Thyroid
THYROID DISORDERS CASE REPORTS II
Carbohydrate Crash: A Rare Case of Thyrotoxic Periodic Paralysis
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SAT-LB81
Introduction Thyrotoxic Hypokalemic Periodic Paralysis (TPP) is an uncommon diagnosis in the western world and may be the initial presentation of hyperthyroidism. Case A healthy 37 year old Asian male was visiting the US when he had sudden onset lower limb weakness after carbohydrate rich meal on Saturday night. He reported hand tremors for 1 month and a 10kg weight loss. On examination he was anxious with a fine hand tremor, BP 158/80mmHg, and HR 106bpm. He had grade 2/5 power to lower limb proximal muscles and brisk reflexes. Thyroid and eyes were normal. Laboratory results significant for potassium (K) 3.2mmol/l, TSH 0.005 (0.270-4.4iu/ml), FT4 2.6 (0.8-2.2ng/dl), FT3 12.4 (2.7-5.27 pg/ml) and TSH Receptor antibody was 23.9% (<16%). Thoracolumbar MRI was normal. Repletion of K resulted in total resolution of paresis. He was given propranolol and methimazole and chose to complete workup in China. Clinical Lesson: TPP results in paralysis due to hypokalemia and hyperthyroidism and can be the initial presentation of hyperthyroidism. It is most common in Asians 20-40 years with incidence 1.9%, but only 0.2% in the west. Proximal muscles are affected more. Attacks may be precipitated by carbohydrate load, rest after exercise, or stress. Patients tend to present on weekends between 2100-0900hrs. It is hypothesized that K metabolism is diurnal, with influx to muscle at night or at rest. Once euthyroid, TPP will not recur unlike familial hypokalemic periodic paralysis which is recurrent and of earlier onset. The underlying reason remains unclear. It may be related to the action of thyroxine on Na/K-ATPase pump. TPP is usually associated with Graves’ disease, but other causes of hyperthyroidism have been reported. TPP is a treatable rare illness in Asians, and very uncommon in the West. Physicians must be aware of its subtleties, as it may be confused with other more common conditions. References: Chang-Hsun Hsieh, Shi-Wen Kuo, Dee Pei, Yi-Jen Hung, Sandra Chyi-Fan, Ling-I Wu, Chih-Tsung He, Tsao-Chin Yang, Wei-Cheng Lian, and Chien-Hsing Lee, Thyrotoxic periodic paralysis: an overview, Ann Saudi Med. 2004 Nov-Dec; 24(6): 418-422. doi:10.5144/0256-4947.2004.418

Cardiovascular Endocrinology
ENDOCRINE HYPERTENSION AND ALDOSTERONE EXCESS II
Mineralocorticoid Receptor Mediates Sex-Dependent Anticontractile Effect of Perivascular Adipose Tissue in Obese Mice.
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SUN-LB93
Obesity, a condition of excessive fat mass and subclinical inflammation, reached epidemic proportions with higher prevalence in women compared to men worldwide. Expansion of the perivascular adipose tissue (PVAT) is observed in obesity and clinical studies indicate a positive correlation between PVAT amount and body mass index. PVAT, a fat depot surrounding most of the vessels, modulates vascular function by releasing PVAT-derived factors such as adipokines.
that exert anticontractile effect in health individuals. Despite sexual dimorphism on PVAT morphology, it is still unknown whether or not there is sex differences in the PVAT modulating vascular function in the setting of obesity. Aldosterone-mineralocorticoid receptor (MR) signaling pathway has been demonstrated to be adipogenic and proinflammatory in classical fat depots and treatment with MR antagonists (A) might reverse vascular dysfunction and remodeling in obese models, especially in female sex. Therefore, we aimed to evaluate the anticontractile effect of PVAT in male and female obese mice and hypothesized that MR signaling would be involved in possible sex differences in PVAT dysfunction in obesity. Male and female C57Bl6J mice were fed a chow or a high-fat diet (HFD, 60% energy from fat) for 20 weeks. At the last 4 weeks of HFD, female and male mice were treated with the MRA spironolactone (Spi, 100 mg/kg/day). HFD feeding significantly increased body weight and visceral adipose tissue, which was not modified by Spi treatment in both sexes. Resistance mesenteric arteries were isolated with or without PVAT and mounted in a wire myograph to evaluate vascular contractile responses. Lean male and female mice PVAT had an anticontractile effect in the response to phenylephrine that was greater in females than males. The anticontractile effect of PVAT was significantly impaired in obese females but not modified in males. HFD-induced dysfunctional PVAT was prevented by Spi treatment in females. Next, we evaluated the protein expression of aldosterone-synthase CYP11B2, serum and glucocorticoid-regulated kinase 1 (SGK1), and epithelial sodium channel subunits (ENaCs) in isolated mesenteric PVAT of lean and obese male and female mice. There was an increased expression of CYP11B2, SGK1 and ENaCs only in obese female PVAT. Protein expression of adiponectin, a major PVAT-released adipokine was also increased in female mesenteric PVAT. In conclusion, the findings suggest sexual dimorphism in PVAT function in health and in obesity. Although anticontractile role of PVAT was exacerbated in lean female mice, female sex was more susceptible to develop PVAT dysfunction in the setting of obesity which was prevented by MR blockade. HFD-induced PVAT dysfunction in females was associated with increased expression of SGK1 and ENaCs. Therefore, data suggest MR activation as a mechanism mediating sex differences in PVAT dysfunction. FAPESP, CAPES.

Bone and Mineral Metabolism
BONE AND MINERAL CASE REPORTS II
Bisphosphonate Related Ocular Inflammation
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MON-LB67
Bisphosphonate related ocular inflammation

Introduction: Osteoporosis is a major public health problem, increasing in incidence with the growth of the aging population. It affects over 200 million women worldwide and is associated with fragility fractures leading to increased morbidity, mortality and poor quality of life (1). Bisphosphonates are among the most widely used first line forms of treatment for management of osteoporosis. They have a structure like pyrophosphate and inhibit bone resorption by attaching to hydroxyapatite binding sites on the bone in areas with active resorption. While initiating treatment with bisphosphonates, endocrinologists generally discuss side effects including gastrointestinal symptoms related to gastroesophageal reflux disease and gastritis, acute phase reactions related to infusion of the bisphosphonates, musculoskeletal pain, hypocalcemia, osteonecrosis of the jaw, and atypical femur fractures. There are rare but severe side effects causing ocular inflammation related to bisphosphonate use - Bisphosphonate Related Ocular Inflammation (BROI). While these are rare based on few case reports, they are

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Myxedema as Presenting Feature of Profound Primary Hypothyroidism in a Toddler
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SAT-LB82
Background: Myxedema is a rare presenting feature of profound primary hypothyroidism that results from disordered accumulation of glycosaminoglycan in the skin and soft tissue. Very few cases of myxedema have been reported in children during the first few years of life.

Clinical Case: A 2-year-old boy with a history of lissencephaly and developmental delay was sent to the emergency room by his primary care physician for worsening of edema. It was noticed by his mother six weeks previously and involved his face, arms, feet and legs. He had no history of cold intolerance, dry skin, hair loss, constipation, or excessive sleep. On exam, he had normal vital signs with no bradycardia and normal blood pressure. Physical exam was remarkable for a sallow complexion, coarse facial features, abdominal distention and non-pitting edema of the face, limbs, hands and feet. A cardiac echo revealed mild pericardial effusion and borderline QT prolongation was noted on EKG. Chest x-ray and abdominal x-ray were unremarkable. Metabolic profile showed normal electrolytes, a mildly low albumin of 2.8 gm/dl and normal renal and liver function. Thyroid function tests were remarkable for an elevated TSH of 562 mcu/ml and a low FT4 of 0.3 ng/dl. TPO and anti-thyroglobulin antibodies were negative. Thyroid ultrasound demonstrated a small thyroid gland in the normal location. Growth data revealed a normal linear growth velocity and weight persistently above the 25th percentile. The child’s newborn screen for congenital hypothyroidism had been normal. He was started on levothyroxine 50 mcg PO per day.

Conclusion: We report an extremely atypical presentation of primary hypothyroidism in a two-year-old boy. He presented with myxedema, pericardial effusions, severe biochemical hypothyroidism and negative thyroid antibodies. The precise etiology and duration of his hypothyroidism, as well as its role in his developmental delay, remain enigmatic. Awareness of unusual presenting features in very young children with hypothyroidism is essential in order to achieve expedient treatment and optimal neurocognitive outcomes.