia. After four days of intensive care treatment, the patient recovered and enteral nutrition with galactose-free formula was started. Dried blood spot testing showed GALT activity less than 2% of the control value. The diagnosis was confirmed by GALT gene testing, revealing two common mutations p.Q188R and p.K285N. The patient recovered fully and had no complications at the age of four.

Conclusion:

Although rare, galactosemia is one of the common causes of neonatal liver failure. It is critical to consider this disease in newborns with pathological hyperbilirubinemia, vomiting, signs of liver failure, and sepsis-like conditions. Timely diagnosis and treatment will prevent life-threatening complications and adverse outcomes.

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Clear cell renal carcinoma - an unusual cause of secondary hypertension in a young patient: a case report

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Keywords:

hypertension, renal cell carcinoma, secondary hypertension, young adults

Background:

Secondary hypertension (SH) constitutes 5-10% of hypertension cases. Understanding when to work up secondary causes is important, due to possibly curable underlying conditions. Herein, we report an unusual case of renal cell carcinoma presenting with hypertension which dramatically improved after surgical treatment, requiring only low-dose antihypertensive.

Case presentation:

A 33-year-old male presented with a 2-month history of hypertension and periodic headaches, with highest blood pressure at 194/100 mmHg. The patient was a nonsmoker, had a sedentary lifestyle, and high salt intake. The initial treatment included amlodipine 10 mg and nebivolol 5 mg, but with partially satisfactory results in controlling blood pressure, necessitating a further escalation of antihypertensive therapy (perindopril/indapamide/amlodipine 5/1.25/5 mg and moxonidine 0.4 mg). Further assessment of presumed SH was done. Renin, TSH, adrenal medulla, and adrenal cortex hormone levels were all within normal limits. CT angiography ruled out a renovascular etiology of SH. However, it revealed a cyst of the left kidney, which required further monitoring. After a repeat CT angiography, due to suspicion of malignancy (Bosniak cyst class III), a left partial nephrectomy was performed and histopathological examination demonstrated clear cell renal cell carcinoma, without evidence of disease dissemination. The postoperative course was uneventful and renal function remained normal. In the follow-up period, the need for antihypertensives decreased consistently, and the patient is currently taking a low-dose ACEi.

Conclusion:

Renal cell carcinoma (RCC) is a rare cancer with an incidence of 3.4% to 7.5% in young adults. 40% of those with RCC experience hypertension, typically associated with low-grade tumors of clear-cell histology. Some of the possible pathophysiological mechanisms of hypertension are ectopic hormone secretion, parenchymal compression, arteriovenous fistula, and polycythemia. In this case, routine laboratory investigations did not reveal hormonal excess that could explain the etiology of SH. In conclusion, conventional imaging modalities should not be overlooked while pursuing the causes of SH.

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Cryptosporidiosis; Is it „reserved" only for the immunocompromised?

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Keywords:

bloody mucous stools, cryptosporidiosis, infection, nitazoxanide

Background:

Cryptosporidium parvum is an intracellular parasite that infects gastrointestinal epithelium, especially in immunocompromised individuals, causing severe, life-threatening diarrhea. It is usually transmitted through the consumption of contaminated water and food. Rarely, infection can occur in immunocompetent patients who can either be asymptomatic or present with gastrointestinal symptoms (diarrhea, abdominal pain, weight loss).

Case presentation:

A three-year-old female presented to the Emergency department (ED) with diffuse abdominal pain, constant vomiting, and no bowel movement over the past three days. Laboratory tests revealed slightly elevated inflammatory markers (leukocytes 15.2 x 10^9/L; neutrophils 74%, CRP 3.7 mg/L). She was diagnosed with acute gastroenteritis and, after receiving parenteral rehydration, discharged. However, the symptoms persisted and she returned to the ED after two days. Except for persistent leukocytosis (19.6 x 10^9/L), laboratory tests, including stool samples, collected after glycerin suppository, were normal; negative coproculture, inflammatory cells, and occult bleeding. Clinical examination revealed significant meteorism without signs of acute abdomen which was confirmed with abdominal ultrasound and X-ray. Due to persistent symptoms, the patient was admitted to the ward where she developed stools containing blood and mucus. Extensive imaging including abdominal magnetic resonance imaging (MRI) revealed diffuse and nonspecific colitis without other pathology, while repeated routine coproculture was negative. Ultimately, a colonoscopy with pathohistological sample collection was performed. While macroscopical findings indicated non-specific colitis, the microscopic findings were far more specific; indicative of cryptosporidium infection. The diagnosis was confirmed with chromatography and rapid test respectively. A 3-day course of nitazoxanide therapy was followed with complete regression of symptoms after which she was discharged.

Conclusion:

Even though cryptosporidium infection is extremely rare in developed countries, especially in immunocompetent patients, it should be kept in mind in cases of refractory gastrointestinal symptoms with negative routine coproculture, considering that if not recognized on time, it can cause severe diarrhea with potentially fatal outcome.

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The diagnostic value of a sports injury

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Keywords:

acute lymphoblastic leukaemia, athletic injuries, haematoma

Background:

Acute lymphoblastic leukaemia (ALL) is a haematological malignant disease characterised by a large number of immature lymphocytes. It is the most common type of cancer in children. Symptoms may include bleeding gums, bone pain, fever, frequent infections, lymphadenopathy, pale skin, shortness of breath and fatigue.

Case presentation:

A sixteen-year-old boy had a COVID-19 infection in March of 2023 after which he started experiencing slight fatigue. Nevertheless, he was playing football several times per week when at the beginning of April 2023 he obtained an injury to the right vastus medialis muscle. A haematoma that appeared was drained by a sports medicine physician but the swelling reappeared. Several days later he noticed lumps inside his oral cavity and went to the emergency department. Initial blood work showed high levels of lymphocytes, so the patient underwent more extensive diagnostics. Peripheral blood smear showed 86% blasts, 11% lymphocytes, and a very low thrombocyte count. Lymphadenopathy and hepatosplenomegaly could be seen on the ultrasound of the neck and abdomen. MSCT of the thorax showed an expansive process in the upper mediastinum and on the MR of the brain, haemorrhagic bleeding could be seen. A bone marrow biopsy showed a domination of blasts of 92%. Cytogenetic analysis showed the deletion of both alleles of CDKN2A genes. The patient was diagnosed with high-risk ALL and started treatment with the ALL-IC BFM 2009 protocol on April 30th, 2023. During the treatment so far, the patient has experienced transitory acute kidney insufficiency and fungal pneumonia. He is regularly undergoing diagnostic testing and examinations.The treatment is still ongoing.

Conclusion:

This case emphasizes the significance of sports medicine in promptly identifying suspicious bruising disproportionate to the associated injury, as such manifestations can serve as the initial and singular symptom of Acute Lymphoblastic Leukemia (ALL). Also, active athletes, taught to be pushed to the limits, can easily dismiss their fatigue, especially masked by post-COVID symptoms.

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A rare silent pheochromocytoma: A diagnostic and management challenge

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Keywords:

GAPP score, PASS score, silent pheochromocytoma

Background:

Pheochromocytomas are extremely rare, usually non-malignant, tumors that develop in adrenal glands and result in excessive catecholamine production. Tumors usually present with paroxysmal or persistent hypertension, severe headache, palpitations, excessive sweating, tremors, and anxiety. Diagnosis is based on biochemical tests measuring catecholamines or their metabolites in urine or plasma and radiological imaging. The GAPP (Grading of Adrenal Pheochromocytoma and Paraganglioma) and PASS (Pheochromocytoma of the Adrenal Gland Scaled Score) grading systems help assess malignancy and recurrence.

Case presentation:

A 33-year-old man was admitted to an endocrinologist due to a left adrenal incidentaloma. Initially, the patient presented with abdominal pain in the left lower quadrant, and an abdominal ultrasound revealed an oval heterogeneous formation near the spleen's inferior pole, the etiology of which was unclear. Subsequent computed tomography (CT) of the upper abdomen confirmed an 11x8.8x11 cm formation in the left adrenal gland, primarily suggesting a pheochromocytoma. Notably, the patient exhibited no typical symptoms of pheochromocytoma. Hormonal and clinical examination excluded Cushing's syndrome. In addition, plasma normetanephrine and metanephrine levels were slightly elevated, but repeated biochemical tests showed results within the normal range. Adrenalectomy was performed, which confirmed a compound pheochromocytoma with a 5-10% ganglioneuromatous component. The GAPP (5/10) and PASS (7/20) scores indicated moderate differentiation and potential aggressiveness of the tumor, respectively. The patient was scheduled for a follow-up abdominal MRI and genetic testing.

Conclusion:

In the differential diagnosis of patients with silent pheochromocytoma, emphasis is placed on a comprehensive biochemical/radiologic workup to identify and treat this rare but potentially life-threatening condition accurately. The definitive diagnosis is confirmed through histopathologic findings following adrenalectomy. Additionally, calculating PASS and GAPP scores offers insights into the malignant potential and likelihood of recurrence. However, the follow-up of patients with silent pheochromocytoma poses significant challenges due to its unpredictable nature and asymptomatic presentation.

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Hypofractionated adaptive stereotactic radiosurgery as a novel treatment option in large brain metastasis

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Keywords:

brain neoplasms, cerebellar neoplasms, radiosurgery, stereotaxic techniques

Background:
For brain metastases up to 2 centimetres, single-session stereotactic radiosurgery is well-established. However, increasing radiation dosage for larger neoplasms is hindered by potential brain tissue damage, while reducing it heightens tumour recurrence risk. A possible solution lies in hypofractionated stereotactic radiosurgery (HSRS) which administers approximately 30 Gy over 3-5 sessions, and hypofractionated adaptive radiosurgery (HARS) which features dynamic treatment plan adjustments between sessions.

Case presentation:

After receiving oncological treatment for pulmonary adenocarcinoma, a 74-year-old woman underwent brain magnetic resonance imaging (MRI), which detected a right cerebellar mass with central necrosis, resulting in compression on the fourth ventricle. She was admitted to the neurosurgical ward and started on anti-edema therapy (dexamethasone 2x8 mg with gastroprotection pre-operatively and two days post-operatively, gradually reducing the dose to 2x4 mg and 1x4 mg, and discontinuing the medication before discharge). Surgical intervention and pathohistological examination confirmed the tumour as a metastasis. Three months later, evidence of recurrent growth was found (volume=16.808 cm^3). Because of its size of over 15 cm^3, HARS was recommended. The patient underwent doses of 10 Gy administered in 3 fractions. After each session, a new treatment plan was devised to adjust the radiation dosage to encompass a smaller volume. Tumour volume decreased to 9.721 cm^3 before the second session and further to 3.751 cm^3 before the third. All sessions, with 2 weeks in between them, were completed without any complications. On the follow-up MRI performed 6 weeks later, there was no evidence of the tumour, no significant oedema, and the patient did not experience any neurological issues.

Conclusion:

HARS is a promising treatment for large brain metastases with limited options. It surpasses traditional HSRS by allowing plan adjustments after each radiation session. New planning at each irradiation stage facilitates ongoing modification to address tumour size reduction. This additional layer of customisation enhances the therapy effect, leading to a higher effective radiation dosage for the tumour and consequently reducing the risk of disease recurrence.

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Distal embolization of calcified atherosclerotic plaque fragment resulting in "balloon uncrossable lesion" during elective percutaneous coronary intervention

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Keywords:

balloon uncrossable lesion, embolization, percutaneous coronary intervention, rotational atherectomy

Background:

Distal embolization is a distal filling defect in one of the peripheral coronary artery branches of the infarct-related vessel, distal to the site of angioplasty. It can lead to a substantial obstruction in coronary circulation, whether it occurs spontaneously or during a percutaneous coronary intervention. It may manifest with specific clinical symptoms and noticeable changes in electrocardiographic readings.

Case presentation:

A 66-year-old female with risk factors for coronary heart disease (arterial hypertension, diabetes and obesity) was admitted to the hospital for a planned coronary angiography due to an asymptomatic episode of nonsustained ventricular tachycardia. The coronary angiogram revealed no significant blockages in the left coronary artery, a partially calcified blockage of the right artery near its origin, and a narrowed area at its junction point. A percutaneous coronary intervention was performed. After using non-compliant balloons for several dilations, a drug-eluting stent at the beginning of the right coronary artery was successfully implanted. At the end of the procedure, a newly formed and restricted blockage was observed, significantly reducing the artery's diameter at the junction point without decreasing the blood flow or showing any clinical or electrocardiographic signs of ischemia. After several unsuccessful attempts to pass through this blockage using small balloons, a rotational atherectomy was performed several days later. A successful percutaneous coronary intervention with stent implantation was achieved with a favorable angiographic result. In the one-year post-procedure follow-up, an excellent outcome was observed in the treated segment at the crux of the right coronary artery during coronary angiography.

Conclusion:

Rotational atherectomy was found to be a crucial factor in enabling the successful performance of a percutaneous coronary intervention, including stent implantation, which resulted in an excellent angiographic outcome.

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A rare case of hereditary thrombotic thrombocytopenic purpura in a toddler

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Keywords:

ADAMTS13 protease, pediatrics, thrombotic thrombocytopenic purpura

Background:

Hereditary thrombotic thrombocytopenic purpura (hTTP) is a thrombotic microangiopathy caused by pathogenic variants in the ADAMTS13 gene resulting in highly reduced activity of von Willebrand factor-cleaving metalloprotease. hTTP is characterized by systemic formation of platelet-rich thrombi in microvasculature resulting in organ ischemia, thrombocytopenia, and microangiopathic hemolytic anemia.

Case presentation:

A 21-month-old female toddler was hospitalized because of thrombocytopenia (38/μL) during acute respiratory infection. On physical examination, the patient was subfebrile with a few isolated petechiae on the face and thighs. In her history, she had transient neonatal thrombocytopenia that spontaneously resolved, and the workup excluded autoimmune etiology. She wasn't regularly vaccinated because of her parent's decision. Later, she also developed hemolytic anemia (hemoglobin 85 g/L, LDH 756 IU, reticulocytes 4.2%) while the blood smear showed schistocytes. Urinalysis showed proteinuria and microhematuria. A platelet transfusion was administered. Further workup excluded immune thrombocytopenia and revealed very low ADAMTS13 activity (<1%) that is consistent with a diagnosis of TTP. Plasmapheresis was performed on two consecutive days with prompt elevation of platelet level. Meanwhile, next-generation gene sequencing from a peripheral blood sample found two missense heterozygotic variants in the ADAMTS13 gene confirming hTTP diagnosis. Prophylactic fresh frozen plasma (FFP) was continued every three weeks. During follow-up, she had one relapse during the flu and was successfully treated with FFP. A special program of vaccination is recommended.

Conclusion:

hTTP is an extremely rare (0.5-2/10^6) hematologic disorder primarily seen in neonates and children. It is characterized by exacerbations following acute infections. Therefore, it is of great importance to observe platelet dynamics and administer FFP if needed during any infective episodes to prevent potentially fatal consequences of end-organ dysfunction.

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Hemolytic uremic syndrome – emergency in an infant

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Keywords:

hemolytic anemia, hemolytic-uremic syndrome, STEC, thrombocytopenia

Background:

Hemolytic-uremic syndrome (HUS) is a serious condition characterized by hemolytic anemia, thrombocytopenia, and acute kidney failure. The most common cause of HUS in children is infection with Shiga toxin-producing E. coli (STEC).

Case presentation:

An 8-month-old female infant presented to the emergency department due to vomiting that started earlier in the day. Since she was stable and her hemoglobin level and platelet count were normal, she was released home. On a follow-up examination after 36 hours, the hemoglobin level had dropped to 48 g/L and the platelet count to $28x10^9$/L. Elevated levels of urea 18.4 mmol/L and creatinine 64 µmol/L suggested kidney injury. On admission, she was tachycardic and hypertensive, with diffuse petechiae on the skin and mucous membranes. Hematuria was observed through a urinary catheter. Schistocytes were found in her peripheral blood smear, raising suspicion of HUS. E. coli O26 was detected in the stool sample, even though there was no bloody diarrhea. Over the following 3 weeks, she received erythrocyte concentrate 4 times, was rehydrated parenterally, and 1.25 mg of amlodipine was initiated for hypertension. Since diuresis was maintained, there was no need for dialysis. Despite the platelet count dropping to an extremely low level of $5x10^9$/L, platelet replacement was not administered. Once the levels of hemoglobin, platelets, and renal function markers reached normal values, the infant was discharged with a follow-up appointment in 2 weeks and instructions to avoid meat, vegetables, and dairy products of unknown origin.

Conclusion:

HUS is an extremely dangerous condition that can progress rapidly. Early initiation of adequate rehydration is crucial to prevent kidney failure. Although the thrombocytopenia can be dramatic, platelet concentrates should be administered only in cases of active bleeding or planned surgical procedures.

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Treatment of fetus with tachyarrhythmia

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Keywords:

antiarrhythmic medications, digoxin, echocardiography, fetal arrhythmias

Background:

Fetal arrhythmia is a term that refers to any abnormality in the fetal heart rate. They are detected in at least 2% of unselected pregnancies during the routine obstetric ultrasound and are normally a temporary, benign occurrence. However, on rare occasions, an irregular heart rhythm can be a significant cause of fetal nonimmune hydrops, premature delivery, and perinatal morbidity and mortality. Therefore, sustained fetal arrhythmias should be considered an emergency in fetal cardiology and treatment should be promptly instituted.

Case presentation:

A 28-year-old female, gravida 2 para 1, was referred at 30 weeks and two days of gestation due to suspected fetal heart arrhythmia. The patient had regular antenatal check ups and an obstetric ultrasonography at 16 weeks revealed an anomaly of the left hand, and shortened bones of the left forearm with the absence of a hand. Fetal echocardiography showed a regular heart structure and cardiac conduction system. At 30 weeks and two days, the patient was hospitalized due to suspected fetal heart arrhythmia during cardiotocogram recording. A tachyarrhythmia was registered with a heart rate of around 285 per minute, without hydrops or effusion. Due to persistent arrhythmia, digoxin was introduced into the therapy. On the 6th day after the introduction, a satisfactory concentration of digoxin was achieved in the maternal plasma, and no fetal tachyarrhythmias were recorded.

Conclusion:

One of the most successful achievements of fetal intervention is the pharmacologic management of fetal arrhythmias. While most arrhythmias in the fetus are benign, persistent arrhythmias can lead to fetal hydrops or cardiac dysfunction. Antiarrhythmic medications are administered transplacentally (given orally or intravenously to the mother) or directly to the fetus (through the umbilical cord). The latter can be considered only in hydropic fetuses, especially if the biophysical profile score (BPS) is altered.

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Successful pleurodesis of refractory pleural effusion caused by heart failure due to restrictive cardiomyopathy caused by amyloidosis

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Keywords:

amyloidosis, heart failure, pleural effusion, pleurodesis

Background:

Amyloidosis is a group of diseases characterized by the accumulation of amyloid in the extracellular spaces of various organs and tissues. Pleural effusion can occur as part of pleural amyloidosis, but also as a consequence of heart failure caused by amyloidosis.

Case presentation:

A 48-year-old male was diagnosed with amyloidosis (hTTR gene mutation) in 2019. As a part of the illness, he developed restrictive cardiomyopathy and impairment of functional capacity (NYHA II). During 2021, he clinically worsened due to the appearance of a chronic right-sided pleural effusion. Repeated pleural punctures (once a week) significantly reduced his quality of life, and hindered the possibility of advanced treatment methods, such as heart transplantation. In 8/2021., after confirmation of a transudative effusion, that most likely resulted from the heart failure (pleural biopsy and exclusion of pleural amyloidosis involvement was not done due to high risk), it was decided to place a thoracic drain and try to perform a pleurodesis. The first procedure was performed upon reduction of daily secretion below 200 ml. The procedure failed and effusion accumulated again, now in two distinct pleural spaces. After consultation with thoracic surgeons, the decision was made to repeat the procedure. Both spaces were drained (one was complicated by the development of a liquid pneumothorax) and pleurodesis with talc was repeated after the secretion fell below 100 ml/24 h. No re-accumulation of pleural effusion was found on further check-ups. The patient continued with cardiological follow-ups and treatment and, in January 2023, he underwent a simultaneous heart and liver transplant.

Conclusion:

Pleurodesis is not an established choice of treatment for chronic transudative effusions, but in well-selected patients it can significantly improve the quality of life.

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Inferior vena cava agenesis presenting as deep venous thrombosis

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Keywords:

anticoagulants, deep venous thrombosis, inferior vena cava agenesis, thrombectomy, thrombolysis

Background:

Inferior vena cava agenesis (IVCA) is a rare congenital malformation caused by dysgenesis during embryogenesis. The condition is often asymptomatic due to the development of collateral venous circulation. It carries a significant risk for deep venous thrombosis (DVT), especially in young people as a result of venous stasis in the lower extremities. The rarest form is infrarenal and renal segment hypoplasia, followed by hypoplasia only of the infrarenal segment. The first episode of deep venous thrombosis usually occurs before the fourth decade, with no gender predilection.

Case presentation:

A 17-year-old, previously healthy male presented to the emergency department with complaints of month-long pain in the right lumbar region and the right leg, following a punch during a hockey match. On the physical examination, there were signs of right leg swelling and skin discoloration. Laboratory tests revealed elevated D-dimer levels (5 mg/L). Color Doppler ultrasonography (CD US) and computed tomography were performed, revealing extensive venous thrombosis of both legs and pelvis. The infrarenal segment of the vena cava inferior (VCI) was missing. Instead, collateral pathways developed through paravertebral and lumbar veins, draining into a prominent azygos vein. Therefore, a treatment with low molecular weight heparin (LMWH) was immediately started. Following phlebography, pharmacomechanical thrombolysis was performed (alteplase and heparin infusion with clot aspiration and percutaneous transluminal angioplasty), achieving complete reperfusion. Two days after admission, the patient was discharged symptom-free and in good general condition with lifelong anticoagulation prophylaxis.

Conclusion:

IVCA is a highly underrecognized cause of DVT in the young population. Because of the condition's rarity, there are no specific guidelines for the management. Currently, treatment is mainly conservative and focused on preventing clot formation and recurrence (lifelong anticoagulation therapy, compression stockings). Further studies need to provide an optimal approach to patient management.

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From a hornet's sting to immediate percutaneous coronary intervention; a case report of a patient with Kounis syndrome

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Keywords:

anaphylaxis, hornet's sting, Kounis syndrome

Background:

Kounis syndrome (KS) presents as acute coronary syndrome caused by an allergic reaction or anaphylaxis. The mechanism of KS involves the release of inflammatory cytokines through mast cell activation leading to coronary artery vasospasm and atheromatous plaque erosion or rupture. There are three types of KS. Type I is an allergic vasospastic angina caused by dysfunctional epithelium of coronary arteries. Type II occurs in patients with underlying coronary diseases, in whom the allergic reaction leads to plaque erosion or rupture. Type III includes coronary artery stent thrombosis secondary to an allergic reaction.

Case presentation:

A 51-year-old male with a previous history of diabetes mellitus type II, hyperlipidaemia and arterial hypertension presented to the emergency department with an anaphylactic reaction to a hornet's sting above his right eyebrow. There were no previous allergic reactions to insect stings or medications and no history of coronary disease. Initially, he had pale skin, was dizzy and hypotensive, arterial pressure was 70/40mmHg, and his other vital signs were within normal limits. The administered therapy included intravenous methylprednisolone 125 mg, chloropyramine 20 mg, 0,9% saline 1000 mL and intramuscular epinephrine 0.5 mg. During monitoring, he complained about shoulder blade pain. Electrocardiogram showed sinus tachycardia with ST elevations in anteroseptolateral regions. The patient underwent emergency percutaneous coronary intervention with successful thromboaspiration and stenting in the left anterior descending coronary artery.

Conclusion:

KS is a rare cause of acute coronary syndrome in patients with allergic reactions or anaphylaxis, no matter if there is a previous history of coronary artery disease or not. Any KS should be recognised and promptly treated.

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An obstructive jaundice secondary to juxtapapillary duodenal diverticulum—Lemmel's syndrome

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Keywords:

cholestasis, diverticulum, obstructive jaundice, syndrome

Background:

Duodenum is the second most common location of intestinal diverticula. Juxtapapillary diverticula account for 75% of the diverticula in the duodenum. Lemmel's syndrome (LS) is an uncommon condition that causes obstructive jaundice due to a juxtapapillary duodenal diverticulum in the absence of choledocholithiasis or neoplasia. Endoscopic retrograde cholangiopancreatography (ERCP) is the gold standard for diagnosing this condition.

Case presentation:

A 63-year-old female with a history of arterial hypertension and cholecystectomy four years prior presented with recurrent episodes of biliary colic and jaundice. Upon physical examination, the patient was icteric, subfebrile (37,6°C) and reported increased sensitivity in the epigastric region. Laboratory results showed signs of cholestasis (bilirubin 89,6 µmol/L, AP 427 U/L, GGT 332 U/L), as well as elevated CRP (21 mg/L). Transabdominal ultrasound revealed dilation of the common bile duct (CBD) with 9 mm in diameter. Choledocholithiasis was initially suspected, but was ruled out when endoscopic ultrasound of the upper gastrointestinal tract confirmed empty dilated CBD with no other pathology. During the ERCP, a diverticulum in the juxtapapillary area of the duodenum was detected, along with narrowing of the final portion of the CBD, without concrements or other pathology. In the context of diverticulum, LS was highly suspected. Pneumatic dilatation of the CBD with through-the-scope (TTS) balloon was performed in the same act, allowing adequate biliary drainage. In the further course, the patient was in excellent clinical condition.

Conclusion:

Most cases of juxtapapillary duodenal diverticula are asymptomatic; however, complications can arise. This unusual case emphasizes the importance of keeping in mind less common differential diagnoses of biliary obstruction to prevent more severe complications such as pancreatitis, perforation or sepsis. In some cases, endoscopic therapy can be an appropriate and effective method of treatment.

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Perforation of the gallbladder presenting as upper respiratory tract infection

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Keywords:

biliary, cholecystitis, gallbladder, pleural effusion, perforation

Background:

Gallbladder perforation is a rare, but life-threatening complication of acute cholecystitis. Acute cholecystitis is a common biliary tract disease affecting mostly men over 50 years of age. Most often it occurs due to the obstruction of the bile duct by gallstones, but it can also be acalculous. 10-15% of patients with acute cholecystitis develop gallbladder perforation.

Case presentation:

A 72-year-old male presented subfebrile with shivering to the emergency department. Upon examination by his family physician the next day rhinorrhea, hoarseness, and a slightly reduced breath sound on the right basal lung were found so viral upper respiratory tract infection was considered. However, laboratory tests showed elevated CRP (92.0 mg/L), slightly elevated AST and GGT (50 U/L and 58 U/L respectively), WBC was normal (10.0×10^9/L). The chest X-ray revealed an elevated position of the right diaphragmatic dome with smaller areas of condensed lung parenchyma supradiaphragmally and a small amount of secondary pleural effusion. Subdiaphragmally, above the liver, two air-fluid levels were observed, corresponding to the subphrenic abscess. Upon admission to the hospital, gallbladder perforation with an abscess formation was confirmed via MSCT scan, leading to subcostal laparotomy and cholecystectomy. Adhesions and an abscess collection with a diameter of 7.5 cm were identified and drained. The structures of Calot's triangle and the cystic duct were separately ligated and resected. After the surgery, the patient was placed in the intensive care unit and had an uneventful postoperative course.

On the second day post-op, drains and nasogastric tube were removed due to inactivity and oral fluid intake was initiated. The digestive system passage was established, allowing a transition to a fully oral diet. The patient was discharged on the 8th day after the surgery.

Conclusion:

If left untreated, acute cholecystitis can lead to severe consequences, like perforation. Because of that, it's important to suspect and rule out acute cholecystitis with radiological tests, especially in atypical presentations.

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Infective endocarditis following wisdom tooth extraction in a professional basketball player with bicuspid aortic valve

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Keywords:

antibiotic prophylaxis, bicuspid aortic valve, infective endocarditis

Background:

Bacterial endocarditis may be rare, but is a fatal complication following routine dental procedures. Although patients with bicuspide aortic valve are considered to be at intermediate risk of bacterial endocarditis, administering antibiotic prophylaxis before dental procedures is not recommended by international guidelines.

Case presentation:

A 45-year-old male former athlete with a bicuspid aortic valve presented septic with a prolonged fever and occasional disorientation 10 days after tooth extraction. Diagnostic tests confirmed staphylococcal bacterial endocarditis of the aortic and mitral valves, resulting in severe regurgitation. Magnetic resonance imaging confirmed septic-embolic encephalitis, while computed tomography angiography revealed an aortic root abscess near the origin of the left coronary artery. Targeted antibiotic therapy (flucloxacillin 6x2 g, gentamicin 3x80 mg) and surgical procedure involving replacement of both valves and aortic root reconstruction led to initial improvement in the clinical status. During the following two months, further deterioration in heart function was observed, accompanied by severe intravascular hemolysis, anemia and renal insufficiency due to a paravalvular leak of both mechanical prostheses. Furthermore, color doppler ultrasound investigation revealed pseudoaneurysm at the previous femoral artery puncture site. The patient underwent a second surgery to repair paravalvular leaks on both positions and resect the pseudoaneurysm. Despite narrow anticoagulant titration, further recovery was complicated by an intra-abdominal hematoma formation urging laparoscopic evacuation. Upon transfer to the cardiology department, the patient developed tachycardia, fever, chills, and an increase in inflammatory parameters. Candida parapsilosis was isolated from the blood culture, resulting in initiation of antifungal treatment (caspofungin 1x70 g). The patient was discharged 115 days after admission in good health.

Conclusion:

Infective endocarditis still carries high morbidity and mortality rate despite significant advances in antibiotic therapy and surgical techniques. Although antibiotic prophylaxis in bicuspid aortic valve patients is currently not recommended, recently published studies suggest these patients are at significant risk of native valve infective endocarditis. The potential benefit of antibiotic prophylaxis is still questionable, but should nevertheless be considered during invasive procedures.

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Successful surgical management of total anomalous pulmonary venous return in a pediatric patient

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Keywords:

total anomalous pulmonary venous return (TAPVR), echocardiography, atrial septal defects (ASD), heart murmurs, cardiac surgical procedures

Background:

Total Anomalous Pulmonary Venous Return (TAPVR) is an infrequent congenital heart defect, occurring in about 1 in 15,000 live births. The condition involves an abnormal connection where pulmonary veins, rather than attaching to the left atrium, drain into the right atrium or systemic venous circulation.

Case presentation:

An incidental systolic murmur was detected during a routine hip ultrasound examination in an otherwise stable 3-month-old infant. Echocardiography indicated enlargement of the right cardiac chambers and the pulmonary artery. The atrioventricular (AV) valves were normal, and the interventricular septum was intact. All pulmonary veins were observed to drain into the right atrium via a venous confluence, with the superior and inferior vena cavae appearing morphologically normal. A non-restrictive interatrial communication was present, characterized by a widely patent foramen ovale, and no coarctation of the left aortic arch was detected. These findings confirmed the diagnosis of TAPVR draining into the right atrium with non-restrictive interatrial communication. Given the echocardiographic results, it was decided to proceed with surgical correction. The procedure, involved creating a connection between the pulmonary veins and the left atrium and closing the atrial septal defect (ASD) through a median sternotomy incision. The surgery was completed without any complications. On the second postoperative day, the patient was extubated. Chest drains were removed on the fourth postoperative day. Ultrasound evaluation post-surgery was favorable, indicating normal cardiac contractility, minimal pulmonary valve insufficiency with no signs of pulmonary hypertension, and minor left-to-right flow across the surgically created fenestration. Inotropic support (adrenalin 0,04 mcg/kg/min) was gradually reduced and completely discontinued by the sixth postoperative day.

Conclusion:

The patient's course emphasizes the critical role of timely diagnosis and surgical intervention in managing TAPVR with concurrent ASD. With appropriate surgical correction and follow-up, patients with TAPVR can have positive outcomes.

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Recurrent peroneal tendon dislocation in a football player-an uncommon, but important consequence of an ankle injury

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Keywords:

ankle injuries, dislocation, surgery

Background:

Recurrent peroneal tendon dislocation is a condition where one or both peroneal tendons dislocate from the retromalleolar space during active or passive dorsiflexion and eversion movements of the ankle. Usually, it appears after an ankle sprain, which can be misleading in making the diagnosis, since the lateral ankle ligaments are the main focus for most physicians. The report aims to present a case of recurrent peroneal tendon dislocation in a football player who was initially misdiagnosed and wrongly treated with ankle arthroscopy.

Case presentation:

A 24-year-old male football player presented four months after an ankle sprain. He complained of pain, swelling, and a "popping" sensation in the retromalleolar sulcus posterior and superior of the lateral malleolus of the right leg. After the physical examination, magnetic resonance imaging (MRI) was conducted, and one month later, anterior ankle arthroscopy was performed. Afterward, the patient underwent 30 sessions of physical therapy, yielding no improvement. One year after the initial injury, an examination showed clinical signs of instability of the peroneal tendons, and another surgery was indicated. Open surgery was performed with the patient in the lateral decubitus position, and under spinal anesthesia. The modified Singapore method was used. Repair of the superior peroneal retinaculum was performed. The perioperative course was uneventful, and the patient was able to bear full weight on his foot two months after surgery and return to sports activities six months after surgery.

Conclusion:

Recurrent peroneal tendon dislocation is a relatively uncommon condition that may occur after an ankle injury, thus a detailed history and thorough clinical examination are needed to make the correct diagnosis. Our report shows that the modified Singapore operation is highly effective with excellent functional results.

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Negative Pressure Wound Therapy in Pediatric Trauma: A Triad of Healing Cases

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Keywords:

NPWT, soft tissue injury, trauma, wound

Background:

Negative pressure wound therapy (NPWT) has proven a powerful tool in healing complex and large wounds of varying etiologies. We report three diverse cases of pediatric patients who presented as follows: polytrauma with severe soft tissue damage of the lower extremity (pt.1), open fracture with soft tissue defect – Gustilo-Anderson grade III. (pt.2), and an infected upper extremity fracture (pt.3).

Case presentation:

Patient one (pt.1) is a 10-year-old involved in a car-bicycle collision. Patient presented as a severe polytrauma with extensive soft tissue and vascular defects of the upper left leg. Despite multiple attempts at revascularization, the patient ultimately required a high femoral amputation with a concurrent infection. NPWT was then applied to the wound in order to promote healing.

Patient two (pt.2) is a 2-year-old hospitalised for 37 days following a crush injury caused by a forklift. Patient presented with a crural fracture and severe skin and soft tissue defects. NPWT was started on the 5th day of hospitalization with a Thiersch skin graft on day 10 followed by additional NPWT dressings.

Patient three (pt.3) is a 9-year-old with an open forearm fracture. On the 3rd post-op day, signs of gas gangrene started to develop. Because of that, a fasciotomy was performed, followed by a 7-day course of hyperbaric oxygenation therapy along with triple antibiotic therapy. Wound management was further facilitated by the application of NPWT.

Conclusion:

Extensive care is needed to protect the delicate tissues of pediatric patients. This is why NPWT has proven to be a safe and effective treatment for a variety of wounds, especially infected wounds with edema and exudate production, or significant tissue defects, such as traumatic and dehisced injuries that cannot be repaired surgically. These cases underscore NPWT's vital role in enhancing pediatric wound care and optimizing patient outcomes.

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Intussusception as clinical presentation of non-Hodgkin lymphoma in a 5-year-old patient

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Keywords:
intussusception, non-Hodgkin lymphoma, pediatric hematology, pediatric surgery

Background:
Intussusception is a common cause of acute abdominal pain in pediatric cases. This case report highlights a rare instance where B cell non-Hodgkin lymphoma (B-NHL), an aggressive malignancy characterized by rapid B lymphocyte growth, led to intussusception in a five-year-old boy and it emphasizes the importance of an early recognition of lymphoma as a potential cause.

Case presentation:
A five-year-old male presented with profuse vomiting and acute abdominal pain. The patient was on anthelmintic therapy 4 days prior to arrival due to ascariasis in kindergarten and was firstly admitted to the Department of Infectology, after which he was referred to a pediatric surgeon. Physical examination revealed a pale appearance and painless, enlarged lymph nodes in the left sternocleidomastoid and right inguinal regions. Abdominal X-ray displayed a dilated intestine with air-liquid levels, while ultrasound confirmed intussusception with ring-shaped bowel loops. Laparoscopy revealed a distended ischemic jejunum and inoperable intussusception, necessitating laparotomy which was performed with exteriorization of the invaginated intestine 60 cm from the ligament of Treitz. A tumefaction measuring 4 cm, a partially necrotic intestine measuring 60 cm and enlarged lymph nodes were excised. Appendectomy and resection of the jejunum with latero-lateral anastomosis using a linear stapler were performed and the samples were sent on pathohistological diagnosis (PHD). Postoperatively, the patient received antimicrobial therapy along with analgesia and parenteral hydration in the pediatric intensive care unit. PHD diagnosed mature B-NHL, with characteristic „starry sky phenomenon" indicative of Burkitt's lymphoma, but the results of genetic tests are awaited. The patient was transferred to the Pediatric Hematology and Oncology Department for further treatment.

Conclusion:
This case accentuates the rarity of B-NHL-induced intussusception in pediatrics. Despite its infrequency, clinicians should consider it, as it might manifest as an initial symptom. Early identification is crucial for prompt intervention and treatment.

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Successful conservative treatment of a complete rectus femoris myotendinous junction rupture in a handball player

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Keywords:

conservative treatment, handball player, rectus femoris

Background:

Although quadriceps muscle injuries are common among athletes, isolated rupture of rectus femoris distal myotendinous junction is considered to be exceptionally rare. These injuries occur during powerful contractions of the muscle required for extension of the knee and flexion of the hip. Therefore, common symptoms of quadriceps muscle injury are exquisite local tenderness and pain followed by swelling. According to the majority of the most recent published clinical cases, surgical repair is the gold standard but it is still debatable due to lack of evidence for positive outcome in terms of return to sport.

Case presentation:

A 24-year-old semi-professional handball player was diagnosed with complete distal rectus femoris myotendinous rupture, confirmed via ultrasound. The injury occurred as a result of compensatory movements for pain caused by earlier inflammation of the Achilles tendon. The patient described the pain as a powerful whip-hurt sensation which caused an immediate fall. Diagnosis was confirmed by following clinical examination. Due to the patient's early ability for active extension, conservative measures such as local magnetotherapy and exercises for muscle strengthening were a treatment of choice and resulted in early return to sport.

Conclusion:

The primary aim of this case report was to present advantages of non-surgical treatment of this potentially career-changing injury. Cooperation with the patient should be pivotal in the process of making a decision about the type of treatment, especially when conservative treatment is an option, since most of the athletes have unfortunately already undergone some type of surgical repair.

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Generalized edema as an atypical clinical manifestation in a pediatric patient with celiac disease

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Keywords:

celiac disease, generalized edema, malnutrition

Background:

Generalized edema is systemic soft tissue swelling produced by the expansion of the interstitial fluid volume caused by various etiopathologies. Celiac disease is a lifelong systemic autoimmune disorder, elicited by gluten and related prolamins in genetically susceptible individuals. This case report describes a pediatric patient with celiac disease who presented with atypical extraintestinal symptoms.

Case presentation:

A 4-year-old female presented with poor weight gain for 10 months, alongside occasional periumbilical cramping pain after a meal. In addition, her parents have reported postprandial vomiting starting one month and diarrhea 10 days before hospitalization. At admission to Children's Hospital Zagreb, the patient was in poor general condition, hypotrophic and pale. On examination, she showed significant abdominal distension, generalized edema and parasternal systolic murmur of grade II/VI. Laboratory workup showed hypoproteinemia (56 g/L) and hypoalbuminemia (36 g/L), microcytic iron deficiency anemia (hemoglobin 107 g/L, mean cell volume 78 fL, ferritin 3.5 ng/mL) and elevated alanine and aspartate aminotransferases (61 U/I, 62 U/I). Cardiological examination revealed pericardial effusion with functional mitral regurgitation. Esophagogastroduodenoscopy was performed with duodenal biopsies that were classified as Marsh 3c, meaning total villous atrophy. Typical serological markers (anti-tissue transglutaminase IgA and anti-endomysial IgA antibodies) were highly elevated, confirming the diagnosis of celiac disease. The therapeutic protocol included albumin administration, temporary nocturnal nasogastric tube feeding and a gluten-free diet. Gradually the patient recovered, started to thrive and the edema and pericardial effusion resolved. She was discharged in good clinical condition. Afterwards, the patient was regularly followed up every 3 months during the first year, and later once a year. She is adhering to a strict gluten-free diet, thriving, and growing well.

Conclusion:

Generalized edema is a rare clinical manifestation of celiac disease that is likely to be misinterpreted. This case emphasizes the importance of recognizing extraintestinal celiac manifestations in order to set up the correct diagnostic and therapeutic regime.

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Cardiac tamponade in a patient with thyrotoxicosis

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Keywords:

autoimmune disease, cardiac tamponade, thyrotoxicosis

Background:

Thyrotoxicosis, marked by elevated thyroid hormones, and pericardial effusion, fluid accumulation in the pericardial sac, are typically distinct conditions. However, in rare cases, hypothyroidism can link them through increased pericardial capillary permeability. In this case, however, pericardial effusion was caused by acute thyrotoxicosis.

Case presentation:

A 44-year-old female, previously healthy, presented to the ER with dyspnea, heart palpitations, significant weight loss, peripheral edema, and fever. The electrocardiogram revealed atrial fibrillation (AF) and tachycardia while the chest X-ray showed bilateral pleural effusions. Thyroid hormone levels showed clear signs of thyrotoxicosis, with high fT4 and fT3 and low TSH levels. Additionally, anti-TPO antibodies and TSH receptor antibodies were positive, which suggested Graves' disease (GD). She was admitted to the ICU and treated with beta-blockers, DOACs, thiamazole, corticosteroids, potassium iodide, diuretics, and PPIs. Pleural drainage preceded the patient's discharge with tapering doses of corticosteroids and thiamazole. One week later, the same patient returned to the ER with fatigue and dyspnea. Electrocardiogram showed AF with tachycardia and echocardiographically, pericardial and pleural effusion were present. The patient was admitted to the ICU where she underwent pericardiocentesis and pleural effusion drainage. High thyroid hormone levels were found. Subsequently, corticosteroid and thyrostatic therapy was intensified, accompanied by diuretics, and beta blockers. Blood tests for other systemic autoimmune diseases were negative. When thyroid hormone levels normalized, the patient underwent a successful total thyroidectomy. Her pleural effusion completely regressed and atrial fibrillation spontaneously converted. She was discharged with levothyroxine.

Conclusion:

GD, an autoimmune disorder causing hyperthyroidism, often accompanies other autoimmune diseases, emphasizing the need for comprehensive testing. A rare, life-threatening complication of GD is thyrotoxicosis. Even though pericardial effusion is a very rare complication of thyrotoxicosis, every patient with cardiac symptoms should be tested echocardiographically to rule out this possibility.

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Tarsal navicular stress fracture in a female gymnast

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Keywords:

non-operative treatment, stress fracture, tarsal navicular bone

Background:

Stress fractures should be considered in any athlete presenting with the insidious onset of pain, especially in the setting of a sudden change in activity or training level. Tarsal navicular stress fractures are high-risk stress fractures typically seen in high-level athletes.

Case presentation:

A 20-year-old female gymnast began to feel pain in her left foot during preparation for the world championship. Her pain began insidiously with no specific incident or trauma. After two weeks, she sought medical attention as she was experiencing difficulty standing solely on the tiptoes of her left foot. During the physical examination, she confirmed the appearance of pain and tenderness to palpation along the dorsal side of the navicular bone, as well as when trying to get up on the tiptoes of her left foot, and as she tried to perform a single leg hop on her left leg. MRI was performed because of a suspected stress fracture. MRI showed low signal intensity in the whole tarsal navicular bone on T1-weighted imaging, and high signal intensity on T2-weighted short T1 inversion recovery imaging. For further assessment of the injury a CT was performed, based on which the method of treatment was determined. A CT scan showed a dorsal cortex stress fracture with the propagation of the fracture line in the proximal one-third of the navicular bone. She was initially treated with cast immobilization and non-weight bearing for six weeks. During the next six weeks, she walked using crutches, gradually increasing the load on her left leg. She returned to sports competition after five months of treatment.

Conclusion:

In athletes with insidious onset of pain in the foot, a stress fracture can be one of the possible diagnosis. Regardless of whether operative or non-operative treatment was performed, tarsal navicular stress fractures require a gradual return to sports.

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Psoriatic arthritis with atypical manifestations

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Keywords:

apremilast, psoriatic arthritis, seronegative spondyloarthritis

Background:

Psoriatic arthritis, a seronegative spondyloarthritis commonly associated with psoriasis, presents a diagnostic challenge, with approximately 15% of cases occurring independently of psoriatic manifestations. The diagnostic process involves consideration of various factors, including a positive family history, specific HLA types, and adherence to the CASPAR Criteria.

Case presentation:

A 55-year-old female was admitted to the hospital for a comprehensive evaluation (09/2020) due to a twenty-year history of symptoms, managed symptomatically with NSAIDs. She was diagnosed with cervical and lumbosacral syndromes in 2018, following cervical and lumbar pain. Over a decade, she endured stiffness and swelling in both knees (initially right-sided) and hip pain for the last five years. Notably, nocturnal joint pain significantly disrupted sleep. The patient's paternal family history included migrating polyarthritis. No evidence of manual joint pathology or extra-articular pathologies (including skin, eye, nail, or enteral involvement) was observed. Radiographic assessment identified bilateral sacroiliitis; MRI revealed protrusions of discs (C2C3, C4C5, C5C6, L5S1); and shoulder imaging indicated calcified tendinitis and enthesopathy of the supraspinatus tendon. Rheumatoid factor testing returned negative results. Despite the absence of HLA-B27, HLA typing prompted a suspected PsA diagnosis. Inducing apremilast, a PDE4 inhibitor, aided clinical regression of knee and hip pain. The patient underwent radiofrequency thermocoagulation to alleviate lumbosacral pain in 2021. In the current examination and treatment regimen (11/2023), the patient reports cervical and right arm pain and is scheduled to undergo epidural infiltration to address evolving symptoms. Concurrently, shoulder pain and bilateral dactylitis-like difficulties warrant further assessment.

Conclusion:

PsA poses a diagnostic conundrum, particularly in cases with an atypical clinical presentation, and is often a diagnosis of exclusion. A personalized clinical approach is crucial for effective management. This case underscores the importance of considering PsA even in the absence of concurrent psoriasis and highlights the need for continuous vigilant surveillance.

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Treatment of a football player with os Trigonum producing neurological symptoms

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Keywords:

ankle, arthroscopy, oedema, os trigonum, tingling

Background:

The os trigonum, found in 5-15% of the population, is a frequent cause of posterior ankle impingement syndrome. It can cause pain and hindered mobility, particularly during plantar flexion. This report details the case of a professional footballer who experienced neurological symptoms caused by os trigonum, focusing on the successful treatment of this condition.

Case presentation:

A 21-year-old male football player presented with pain and tingling sensation spreading into the middle and lateral part of his right heel after a collision with another player 7 days earlier. During clinical examination pain in the area of the tarsal tunnel, as well as a positive Tinel sign (percussing over the nerve elicits a sensation of tingling in the distribution of the nerve) at the tibial nerve projection were present. Ankle mobility remained unimpaired. Magnetic resonance imaging (MRI) results showed a bone oedema of the os trigonum. After 6 weeks of conservative treatment and rest from training and matches, a follow-up examination disclosed a still positive Tinel sign at the tibial nerve projection within the tarsal tunnel. Subsequently, MRI was performed again, uncovering unchanged presence of bone oedema in the os trigonum and effusion around the tibial nerve. The patient underwent posterior ankle arthroscopy as described by van Dijk, in a prone position, under spinal anesthesia. The os trigonum was visualized and removed completely. The perioperative course was uneventful. The patient proceeded with a range of motion exercises and physical therapy from the first postoperative day. After 6 weeks the patient was symptom-free, eventually returning to his everyday training and matches.

Conclusion:

Symptomatic os trigonum typically manifests as ankle pain and restricted range of motion. This report underscores the potential for concurrent neurological symptoms arising from the same issue and highlights the safety and effectiveness of arthroscopic surgery as the preferred treatment approach.

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How to conquer tardive dyskinesia: could pharmacogenetics and therapy drug monitoring be useful tools?

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Keywords:

clozapine, paliperidone palmitate, pharmacogenetics, tardive dyskinesia, TDM

Background:

Tardive dyskinesia is a neurological disorder characterized by involuntary, repetitive movements of the face, tongue, and limbs, which may result from a long-term use of antipsychotics.

Case presentation:

A 27-year-old male was diagnosed with schizophrenia in 2018. Following his initial hospitalization, he was prescribed a combination of medications, including paliperidone palmitate (150 mg), clozapine (50 mg every other day), amisulpride (100 mg), and lamotrigine (50 mg). From July 2022 onwards, the patient began to experience distressing orofacial dyskinesia symptoms that significantly impeded his daily life. In response, a comprehensive evaluation was conducted, which included CYP genotyping and therapy drug monitoring (TDM). The measurement of 9-OH risperidone plasma concentration revealed an elevated level (296.4 nmol/L), twice the permissible upper limit. Consequently, the dosage of paliperidone palmitate was reduced, while the clozapine dosage was increased. In addition, genotyping analyzes of CYP2D6, CYP3A4/5, CYP2C19, ABCB1, and ABCG2 were performed and showed the patient's intermediate metabolizer status for CYP2D6. Subsequent follow-up assessments exhibited a gradual decline in the 9-OH risperidone concentration, with levels reducing to 83.7 nmol/L after three months and further to 67.5 nmol/L after an additional month. This reduction was attributed to the tapering-down and dosage reduction of the medication. Ultimately, 9-OH risperidone was excluded completely, with a concomitant increase in the clozapine dosage (100 mg). Upon the patient's final evaluation in September 2023, he reported a substantial improvement in his condition, marked by the complete resolution of orofacial dyskinesia symptoms.

Conclusion:

This case underscores the significance of personalized pharmacotherapy adjustments informed by both clinical and genetic factors in achieving favorable outcomes in the treatment of psychiatric disorders. Today, a good psychiatrist should possess the knowledge to recognize adverse effects, understanding of pharmacogenetics and TDM, and a patient-centered approach to tailor treatments for optimal outcomes.

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ORIGINAL RESEARCH:

Running towards higher HDL cholesterol

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Keywords:

aerobic exercise, HDL cholesterol, long-distance running

Introduction:

The cholesterol contained in high-density lipoproteins (HDL-C) is colloquially called the good cholesterol owing to the beneficial effects of HDL particles on the cardiovascular system. Along with its function in reverse cholesterol transport, HDL maintains normal endothelial function and has antioxidative as well as anti-inflammatory effects.

Aim:

The aim of this study was to compare serum lipid parameters of healthy sedentary individuals and healthy individuals who actively participate in aerobic exercise.

Participants & Methods:

A total of 20 healthy men aged 56 to 64 years were enrolled in the study - 10 were not playing sports actively (NS - no sports) and 10 were active long-distance runners (S - sports). Routine biochemistry lipid parameters were determined using the Cobas c system (Roche Diagnostics, Hitachi, Tokyo, Japan). Low-density lipoprotein cholesterol (LDL-C) levels were calculated using Friedewald&'s formula. Quantitative variables were presented as medians with interquartile ranges. The Mann-Whitney U test was used to compare the groups. P value <0.05 was considered statistically significant.

Results:

There was no significant difference in age [NS: 60.0 (58.8, 61.3); S: 61.0 (56.8, 62.0) years; P=0.977], body weight (P=0.065) or height (P=0.468) between compared groups. However, the S group had a significantly smaller waist circumference (P=0.004). Total cholesterol [NS: 5.3 (4.9, 5.9); S: 5.7 (5.2, 5.9) mmol/L], LDL-C [NS: 3.3 (2.9, 3.8); S: 3.2 (2.4, 3.6) mmol/L], as well as triglyceride levels [NS: 1.0 (0.8, 1.2); S: 0.8 (0.7, 1.2) mmol/L], were similar in NS and S groups (P=0.402, P=0.445, P=0.539, respectively). Interestingly, HDL-C levels were significantly higher in the S compared to the NS group [NS: 1.6 (1.4,1.8); S: 1.8 (1.7, 2.2) mmol/L, P=0.018].

Conclusion:

Despite the favorable HDL-C serum levels observed in both groups, these were significantly higher in healthy active long-distance runners compared to healthy sedentary participants.

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WORKSHOP:

ECG interpretation

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Keywords:

cardiology, electrocardiogram (ECG), heart disease

Summary:

During their medical education, medical students are introduced to ECG interpretation courses, often multiple times. However, considering that ECGs are one of the most frequently ordered tests in medicine, no matter how many courses one takes, continuous practice is invaluable. It is essential for every young doctor to be capable of recognizing common heart conditions, including atrial fibrillation, as well as urgent conditions like myocardial infarction, ventricular tachycardia or ventricular fibrillation. So the main purpose of this workshop was to remind participants of the basic ECG pathologies and to provide the foundational knowledge to individuals who had not yet had the opportunity to encounter an ECG interpretation course.

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Diagnostic ultrasound in sports medicine

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Keywords:

diagnostic ultrasound, musculoskeletal system, radiology

Summary:

Ultrasound imaging is an invaluable tool in diagnosing sports related pathologies. Its ability to show changes in real time and its portability prove to be the advantages over MR imaging. The student section for radiology will hold a workshop titled DIAGNOSTIC ULTRASOUND IN SPORTS MEDICINE. Join us for a brief summary of the basic information about ultrasound imaging and the most common sports related pathologies visible using the ultrasound followed by a demonstration of joint and muscle sonography. Following this, all attendants will be given a chance to learn about the technique of performing an ultrasound examination and to test their skill in joint and muscle ultrasound themselves.

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Primary wound care

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Keywords:

surgical procedure, suture, wound

Summary:

Primary wound care is a fundamental skill for every physician. In the framework of this workshop organized by the Student Society for Orthopedics and Traumatology, participants familiarize themselves with the principles and techniques of primary wound care, including taking a patient history, identifying the type of wound, and the overall wound management process, along with choosing the optimal closure technique using a specific type of suture. The workshop begins with a brief theoretical introduction, followed by a practical session. In the practical part of the workshop, each participant is assigned a workstation with the necessary medical instruments and equipment for the primary wound care procedure on a pig's foot. The entire wound care process, including basic surgical knot tying, is practiced by participants under the guidance of their demonstrators.

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Traumatic brain injury

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Keywords:

anesthesiology, brain injury, bronchoscopy, laryngoscopy, trauma

Summary:

Traumatic brain injuries occur mostly with high force trauma, such as traffic incidents, sports injuries, blunt force trauma and shaken baby syndrome. When assessing the patients, it is crucial to carefully examine their state with detailed neurological exam and Glasgow coma scale (GCS), and react accordingly. Further treatment includes airway management, as well as continuous monitoring of vital parameters in Intensive care unit (ICU). This workshop aims to, through a series of case reports, differentiate brain injuries and corresponding treatment along with highlighting vital parameters to keep an eye on. Additionaly, the workshop offers a hands-on course on laryngoscopy and bronchoscopy, skills crucial in effective airway management.

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Parkinson’s, potentials and pretty lights

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Keywords:

action potential, neurology, neuron stimulators, Parkinson's disease

Summary:

In this engaging workshop, we'll explore the intricacies of movement control and delve into the background of Parkinson's disease. Through the use of miniature blinking neuron simulators, we aim to demonstrate the processes visually. Additionally, we'll explore the possibility of enhancing everyday function with different treatment options for Parkinson’s disease.
Join us for an engaging workshop focused on Parkinson's disease and action potentials. Experience a captivating demonstration of neuron circuits with (festive) blinking lights, embracing the upcoming Christmas spirit.

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Advanced life support—ALS workshop

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Keywords:

advanced cardiac life support, electric countershock, heart arrest

Summary:

Advanced life support (ALS) is a fundamental algorithm every doctor should master. ALS training provides doctors with a systematic approach to managing emergencies and helps them make rapid, informed, evidence-based decisions, optimising patient care under stress. This workshop aims to provide its participants with an opportunity to learn the most important ALS algorithms through a lecture, medical simulations, and hands-on practice. The workshop covers two main areas: out-of-hospital emergency situations and hospital-based scenarios. Engaging in these scenarios, students will participate in managing emergency medical cases, simulating real-life circumstances. Each scenario provides them with an opportunity to apply theoretical knowledge in a practical setting, enhancing communication skills and teamwork. The workshop empowers students to handle future situations requiring rapid, precise, and coordinated responses. Overall, studying and practicing ALS are fundamental for healthcare professionals to deliver timely care, ultimately saving lives and improving patient outcomes in critical situations.

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Trauma Examination

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Keywords:

emergency medicine, examination, trauma

Summary:

Picture this - it is your first day working in emergency department, and you got a call for a patient suffering from trauma. How can you assess? How to determine the severity of i-njuries? Trauma examination workshop emphasizes the importance of a systematic ap-proach to trauma assessment, thus guiding through the primay survey, focusing on imme-diate life.saving interventions such as ABC evaluation. After ABC, the focus shifts on secondary survey, gathering the patient's medical history and including detailed examina-tion of the whole body. In this workshop, participants learn how to perform thorough exa-mination, focusing on sensimotor skills outbursts or bleeding, how to manage said outbur-sts and the effective way to immobilize the patient, securing a safe transport to the emer-gency department.

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Orthobasics

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Keywords:

clinical examination, orthopedics, practice, workshop

Summary:

The disorders of the musculoskeletal apparatus make up a major part of the cases which are encountered by young physicians, no matter their workplace. The workshop, developed by the Student Society for Orthopedics and Traumatology, introduces participants to the fundamentals of musculoskeletal examination. It consists of a short introduction with an overview of the anatomy, biomechanics, and pathology of the joint that is being examined. Afterward, specific tests for diagnosing the pathology in each joint are demonstrated. The joints that are being examined are the hip, knee, and shoulder. Participants are then divided into smaller groups and with the guidance of their demonstrator, practice clinical examination of each joint. Furthermore, the participants practice taking patient history, inspection and palpation, which can help in setting a suspicion of a certain pathology. After each workshop, handouts are given to the participants which contain a summary of the clinical examination of each joint.

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LECTURE:

Sports physiology

Assoc. prof. Davor Šentija, MD, PhD

Held by assoc. prof. Davor Šentija, this lecture provides basic physiology and effect of training on a human body. Associate professor Davor Šentija works at Faculty of Kynesiology, University of Zagreb, teaching Functional anatomy and Diagnostics in sports recreation.

Training theory

Prof. Damir Knjaz, PhD

Lecture „Training theory" dives into types of trainings, effective methods in warming-up our bodies, and tackles the most common mistakes when training. Professor Damir Knjaz served as dean at the Faculty of Kynesiology, University of Zagreb, from 2013 to 2017.

Sports injuries

Assoc. prof. Tomislav Smoljanović, MD, PhD

In this lecture, assoc. Prof. Tomislav Smoljanović went through some of the most common injuries when practicing sport, from injury mechanisms to effective prevention and rehabilitation techniques. As a part of Croatian rowing team, Tomislav won bronze medal in a category „coxed eight". Now, Tomislav works as a orthopedic surgeon at the Deparment of Orthopedics, UHC Zagreb, as well as teaches the course Orthopedics at School of medicine, University of Zagreb.

Sports cardiology

Prof. Zdravko Babić, MD, PhD

The last lecture of the Summit focuses on the most important muscle in a human body - heart. Professor Zdravko Babić gave us the insight of cardiovascular system when training, and how to assure its stability when under pressure. Zdravko works as a head of Department of Cardiovascular diseases, Sestre milosrdnice UHC, Zagreb, as well as teaching Propedeuthics and Internal medicine at the School of Medicine, University of Zagreb.

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