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Thyroidectomy: Perioperative Management of Acute Thyroid Storm

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Patients with hyperthyroidism in need of surgical intervention present challenges to medical consultants charged with making recommendations perioperatively. Furthermore, those who enter thyroid storm are at risk for complications prior to, during, and after surgery. Increased awareness, early intervention, and delay of thyroidectomy will result in improved outcomes.

We report a 58-year-old female with Graves' disease, coronary artery disease, diabetes mellitus, and right-sided vocal cord paralysis who presented with ventilator-dependent respiratory failure after aspiration. The patient had a long history of dysphagia and required a PEG tube for nutrition. She had documented normal thyroid function 2 weeks prior to admission. She then developed nausea, increased neck size, and double vision. She reportedly had been compliant with methimazole and propranolol.

The patient was intubated secondary to respiratory failure after aspiration. With ventilatory support, she was found to have blood pressure of 125/52, heart rates of 115 to 156, pulse oximetry of 100%, and to be afebrile. Other positives on physical exam were diplopia, exophthalmos, and neck goiter. She had 2/6 systolic ejection murmur heard over the left second intercostal space. She exhibited 3+ reflexes and bilateral lower extremity wasting.

Initial diagnostics measured TSH < 0.03, free T4 of 7.6, and a T3 > 20. Chest CT was negative for pulmonary embolism and demonstrated enlarged heterogeneous thyroid.

Subsequently, the patient passed spontaneous breathing trials but was unable to produce cuff leak. However, she self-extubated and remained stable enough to be transferred to a regular medical floor. For management of thyrotoxicosis, she was placed on an esmolol drip initially and then given oral propranolol. Her methimazole was increased and corticosteroids were started. Her symptoms gradually improved, and her T4 decreased to 1.4. The patient was discharged in stable condition and instructed to follow up with a general surgeon regarding thyroidectomy in 1 week.

Preoperative thyroid storm is a life-threatening condition that requires medical intervention prior to surgery. Most patients are boarded to undergo thyroidectomy for persistent thyrotoxicosis, usually secondary to Graves' disease. In most cases, they have contraindications to or have failed medical therapy. The method of treatment usually depends on the time available for preoperative measures and the severity of thyrotoxicosis. Beta-blockers are typically employed unless contraindicated because they improve thyroid storm symptoms, especially those of the cardiovascular system. Other agents, including iodine and steroids, are used if severe thyrotoxicosis is present. The ultimate goal of therapy is to make the patient as close to euthyroid and hemodynamically stable as possible before surgery.

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