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Delayed Emergence from General Anesthesia

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Introduction

The incidence of perioperative morbidity associated with varying degrees of untreated thyroid disease is unknown, however, major complications have been reported[1] including severe hypotension or cardiac arrest, extreme sensitivity to opioids and anesthetics with prolonged unconsciousness, and myxedema coma.[2] Myxedema coma is a rare and life-threatening illness the outcome of which has not been robustly studied in large numbers, partly due to its low incidence.[3]

Head CT	No Acute Abnormalities
Arterial Blood Gas	pH: 7.31 $PaCO_2$: 58 mmHg
Glucose	170 mg/dL
Hemoglobin	9 g/dL
TSH	122 uIU/mL (0.28 – 3.89)
Free T4	0.27 ng/dL (0.58 – 1.64)
Thyroid Peroxidase Antibody	>1000 IU/mL (< 35)

Table 1. Initial delayed emergence work up results

Case Report

A 56 year-old Albanian female was scheduled for an elective rotator cuff repair. She had a past medical history of diabetes mellitus type 2, carpal tunnel syndrome, peripheral neuropathy, hypertension, dyslipidemia, migraines, and gastro-esophageal reflux disease. Her home medications included gabapentin, metformin, lisinopril, simvastatin, and omeprazole. The physical examination and preoperative evaluation were unremarkable.

Preoperatively the patient had an interscalene block performed. Once in the operating room intravenous induction of general anesthesia was achieved with propofol 130 mg, fentanyl 100 mcg, and muscle relaxation with rocuronium 50 mg without further dosing. The patient developed transient hypotension treated with ephedrine and was then positioned in the beach chair conformation for the surgical procedure.

Throughout the anesthetic the systolic blood pressure was maintained between 110-150 mmHg by titration of a phenylephrine infusion. General anesthesia was maintained with inhaled sevoflurane. On emergence the patient followed simple commands and met extubation criteria. She was subsequently extubated and transferred to the Post Anesthesia Care Unit (PACU).

On arrival to the PACU, she was still responsive but within 30 minutes she became increasingly obtunded, responding to deep stimulation only. The work up of delayed emergence started. Findings on physical examination included: lungs clear to auscultation, no focal neurological deficits and an enlarged tongue. To rule out possible residual muscle relaxation a dose of neostigmine 5 mg and glycopyrrolate 1 mg was given without clinical improvement. Laboratory workup for electrolyte and glucose abnormalities were unremarkable. An arterial blood gas revealed hypercapnea, therefore she was placed on BiPAP. A head CT scan was performed to rule out any intracranial pathology as the cause of the ongoing obtundation. The patient was then transferred to the surgical intensive unit for close monitoring and further workup.

Upon admission to the surgical intensive care unit, further history from the family revealed recent episodes of weakness, weight gain, mood swings and day time sleepiness over the past few months. Her daughter also shared a strong family history of hypothyroidism. Further workup to evaluate thyroid function revealed a TSH value of 122 mIu/mL. At this point, oral levothyroxine 88 mcg daily treatment was started. At the 1 month follow up the patient was found to be euthyroid with a TSH of 2.27 mIu/mL.

Discussion

The differential diagnosis for postoperative changes in mental status is extensive.[1] Higher on the differential in this particular patient was hypoglycemia, ischemic stroke (particularly since she was positioned in a beach chair configuration throughout the surgery), hypoxic brain injury, myocardial infarction, electrolyte abnormalities or prolonged medication metabolism. Proper testing was initiated to rule out some of these causes and ultimately thyroid testing revealed the diagnosis. Although common, symptoms of hypothyroidism can be vague and difficult to elicit during a brief history and physical examination. Fatigue, dry skin, hypothermia, constipation and changes in hair texture can be subtle and gradual in onset, making it even more important for examiners to look for these signs and symptoms in the pre-operative evaluation, since they could be missed by the patient or family members. In these patients, a thorough examination or blood test can be lifesaving by preventing a potentially fatal complication as is myxedema coma.

Conclusion

This case illustrates the differential diagnosis of delayed emergence from general anesthesia and the value of a complete history and physical exam. Although delayed emergence from general anesthesia is not uncommon, recognizing the cause and instituting timely treatment is imperative in conditions where delayed therapy can increase morbidity and mortality.

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