An interesting case of hyperthyroidism, in the critical care setting

Lance Mwangi, MD Ladi Larry MD

Introduction

Thyroid storm or Thyrotoxic crisis, is a life-threatening complication of hyperthyroidism.

It's often due to untreated hyperthyroidism which may be due to graves, multinodular goiter, or solitary toxic adenoma. Infection & cessation of medication are examples of events that can precipitate a thyroid storm.

Diagnosis is often clinical (Burch-Wartofsky Point Scale) with the support of imaging, and labs for futher evaluation.

Treatment often includes b blockers, steroids, thionamines, & iodine. Surgery may be included depending upon the case, and cause of the patient's hyperthyroidism.

Case Presentation

73 yo F with a history of HTN, pAFIB, SVT, RA, DM, Thyroid nodule, and valvular heart disease.

She presented for fever, and sob for the past 3 days, as well as neck swelling. She reports that her neck has been swollen, and that it hurts to touch on the left side. She denies dysphagia of solids or liquids, n/v, dysuria, productive cough, ulcerations/wounds.. FHX was significant for htn.

Vitals Hypotensive Systolic Blood Pressure 80s-90s

HR 140s Temp 100 F

Physical examination was normal except for her neck, abdomen, and cardiovascular components.

Neck: Enlarged neck mass/w possible abscess/Fluid collection. mobile. Tender to palpation. Cardiovascular: irregular rhythm, tachycardia. Abdomen: Mild abdominal tenderness.

Labs : TSH Undetectable T4 > 7 T 3 13 BNP 2070.
CBC Hgb 10.5, WBC 34.5, Mainly Neutrophilic with some eosinophilia.
CMP Glucose 80 Cr 1.3
Trop: . 058 Iron Studies: Shows Iron deficiency, with mild elevation in ferritin.
Blood, Aspirate, and urine cultures were also taken.

EKG: Atrial Fibrillation (afib)

CT neck chest, & abdomen/pelvis were completed

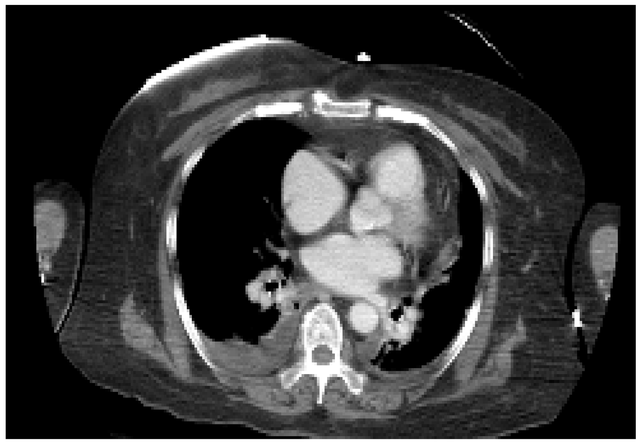
Neck CT showed 3cm thyroid nodule on the left/w potential abscess/necrosis concerning for potential malignancy. Abd/Pelvis showed potential colitis. CT chest showed some pleural effusions.

The patient was admitted to ICU for sepsis, with thyroid storm, and afib.

The patient was put on beta blockers, steroids, propylthiouracil, and cholestyramine. She was also started on antibiotics for sepsis. She was started on Vancomycin, and Aztreonam, as well as Furosemide due to the pleural effusions.

Imaging/Figures/etc

- Image 1: CT Shows Thyroid nodule with some retropharyngeal edema.



- Image 2: CT Shows some pleural effusions

Case Presentation cont.

In the ICU, she was intubated for airway protection, and a feeding tube was put in. Cardiology was consulted and they followed the case. Amiodarone was avoided due to potential worsening of thyroid storm. Later, the patient was started on fluconazole as her aspirate had grown yeast.

Her SBP improved with medication, and she had returned to sinus rhythm. Repeat Neck CT that was done a few days later showed resolution of potential abscess/necrosis with a persistent mass.

In the coming days, she was transferred for ENT services, and higher level of care. Urine and blood cultures were negative.

Discussion

- Thyrotoxicosis with suspected cancer is not well recognized. It's estimated that 17% of those with Grave's disease will have concomitant thyroid cancer. A potential mechanism in which this occurs is believed to be due to thyrotropin receptor antibodies (TRAb). Thyrotropin receptor antibodies may play a role in Differentiated Thyroid cancer such as Papillary, or Follicular Thyroid cancer. Surgery is often the mainstay for those who have thyroid cancer, with thyrotoxicosis, however, medical management is often initiated before to help mitigate operative risk [1]. The need and timing for radioactive iodine depends upon whether or not the mass can be removed, as well as if its confirmed to be a hyperfunctioning mass [2].

- Follicular Thyroid Cancer is common amongst hormone producing thyroid cancers. Tumor burden is also higher with this type of cancer as well. As per the Surveillance, Epidemiology and End Results (SEER) cancer registry which was cited in a separate case report involving thyrotoxicosis, and thyroid cancer, Follicular Thyroid Cancer averages 4.25 cm +- 2cm [3]. The mortality of this population is also high as well.

Conclusion

- Thyroid storm is a life-threatening condition with high mortality. Prompt identification, and treatment is key in helping to manage this condition. Evaluation and confirmation of malignancy, as well as removal of the mass after starting medication is the standard of treatment.

References

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