Peti regionalni simpozij mladih endokrinologa

Mostar, 4. – 6. 4. 2025. godine

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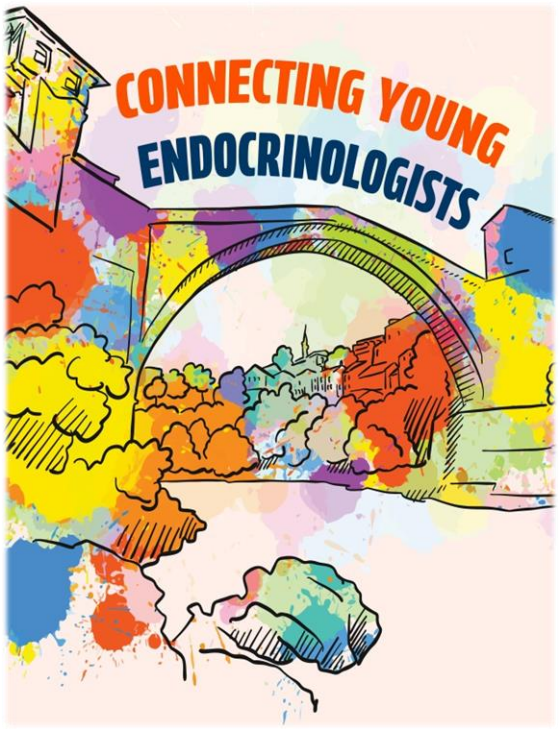

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A01

Show Me Your Hands: A Diagnostic Clue in Pseudohypoparathyroidism

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Introduction: Hyperparathyroidism can be classified as primary, resulting from autonomous secretion by the parathyroid glands, or secondary - compensatory response to hypocalcemia and low vitamin D levels. A rare form of hyperparathyroidism may arise due to resistance to parathyroid hormone (PTH).

Case report: A male patient was referred for a neck ultrasound at age 34. A few years earlier, following an episode of erythrocyturia, a significantly elevated PTH level was discovered, leading to the presumption of primary normocalcemic hyperparathyroidism. The patient demonstrated very low bone mass, and parathyroid surgery was considered. Neck ultrasounds and parathyroid scintigraphy had already been performed, but they failed to localize parathyroid glands. Upon presentation, he exhibited short stature, a round face, obesity, and small hands with brachydactyly. His phenotype closely resembled Albright hereditary osteodystrophy (AHO). Laboratory investigation revealed a PTH level of 41.95 pmol/L (normal value < 6.9 pmol/L), with low-normal serum calcium and normal urine calcium. An X-ray of both hands showed abnormal formation of all carpal bones, short metacarpals, and significant hypoplasia of both distal ulnar bones. Based on laboratory profile and characteristic phenotype, the accurate diagnosis is pseudohypoparathyroidism type Ia, and calcitriol therapy was initiated.

Conclusion: Pseudohypoparathyroidism is a rare and heterogeneous genetic disorder caused by mutations in the GNAS gene, which impairs the function of the Gs alpha subunit in target tissues such as bone and kidney. Its diagnosis is more straightforward when hypocalcemia is present; however, a more subtle presentation featuring aspects of AHO may also provide a clue to the diagnosis.

A02

Can We Work Together?

Sanja Đurasović

Introduction: Primary hyperparathyroidism (PHPT) is the most common cause of hypercalcemia and one of the leading endocrine disorders, following diabetes mellitus and hypothyroidism. It is most frequently diagnosed in postmenopausal women, and its clinical presentation can be atypical, with nonspecific symptoms such as fatigue, musculoskeletal weakness, depression, and polyuria. If left untreated, PHPT leads to significant complications, including osteoporosis, nephrolithiasis, cardiovascular issues, and neurocognitive dysfunction.

Case report: A 64-year-old female patient visited her family physician due to muscle weakness, frequent urination, and intermittent nausea. Laboratory findings revealed hypercalcemia (2.84 mmol/L), elevated parathyroid hormone (222.7), and hypercalciuria. Bone densitometry confirmed severe osteoporosis (T-score -4.5), while a neck ultrasound detected a hypoechoic lesion of the parathyroid gland, consistent with an adenoma. The patient underwent parathyroidectomy, which resulted in normalization of serum calcium levels (2.4 mmol/L). Postoperatively, vitamin D and calcium supplementation were initiated. One year after surgery, bone densitometry parameters improved (T-score -2.9). However, after two years, there was a decline in bone density (T-score -3.6), necessitating the introduction of ibandronate therapy (150 mg monthly).

Conclusion: Family physicians play a crucial role in the early recognition of PHPT and the prevention of its complications. Timely identification of nonspecific symptoms and referral of patients for further endocrinological and surgical evaluation can significantly improve treatment outcomes. This case report highlights the importance of multidisciplinary collaboration between primary and secondary healthcare in optimizing care for patients with PHPT.

A03

Remission of obesity-related comorbidities after bariatric surgery: a case report

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Introduction: Bariatric surgery is no longer considered only weight loss surgery but also a way of treating obesity-related comorbidities. We present the outcome of sleeve gastrectomy in patient with severe obesity, T2DM, arterial hypertension (AH), and chronic kidney disease (CKD).

Case report: A woman was diagnosed with T2DM at the age of 21 and for the first two years was treated with metformin. However, as her glycemic control worsened, basal insulin was introduced. Over the next 3–4 years, she gained 20 kg, necessitating the addition of bolus doses of rapid-acting insulin. At her first consultation, 10 years after initiating basal-bolus insulin therapy, she had a BMI of 39.8 kg/m². Her HbA1c was 9.38%, and she required 110 units of insulin daily, without metformin, due to gastrointestinal intolerance. She was taking three antihypertensive medications and was diagnosed with stage IIIb CKD. She desired but was refused from bariatric surgery due to her advanced CKD. At this point, she was placed on a diet, and subcutaneous semaglutide was introduced. Over the next 8 months, she lost 15 kg, achieved target HbA1c, and experienced significant improvement in creatinine levels. A sleeve gastrectomy followed and an additional loss of 20 kg. After surgery, insulin therapy was discontinued due to hypoglycemia, and a DPP-4 inhibitor was briefly introduced. Today, she is free from diabetes, AH, and CKD.

Conclusion: Weight loss is crucial for the reduction of obesity-related complications, so bariatric surgery leads to remission of T2DM, AH, and CKD in severely obese individuals.

Keywords: bariatric surgery, obesity, type 2 diabetes.

A04

Insulinoma

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Introduction: Insulinomas are endocrine tumors that present with fasting hypoglycemia. The average age at diagnosis is 50 years. Symptoms include weakness, dizziness, trembling, a feeling of palpitations, sweating, and intense hunger. Diagnosis is confirmed through a fasting test. Differential diagnosis should include other conditions that lead to hyperinsulinemia in a similar manner, such as: persistent hyperinsulinemic hypoglycemia of infancy, non-insulinoma pancreatogenic hypoglycemia syndrome, and hypoglycemia after gastric bypass surgery.

Case report: A 77-year-old female patient is presented with fasting hypoglycemia and recurrent episodes of neuroglycopenic symptoms over the past 6 months. The patient has a history of being under the care of a nephrologist and cardiologist due to renal and heart failure. Her first hospitalization at the Endocrinology Clinic was in 2024, where a complete diagnostic workup was performed. The fasting test was positive, showing high insulin levels, low blood glucose levels, and very high chromogranin A levels, raising suspicion for an insulinoma. A full radiological examination revealed a lesion in the tail of the pancreas. Due to the small size of the lesion and the inability to measure its dimensions, the patient was referred for endoscopic ultrasound.

Conclusion: The diagnosis of insulinoma is challenging because symptoms that can be life-threatening often appear before the tumor is detected. Therefore, it is important to suspect insulinoma in patients with neuroglycopenic symptoms but no prior diagnosis of diabetes. All radiological investigations must be performed to rule out the presence of a tumor. Early and accurate diagnosis of insulinoma allows for a 100% cure.

A05

Complex diagnostic process in hypercalcemia: a case report

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Introduction: Hypercalcemia may pose a diagnostic dilemma, especially in patients with multiple comorbidities. Differentiating between malignancy-associated hypercalcemia and primary hyperparathyroidism (PHPT) is crucial for appropriate management. Key diagnostic steps include evaluating serum calcium, phosphate, and parathyroid hormone (PTH) levels, assessing vitamin D status, and performing imaging studies. Additionally, chronic kidney disease (CKD) complicates both the diagnostic process and treatment choices, as it can lead to secondary hyperparathyroidism and thus influence calcium-phosphorus homeostasis.

Case report: We present the case of a 79-year-old female, hospitalized for evaluation of multiple liver metastases. The patient had been relatively healthy before the hospitalization, with chronic antihypertension therapy including indapamide. The initial workup revealed a primary lung neuroendocrine malignancy. However, persistent hypercalcemia prompted further endocrinological assessment. Laboratory findings showed elevated serum calcium, decreased phosphate levels, and elevated PTH levels. Further imaging studies, including neck ultrasound and 99mTc-sestamibi scintigraphy, confirmed an adenoma of the lower left parathyroid gland as the underlying cause. CKD further complicates the clinical course, as it limits therapeutic options for hypercalcemia, necessitating a tailored approach. A complex clinical background, including small-cell neuroendocrine lung carcinoma, PHPT, and CKD, required intricate diagnostic processes and a multidisciplinary treatment approach.

Conclusion: This case illustrates the difficulty in diagnosing hypercalcemia in patients with malignancy, primary hyperparathyroidism, and chronic kidney disease. Thorough endocrine evaluation is crucial for accurately diagnosing hypercalcemia, as management approaches vary. Multidisciplinary care is important in optimizing patient outcomes.

A06

Investigation of the impact of exogenous factors on the fluidity of the spermatozoa membrane and the concentration of free radicals (thiol and ascorbyl radicals) in seminal fluid in patients with impaired spermogram quality

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Introduction: According to the World Health Organization (WHO), the infertility rate is increasing, particularly among younger men. Semen quality and male fertility are key indicators of overall health. This review explores factors that increase the concentration of free radicals and oxidative stress, as well as their impact on spermogram quality and the fluidity of the spermatozoa membrane.

Methods: This review analyzes published studies that investigate the effects of exogenous factors on spermogram quality, with a particular focus on membrane fluidity and free radical concentration.

Results: Free radicals, especially reactive oxygen species (ROS), are essential for spermatozoa maturation, but in excessive amounts, they cause oxidative stress. This negatively affects spermogram quality and membrane fluidity, impairing sperm motility and their ability to fuse with the egg cell. The detection of free radicals, using methods such as EPR/ESR, allows for precise measurement of their concentrations. The electron paramagnetic resonance (EPR/ESR) method utilizes the magnetic properties of unpaired electrons to accurately detect free radicals, without interference from other chemical compounds. The plasma membrane of spermatozoa, rich in unsaturated fatty acids, is prone to lipid peroxidation due to ROS interaction. This process reduces membrane fluidity, which affects sperm motility and their ability to fuse with the egg cell. Maintaining a balance between the production and elimination of free radicals is crucial for the organism's health. Antioxidants, such as glutathione and ascorbic acid, help eliminate excess free radicals and can improve spermogram results.

Conclusion: Early detection of free radicals is crucial for maintaining the organism's homeostasis. Proper spermatozoa membrane fluidity and antioxidants are important for sperm motility and their ability to fuse with the egg cell.

A07

Secondary hypertension due to combined oral contraceptives: Justified suspicion or hormonophobia?

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Introduction: The combined oral contraceptive pill is an effective therapeutic choice for various endocrinological conditions such as irregular menstrual cycles, endometriosis, polycystic ovary syndrome. In addition to the positive effect on these conditions, it has been shown that the use of the contraceptive pill reduces the incidence of ovarian and endometrial cancer. The choice of therapy is individual and depends on the presence of comorbidities. In the absence of comorbidities, the benefit of this type of therapy significantly outweighs the potential risks.

Case report: A 21-year-old female patient was examined due to secondary amenorrhea for the past 12 months. Menarche occurred at the age of 12, with irregular cycles with absences of bleeding for up to 8 months. Polycystic morphology of both ovaries was verified by examination of the small pelvis. Clinical examination revealed normal nutrition (TT 67 kg, TV 171 cm, BMI 22.9 kg/m2), Ferriman-Gallwey score 6 (chin region, upper back and thighs). Laboratory work-up showed hyperinsulinism in OGTT, inverted FSH/LH ratio (7.3/13.4 mIU/mL), elevated testosterone 1.46 ng/mL and AMH 8.23 ng/mL. A diagnosis of polycystic ovary syndrome was made and an inositol was prescribed along with a hygienic-diet regimen. After 6 months, due to failure to establish regular menstrual cycles, a combined oral contraceptive pill (drospirenone/ethinylestradiol 3mg/0.02mg, 24/4 regimen) was introduced into the therapy. During the first two months of taking the therapy, a regular cycle is established with the appearance of breakthrough bleeding around the 12th day. For the next 7 months, regular cycle continues with a subjectively good condition without pronounced complaints. 9 months after the start of oral contraceptive therapy, the patient reports occasional heart palpitations without clear chest pain, with a verified blood pressure of up to 130/90 mmHg in several measurements. Family medicine doctor advises to stop the use of contraceptives as a possible reason for high blood pressure. Before stopping the therapy, a complete cardiology work-up is performed, and physiological findings for age are shown. The patient nevertheless decides that she wants to take a break from using contraceptives. In the following period of 6 months, there are repeated irregularities of menstrual cycles with increased blood pressure on several occasions. The contraceptive pill is re-introduced into the therapy, and in the next 12 months, a regular menstrual cycle is achieved with the withdrawal of earlier signs of hyperandrogenism, without side effects.

Conclusion: It has been shown that ethinyl-estradiol can have an effect on the increase in blood pressure in normotensive women through its effect on the renin-angiotensin-aldosterone system. Reducing the dose of EE as well as the use of progestins with an antimineral effect,

such as drospirenone, can moderate or even reverse the association between blood pressure rise and the use of combined oral contraception, making it safe to use.

Keywords: Combined oral contraceptive pill, polycystic ovary syndrome, secondary hypertension.

A08

Secondary diabetes in paraganglioma: case report

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Introduction: Pheochromocytomas and paragangliomas (PPGLs) cause secondary diabetes mellitus (DM) in up to 50 percent of cases, with total remission after successful surgery in up to 80 percent of patients.

Case report: We report a 35-year-old male (BMI 31.8 kg/m2) who presented with DM diagnosed when he was 31 years old. Autoimmunity was excluded, and his insulin secretion was intact. After two years, arterial hypertension with paroxysmal palpitations and sweating was noted, and normal blood pressure was not achieved even with four antihypertensive medications. Workup of resistant arterial hypertension showed normetanephrine concentrations in a 24-hour urine sample ten times upper the normal limit. A CT of the abdomen showed a mass in the left adrenal gland measuring 53×56 mm in diameter with characteristics of pheochromocytoma. Pathohistological report after laparascopic left adrenalectomy showed that the tumor was a paraganglioma. With postoperative normalization of catecholamine levels, the patient was persistently euglycemic and had normal blood pressure without medications. In subsequent controls, with significant weight gain of 20 kilograms, the patient developed DM again despite biochemical remission of the disease.

Conclusion: Pheochromocytomas and paragangliomas often cause glycemic alterations, with secondary DM being the first presenting sign of the disease in some cases; and a high incidence of total remission after successful surgical treatment. However, long-term glycemic monitoring is necessary, especially in patients with risk factors for type 2 DM.

Key words: paraganglioma, pheocromocytoma, secondary DM.

A09

Uncommon Etiology of Hypercalcemia: A Case Report

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Introduction: The most common causes of hypercalcemia are primary hyperparathyroidism and malignancy, while other causes are significantly less frequent. Here, we describe a patient with hypercalcemia resulting from the use of the site enhancement oil Synthol.

Case report: A 44-year-old male bodybuilder was hospitalized due to acute kidney injury with nephrocalcinosis. Laboratory tests revealed severe hypercalcemia with suppressed parathyroid hormone (PTH) levels. The patient was treated with saline infusion and zoledronic acid. Chest CT imaging showed voluminous soft tissue structures in the pectoral region and anterior abdominal wall, along with blurred subcutaneous fat and altered muscle structure interspersed with fat inclusions. Additionally, multiple small, irregular pneumonic infiltrates were observed peripherally in both lungs. Bone scintigraphy revealed increased radiopharmaceutical uptake in the soft tissues of the upper arms, chest, and trapezius muscles. A biopsy of the subcutaneous formations in the abdominal wall confirmed a tissue reaction to foreign material. Upon further questioning, the patient disclosed that he had repeatedly injected Synthol oil into the muscles of his chest and abdominal wall.

Conclusion: Synthol injections for body contouring can lead to foreign body granulomatosis, which may trigger calcitriol-mediated hypercalcemia. To our knowledge, only a few cases of hypercalcemia due to Synthol-induced granulomatosis have been reported in the literature. This case highlights a rare cause of PTH-independent hypercalcemia.

A10

Theraporesistant Hypothyroidism and Celiac Disease: A Case Report

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Introduction: Hashimoto's thyroiditis is a T-cell mediated autoimmune disease and a high prevalence of celiac disease is observed in these patients. Due to atypical clinical manifestations, the diagnosis of celiac disease may be delayed.

Case report: A 30-year-old pregnant woman at 13 weeks of gestation presented with elevated thyroid-stimulating hormone (TSH 89 mIU/L) and low free thyroxine (fT4 6.77 pmol/L). She reported weakness, malaise, headaches, and bloating. She had no comorbidities, but her family history was positive for thyroid disease and type 1 diabetes. Sodium levothyroxine therapy was initiated, but as further controls showed inadequate therapeutic response, the dose was increased to 125 μg alternating with 100 μg. Thyroid ultrasound indicated autoimmune thyroid disease. Elevated titers of antibodies to thyroid peroxidase (anti-TPO Ab) and thyroglobulin (anti-TG Ab) were confirmed. During follow-up, the pregnancy and delivery were normal. Elevated IgA antibodies to tissue transglutaminase were detected. An esophagogastroduodenoscopy revealed chronic erythematous gastritis and duodenitis. Histopathological findings confirmed chronic atrophic pangastritis and duodenal mucosal inflammation with villous atrophy. A gluten-free diet was initiated, and the sodium levothyroxine dose was reduced.

Conclusion: This case highlights the possibility of atypical clinical presentation of celiac disease and emphasizes the importance of timely screening for this condition in patients with autoimmune hypothyroidism requiring higher doses of sodium levothyroxine than expected, even in the absence of celiac disease symptoms.

A11

Ketoacidosis as the underlying cause for the occurrence of pulmonary thromboembolism: A case report

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Introduction: Ketoacidosis is the most severe acute complication of diabetes. It is characterized by hyperglycemia, hyperketonemia and metabolic acidosis. As a very complex pathological entity, ketoacidosis provokes a number of patohophysiological mechanisms that can lead to other acute events. One of these is a pulmonary thromboembolism (PTE) which can occur in a completely atypical form, with the absence of common symptoms such as dyspnoea, tachypnoea, tahycardia and chest pain.

Case report: We will present the case of a 74-year-old female patient who was admitted to neurological emergency department due to general weakness, impaired movement and speech. Laboratory results revealed very high glycaemic values - 77 mmol/l, indicating newly diagnosed diabetes mellitus, with acidosis in blood gases and acute renal failure. The patient was hospitalized to Intensive care unit and afterwards transfered to endocrinology department. Upon transfer, she complained on fatigue, thirst and occasional dizziness. A more detailed examination revealed shortness of breath and a dry irritating cough, especially in lying position. Laboratory results showed increased D-dimer values – 12,96 mg/l. Due to rise in D- dimer values – repeated values of 111,65 mg/l, pulmonary CT angiography was performed revealing massive bilateral pulmonary embolism (PTE). Cardiologist and pulmologist were consulted, patient recieved low molecular weight heparine in therapeutic doses and further follow up was resumed in our ward. After decline in D-dimer values, she was dissmised home with oral anticoagulant therapy according to protocol for treatment of PTE.

Conclusion: Since ketoacidosis is accompained by severe dehydration, high serum viscosity and low cardiac output, we can conclude that it is justified to consider it as one of the possible underlying causes for the occurence od PTE.

A12

When Back Pain Signals More: Spondylodiscitis in Diabetes Mellitus – A Case Report

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Introduction: Spondylodiscitis, an infection of the intervertebral disc and adjacent vertebrae, is rare but can cause severe morbidity. Diabetes mellitus (DM) is a known risk factor due to immunosuppression and impaired microcirculation. Back pain is a common complaint in diabetic patients, but infections like spondylodiscitis are often overlooked. Early diagnosis is crucial to prevent complications.

Case report: A 65-year-old female with a 10-year history of type 2 DM was admitted for hyperglycemic hyperosmolar state and E. coli urosepsis. She reported lower back pain for a month. On examination, she had tenderness over the lumbar spine without neurological deficits. Blood tests showed elevated CRP (206.7 mg/L) and PCT (0.26 ng/mL). Whole body CT scan was inconclusive. MRI of the lumbar spine revealed spondylodiscitis at L4- S1 with adjacent soft tissue edema. Given the absence of indications for surgical treatment, she was started on empirical triple antibiotic therapy (vancomycin, ceftriaxone and metronidazole), which was later adjusted based on sensitivity results. In the further course of treatment, during the 6 weeks period, patient showed clinical and laboratory improvement.

Conclusion: Spondylodiscitis should be considered in diabetic patients presenting with persistent back pain, particularly following urosepsis. Early use of MRI and prompt antibiotic therapy can prevent complications and surgical interventions. This case underscores the importance of vigilance in managing infections in diabetic patients.

A13

From Type 2 Diabetes to LADA: A Case Report

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Introduction: According to the ADA classification, type 1 diabetes is caused by autoimmune destruction of pancreatic beta cells, which will lead to a complete lack of insulin, and this includes LADA (latent autoimmune diabetes in adults) as a form with delayed progression. LADA, as one of the rarer forms of diabetes mellitus, is most often initially misdiagnosed as Diabetes mellitus type 2. It appears at the age of 30 and without the need for insulin for at least 6 months from the diagnosis. Treatment initially oral antidiabetics and eventually insulin.

Case report: A 39-year-old patient comes for a check-up due to poorly controlled diabetes. It is a patient who is verified for elevated glucose values during pregnancy, and who is then diagnosed as type 2 diabetes. Due to poor regulation of DM, 2020g is introduced in therapy in addition to repaglinide and insulin IDeg/Lyra. Hyperthyroidism is also verified at that time, and it is advised to introduce Athyrazole into the therapy, which the patient took for a while and then excluded from therapy on her own initiative. Despite modified and corrected therapy for diabetes, frequent episodes of hyperglycemia as well as severe hypoglycemia occured. She comes to our clinic in 07/2024 due to poor diabetes control, poor quality of life and severe hypoglycemia verified on a couple of occasions. She states that she does not have regular meals because of the work she does, she skips them and has her first meal in the late afternoon. After the initial examination, a re-evaluation of the underlying disease is performed, and in the received findings, HbA1c 11.6, positive GAD At and IAA At are verified, which diagnoses LADA and introduces BBT into therapy, along with education on nutrition and application of therapy, and CGM is placed. They are also verifying highly positive Anti TPO and now the diagnosis of Mb Hashimoto's is made. A gastroenterological examination is performed for positive antiparietal antibodies and suspicion of autoimmune gastritis is established, after which EGDS is performed, celiac disease is excluded and Sy polyglandular deficit type 3 is verified. After several months of controls and titration of therapy, the target values of glycemic HbA1c 6.7% are achieved, the patient feels better and there are no more verified hypoglycemias.

Conclusion: Rare forms of diabetes are often misdiagnosed, and it is important to recognize them because, first of all, an accurate diagnosis allows optimal therapy. Based on everything done, we can say that it is Polyglandular Deficit Syndrome type 3, in which the adrenal glands remain normal and hormone deficiencies do not always appear at the same time and can develop over a period of several years. With proper treatment, we will improve the quality of life as in the case of the presented patient, and at the same time reduce the risk of complications.

A14

Hypogonadotropic hypogonadism, Kallmann syndrome

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Introduction: Kallmann syndrome is rare genetic form of hypogonadotropic hypogonadism. It is characterized by low levels of gonadotropins, micropenis, cryptorchidism, lack of sexual development, absent, of reduced sense of smell (anosmia or hyposmia), facial developmental anomalies, renal agenesis, synkinesia, hearing impairment, color blindness, cerebral ataxia and dental anomalies. While most cases arise from sporadic mutations, the syndrome can also be inherited in an autosomal dominant, autosomal recessive, or X-linked recessive pattern. The prevalence is estimated at 1 in 30,000 males and 1 in 25,000 females.

Case report: We present the case of a 14-year old boy who was referred to the endocrinology clinic due to small genitalia and delayed pubertal development. Endocrinological evaluation confirmed hypogonadotropic hypogonadism, while objective smell tests established the presence of anosmia. Molecular diagnostics confirmed the diagnosis of Kallmann syndrome. After treatment with a combination of hCG and FSH, secondary sexual development and spermatogenesis were achieved.

Conclusion: Children with Kallmann syndrome require a multidisciplinary approach for diagnosis, monitoring and treatment of the disease. Early recognition of the condition and the timely initiation of hormone replacement therapy and psychological support are crucial. Long-term hormone replacement therapy is essential for ensuring normal growth, development, future fertility and prevention of osteoporosis.

A15

A girl with Noonan syndrome – Amiodarone induced hyperthyroidism

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Introduction: Noonan syndrome is an autosomal dominant disorder characterized by short stature, ptosis, hypertelorism, mild ictellectual disability and congenital heart disease, most often pulmonic stenosis. Hypetrophic cardiomyopathy is present in approximately 20 percent of patients, although the percentage varies greatly depending on the gene mutated. Amiodarone is associated with a number of side effects, including thyroid dysfunction, which is due to amiodarone's high iodine content and its direct toxic effect on the thyroid.

Case report: We introduce a 15 year old girl with Noonan syndrome (mutation in the RAF1 gene). In infancy, suspicion of Noonan syndrome was raised. She had characteristic facial features and hypertrophic cardiomyopathy with severe degree of left ventricular outflow tract obstruction. The diagnosis was confirmed abroad. She was taking propranolol as part of her therapy. At the age of 9 she had myectomy. The postoperative course was complicated by a pericardial effusion and arrhythmias. Amiodarone was added to her therapy. 15 months after starting amiodarone, she developed hyperthyroidism. She has started taking thiamazole. Amiodarone has been discontinued. After 6 months, she became euthyroid. She doesn't take growth hormone therapy becauce of hypertrophic cardiomyopathy.

Conclusion: We need a multidisciplinary approach for children with Noonan syndrome, both in pediatric and adult age. An annual review of all systems should be conducted. Good communication between the pediatrician and internist is essential, especially during the transitional years.

A16

Primary adrenal insufficiency in a patient with type 1 diabetes

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Introduction: Autoimmune diseases are frequently associated with type 1 diabetes. Adrenal insufficiency has been rarely observed but it deserves a timely diagnosis. A latent insufficiency always manifests in situations of stress and then represents a potentially life-threatening condition.

Case report: In October 2024, a 36-year-old with diabetes type 1 since the age of 12, was transferred to the Department of Endocrinology from the Department of Surgery. He was being treated with insulin glargine U300 and prandial aspart only before lunch with good glycometabolic control according to HbA1c 6.8% but he had frequent hypoglycemic episodes in the morning, 2-3 times a week. Two weeks earlier, he had had a cholecystectomy. Postoperatively he had ketoacidosis, which was treated in ICU. Due to severe pain and clinical presentation of an acute abdomen, CT scan was performed and five days after the first operation, another surgery, appendectomy, was performed. Postoperatively he presented with general weakness, hypotension, low glycaemia and hyponatremia and hypochloremia. Considering the discoloration of the skin, biochemistry findings and clinical presentation, further investigation continues at the Department of Endocrinology. Adrenal axis evaluation showed normal cortisol, unexpected for the postoperative period and very high ACTH levels. Synacthen test was performed. Cortisol level after 30 minutes showed no increase, while adrenal insufficiency was confirmed. Antiadrenal antibodies were positive. Oral hydrocortisone at 15 mg/day divided in 2 daily doses was started. The thyroid and sex hormone status was normal. CGM was performed and he was discharged from hospital. Three months later, he reported subjectively better quality of life with TIR above 70% and no nocturnal hypoglycemic arousals. Since there is a possibility of Schmidt syndrome, frequent monitoring of thyroid hormones is necessary.

Conclusion: Type 1 diabetes needs prompt recognition or periodical screening of potentially associated autoimmune conditions. Adrenal insufficiency may be initially symptomless and characterized by slow progression until it turns into acute adrenal crisis as potentially life-threatening condition.

A17

Case report: When PCOS isn't the whole story

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Introduction: Secondary amenorrhea is the absence of menstruation for more than three months in women with previously regular cycles, or fewer than three periods per year in those with previously irregular cycles. Main causes include ovarian disorders (e.g., PCOS, premature ovarian failure), hypothalamic or pituitary dysfunction (functional amenorrhea, hyperprolactinemia, hypopituitarism), intrauterine adhesions (Asherman's syndrome), and thyroid or androgen-related disorders. Intracranial lesions account for only 5–10% of cases but can disrupt gonadotropin secretion.

Case report: A 21-year-old patient experienced menarche at 12 and regular cycles until 16, when oligomenorrhea developed, leading to a PCOS diagnosis. Over time, declining gonadotropin levels caused her ovarian cysts to regress, and for the past two years, she has had complete amenorrhea—an atypical course for PCOS. Laboratory tests revealed low-range gonadotropin levels (LH, FSH), decreased estradiol and progesterone, and normal AMH and inhibin B. As these findings alone could not explain her new-onset amenorrhea, further evaluation was pursued. MRI revealed an arachnoid cyst in the left hemisphere displacing the pituitary stalk, likely causing secondary hypogonadism. Supporting pituitary involvement, TSH was at the low range and FT4/FT3 were reduced, suggesting partial impairment of pituitary and/or hypothalamic function. Surgical opinions varied, while the endocrinology team warned of progressive hormonal deficiencies if compression persisted.

Conclusion: A PCOS-like presentation can obscure a structural lesion affecting the hypothalamic–pituitary axis, especially with atypical or persistent amenorrhea. Timely detection of such lesions is crucial, as delaying treatment risks irreversible hormonal deficits. A multidisciplinary approach is vital in complex cases of secondary amenorrhea.

A18

A case report: Hypophysitis with involvement of the cavernous sinus in an elderly woman

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Introduction: Hypophysitis (HP) is an uncommon inflammatory disorder of the pituitary gland leading to mass effects, pituitary hormonal deficit, diabetes insipidus and hyperprolactinemia. Primary hypophysitis is most often lymphocytic, granulomatous, or IgG4-related, whereas secondary HP is caused by systemic illnesses, immunotherapy, or sella-based pathologies. We report our experience with this uncommon condition.

Case report: A 60-year-old female patient was diagnosed with HP after presenting with severe headache, left retrobulbar pain, and double vision in the left gaze. MRI showed an enlarged pituitary gland with heterogeneous gadolinium enhancement, left cavernous sinus involvement, a thicker and deviated stalk, dural enhancement, absent posterior pituitary bright spot on T1-weighted images, and left-sided sphenoid sinus mucosal thickening. Hormonal testing showed hyperprolactinemia, low LH, and FSH. No diabetic insipidus symptoms were present. Initially the patient was treated with moderate to low-dose oral corticosteroids over a period of nine months. On several occasions, a headache prompted a slight increase in the dose. Due to a severe flare-up, a high dose of corticosteroids with gradual tapering over an extended period was provided, and the outcome was favorable.

Conclusion: HP treatment aims to reduce compressive effects on neighboring sellar tissues, inflammation, and hormone deficiency. Early recognition and management of HP is essential in preventing permanent hypopituitarism. Corticosteroids continue to be the primary treatment for HP.The ideal dosage, route, and treatment duration are undefined due to the disease's rarity, variable clinical presentation and etiology, and lack of randomized clinical trials. Our case suggests that high-dose glucocorticoids for an extended time have favorable clinical outcomes.

A19

Unveiling McCune-Albright Syndrome: Polyostotic fibrous dysplasia and hyperfunctioning endocrinopathies

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Introduction: Fibrous Dysplasia (FD) is a disorder characterized by the replacement of bone tissue by fibrous tissue and irregularly distributed bone trabeculae, increasing the risk of pathological fractures. It may impact either a solitary bone (monostotic) or multiple bones (polyostotic; PFD). The proximal femur, ribs, and skull base are the most often affected bones. PFD accompanied by café-au-lait skin pigmentation and hyperfunctioning endocrinopathies is identified as McCune-Albright syndrome (MAS).

Case report: We report a case of a 22-year-old male patient presenting with severe headaches, left eye ptosis, and visual field deficits. He was initially assessed at the neurology clinic. MRI scans showed a pituitary macroadenoma with suprasellar and parasellar extension and abnormally expanded bones of the skull and face. The medical history included pathological fractures of both femurs at age of 12 and several corrective surgeries for subsequent bone bowing. Skeletal radiographs showed multiple lytic lesions in the femur and tibia. A 99mTc-MDP full-body scan demonstrated radiotracer uptake in the appendicular and axial bones. The patient was treated with intravenous bisphosphonates since he was 17 years old; however, confirmatory testing for bone disease was not done. The skeletal investigations were indicative of PFD. The presence of café-au-lait skin pigmentation implied MAS. Hormonal analysis confirmed acromegaly and hypopituitarism. After transcranial surgical decompression treatment with Sandostatin LAR was initiated.

Conclusion: MAS is a diagnostic challenge and a delayed diagnosis might result in significant consequences. Screening and early detection of endocrinopathies can improve the quality of life of patients with PFD.

Keywords: McCune–Albright syndrome; café au lait macules; fibrous dysplasia.

A20

The therapeutic approach to premature ovarian insufficiency (POI) using in vitro maturation (IVM) and in vitro activation (IVA)

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Introduction: According to WHO data, infertility is constantly on the rise, particularly highlighting the category of younger couples. Recent studies indicate that male and female infertility share an equal proportion, with increasing emphasis on idiopathic infertility. The aim of this paper is to highlight the significance of premature ovarian insufficiency, with a focus on treatment possibilities using innovative methods.

Methods: A review paper in which publications discussing the use of IVM and IVA in POI are analyzed, as well as a comparison with conventional IVF.

Results: The three main causes for the development of POI include early follicular depletion, blockage of further follicular development, and destruction of immature oocyte reserves. The potential solution to overcoming this issue lies in the application of IVM and IVA. The live birth rate after conventional IVF was 43%, while after the two-phase IVM it was 35%, with significantly lower use of hormone replacement therapy. In vitro activation can be performed using both two-step and one-step approaches. Recent studies largely favor the one-step (alternative) approach.

Conclusion: IVM and IVA, as modern approaches, significantly expand the therapeutic options for women with premature ovarian insufficiency. Despite the achieved results, further research is necessary to improve the effectiveness of these methods.

A21

Lipodystrophy a Rare Case of Diabetes Mellitus-Clinical Consideration in Pediatric Patient

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Introduction: Familial partial lipodystrophy of the Dunnigan type 2 (FPLD2) is a rare autosomal dominant disorder characterized by progressive loss of subcutaneous adipose tissue in the trunk and extremities and an abnormal accumulation of adipose tissue in the face, neck and intraabdominal organs. Metabolic disorders such as insulin resistance, diabetes mellitus, hypertriglyceridemia, MAFLD, and PCOS, invariably accompany FPLD2.

Case report: a 16-year-old female patient, diagnosed with type 2 DM at age 8, was referred to our clinic for endocrine care. The patient appeared athletic, with prominent muscles and veins and no subcutaneous adipose tissue in the trunk and extremities. The Cushingoid appearance was caused by abnormal facial and neck adipose tissue accumulation. Acanthosis nigricans around the neck and generalized hirsutism were present. The gynecologic history was unremarkable. Laboratory results showed hypertriglyceridemia, hyperinsulinemia, and hyperandrogenemia.An ultrasound revealed hepatic steatosis and the fibroscan estimated liver stiffness was 4 kPa. Additionally, we assessed the patient's mother. She suffered a myocardial infarction at 46 and had similar muscle phenotype and subcutaneous fat deficit. We diagnosed her with DM type 2 and dyslipidemia. Genetic validation of FPLD 2 was indicated and results are pending.

Conclusion: Our case report seeks to heighten clinician awareness of FLPD2 in pediatric and adolescent patients. Lipodystrophy typically occurs throughout puberty. A comprehensive clinical evaluation of abnormalities in fat tissue distribution is a prerequisite for clinical suspicion of FLD2. Recognition of FLPD2 enable patients, and afflicted family members to be adequately screened for cardiometabolic abnormalities, thus enabling timely and targeted interventions.

Keywords: Familial partial lipodystrophy; diabetes mellitus, metabolic associated fatty liver diseases.

A22

Simultaneous occurrence of subacute thyroiditis and Graves' disease

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Introduction: Subacute thyroiditis (SAT) is a transient, post-viral inflammatory disorder of the thyroid gland characterized by transient thyrotoxicosis, neck pain, and eventual recovery of thyroid function. In some cases, hypothyroidism may develop due to glandular damage. The coexistence of SAT and Graves' disease (GD) is extremely rare, with only a few cases reported in the literature.

Case report: We report a case of the simultaneous occurrence of SAT and GD with active orbitopathy in a 46-year-old woman. The patient presented with malaise, generalized weakness, nausea, vomiting, neck pain, and orbitopathy symptoms persisting for approximately one month. Physical examination revealed tachycardia (100 bpm), a diffusely enlarged and tender thyroid gland, conjunctival redness, eyelid swelling, and mild exophthalmos. Laboratory findings included: TSH <0.01 mIU/L, FT4 >64.4 pmol/L, FT3 >30.7 pmol/L, thyroglobulin 1038.52 ng/mL, thyroglobulin antibody 1.1 IU/mL, thyroperoxidase antibody 19.1 IU/mL, TSH receptor antibody >40 IU/L, ESR 85 mm/h, CRP 11.9 mg/dL, IL-6 82 pg/mL. Thyroid ultrasound showed an enlarged, heterogeneous gland with hypervascularity. Ophthalmological examination confirmed active Graves' orbitopathy with a Clinical Activity Score (CAS) of 4–5/7 based on EUGOGO criteria. The patient was treated symptomatically with thyrosuppressive therapy and pulse corticosteroids for 12 weeks.

Conclusion: The simultaneous occurrence of SAT and GD, especially with active Graves' orbitopathy, is exceedingly rare. In this case, SAT-induced autoimmune alterations may have triggered the development of GD in a predisposed individual. This case highlights the importance of considering overlapping thyroid pathologies in complex clinical presentations.

A23

Case report: A patient with type 1 diabetes mellitus treated with insulin pump therapy

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Introduction: Insulin pumps are an option in the treatment of diabetes mellitus and can be a good choice for patients who like the idea of the pump, active patients, patients with frequent hypoglycaemia, women planning pregnancy.

Case report: A 37-year-old man was referred to the diabetes outpatient clinic for assessment as he is motivated to switch to insulin pump treatment. He had been diagnosed with type 1 diabetes mellitus since the age of 24. He had been almost continuously poorly controlled, mainly because he did not follow a diabetic diet and was physically inactive, but had no chronic complications. At his first visit, however, he was not prescribed an insulin pump, but was re-educated in the basics of diabetes and the principles of basal-bolus therapy, with a focus on carbohydrate calculations. The ambulatory glucose profile showed better glucoregulation, but still frequent nocturnal hypoglycaemia of 18%. According to the health insurance company, this is one of the indications for prescribing an insulin pump. Among the pumps currently available on the market, he opted for Medtronic's MiniMed 780G pump system with SmartGuard automation, which delivers insulin every 5 minutes (as needed) for automatic correction to achieve a predefined glucose target. With this technology, excellent glucose control has been achieved - a target in the 80% range and, most importantly, a target below the 4% range.

Conclusion: Insulin pump therapy has been shown to lead to better blood glucose control, less nocturnal hypoglycaemia and therefore a more flexible lifestyle.

A24

Diabetes mellitus as the first manifestation of acromegaly

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Introduction: Acromegaly is a chronic systemic disease primarily caused by an adenoma of somatotropic cells, leading to excessive growth hormone secretion. This hypersecretion results in increased insulin-like growth factor (IGF-1) release from the liver. Unlike other hormones from the adenohypophysis, growth hormone affects all tissues and has a diabetogenic effect. It elevates blood glucose levels, decreases glucose uptake into cells, and stimulates insulin secretion, potentially leading to diabetes.

Case report: The case study involves a 48-year-old patient hospitalized for poor glycoregulation. Type 2 diabetes was diagnosed in 2016. Due to the visible acromegaloid features, an endocrinological evaluation was conducted, revealing elevated basal IGF-1 levels of 1225 ng/ml and a paradoxical increase in growth hormone during the oral glucose load test (OGTT). The lactotropic and thyrotropic axes were intact, but hypogonadotropic hypogonadism was present. A pituitary gland MRI confirmed a 16 mm macroadenoma causing cavernous sinus compression. A neurosurgeon recommended transsphenoidal surgery for treatment. Glycoregulation was improved with a long-acting insulin analogue, metformin, a DPP4 inhibitor, and diabetes diet measures.

Conclusion: Diabetes, a complication of acromegaly, affects about 30% of patients and significantly impacts disease prognosis. Treatment aims to halt GH and IGF-1 hypersecretion, stop tumor growth and maintain pituitary function, thereby reducing the risk of complications.

Keywords: acromegaly, diabetes mellitus, hyperglycemia.

A25

Inadvertent severe calcitriol intoxication with calcium-alkali syndrome after rapid recovery from surgical hypoparathyroidism

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Introduction: Calcium-alkali syndrome comprises the triad of hypercalcemia, metabolic alkalosis and acute kidney injury with a history of excessive calcium and vitamin D intake. It can therefore occur in patients being treated for hypoparathyroidism.

Case report: A 68-year-old man with metastatic papillary carcinoma underwent total thyroidectomy with bilateral selective neck dissection. One parathyroid gland was reimplanted into the sternocleidomastoid muscle. Postoperatively, symptomatic hypocalcemia occurred. The discharge instructions were as follows: calcitriol 0.5 mcg TID, calcium carbonate 1 g TID and follow-up in one week. Eleven days later, he came to the emergency room complaining of drowsiness, altered mental status, constipation, and loss of appetite. Laboratory results showed severe hypercalcemia (albumin-adjusted calcium 5.02, ionized 2.62 mmol/L), unmeasurably low PTH, metabolic alkalosis (HCO_3^- 36.1 mmol/L), and acute kidney injury (creatinine 342 µmol/L). He had inadvertently been taking twice the recommended dose of calcitriol (he had been given Rocaltrol at 0.25 mcg per tablet during previous hospitalization). The offending substances were discontinued and he was given saline infusions, furosemide and glucocorticoids. Ten days later, he was discharged with mild hypercalcemia (albumin-adjusted calcium 2.6, ionized 1.37 mmol/L) and a lower creatinine (176 µmol/L).

Conclusion: Recovery from postoperative hypoparathyroidism is very variable and unpredictable so serum calcium levels should be monitored frequently. The pharmacologic effect of a single dose of calcitriol lasts up to one week. However, prolonged exposure to excess calcitriol leads to deep changes in bone metabolism and consequently to long-lasting hypercalcemia.

A26

Ectopic ACTH secreting Cushing's syndrome due to medullary thyroid carcinoma

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Introduction: This case involves a patient who was diagnosed with medullary thyroid carcinoma accompanied by ectopic Cushing's syndrome.

Case report: A thirty-year-old male patient, with no significant medical history, presented with 15 kilograms weight gain. He reported general bodily weakness, profound difficulty in rising from a seated position, increased susceptibility to bruising, bilateral hand and feet swelling, facial puffiness, goitre, abdominal distension, hypertension and new-onset diabetes. He had purple stretch marks on the abdomen, hyperpigmentation in the axilla and cervical swelling. Hormonal assessments indicated ACTH-dependent Cushing's syndrome, with an ACTH level of 107 pg/ml and a cortisol level of 996 nmol/l. Further thyroid evaluation revealed elevated levels of CEA at 355 ng/mL and calcitonin at 5383 pg/mL. A contrast-enhanced MRI of the pituitary gland was normal, and a high-dose dexamethasone suppression test demonstrated a lack of suppression. A 68Ga DOTA PET indicated a thyroid lesion with locoregional metastasis and heightened uptake in both adrenal glands. The patient was diagnosed as ectopic Cushing's syndrome. He underwent bilateral adrenalectomy because of overwhelming hypercortisolemia and anticipated incomplete removal of the thyroid lesion, followed by a thyroidectomy with dissection of the cervical lymph nodes. Postoperative calcitonin level: 350 pg/ml, and after radiotherapy, the calcitonin level decreased to 231 pg/ml. Histopathology confirmed medullary thyroid carcinoma, with calcitonin and ACTH positive immunofluorescence. A genetic study was non contributory. Currently he is having stable disease with the resolution of hypertension and diabetes.

Conclusion: The present case highlights that proper hormonal evaluation and treatment are crucial for patients with MTC.

A27

Resistance to Thyroid Hormone Beta – a case report

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Introduction: Resistance to Thyroid Hormone (RTH)-β syndrome is a hereditary condition with an incidence of 1/40.000. They are characterized by reduced sensitivity of target tissues to thyroid hormone due to mutations in the thyroid hormone receptor.

Case report: We describe a 50-year-old female patient with RTH genetically proved. The patient has been followed by an endocrinologist for about 20 years, initially monitored as thyrotoxicosis and nodular goiter. She was treated by methimazole during over then 10 years. The patient complains of palpitations and fatigue. At the follow-up examination after several years, the laboratory findings showed elevated levels of the free fractions of thyroid hormones and TSH in the reference range. Thyroid ultrasound showed enlarged thyroid gland, with thyroid nodules of limited clinical significance, while thyroid scintigraphy showed that described thyroid nodules were functional. MRI of the pituitary gland was normal. A thyrotropin releasing hormone (TRH) test was performed, indicating THR. The patient was referred for genetic testing (THRB, MCT8, SECISBP2 genes). The conducted genetic testing revealed a heterozygous pathogenic variant in the thyroid hormone receptor-beta (THR- β) gene.

Conclusion: RTH is a hereditary disease characterized by elevated serum free thyroid hormone levels with normal or elevated TSH levels. Due to its nonspecific symptomatic presentation, RTH presents a diagnostic challenge, which can lead to unnecessary therapeutic treatment, if not considered.

A28

Adjuvant Therapy and Fertility Counseling in Female Patients with Adrenocortical Carcinoma

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Case report: A 25-year-old female was hospitalized for post-surgical staging following a right adrenalectomy for adrenocortical carcinoma (ACC). She was initially referred from a regional hospital after a large adrenal incidentaloma was detected during routine postoperative monitoring for a sleeve gastrectomy performed abroad. A follow-up CT scan revealed a 52 × 46 × 42 mm hyperintense right adrenal mass with suspected propagation to the adrenal vein. Biochemical evaluation ruled out hormonal excess, and retroperitoneoscopic adrenalectomy was performed. Histopathology confirmed ACC (pT2NxMx, Ki-67 = 5%, mitotic count: 10/50 HPF, Weiss score 4, ENSAT stage 3). Due to personal circumstances, she was hospitalized for post-surgical staging six weeks postoperatively. Imaging and biochemical evaluations were unremarkable. Prioritizing fertility preservation, for the first time in Serbia, a cryopreservation was successfully performed in collaboration with the oncofertility board, though the procedure was complicated by ovarian hyperstimulation syndrome, which was managed accordingly. The neuroendocrine tumor board determined that the adjuvant mitotane therapy was not indicated, as the post-surgical interval slightly exceeded three months. She remains clinically stable under surveillance.

Conclusion: This case highlights key challenges in the management of young female patients with ACC, underscoring the need for a more precise classification criteria for borderline ACC cases, optimized timing of fertility preservation in ACC patients and revaluation of adjuvant therapy criteria, particularly the current “three-month window” for initiating mitotane therapy. This case contributes to the ongoing discourse on refining ACC management strategies, particularly in reproductive-age women, to balance oncologic outcomes with fertility preservation.

A29

Endocrinological challenges in patients with left ventricular assist device (LVAD): a case report

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Introduction: Amiodarone-induced thyrotoxicosis (AIT) can be a serious and potentially life-threatening condition, particularly for patients with heart disease who are at risk of severe complications. In patients with AIT resistant to pharmacological treatment, in a situation where thyroidectomy is not possible due to severe comorbidities, prolonged treatment with corticosteroids could lead to severe complications.

Case Report: We describe a 19-year-old patient with advanced heart failure (HF) due to dilated cardiomyopathy, with surgically implanted left ventricular assist device (LVAD), awaiting heart transplantation. Patient was treated with amiodarone for 18 months, due to the earlier manifestation of atrial fibrillation (AF). Consequently, he developed AIT and thyroid storm, and treatment with various modalities of corticosteroid therapy and propylthiouracil was initiated. Despite treatment, AIT was highly resistant to treatment, and prolonged treatment with corticosteroid therapy led to the development of iatrogenic Cushing's syndrome. Due to severe thyrotoxicosis, it was not possible to perform surgical treatment, total thyroidectomy.

Conclusion: Treatment of patients with severe HF and LVAD, associated with AIT and associated iatrogenic Cushing's syndrome, is an endocrinological emergency, with many challenges and requiring a multidisciplinary approach to treatment. AIT is associated with an increased risk of cardiovascular (CV) events, especially in patients with severe HF, so early diagnosis and adequate and timely treatment are very important.

A30

Levothyroxine dose according to body weight in patients with severe subclinical hypothyroidism

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Introduction: The dosage of levothyroxine can be determined based on a patient's weight and is estimated to be 1.6 to 2.1 mcg/kg/day for primary hypothyroidism. This study aimed to determine the mean weight-based dose of thyroxine in patients with severe subclinical hypothyroidism.

Methods: Patients with TSH values between 10 and 20 mIU/mL and normal fT4 levels who achieved euthyroid status were retrospectively analyses. A total of 51 patients were included in the study.

Results: The mean age was 58.11 ±17.4 years, and the mean weight was 74.78±15.9 kg. Females were 86%. The mean dose of levothyroxine to achieve euthyroid status was 72.40 ± 25.5 mcg/day, or 0.996± 0.35 mcg/kg/day. The mean TSH level after treatment was 2.621±1.22 mU/L. Age, gender, height, and disease duration did not impact achieving a euthyroid state ($p>0.05$).

Conclusion: Determining the correct levothyroxine dosage involves more than a simple weight-based calculation. However, understanding the mean dose relative to weight allows healthcare providers to better tailor therapy to individual patient needs, improving outcomes, minimizing frequent visits, and reducing the risk of under- or over-treatment.

Keywords. Subclinical hypothyroidism, weight-based calculation, levothyroxine.

A31

A patient with Turner syndrome with mixed gonadal dysgenesis (45XO/46 XY; SRY +)

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Introduction: Gonadal dysgenesis refers to conditions that cause impaired or defective formation of the gonads, with clinical manifestations and varying degrees of genital ambiguity determined by the level of dysfunction or malformation. Turner syndrome is relatively more common that other forms of gonadal dysgenesis with female phenotype.

Case report: We present a girl aged 15 years and 4 months who was admitted for treatment due to primary amenorrhea, short stature and reduced growth. The laboratory results showed hypergonadotropic hypogonadism and karyotype confirmed diagnosis of Turner syndrome with mixed gonadal dysgenesis (45XO/46XY; SRY +). Immediately after confirmed diagnosis we started growth hormone therapy. After prophylactic adnexectomy hormonal replaced therapy with estradiol patches was started. Two years after presentation of replacement hormonal therapy, she had breakthrough bleeding, after which we introduced her with progestogens therapy as well. As the consequence of the primary diagnosis she developed osteoporosis (Z score -3.09). She was on high doses of vitamin D, and we have not yet decided on bisphosphonate therapy.

Conclusion: It is important to acknowledge the impact of the quality of life that associated health burdens have on the females with TS. The importance of multidisciplinary care with different subspecialty providers is essential in managing the female with TS to ensure optimal outcomes.

A32

Latent autoimmune diabetes in adults – a therapeutic challenge (case report)

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Introduction: Latent autoimmune diabetes in adults (LADA) is a form of diabetes characterized by slow progressive autoimmune destruction of pancreatic beta-cells. This condition is usually diagnosed during adulthood, often around 35 years of age. While LADA can initially be managed by oral medications, most of the patients will eventually require insulin therapy.

Case report: We present a 34-year-old man with newly discovered hyperglycemia. He had polydipsia and weight loss of around 15 kg in the past five months. Besides the fact that he had been hospitalized due to autoimmune urticaria ten years ago, the patient's medical history of any chronic illnesses was negative. He had no family history of diabetes. Physical exam showed normal body mass index (BMI) of 24.4 kg/m2. Laboratory examination revealed hyperglycemia, glycated hemoglobin (HbA1c) at 10.1%, with normal insulinemia and C-peptide levels. Islet cell autoantibodies (ICA) and autoantibodies against glutamic acid decarboxylase (anti-GAD) were positive. Any attempts at using insulin therapy were followed by borderline low values of glycemia and he was released with metformin therapy. In the follow-up, optimal glycoregulation with metformin monotherapy was achieved with HbA1c values ranging from 5.8% to 6.7%.

Conclusion: Early diagnosis of LADA helps patients achieve better glycemic control and avoid the long-term complications of diabetes. While insulin therapy remains the treatment of choice, careful monitoring of patients with LADA is advised, as the optimal timing for initiating insulin therapy varies among individuals.

A33

Acute Severe Hyponatremia - A Rare Manifestation of Pituitary Apoplexy

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Introduction: Pituitary apoplexy is a severe and acute emergency in endocrinology that can present in most cases with vision problems and headaches.

Case report: A 78-year-old man presented in the emergency department with general weakness, diarrhea, nausea, and presyncope. He was previously treated for arterial hypertension and atrial fibrillation. Clinically he was euvolemic with no using of diuretics. Initial laboratory findings included severe acute symptomatic hyponatremia (110 mmol/L), high urine sodium levels (66 mmol/L), and normal renal function. Because of acute neurological symptoms, the patient was treated with hypertonic saline. Low cortisol and ACTH levels and central hypothyroidism were observed during further hospitalization. A fluid restriction was initiated and hydrocortisone was administered, followed by normalization of sodium levels` and recovery of mental status. An emergency MR scan showed pituitary apoplexy and further laboratory tests indicated hypogonadotropic hypogonadism too. The patient was discharged from the hospital with a recommendation to take hydrocortisone, and levothyroxine orally, and apply testosterone gel.

Conclusion: Severe hyponatremia can be multifactorial, necessitating a comprehensive evaluation to identify all contributing factors and determine the underlying cause of hyponatremia.

Keywords: pituitary apoplexy, SIADH, acute hyponatremia, adrenal insufficiency.

A34

Persistent hypocalcemia caused by primary hypoparathyroidism after total thyroidectomy

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Introduction: In primary hypoparathyroidism characterized by hypocalcemia and hyperphosphatemia, deficient parathyroid hormone (PTH) secretion is most commonly a result of surgical excision or damage to the parathyroid glands. Total thyroidectomy is effective in treating Graves' disease (an autoimmune disorder that leads to hyperthyroidism), but it can lead to various postoperative complications, with hypoparathyroidism and transient hypocalcemia being the most common.

Case report: A 44-year-old female presented to the endocrinology clinic with symptoms of hyperthyroidism, including weight loss, tachycardia, hand tremors and anxiety. Laboratory tests showed suppressed TSH (<0.01 mIU/L) and elevated FT4. TSH receptor antibodies (TRAb) were positive, confirming Graves' disease. Neck ultrasound revealed diffuse thyroid hyperplasia and thyroid scintigraphy showed increased radioactive 99mTc-pertechnetate uptake. Laboratory tests showed hypercalcemia (2.81 mmol/L) and elevated parathyroid hormone (PTH 146.5 pg/mL), along with hypophosphatemia, indicative of primary hyperparathyroidism. Total thyroidectomy was performed. Few days postoperatively, the patient developed symptoms of hypocalcemia, including paresthesia in the fingers, muscle cramps and positive Chvostek's and Trousseau's signs. Laboratory tests confirmed severe hypocalcemia (1.68 mmol/L), normal PTH (30. 8 pg/mL), which raised suspicion of Hungry bone syndrome (HBS). Despite initial treatment and dose increasing with oral calcium and vitamin D (calcitriol), hypocalcemia persisted for more than 6 months. This is considered a primary hypoparathyroidism.

Conclusion: In cases of prolonged hypocalcemia like ours, early detection of hypoparathyroidism and appropriate replacement therapy is crucial to prevent serious complications and improve the patient's quality of life.

A35

Induction of spermatogenesis in patient with hypopituitarism due to hemorrhagic fever

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Introduction: Hypopituitarism due to hemorrhagic fever is rare, and is usuallu result of hypophysitis, ischemic injury, or hemorrhage (pituitary apoplexy) affecting the hypothalamic-pituitary axis.

Case report: We present a 39-year-old patient who developed panhypopituitarism as a late complication of hemorrhagic fever, treated 12 years earlier. He was treated with renal replacement therapy, hemodialysis, until renal function recovered, and shortly thereafter panhypopituitarism developed. He was initially treated with hydrocortisone and L-thyroxine, and then therapy with testosterone and growth hormone was introduced, the latter being taken occasionally. After 11 years, the patient married and planned to have children. Given the spermogram findings, additional endocrinological examinations were performed, including retesting of the pituitary axis, with the aim of initiating a treatment, induction of spermatogenesis. Physical examination revealed severe obesity. Laboratory tests revealed hypopituitarism with low levels of FSH and LH. A gonadotropin-releasing hormone stimulation test was performed, which didn't indicate a response in FSH and LH levels. MRI showed a radiological finding ''empty sella''. After stopping testosterone therapy, a testicular ultrasound and additional urological evaluation were performed, and an appropriate regimen with follitropin alfa and recombinant human chorionic gonadotropin was started. After 10 months from the initiation of treatment, spermatogenesis is established, after 11 months spontaneous pregnancy occurs. After that, cryopreservation was performed, spermatogenesis induction therapy was stopped and the patient was transferred to testosterone therapy.

Conclusion: This case highlights the importance of early recognition and treatment of hypogonadotropic hypogonadism in male patients, with a comprehensive approach, including fertility induction when necessary.

A36

Primary ovarian insufficiency - A case report

Senal Malkočević

Introduction: Primary ovarian insufficiency (POI) is defined as the loss of ovarian function before 40 years of age, characterized by amenorrhea (primary or secondary) with raised gonadotropins in the postmenopausal range and low estradiol. Prevalence is 1/10 000 women by the age of 20 years,1/1000 women by the age of 30 years and 1/100 by the age of 40 years. POI occurs through two major mechanism: follicle dysfunction and follicle depletion.

Case report: This young girl was 30 years old, unmarried, present with 11 months amenorrhea. She attained her menarche at the age 12 years. Amenorrhea was preceded by oligomenorrhea, followed by irregular menses. She complained of hot flashes, night sweats and decreased libido. There was no history of intake of drugs for any other disease, exposure to radiation, malignancy or congenital disorders. She did not smoke or drink alcohol. She was 167 cm tall and 70 kg weight. Thyroid gland was no palpable. There was no hyperpigmentation, hirsutism, or dry skin. Routine clinical evaluation and system examination was normal. Gonadotropins was raised: FSH 48 mIU/ml (5-12), LH 37 mIU/ml (5-12), Estradiol 12 pg/ml (20-400), Anti-Muller hormon was nondectable, 25-hydroxi vitamin D 20 ng/ml (>30). Ultrasound pelvis: normal size uterus ,right ovary volume 2 ml, left ovary volume 4 ml, normal stroma, endometrial thicknes measuring 0,8 mm, and no follicles seen.

Conclusion: Women with primary ovarian insufficiens early and induced menopause will need support over many years,with physical and psychological changes over time.Our ability to give these women child now is an encouraging development in the menagment of this disease.

A37

The role of fine-needle aspiration in diagnosing primary hyperparathyroidism

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Introduction: Adenoma or hyperplasia of the intrathyroidal parathyroid gland is the cause of primary hyperpratireoidism in 2% of cases. Ectopic adenomas are a common reason for the failure of surgical treatment of primary hyperparathyroidism.

Case report: Endocrinological examination started due to osteoporosis (osteodensitometry: T score L1-L4 -2.6, femoral neck -2.7). Laboratory tests revealed hypercalcemia (calcium 2.61 mmol/l (2.1-2.55), Ca2+ 1.37 mmol/l (1.0-1.35)) with an elevated parathyroid hormone (198.9 pg/ml (15-68.3)) and accelerated bone metabolism (P1NP 111.2 ng/ml (16.3-73.9), CrossLaps 1073 pg/ml (556-1008). Alendronate and loop diuretics therapy was introduced, with intensified hydration. Scintigraphy (radiopharmaceutical Technetium-MIBG) indicated the presence of a focal change in the inferior pole of the right thyroid lobe. This findig may be in favor of adenoma/hyperplasia of the lower right parathyroid gland. However, the presence of the MIBG avid thyroid nodule could not be ruled out due to the fact that the lesion accumulated radiopharmaceuticals on the thyroid scintigram as well. A fine-needle aspiration of the observed change was proposed. Cytological finding was inadequate for evaluation due to insufficient number of thyrocytes. Therefore, aspiration was repeated with parathormone analysis in rinse material in which the level of parathyroid hormone was 80 pg/ml. In this way, intrathyroid localization of the parathyroid gland responsible for the occurrence of primary hyperparathyroidism was confirmed.

Conclusion: Fine-needle aspiration enabled the differentiation between the intrathyroidal parathyroid gland and the thyroid nodule with high MIBG uptake, and was a necessary final step in the diagnosis and preparation for surgical treatment of primary hyperparathyroidism.

A38

Case report: A rare case of primary hyperparathyroidism due to an ectopic retrosternal parathyroid adenoma

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Introduction: Primary hyperparathyroidism (PHPT) is an endocrine disorder characterized by excessive secretion of parathyroid hormone (PTH), leading to hypercalcemia and various systemic complications, including hypertension and nephrolithiasis. Ectopic parathyroid adenomas present a particular challenge due to their atypical location, often requiring additional imaging and appropriate surgical approach.

Case report: A 55-year-old female presented with persistent hypertension, chronic fatigue, generalized bone pain, and recurrent nephrolithiasis. Despite antihypertensive therapy, blood pressure remained uncontrolled. Laboratory investigations confirmed severe hypercalcemia, markedly elevated PTH levels, and hypophosphatemia. Imaging studies, including renal ultrasound and parathyroid scintigraphy with 99mTc-MIBI, identified an ectopic hyperfunctioning parathyroid adenoma in the retrosternal region. CT scan evaluation revealed a well-defined, homogeneous soft tissue mass measuring 17 mm x 8 mm, located behind the manubrium of the sternum, slightly central and to the right, consistent with an ectopic parathyroid adenoma. A DEXA scan revealed osteoporosis. Given the mediastinal location of the adenoma, a transthoracic surgical approach was performed. Histopathological examination confirmed oxyphil cell parathyroid adenomas. After surgery, serum calcium and PTH levels normalized, and blood pressure improved.

Conclusion: This case highlights the importance of precise anatomical localization in PHPT, particularly when ectopic adenomas are involved. The surgical approach is dictated by the adenoma's location, with transthoracic intervention required for mediastinal lesions. Early detection and appropriate management are crucial for preventing cardiovascular morbidity. A multidisciplinary approach remains key to optimizing patient outcomes and ensuring long-term disease control.

A39

Statin-induced rhabdomyolysis

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Introduction: Statin-induced rhabdomyolysis is a rare but potentially life-threatening condition that can lead to acute kidney injury (AKI) and severe complications if not promptly recognized and treated.

Case report: A female patient presented to the Emergency Room (ER) at the University Hospital Center Zagreb due to concerning laboratory results obtained by her family medicine specialist. She reported progressive leg pain, difficulty bending, and pronounced fatigue even after short walks. Upon further inquiry, she disclosed having dark-colored urine for the past three days.
Her medical history was significant for type 2 diabetes mellitus, dyslipidemia, arterial hypertension, and chronic kidney disease. A detailed medication review revealed that her lipid-lowering therapy had been recently modified, with a statin introduced approximately one month prior by a specialist from another institution. The onset of her symptoms coincided with the initiation of this new therapy. Laboratory findings in the ER revealed markedly elevated creatine kinase (CK) levels of 8,852 U/L, indicative of severe muscle injury, along with acute renal failure (serum creatinine: 263 µmol/L, eGFR <15 mL/min/1.73m^2). Immediate intravenous fluid resuscitation was initiated, and the patient was subsequently admitted to our department for further management. Through aggressive parenteral hydration and urine alkalization, her condition gradually improved. CK levels steadily declined, nearing reference values within one week of hospitalization. Pharmacogenetic testing later confirmed a genetic predisposition to statin intolerance, particularly to rosuvastatin.

Conclusion: This case underscores the critical need for careful monitoring of statin therapy, especially in patients with pre-existing comorbidities such as chronic kidney disease. Pharmacogenetic testing may serve as a valuable tool in identifying individuals at risk for severe adverse effects.

A40

Self-healing acromegaly – secret beyond the hormones

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Introduction: In very rare cases, spontaneous remission of acromegaly can occur without treatment.

Case report: A 54-year-old male was referred for evaluation due to suspected acromegaly. His history revealed that 18 months ago, he experienced severe headaches and diplopia. At that time an MRI of the sellar region showed an enlarged pituitary gland (18x18x26 mm) with a left-dominant adenoma (17x15x11 mm), infundibular displacement to the right, and mild contact with the optic chiasm. Visual field testing showed reduced sensitivity centrally and superiorly in the right eye and diffuse loss in the left eye. He has type 2 diabetes with diabetic retinopathy and dyslipidemia. He underwent surgery for cervical spinal canal stenosis with myelopathy and received corticosteroid therapy for lumbar disc disease for two years. Upon admission to our clinic except for acral enlargement, he denied previous symptoms (diplopia and headaches), but reported absent libido and erectile dysfunction. Hormonal findings indicate hypopituitarism: TSH 2.12 mIU/L, FT4 8.9 pmol/L, FSH 2.1 IU/L, LH 0.9 IU/L, Prolactin 107mIU/L, growth hormone 0.3 ng/ml, Testosterone 1.74 nmol/L, Cortisol <28 nmol/L, IGF-1 57.6 ng/mL. OGTT showed proper GH suppression. Follow-up MRI shows reduced pituitary parenchyma, displaced downward, with adenoma regression (9.4x6.4x11.5mm, Knosp 1). Findings suggest apoplexy of a somatotrophic macroadenoma with consequently complete hypopituitarism.

Conclusion: Despite clear acromegaly stigmata, clinical progression, hormonal findings, and MRI suggest inactive or “burnt-out” acromegaly.

A41

Early menopause in a patient with membranous glomerulonephritis and complex comorbidities

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Introduction: Chronic kidney disease (CKD) during women's reproductive life negatively affects ovarian aging.

Case report: A 42-year-old female consulted an endocrinologist due to amenorrhea for 8 months, accompanied with hot-flushes, vaginal dryness, poor sleep, low mood and concentration decline. She reports that from the age of 38 she suffers of oligomenorrhea. Detailed documentation review revealed that at the age of 29 she underwent laparoscopic adnexectomy (PH: teratomas), and at 33, she was diagnosed with membranous glomerulonephritis, and was treated according to the Ponticelli protocol. Additionaly, she had impaired glucose tolerance, hypertension, hyperlipidemia, atrial fibrillation, and at the age of 39 she had trombous pulmonary embolism, and currently takes rivaroxabane, fosinopril, bisoprolol, atorvastatin, propafenone, metformin. Physical examination showed no peculiarities, with a BMI of 25 kg/m2. The tests showed preserved kidney function and metabolic parameters, with FSH 41 IU/L, LH 33 41 IU/L, E2<88 pmol/L. Pelvis US revealed 5 mm thin endometrium, and lack of follicular activity. Her haemathological and immunological results were normal. She was diagnosed with early menopause, and started on transdermal estradiol, vaginal micronised progesterone, sequential, and vaginal estriol cream. After 3-months she reported reduction in hot flushes and improved sleep, however, although improved, the low mood was still present. Following psychiatric evaluation, escitalopram was added to her therapy. After six-months, she reported complete resolution of her symptoms.

Conclusion: CKD is associated with early menopause and mental health impairments. Multidisciplinary approach, including hormone replacement therapy and psychiatric support, proved effective in alleviating symptoms and enhancing the patient's well-being.

A42

Hematometra as the first presentation of primary amenorrhea

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Case report: in December 2022, an 18-year-old female was referred by her pediatrician to our Clinic. One year prior she was admitted to Pediatric Clinic due to vomiting, dizziness, and loss of consciousness where she was diagnosed with hematometra, hematosalpinx, and bilateral ovarian cysts. An MRI revealed the presence of cervical agenesis, uterine adhesions, and a double collecting system in the left kidney. Additionally, she reported urinary incontinence since early childhood, and urodynamic testing revealed reduced bladder capacity and abnormal urinary function. Her gonadal hormone status was normal. GnRH agonist was initiated to suppress the hypothalamic-pituitary-gonadal axis and surgery was planned but for to us unknown reasons was never performed. Since childhood she was diagnosed with hypothyroidism and was taking l-thyroxine, however, irregularly, so her TSH levels was chronically elevated despite our efforts to adjust her treatment. After initial evaluation, we have referred her to a pediatric urologist at the University Children Clinic “Tiršova“ where the surgery was planned but was performed after in total 3 years of regular triptorelin treatment due to incompliancy with her l-thyroxine therapy. In February 2025, following cystoscopy, urethral reimplantation was successfully performed. No remnants of the vagina or cervix were found, so she is planned to undergo another surgery for vaginoplasty.

Conclusion: Vaginal agenesis together with double collecting system in the kidney resulting from Mayer-Rokitansky-Küster-Hauser syndrome affects 10% of these patients. Skilled surgical team provided successful surgery; however, our patient is now awaiting another surgery and evaluation to detect and correct long term GnRH agonist consequences.

A43

Challenges of hormone therapy in patients with iatrogenic premature ovarian insufficiency and multiple sclerosis

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Introduction: Studies have shown that hypoestrogenism in patients with multiple sclerosis (MS) has profound negative effect on the course and progress of this disease.

Case report: 22-year-old female was referred to an endocrinologist 2-years after iatrogenic premature ovarian insufficiency (iPOI). At the age of 8 she underwent left-sided adnexectomy due to ovarian torsion. At the age of 12, due to a cyst on the right ovary, combined oral contraceptive (OCP) ethynilestradiol/levonorgestrel was initiated. Despite the timely treatment, she suffered another ovarian torsion at the age of 19, and right-sided adnexectomy was performed (PH: cyst infarction and hemorrhagic infarction of the fallopian tube). OCP was continued, however, a year later, due to vision impairments and elevated intraocular pressure, she underwent neurological evaluation, and was diagnosed with MS, starting cladribine. After a year, she suffered MS relapse, and pulse corticosteroid treatment was initiated. During diagnostics she had two lumbar punctions in the same day, and in the evening, she developed intense headache. Angiography showed cerebral venous thrombosis, dabigatran was introduced, and OCP were discontinued. In our outpatient clinic, she complained on fatigue, forgetfulness, hot flushes, incontinence. Pelvis US showed a 4 mm endometrium, scar tissue in both adnexal regions, thus ultralow transdermal estradiol with vaginal micronized progesterone, sequential, was initiated, with vaginal estriol cream. After 6-months, she reported regular menstrual bleedings, with resolution of all complaints.

Conclusion: Hormonal replacement therapy in patients with iPOI and MS has a neuroprotective and immunomodulatory effects, thus improving the quality of life and mental health in these patients.

A44

Novel Genetic Mutations in Congenital Hypopituitarism: A Case Report

Anida Divanović Slato

Introduction: Panhypopituitarism is an uncommon endocrine disorder resulting from a deficiency of multiple pituitary hormones, with an estimated prevalence of 4–5 cases per 100,000 people. A rare cause of this condition is pituitary stalk interruption syndrome (PSIS), which affects approximately 0.5 per million live births. Diagnosis relies on MRI findings, which commonly show a thin or absent pituitary stalk, ectopic posterior pituitary, and anterior pituitary hypoplasia.

Case report: A 38-year-old man from a disadvantaged background initially sought neurological evaluation due to gait abnormalities and heel discomfort. Further assessment by an endocrinologist revealed a childhood history of hospitalization in a pediatric endocrine unit, where he briefly received growth hormone therapy. He also recalled undergoing surgery for cryptorchidism. On examination, he was notably tall (195 cm) with a eunuchoid body structure, high-pitched voice, small testes, reduced genital size, and sparse body hair. Laboratory findings confirmed deficiencies in multiple pituitary hormones. Karyotype analysis identified a normal 46, XY pattern. MRI revealed pituitary stalk disruption, while thyroid ultrasound showed normal gland morphology but incomplete maturation of the right thyroid cartilage. X-ray imaging indicated an asymmetry in knee joint height and hypoplasia of the right fibula. Genetic testing identified novel mutations not previously reported.

Conclusion: PSIS is typically diagnosed in childhood due to growth failure, with adult cases being extremely rare. While growth hormone deficiency usually results in short stature, some individuals may grow normally. Whole-exome sequencing could provide further insights into the genetic mechanisms underlying this syndrome.

A45

Primary Hyperparathyreoidism after Total Thyreoidectomy for a Cancer: A Case Report

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Opća bolnica Tešanj

Introduction: Hypoparathyroidism is the most common complication in post-thyroidectomy patients. In this clinical setting, primary hyperparathyroidism is an unexpected diagnosis. The majority of patients are asymptomatic at the time of diagnosis and are discovered in routine lab work.

Case report: A 33-year-old female patient was referred to the endocrinology department for a regular check-up. At the age of 29 years old, she underwent total thyroidectomy for follicular thyroid cancer, followed by adjuvant RAI (radioactive iodine treatment). Since her pregnancy, at 27 years old, which was complicated with eclampsia, she was medicated with angiotensin receptor antagonist in combination with thiazide diuretics. A couple of months after the thyroidectomy, a mild asymptomatic hypercalcemia was detected. Hypercalcemia persisted after the thiazide drug was discontinued. The blood testing confirmed primary hyperparathyroidism. Cervical ultrasound was unable to identify a parathyroid glands, and the CT scan revealed an overly descendent (ectopic) mass suspected for the parathyroid gland in the level of the right clavicle. 99m Tc–sestamibi scintigraphy showed an area of tracer uptake compatible with an enlarged parathyroid gland. Parathyroid surgery was scheduled. The patient is still on follow-up.

Conclusion: I describe a rare case of primary hyperparathyroidism, diagnosed after total thyroidectomy and RAI therapy. The cause seems to be an overly descendent (ectopic) parathyroid adenoma, although the surgery is yet to come.

Key words: primary hyperparathyroidism, ectopic parathyroid adenoma, follicular thyroid carcinoma.

A46

The negative effect of anabolic steroids on male reproductive function: a case report

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Introduction: The abuse of anabolic steroids is common in bodybuilding due to their ability to rapidly increase muscle mass. However, they carry health risks, such as cardiovascular problems, liver and kidney dysfunction, hypogonadism, impaired spermatogenesis, and infertility. We demonstrate the harmful effects of anabolic steroids on reproductive function.

Case report: A 27-year-old bodybuilder with previously normal reproductive function presented with infertility concerns due to his and his wife's inability to conceive. Hormonal analysis indicated secondary hypogonadism (FSH = 0.9 mIU/mL, LH = 0.1 mIU/mL, testosterone = 0.63 ng/mL, and E2 < 10 pg/mL), while the function of other pituitary axes, including prolactin levels, remained normal. Semen analysis revealed oligozoospermia. Anabolic steroids were discontinued, and a watch-and-wait strategy was recommended. Three months after stopping steroids, his gonadal axis remained suppressed. After six months of observation, hormonal improvement was noted (FSH = 1.0 mIU/mL, LH = 2.2 mIU/mL, testosterone = 2.42 ng/mL, and E2 < 10 pg/mL), but without improvement in spermogram. Full recovery, with normozoospermia, was achieved after one year. Today, his wife is pregnant.

Conclusion: Anabolic steroid abuse in bodybuilding can significantly impair male reproductive function. In this case, full recovery occurred after one year of steroid cessation.

Keywords: anabolic steroids, infertility, bodybuilder.

A47

Addisonian Crisis Precipitated by Thyrotoxicosis: A Case Report

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Introduction: An adrenal crisis is a rare and potentially life-threatening condition that can be triggered by various factors. Due to its rarity, it is often not recognized or treated promptly, which contributes to higher mortality rates.

Case report: A 27-year-old patient was hospitalized due to a fever of up to 39°C, accompanied by abdominal pain and diarrhea. Laboratory tests showed low sodium levels and mildly elevated potassium levels. The basal cortisol level was low, while adrenocorticotropic hormone (ACTH) was elevated, leading to the diagnosis of primary adrenal insufficiency. The thyroid-stimulating hormone (TSH) was low, with elevated thyroid hormones and positive antibodies against the TSH receptor, indicating thyrotoxicosis. An echocardiogram revealed pericardial effusion without affecting blood circulation. Treatment included saline infusions, intravenous hydrocortisone, and thiamazole tablets. Following the prescribed treatment, the patient's condition improved, and he was discharged with instructions for home treatment, continuing thiamazole and hydrocortisone tablets.

Conclusion: An Addisonian crisis should be considered in patients presenting with symptoms such as hypoglycemia, electrolyte imbalances, unexplained abdominal pain, general weakness, and gastrointestinal disturbances. Thyrotoxicosis can act as a precipitating factor for an Addisonian crisis, particularly when accompanied by an infectious event. Early recognition and prompt treatment are crucial for improving patient outcomes.

A48

Hypoglycaemia Induced by Insulin Abuse in a Non-Diabetic Patient: A Case Report

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Introduction: Detecting hypoglycemia and identifying its cause in non-diabetic patients can be quite challenging. There are many causes of hypoglycemia, which can generally be divided into two groups: insulin-mediated and non-insulin-mediated.

Case report: A 34-year-old man with no history of diabetes was admitted to the hospital due to severe hypoglycemia. He was found unresponsive by his housemates. An ambulance was called, and hypoglycemia was verified. After administering glucose intravenously and glucagon, the patient's plasma glucose level returned to normal. The patient had no previous episodes of hypoglycemia and was not taking any medications. His family history revealed that his mother has diabetes and is on insulin therapy. Upon admission, the patient developed hypoglycemic symptoms again, and blood samples were collected to measure glucose, insulin, and C-peptide levels. The results showed hypoglycemia with elevated insulin levels and suppressed C-peptide levels, suggesting the presence of exogenous insulin in the blood. The patient initially denied the possibility of insulin use. Family members were contacted, and they reported that the patient had some psychological difficulties. Among his belongings, insulin pens that had been used by his mother were found. After being confronted with these facts, the patient finally admitted to administering insulin to himself.

Conclusion: High insulin levels with suppressed C-peptide levels, in the context of hypoglycemia, indicate the presence of exogenous insulin in the blood. This rare cause of hypoglycemia due to insulin abuse in non-diabetic patients can sometimes be complicated by the patient's denial, which may require a specialized psychological approach.

A49

Atypical Parathyroid Tumor Mimicking Carcinoma: A Case Report

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Introduction: Since primary hyperparathyroidism (PHPT) is now most often diagnosed incidentally, without overt symptoms or signs, the “classic” disease with *osteitis fibrosa cystica* is rarely observed. A parathyroid adenoma remains the most common cause of PHPT, while atypical parathyroid tumors or parathyroid carcinoma are seen less frequently.

Case report: A 60-year-old male was diagnosed with chronic kidney disease and nephrolithiasis. Laboratory investigations revealed moderate parathyroid hormone (PTH)-dependent hypercalcemia. Neck ultrasound findings were inconclusive, and parathyroid scintigraphy was performed. It showed intensely increased accumulation of radiopharmaceuticals below the lower pole of the right thyroid lobe. Multi-slice computed tomography (MSCT) of the neck revealed a 40 × 55 × 28.5 mm mass in the same location, with radiological characteristics suggestive of parathyroid carcinoma. Due to the possibility of metastatic bone changes described on MSCT, bone scintigraphy was performed, revealing multiple skeletal abnormalities. These could represent metastases or features of *osteitis fibrosa cystica*, as bone scintigraphy is not specific in this regard. A parathyroidectomy was performed, and the histopathological report showed an atypical parathyroid tumor. During the follow-up after surgery, normal serum calcium levels were observed, which would not typically be the case if bone metastases were present.

Conclusion: *Osteitis fibrosa cystica* is rarely seen in patients with PHPT today. Bone scintigraphy cannot distinguish between *osteitis fibrosa cystica* changes and bone metastases. However, normal postoperative serum calcium levels suggest remission of primary hyperparathyroidism, which is not typically observed if metastases are present.

A50

Cushing's Disease in a Patient with Long-Standing Obesity

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Introduction: Obesity is a growing problem in clinical practice that endocrinologists are increasingly encountering. Since obesity is one of the signs of Cushing's syndrome, it remains a challenge to recognize the rare patients with obesity who also have Cushing's syndrome.

Case report: A 35-year-old female patient was referred for endocrinological evaluation due to suspected Cushing's syndrome. Her medical history revealed increased body weight since childhood. She also experienced hirsutism since puberty and was diagnosed with polycystic ovary syndrome by a gynecologist. After pregnancy, she gained a total of 30 kg and was temporarily treated with semaglutide, but without significant clinical response. Additionally, she had a diagnosis of arterial hypertension. Clinical examination revealed grade 3 obesity, with discreet fat tissue accumulation in the upper back and a slightly rounded face. The patient did not exhibit other characteristic signs of Cushing's syndrome. Diagnostic workup showed adrenocorticotropic hormone (ACTH)-dependent hypercortisolism. An MRI of the sellar region was performed, confirming a pituitary macroadenoma measuring 9.8x11 mm. Transsphenoidal surgery of the macroadenoma was successfully performed. Postoperatively, insufficiency of corticotropin-producing cells in the anterior pituitary was observed, and hydrocortisone replacement therapy was initiated.

Conclusion: Among patients with long-standing obesity, diagnosing those with a secondary cause of obesity, such as Cushing's disease, remains a clinical challenge while avoiding unnecessary testing for all patients.

A51

Delayed Diagnosis of Addison's Disease in a Patient with Vitiligo and Chronic Thyroiditis

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Introduction: Rare endocrine diseases can be challenging to diagnose, as their clinical presentation may vary, and physicians may not always be familiar with them.

Case report: A 50-year-old woman with a previously diagnosed autoimmune thyroid disease presented with fatigue, loss of appetite, and low blood pressure. Her initial basic laboratory tests were unremarkable, including normal thyroid-stimulating hormone levels while on levothyroxine therapy. She was referred to a psychiatrist due to suspicion of a depressive disorder. Over the course of one year, she lost 40 kg in weight. Her clinical condition progressively deteriorated, and she eventually became unable to walk independently. Finally, in a critical state, her cortisol concentration was measured and found to be immeasurably low, with a markedly elevated adrenocorticotropic hormone level, consistent with primary adrenal insufficiency. She was treated with intravenous fluids and hydrocortisone, leading to a gradual improvement in her condition. As the patient had pronounced vitiligo, her skin darkened only in small areas of preserved healthy skin. Additionally, she tested positive for glutamic acid decarboxylase (GAD) antibodies, while her blood glucose levels were still within the normal range.

Conclusion: In patients with a previously diagnosed autoimmune endocrine disorder, it is important to consider the possibility of additional autoimmune conditions. The coexistence of Addison's disease, autoimmune thyroid disease, and type 1 diabetes is known as polyglandular autoimmune syndrome type 2. It can also be associated with vitiligo, celiac disease, pernicious anemia, and some other disorders.

A52

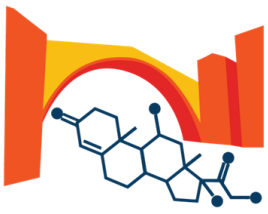
Hyperandrogenism in postmenopausal woman

Nikolina Vučenović Bašić, Ivana Kraljević

Introduction: Hyperandrogenism in postmenopausal women can be caused by excessive androgen production of either ovarian or adrenal origin. Identifying the source of hyperandrogenemia poses a diagnostic challenge due to the limited accuracy of currently available endocrine tests. This case highlights the diagnostic challenges and underscores the importance of imaging techniques in guiding clinical decisions.

Case report: We report a 59-year-old woman who presented with progressive hirsutism over the past decade. She had no clinical signs of Cushing's syndrome but was overweight (BMI 38.1kg/m2) and exhibited glucose intolerance. Thirteen years prior, she had been diagnosed with non-functional adrenal adenoma. Hormonal evaluation revealed elevated testosterone levels (5.75 nmol/L, reference range 0.4-1.9), while the overnight dexamethasone suppression test confirmed proper cortisol suppression. To further delineate the etiology of hyperandrogenism, a GnRH analogue suppression test was performed. However, testosterone secretion was not adequately suppressed. Subsequently, a dexamethasone androgen-suppression test (DAST) was conducted, showing persistent testosterone elevation (total testosterone 5.4 to 8.3 nmol/L) indicating that the source of hyperandrogenism was ovarian. An MSCT scan of the abdomen and pelvis revealed a stable but voluminous left adrenal gland and an enlarged left ovary, which was confirmed by a gynecological ultrasound. Based on these findings, the patient was advised to undergo adnexectomy.

Conclusion: This case underscores the growing recognition that in postmenopausal women with persistent hyperandrogenism, extensive hormonal suppression testing may not always provide additional diagnostic value. Instead, advanced imaging techniques such as MRI or MSCT can directly visualize potential androgen-secreting tumors, allowing for faster clinical decision-making.



Peti regionalni simpozij mladih endokrinologa

Mostar, 4. – 6. 4. 2025.