There is considerable evidence that some Borrelial (Lyme spirochetal) proteins share significant antigenic properties with several thyroid-related proteins (e.g. TSH receptor, thyroglobulin, thyroid peroxidase) and can induce thyroid autoimmunity, sometimes associated with Hashimoto's thyroiditis and perhaps also a "destructive thyroiditis" such as "silent" thyroiditis or "Hashitoxicosis." As an acute illness, Lyme disease may also constitute a "non-thyroidal illness" capable of perturbing thyroid function tests without causing thyroid dysfunction. We report a 22-year old woman admitted with an acute paranoid schizophrenia, thyroid function tests consistent with autoimmunity, transient thyrotoxicosis (tachycardia, lid-lag, brisk DTR's) and a greatly reduced radioiodine uptake. The thyroid was not palpably enlarged, nodular or tender. On screening assay, reactivity was demonstrated to 4 of 13 Borrelial proteins. Anti-Lyme IgM but not IgG, antibodies, were positive. This was consistent with recent Lyme disease infection. Serum TSH (NL: 0.358-3.74 mcU/ml), Free T4 (NL: 0.76-1.46 ng/dl), and Free T3 (NL: 2.18-3.98 pg/ml) were, respectively: Day1: 0.087 mcU/ml (suppressed), 1.52 ng/dl (slightly elevated), 2.07 pg/ml (slightly reduced); Day2: 0.148 (suppressed), 1.18 (normal), no FT3; Day4: 0.827 (normal), no FT4 or FT3; Day5: 1.66 (normal), 0.89 (normal), 1.77 (low). Anti-Tg and Anti-Peroxidase antibodies were both moderately elevated. Thyroid Stimulating Immunoglobulins were not elevated. The radioactive iodine uptake on Day4 was 2.8% (NL: 15-30% at 24 hr). Thyroid ultrasonogram was normal. An attractive explanation is that Lyme disease triggered a "destructive thyroiditis," perhaps but not necessarily mediated by thyroid autoimmunity. This would account for the brief interval of thyrotoxicosis accompanied by a very low radioiodine uptake. Alternatively, Lyme disease, as an acute process, would expectedly be capable of eliciting the thyroid function abnormalities of "non-thyroidal illnesses" in general, as would acute psychosis, well-known to often resemble Graves' disease at admission.

Thyroid

THYROID DISORDERS CASE REPORT

Management of Atrial Flutter in Thyroid Storm

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Introduction: Thyroid storm, life-threatening hyperthyroidism, commonly presents with tachyarrhythmias. We present a case of hyperthyroid-induced atrial flutter, refractory to beta-blockade, successfully treated with electrical cardioversion (CV) while biochemically hyperthyroid.
Case Description: A 49-year-old female with history of asthma and no family or personal history of thyroid disease presented with new-onset atrial flutter and heart failure. The patient endorsed weight loss, hot flashes, anxiousness, tremors, and palpitations. She denied gastrointestinal symptoms or visual changes. She was afebrile with normal mentation. Heart rate was found to be 260 beats per minute (bpm) in atrial flutter. Exam demonstrated bilateral lower extremity edema, and profound exophthalmos. Labs were remarkable for thyroid stimulating hormone (TSH) <0.01 [ref: 0.27-4.2] uIU/mL, free T4 4.5 [ref: 0.8-1.8] ng/dL, free T3 15.5 [ref: 2.0-4.4] pg/mL, thyroid stimulating immunoglobulin (TSI) of 379 [ref: <140] % and a thyroid receptor antibody (TRab) of 10.02 [ref:<=2.0] IU/L. White blood cell count and liver function tests were normal. Chest x-ray (CXR) showed bilateral pulmonary edema and ultrasound showed an enlarged heterogeneous hypervascular thyroid gland. The patient was initially started on Methimazole 30 mg daily and Metoprolol 25 mg every six hours but on day two, the patient was transitioned to Propylthiouracil (PTU) 250 mg every 6 hours given continued atrial flutter and concern for thyroid storm given Burch-Wartofsky score was 50. She was also given potassium iodide for three days. Cardioversion was deferred, as it was felt that the severity of thyrotoxicosis would limit success. On day six, TFTs were improved with a free T4 of 2.2, free T3 3.6. On day 8, because of continued tachycardia >130 bpm with limitation of beta-blockade due to hypotension, she underwent a cardioversion which was successful. On discharge, free T4 was 1.7 and she was transitioned to Methimazole 40 mg daily.
Discussion: Thyroid storm has a mortality rate of 10-20%, often related to tachyarrhythmias which can be difficult to treat during a hyperthyroid state. Tachycardia should initially be treated with beta-blockade and antithyroid therapy. Amiodarone is avoided due to concern for worsening hyperthyroidism. A literature review suggests that electrical CV should not be attempted until a patient is euthyroid for four months, as a majority will spontaneously revert once thyroid levels normalize. Conversely, other studies have found that the rate of recurrence of atrial fibrillation between clinically hyperthyroid and euthyroid patients was not statistically significant, suggesting CV should not be delayed until a patient is euthyroid. This suggests that further studies need to be completed to better elucidate appropriate timing in hyperthyroid patient's refractory to pharmacologic treatment alone.

Thyroid

THYROID DISORDERS CASE REPORT

Mitral Valve Disease in Thyroid Storm

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Introduction: The cardiovascular effects that thyroid gland causes are widely studied. In fact, there is a known correlation between Graves' Disease and mitral valve damage. We present the case of a patient admitted with thyroid storm and heart failure associated with severe structural damage of the mitral valve papillary muscle.
Case Report: 24 year old woman with hyperthyroidism diagnosed 12 years ago, treated irregularly with thiamazole and propranolol, leaving treatment a year ago, presents dyspnea, class III functional capacity, diarrhea and logic dysphagia of a month of evolution. Heart rate over 170 bpm, respiratory rate 48 rpm and blood pressure 143/84 mmHg.

Physical exam positive for exophthalmos, grade III goiter, crackles in both lung bases, pretibial myxedema and fulfilling criteria for a thyroid storm (65 points in Burch-Wartofsky Point Scale).
First Lab Results: TSH<0.005μU/mL, free T4>7.7ng/dl and TRAB 37.8UI/L. Chest ray: Global cardiomegaly and pulmonary edema. EKG: Narrow complex supraventricular tachycardia. Thyroid ultrasound: Intrathoracic goiter. Transesophageal echocardiogram: Severe mitral insufficiency (Carpentier Type I and IIIB), right cavities and left ventricular enlargement, preserved right ventricular function and severe pulmonary hypertension (PSAP 71-76 mmHg).
First treated with thiamazole, hydrocortisone IV, cholestyramine and sedation, falling time after into ventilatory failure and developing delirium, requiring invasive mechanical ventilation. Tested positive for COVID- 19. Starts preparation with Lugol and undergoes Total Thyroidectomy. After surgery develops severe hypocalcemia secondary to transitory hypoparathyroidism.
During hospitalization presents multiple infections including pneumonia (Pseudomonas Aeruginosa), lung aspergillosis, bacteriuria (Enteroccocus Faecium) and candiduria (Candida Albicans and Glabrata), each one treated with multiple antibiotics and vasoactive drugs. Once stable, mitral valve replacement is realized, after which, the patient progresses favorably being discharged with programmed ambulatory controls.
Conclusion: We report a case of a patient who was presented with positive thyroid storm criteria associated with heart failure and severe mitral valve insufficiency. The case gets complicated as multiple infections take place, including COVID-19. Fortunately, because of the early and aggressive multidisciplinary management, the patient evolved favorably, overcoming the life-threatening conditions she went through.
Key Words: Thyroid storm, mitral valve insufficiency, heart failure.
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Thyroid
THYROID DISORDERS CASE REPORT

Monitoring Foetus and Neonatal Outcomes in Patients With Current or Previous History of Hyperthyroidism

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Aim: Graves' hyperthyroidism can be associated with persistent TSH-receptor antibody (TRAB) and need for antithyroid drugs (ATD) during pregnancy warranting careful monitoring during pregnancy and the neonatal period. The aim of this retrospective observational study was to assess the outcomes of babies born of women with current or previous history of hyperthyroidism.
Method: All women with previous or current hyperthyroidism were reviewed in the joint antenatal-endocrine clinic. Neonatal alert was instituted for all patients with positive TRAB at 20 weeks and/or requiring ATD into third trimester and included serial growth scans in third trimester, fetal medicine(FM) scan, review of neonate by paediatrician, thyroid function test(TFT) for the neonate on day 2(D2) and further tests as needed.
Results: Of the 56 patients treated over a 2 year period, 31 qualified for this study. Thyroid statuses of patients were: active hyperthyroidism at conception=20; Post radioactive iodine (RAI)=4; post thyroidectomy =2; hyperthyroidism in remission prenatally=5. 24 patients were TRAB positive at 20 weeks (Strongly positive(>3xnormal) =10) & 7 were TRAB negative. 16 patients required ATD into 3rd trimester, of whom 11 required until delivery. Presence of any TRAB positivity did not statistically predict continuation or withdrawal of treatment. FM scan was normal in all patients (one patient had hydronephrosis which was deemed not related to thyroid status and resolved spontaneously after birth). Growth Scans were normal in 26 patients. One patient had a large for gestational age fetus which was not related to thyroid status (patient in Graves' remission, TRAB weakly positive, normal FM scan, normal D2 and D14 TSH in the neonate). 4 patients had small for gestational age fetuses -2 had weakly positive and 1 strongly positive TRAB; all had normal FM scans; 1 neonate had high TSH at D2 and others normal; all neonates had normal TFT at D14. None of the neonates had clinical or biochemical hyperthyroidism on D2. 12 had high TSH on D2 - 10 normalized at D14; the other 2 were discussed with tertiary referral centre, no further medical treatment was advised and normalized spontaneously. 22 had high T4 at D2; at D14, 14 normalized, 4 had persistent high T4 but normal TSH (T4 data not available on 4 but all had normal TSH). Neonates born to mothers who were using ATD at time of delivery had higher probability of having high TSH at D2 compared to those who were not (8/11 vs 4/20, p<0.005). This difference was not statistically significant based on use of ATD at onset of pregnancy (10/20 vs 2/11, p=0.08).
Conclusion: Our study showed that no neonates developed overt hyperthyroidism. Use of ATD, especially in third trimester, could be associated with risk of transient biochemical hypothyroidism in neonate. A coordinated multidisciplinary care pathway is required to monitor and manage this complex cohort of patients and neonates.

Thyroid
THYROID DISORDERS CASE REPORT

Myxedema Coma Disguised as Alcohol Withdrawal

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Introduction: Myxedema coma is a medical emergency whose symptoms may sometimes mimic other diseases such as alcohol withdrawal.
Case: A 64-year-old male with a history of alcohol abuse and bipolar disorder (on no medications) presented to