Due to high suspicion for granulomatous disease, a liver biopsy was done. Liver biopsy confirmed granulomatous hepatitis with stage 2 of 4 fibrosis with numerous foci of non-caseating granulomatous inflammation. With negative acid-fast staining, no fungal organisms, absence of foreign material, normal eosinophil counts and low clinical suspicion for Crohn’s disease, a diagnosis of abdominal sarcoidosis was made. The patient was started on 10 mg prednisone daily and within one week, his albumin-corrected calcium levels improved to 10.4 mg/dL with significant improvement in appetite and mental status. Conclusion: While isolated extrapulmonary sarcoidosis is rare, it is an important cause of hypercalcemia due to elevated 1,25-dihydroxyvitamin D levels. Management of hypercalcemia secondary to sarcoidosis often consists of initiating glucocorticoids which act mainly by inhibition of 1,25-dihydroxy vitamin D synthesis in addition to inhibiting calcium absorption and osteoclast activity.

Bone and Mineral Metabolism

BONE AND MINERAL CASE REPORTS II

Osteitis Fibrosa Cystica and Pathological Fractures: The Classic but Neglected Skeletal Manifestation of Primary Hyperparathyroidism

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MON-347
Background: Osteitis fibrosa cystica is one of the classic manifestations of primary hyperparathyroidism (PHPT), yet it has become increasingly rare due to early detection of PHPT.

Clinical case: A 37-year-old woman was referred to our hospital for fixation of multiple fractures. Before transferring to our hospital, she was admitted to a local hospital due to right distal humerus and left tibial fractures without history of trauma. During the hospitalization, a new fracture at left femur had occurred. Her past medical history was significant for fractures of right shoulder, left elbow and right femur when she fell on the ground 5 years ago and treated by fixation. She had a history of kidney stones in the remote past. She denied family history of calcium or skeletal disorders.

Clinical examination revealed gross deformities at right elbow, left thigh and painful swelling of the left tibia. On HEENT examination, there were no palpable neck masses. Upon review of plain radiographs from outside hospital, we found not only fractures but diffuse osteopenia and brown tumors at multiple sites including shaft of right humerus, right proximal radius, left proximal femoral shaft and left tibia. Skull X-ray showed salt-and-pepper appearance. There were prominent subendplate densities at multiple lumbar spines (Rugger-jersey spine). These findings were consistent with osteitis fibrosa cystica which prompted further laboratory investigation for PHPT. The patient had a high corrected serum calcium level of 13.6 (8.6-10.0) mg/dL, low serum phosphate of 2.2 (2.5-4.5) mg/dL, serum creatinine of 1.16 (0.51-0.95) mg/dL, glomerular filtration rate (GFR) of 60.29 ml/min, high serum alkaline phosphatase of 1,482 (35-105) U/L. The serum parathyroid hormone (PTH) level was significantly high at 3,850 (15-65) pg/mL. Vitamin D level was low at 5.98 (≥20) ng/mL.

The patient was diagnosed with PHPT. The left lower parathyroid adenoma was identified by 99mTc-Sestamibi scan with single photon emission computed tomography and neck ultrasound. Given severe skeletal manifestations and extremely elevated PTH level, urgent parathyroidectomy was performed. A 2.5-cm parathyroid adenoma was removed which was histologically confirmed by a pathologist. Postoperatively, she developed a hungry bone syndrome which resolved 10 months after.

Clinical lesson: In current practice, skeletal manifestation of PHPT is uncommon with a reported incidence of 1.4% in US. Osteitis fibrosa cystica is a radiographic feature of PHPT characterized by demineralized skeleton, salt-and-pepper appearance of the skull, subperiosteal resorption of the phalanges, bone cysts, and brown tumors. Although PHPT has evolved to asymptomatic disease in majority of patients, the classic skeletal involvement should not be overlooked, particularly in young patients who present with multiple pathological fractures.

Thyroid

THYROID DISORDERS CASE REPORTS II

A Grave Complication: Pulmonary Arterial Hypertension

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SAT-459
There is currently emerging evidence that thyroid disease can have an impact on pulmonary pathologies but a direct causation, as opposed to correlation, is yet to be established. We present a unique case of newly diagnosed Graves’ disease with pulmonary sequelae.

69 year old non-smoking female with no known medical history presented to the hospital with acute onset of chest tightness, shortness of breath and palpitations. She had been experiencing night sweats and 10 lbs weight loss in the 3 weeks preceding hospitalization. She did not endorse any pertinent family history. On exam, she presented with tachycardia. The rest of the physical exam remained unchanged. Complete blood count and comprehensive metabolic panel did not reveal any abnormalities. Her TSH was suppressed below lab capability of measurement (<0.015). Free T4 was 5.97 ng/dL, and total T3 was 492 ng/dL. Subsequently obtained TPO antibody level was > 1000 IU/ml and TSI was 29.3 IU/L. EKG showed atrial fibrillation with RVR. Thyroid U/S showed that the thyroid gland was diffusely enlarged to the upper limit of normal but no nodules. CT chest showed diffuse ground glass opacities. She was treated with propranolol, and methimazole after resolution of acute symptoms. She was placed on diuretics to treat symptoms of pulmonary edema secondary to uncontrolled atrial fibrillation and high output heart failure. On outpatient follow up she continued to have mild shortness of breath on exertion. She had normal systolic and diastolic function of heart but an elevated PAP of 38mm Hg on a transthoracic echocardiogram, and her pulmonary function...
tests were within normal limits for her age. A follow up CT chest, 6 weeks after discharge, showed no resolution of ground glass opacities.

Current literature shows that there might be pulmonary effects of hyper-thyroidal diseases; such as ventilation disorders, OSA, CSA, and pleural effusions. A 2002 study revealed a strong association of hypothyroidism with pulmonary hypertension. A 2016 literature review established that there is specifically an association of Graves’ disease with pulmonary arterial hypertension. Both of these studies have had a small patient group. Our case perhaps adds credence to the fairly less known affiliation of hypothyroidism with pulmonary disease. A unique finding in our patient - unresolving ground glass opacities, suggests a possible thyroid related interstitial lung disease. As with our case, there needs to be an increased awareness in the among clinicians to further work up both thyroid related pul monary hypertension and interstitial lung disease possibly related to uncontrolled thyroid pathology. Increased vigilance to include hyperthyroidism as a differential for pulmonary hypertension can lead to better clinical outcomes for patients, with less possible invasive and expensive testing of other causes of pulmonary hypertension.

Neuroendocrinology and Pituitary
PITUITARY AND NEUROENDOCRINE CLINICAL TRIALS AND STUDIES

Immune Checkpoint Inhibitor-Induced Hypophysitis Is Associated with Improved Overall Survival in Cancer Patients
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OR32-02
Context: Immune checkpoint inhibitors (ICIs) are monoclonal antibodies against checkpoints namely CTLA-4, PD-1 and PD-L1. These can cause pituitary dysfunction due to hypophysitis in addition to other endocrinopathies. While the prevalence and course of hypophysitis have been described extensively, the relationship between hypophysitis and cancer prognosis has only been investigated in melanoma patients on ipilimumab. Additionally, the impact of high dose glucocorticoids for hypophysitis treatment on survival has been unclear. Objective: In order to address these important questions, we aimed to characterize the frequency and course of hypophysitis from various ICIs, and to investigate a possible impact on overall survival in cancer patients. Design and Methods: We conducted a single center retrospective cohort study of adult cancer patients that received an ICI from 1/1/2012 - 12/31/2016, followed for a median of 14.8 months. A total of 896 patients were identified who received an ICI from 1/1/2012 - 12/31/2016, followed for a median of 14.8 months. A total of 896 patients were identified that received ipilimumab alone (n=250), nivolumab (n=50); ipilimumab and nivolumab (n=50); ipilimumab followed or preceded by pembrolizumab (n=70), pembrolizumab alone (n=406), and nivolumab alone (n=250). Results: Twenty-six patients (2.9%) developed hypophysitis after a median of 2.3 months (range 0.8 to 11.7). Their median age at initiation of ICI was 57.9 years (range 42.4 to 78.5), 54% were males, and the most common malignancy was melanoma (81%). All had hypopituitarism showing secondary adrenal insufficiency (100%), central hypothyroidism (38.5%) and central hypogonadism (28.5% in men, 25% in premenopausal women). Sixty-four percent demonstrated pituitary enlargement on imaging which resolved on follow-up. Mass effects occurred in 50% and were managed by initial high dose glucocorticoids. Thyroiditis occurred in 19.2% of those with hypophysitis. Occurrence of hypophysitis was associated with better overall survival (median 50.7 vs 16.5 months; p value 0.015) and reduced mortality (RR 0.52, 95% CI 0.28 to 0.99; p value 0.036) after adjusting for age, sex and malignancy type. Conclusions: Hypophysitis, usually but not always accompanied by classic MRI features, occurs within a few weeks in cancer patients most frequently after ipilimumab alone or in combination with a PD-1 inhibitor, rarely after pembrolizumab and never after nivolumab alone. ICI-induced hypophysitis presents as mass effects in half and as hypopituitarism in all patients involving the corticotrophs more commonly than thyrotrophs and gonadotrophs. The improved survival with a 48% lower mortality rate in patients with hypophysitis suggests its possible role as a marker for better efficacy of ICIs against malignancy.

Neuroendocrinology and Pituitary
CASE REPORTS IN SECRETORY PITUITARY PATHOLOGIES, THEIR TREATMENTS AND OUTCOMES
Thyroid Stimulating Hormone-Secreting Pituitary Macroadenoma and Papillary Thyroid Cancer in a 55-Year-Old Male: A Case Report
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SAT-261
Background: Thyroid-Stimulating Hormone Secreting Pituitary Adenoma (TSHoma) is a rare Endocrinologic finding occurring in 0.5–3% of all pituitary adenomas, and is even rarer to find it coexisting with differentiated thyroid cancer.

Clinical Case: A 55-year-old male consulted last 2012 for palpitations and resting tachycardia. Initial tests revealed an ECG of sinus tachycardia, normal electrolytes and TSH 3.16 uIU/mL (0.27–4.2) and FT4 66 pmol/mL (12–22). He was referred to an Endocrinologist where thyroid ultrasound was done revealing bilaterally enlarged thyroid lobes with diffuse thyroid parenchymal changes, and a thyroid scan consistent with Graves’ Disease. He was started on methimazole and beta-blockers. Persistently elevated FT4 and a non-suppressed TSH prompted work-up for secondary hyperthyroidism. Pituitary MRI revealed a sellar mass measuring 3.4 cm x 2.7 cm x 2.6 cm, noted to be compressing the left side of the optic chiasm and prechiasmatic left optic nerve laterally. The consideration was pituitary macroadenoma. He underwent transphenoidal surgery but operative technique only involved near total excision of the adenoma due to proximity of the mass to the pre-chiasmatic left optic nerve. The tumor was