

# Thyroid storm: A diagnostic conundrum

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## INTRODUCTION

We report a case of thyroid storm presenting as heart failure in a young female who had an underlying untreated hyperthyroidism.

## BACKGROUND

A 47 year old woman with past medical history of hypertension and morbid obesity presented to the emergency room with 3 week history of shortness of breath and chest pain associated with productive cough, bilateral leg swelling, orthopnea, paroxysmal nocturnal dyspnea, and palpitations. Upon evaluation, she was in moderate respiratory distress, restless, tachypneic and tachycardic. She had bilateral proptosis and visible jugular venous pulsation. She had bibasilar crackles and pitting edema bilaterally. Lab tests revealed BNP 539 pg/ml and D-Dimer 6401 ng/ml. ECG showed atrial flutter, Chest X-Ray showed bilateral pleural effusions, and CT Chest was negative for pulmonary embolism.

## CASE

She was admitted to CCU for aggressive diuresis, control of heart rate and was started on anticoagulation. A review of medical records from outside hospital revealed patient was hyperthyroid 8 months ago, however, was not discharged on medications or outpatient follow up. Given a Burch-Wartofsky score >70, she was started on IV hydrocortisone and cholestyramine for severe thyrotoxicosis. Endocrinology was consulted and added PTU to management. TFTs revealed a TSH 0.006 IU/ml, FT4 4 ng/dL and T3 2.5 ng/ml. Bedside ECHO showed LVEF of 14% with global hypokinesis and thyroid ultrasound revealed an enlarged, heterogenous thyroid with a solid, isoechoic, calcified left lobe interpole nodule measuring 0.8 x 0.4 x 0.5 cm.

Her serum thyroid stimulating immunoglobulins and thyrotropin receptor antibodies were elevated at 17.20 IU/L and 20.20 IU/L, respectively. She responded to treatment and was discharged on metoprolol, losartan, spironolactone, and furosemide for new-onset heart failure, apixaban for atrial flutter, and PTU and cholestyramine for hyperthyroidism, with outpatient Cardiology and Endocrinology follow-ups.

## DISCUSSION

Thyroid disease is a common illness affecting 9 to 15 percent of the adults. Thyrotoxicosis refers to the clinical syndrome of hyper-metabolism due to excessive amount of circulating thyroid hormones. The incidence of thyroid storm is 0.57 to 0.76 per 100,000 people per year in the US. It most commonly occurs in women and is more common in patients with underlying Grave's Disease. The exact underlying mechanism that leads to thyroid storm is not well understood but adrenergic activation seems to have a major role. Our patient had long standing untreated hyperthyroidism with a solid nodule which led to the crisis. The most common cause of death is cardiopulmonary failure and hence treatment should be initiated as soon as diagnosis is suspected owing to high mortality.

## CONCLUSION

Awareness of thyroid pathology affecting the heart is important to remember in evaluating the etiology of heart failure in patients.

