developing myxedema coma as she presented with hypotension with blood pressure of 103/55 mmHg, hyponatremia 133 mmol/L and mild change in mental status. There was no evidence for hypothermia or bradycardia. Presence of a small thigh hematoma on examination partially explained the acute drop in hemoglobin. Iron panel, folic acid and vitamin B12 levels were found to be within normal range. Patient had no active of infection to suggest sepsis and she did not receive any myelosuppressive medication. Rapid replacement with IV levothyroxine was started before proceeding with surgery to prevent development of myxedema coma. Free T4 normalized at 1.05 ng/dl after receiving a total of 700 mcg of IV levothyroxine on day 5 of hospitalization. ORIF was done with no complications. Pancytopenia resolved upon thyroid replacement therapy and she was discharged on her regular dose of levothyroxine 75 mcg daily.

Discussion: Most common hematologic abnormality associated with hypothyroidism is normochromic normocytic anemia. Currently, there are less than 10 reported cases of pancytopenia associated with hypothyroidism. The exact mechanism is unclear but proposed hypothesis is transient bone marrow hypoplasia. The most common clinical presentation, as seen in our patient, is profound hypothyroidism with ultimate outcome of myxedema coma. Most of these patients had resolution of pancytopenia following adequate thyroid hormone replacement. Interestingly, all cases have been reported in female patient population. Further research is needed to understand pathophysiology, risk factors, prognosis and the risk of pancytopenia recurrence in patients with severe hypothyroidism. More importantly, hypothyroidism must certainly be entertained as a differential diagnosis of pancytopenia.

Thyroid

THYROID DISORDERS CASE REPORT

Percutaneous Ethanol Injection as Treatment for Thyroid Cystic Nodules

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Background: Thyroid cystic nodules are common and frequently benign. Aspiration of thyroid cyst decreases compression symptoms and volume. However, they commonly recur, and usually, surgery is required for definitive treatment. A less invasive approach, done less frequent, is percutaneous ethanol injection (PEI), which has shown fewer recurrences than simple aspiration and is well-tolerated with few side effects. We present 2 patients that where treated in our clinic with PEI.

Clinical Case: 41-year-old female with a history of primary hypothyroidism on Levothyroxine, with neck discomfort, and no risk factors for thyroid cancer had a cystic thyroid nodule 1.5 x 1.8 x 2.8 cm over the right thyroid lobule. Cytology results reported as Bethesda II. One year later, her thyroid nodule was 1.9 x 2.6 x 3.3 cm. Underwent FNA and 6 cc of dark brown liquid was drained from the cyst which was reported again as Bethesda II. The patient was monitored with thyroid ultrasound after a year, and the cystic nodule was 2.2 x 2.9 x 3.1 cm. PEI was decided as the next approach. After six cc was aspired, 0.5 cc of desiccated ethanol was injected into the remained cystic. Eight months after PEI, cystic size was 0.7 x 0.9 x 0.8 cm. The second case is a 40-year-old female who presented complaining of neck discomfort without changes in her voice. The patient did not have any risk factors for thyroid cancer. Thyroid ultrasound was done, which showed a 2.3 x 2.7 x 3.3 cm cyst on her right thyroid lobe. PEI was arranged and 9 cc of dark fluid was aspirated with a posterior injection of 0.5 cc of desiccated ethanol. Symptoms resolved, and the patient was lost to follow up. Five years later, she was seen again. Neck ultrasound showed a cyst of 0.4 x 0.6 x 0.8 cm on her right thyroid lobe. Neither of the two patients had a side effect associated, and the procedure was well tolerated.

Conclusions: Percutaneous ethanol injection is a good alternative in the treatment for cystic thyroid nodules due to decrease in cystic size, which we observed that continued for five years of follow up in one of our patients. These will avoid frequent cystic aspiration secondary to recurrence or invasive surgical management.

Thyroid

THYROID DISORDERS CASE REPORT

Plasmapheresis as an Effective Treatment for Thyroid Storm in Critical Patients: Case Reports and Systematic Literature Review

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Background: Thyrotoxic crisis is a rare, multisystemic and lethal condition, especially when its reversal is delayed. The Burch Wartofsky score establishes severity and predicts the indication of plasmapheresis, but once there is organ dysfunction this therapy should be considered despite of the score. When it is added to conventional treatments it is really effective because of the quick clinical compensation of critically ill patients regardless of the main trigger factor of this emergency. **Clinical Cases:** 5 patients with thyrotoxic crisis, 1 man and 4 women that had Graves'disease (4 cases) or TSH-secreting tumor (1 case). The precipitating factors were: 1 case due to orchitis, 2 due to poor adhesion, 1 due to antithyroid drugs hepatoxicity and 1 due to ketoacidosis. All them had elevated free T4 ranging from 3.38 to >7.77 ng/dL. All them had high Burch Wartofsky scores (55 to 70) and severe organ dysfunctions: 4 cases with hepatopathy (hepatosplenomegaly, jaundice and coagulopathy) and cardiopathy (diastolic dysfunction and pulmonary hypertension) and 1 case with severe diabetic ketoacidosis. Plasmapheresis (2 to 3 sessions were performed) were indicated for clinical compensation and so subsequent definitive treatment: 3 cases received radioiodine therapy and 1 case had total thyroidectomy.

All of them progressed well. The patient who died had already severe prior comorbidities. We performed a systematic survey on PubMed of English articles (case reports and reviews) in humans and we analyzed our 5 cases along with the 108 articles about the use of plasmapheresis in thyroid storm from 1970 to 2020 and we compare them to 394 ones of conventional treatments in past 10 years. Our objective was to evidence plasmapheresis is not related to a higher mortality of patients who underwent to it. We found 7% of mortality in both groups. The chi square test showed an Odds Ratio of (CI 95%) = 1,091 reinforcing there is no relation between number of deaths and treatment type. **Conclusion:** Plasmapheresis is a therapeutic option with few reports in the literature and without clear guidelines about indication criteria or better timing to initiate it. The statistical analysis showed that 3 or more organ dysfunctions in thyroid storm are related to higher death rates. Its early employment within 24 hours of the initial symptoms and the prompt normalization of free T4 are related to lower mortality. It is a safe and effective therapy that allows thyroid storm patients to be compensated to receive definitive treatment with lower chances of death. **Reference:** Ono Y, Ono S, Yasunaga H, Matsui H, Fushimi K, Tanaka Y. Factors Associated With Mortality of Thyroid Storm: Analysis Using a National Inpatient Database in Japan. *Medicine (Baltimore)*. 2016;95(7):e2848.

Thyroid

THYROID DISORDERS CASE REPORT

Plasmapheresis as First Line Therapy for Thyrotoxicosis in a Critically Ill Patient

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Introduction: The role of plasmapheresis (TPE) in thyrotoxicosis management is not well established. Its use may be determined on an individualized basis (1). We report a case of a critically ill patient where TPE was utilized as first-line therapy for refractory thyrotoxicosis. **Clinical Case:** A 33-year-old woman with Graves' disease complicated by medication non-adherence presented with rapidly ascending paralysis and bulbar weakness. Primary work up was consistent with acute inflammatory demyelinating polyneuropathy (AIDP) based on EMG findings of motor fiber polyneuropathy with demyelinating features. Laboratory evaluation revealed uncontrolled hyperthyroidism (TSH <0.05 uU/mL, N 0.3-4.2 uU/mL; fT4 3.9 ng/dL, N 0.6-1.5 ng/dL; tT3 318, N 60-160 ng/dL). Initially, there was low concern for thyrotoxicosis based on a Burch-Wartofsky score of 15 (2). Standard dose methimazole and aggressive beta-blockade were initiated. Hospital course was complicated by hypoxic respiratory failure due to progressive paralysis requiring intubation and septic shock from Klebsiella pneumonia requiring initiation of pressors and broad-spectrum antibiotics. Biochemical evaluation showed increasing fT4 (3.8 ng/dL) and tT3 (419 ng/dL) levels. Burch-Wartofsky score increased to 55, consistent with a thyrotoxic crisis. Due to the patient's critical condition, TPE was rapidly initiated along with standard therapy for thyrotoxic crisis (high dose methimazole, esmolol drip, stress dose corticosteroids, cholestyramine, and potassium iodide) as a bridge to definitive management with thyroidectomy. Rapid clinical improvement with a decline in fT4 levels (3.8 to 2.1 ng/dL) was noted after initiation of TPE with normalization in fT4 (1.5 ng/dL) and tT3 (54 ng/dL) after three sessions. Thyroidectomy was pursued after clinical stabilization. Surgical pathology showed diffuse papillary hyperplasia consistent with Graves' disease. Due to persistent respiratory failure, the patient underwent tracheostomy placement. Repeat EMG revealed severe myopathic dysfunction without demyelinating features favoring a diagnosis of acute thyrotoxic myopathy over AIDP. Patient was ultimately discharged to a long term acute care facility due to slow neurological recovery. **Conclusion:** TPE should be considered as first line management in conjunction with conventional medical therapy in critically ill patients with thyrotoxicosis as a bridge to thyroidectomy due to rapid time to effect and patient stabilization. **References:** (1) Padmanabhan A, et al. J Clin Apher. 2019 Jun;34(3):171-354. (2) Bahn Chair RS, et al. Thyroid. 2011 Jun;21(6):593-646.

Thyroid

THYROID DISORDERS CASE REPORT

Postpartum Thyroid Abnormalities and Systemic Lupus Erythematosus: Is There a Link?

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Introduction: Postpartum Thyroiditis (PPT) is an autoimmune disorder characterized by destruction of the thyroid gland within the first year after delivery. Systemic Lupus Erythematosus (SLE), another autoimmune disease, has been associated with a spectrum of thyroid disorders. While the prevalence of thyroid diseases in patients with SLE is increased, the association between SLE and PPT is not well known. The infrequency of encountering SLE and PPT makes abnormal thyroid tests in the postpartum period a diagnostic challenge.

Clinical Case: A 27-year-old G1P1001 who was five months postpartum and not breast feeding was referred to Endocrinology clinic for evaluation of abnormal thyroid function tests. Past medical history was significant for SLE with renal and pericardial involvement. SLE was well controlled, treated with hydroxychloroquine. Family history was significant for hypothyroidism in her mother.

She was asymptomatic and appeared clinically euthyroid. Vitals were stable and physical exam was negative for goiter, nodule or orbitopathy. Lab results at two months postpartum showed an elevated TSH of 3.87 UIU/mL (Normal 0.40-3.8 UIU/mL) and at four months postpartum TSH was low at 0.012 UIU/mL. Repeat labs at five months postpartum continued to show a low TSH at 0.007 UIU/mL with mildly elevated Free T4 at 1.7 ng/dL (Normal 0.6-1.6 ng/dL) and elevated Free T3 of 6.0 pg/mL (Normal 2.1-3.8 pg/mL). Anti-thyroid peroxidase antibodies (TPO), thyroid