

Abstract citation ID: bvac150.1704

Thyroid

PSAT324

Altered Mental Status, Hypercalcemia, and Atrial Fibrillation Induced by Post-Parathyroidectomy Thyroiditis

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Background: Parathyroidectomy-induced thyroiditis is a rare but possibly underreported phenomenon. It has been reported in primary, secondary, and tertiary hyperparathyroidism, and typically presents with transient thyrotoxicosis in the days to weeks following surgery.

Clinical Case: A 66-year-old man with end stage renal disease complicated by tertiary hyperparathyroidism and no prior history of thyroid disease or cardiac dysrhythmia was admitted for parathyroidectomy. A multinodular goiter and four enlarged parathyroid glands were identified intraoperatively. With significant thyroid retraction, removal of the inferior parathyroid glands, left superior parathyroid gland, and one-half of the right superior parathyroid gland

was successfully performed without complication. Despite normalization of the parathyroid hormone level after surgery, the patient's preoperative hypercalcemia was noted to paradoxically worsen, rising from a corrected total calcium of 10.9 mg/dL (ref. 8.5-10.4 mg/dL) to 12.2 mg/dL. This was observed concurrently with the development of worsening mental status and new onset atrial fibrillation with rapid ventricular rate, prompting beta blockade initiation. Administration of intravenous crystalloid and subcutaneous calcitonin rapidly normalized his serum calcium but did not resolve the altered mentation or cardiac arrhythmia. Thyroid function tests revealed thyroid stimulating hormone 0.05 mIU/L (ref. 0.49-4.67 mIU/L), free thyroxine (T4) 3.8 ng/dL (ref. 0.7-1.9 ng/dL), and total triiodothyronine 144 ng/dL (ref. 60-181 ng/dL). Thyroid stimulating immunoglobulin was negative, and a thyroid ultrasound demonstrated multiple bilateral thyroid nodules with no evidence of increased vascularity of the gland. Serial thyroid function tests over several days revealed spontaneous biochemical improvement in the patient's T4-thyrotoxicosis that correlated with improved mentation. An exhaustive metabolic, infectious, and radiologic work-up yielded no alternative explanation for his initial change in mental status. By postoperative day 6, his cardiac dysrhythmia and altered mentation completely resolved, and the free T4 improved to 2.1 ng/dL, allowing for hospital discharge. His free T4 normalized a week later.

Conclusion: Our patient's postoperative course appears to have been driven by surgically induced thyroiditis. There are no current recommendations for routine postoperative screening for parathyroidectomy-induced thyroiditis, but biochemical testing should be considered if signs or symptoms of thyrotoxicosis such as unexplained altered mentation, cardiac dysrhythmias, and/or worsening hypercalcemia emerge. Doing so may allow for a rapid and cost-effective approach towards a unifying diagnosis. Bilateral cervical exploration is a known risk factor. Other possible risk factors include the presence of a multinodular goiter and significant intraoperative thyroid retraction, though further characterization of these is needed. Treatment is supportive, as cases typically self-resolve.

Presentation: Saturday, June 11, 2022 1:00 p.m. - 3:00 p.m.