A Perfect Storm: Thyroid Storm, Atrial Fibrillation, and Pulmonary Embolism

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Both pulmonary embolisms and atrial fibrillation are potential life-threatening conditions that can vary in etiology and presentation.

An 89-year-old female with no documented medical history presented to the emergency department with 2 weeks of poor appetite, weakness, and increasing confusion. Information was obtained from the patient's daughter, who stated that the patient was previously diagnosed with some type of thyroid condition but had not taken any prescription medication for years. Upon physical exam, the patient was only oriented to self and appeared uncomfortable and anxious. Initial vital signs were notable for a heart rate of 152. Echocardiogram showed atrial fibrillation with rapid ventricular response (Afib with RVR). The patient received diltiazem, followed by a continuous infusion of amiodarone. Labs were notable for a TSH of 0.009 mIU/L and Free T4 of 1.93 ng/dL. A calculated Burch-Wartofsky point scale for thyrotoxicosis was highly suggestive of thyroid storm. The amiodarone was discontinued, and the patient was initiated on the following regimen: propranolol, propylthiouracil, and hydrocortisone, followed by potassium iodide. The patient was initiated on treatment-dose enoxaparin for Afib with RVR. She required 2 liters of supplemental oxygen to maintain oxygen saturation >92% and remained tachycardic. A D-Dimer was measured on hospitalization day three, which was elevated to 5,227 ng/mL. This prompted a computed tomography (CT) pulmonary angiogram to be ordered, which showed large filling defects consistent with pulmonary embolism with saddle embolus and evidence of right heart strain. The patient remained hemodynamically stable. Treatment options were discussed with the patient and family, and it was determined to continue enoxaparin rather than thrombectomy or systemic thrombolysis. The CT imaging also revealed a 3.3 cm mass in the tail of the pancreas, worrisome for malignancy. Palliative medicine was consulted and the patient was discharged home under palliative care.

This case illustrates that acute conditions can be precipitated by multifactorial underlying conditions. Pulmonary embolisms and atrial fibrillation have an established bidirectional relationship. This patient's underlying malignancy likely raised her risk for pulmonary embolism and thyrotoxicosis may have incited her atrial fibrillation. Prompt diagnosis of both conditions is necessary for appropriate management.