WHEN STRIDOR STRIKES: RECURRENT LARYNGEAL NERVE INJURY VS POST SURGICAL HYPOCALECEMIA INDUCED WEAKNESS CASE REPORT

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UPMC LIFE CHANGING MEDICINE

Significance

• Our case report highlights a rare episode of compounded post-surgical hypocalcemia induced weakness that mimicked recurrent laryngeal nerve (RLN) injury.

• Despite hypocalcemia occurring in 25-45% of thyroidectomies and central neck dissections, current guidelines for assessing risk and preventing postsurgical hypocalcemia are still under development[8,10].

Introduction

• The most concerning side effects of thyroidectomy are RLN damage or injury of the parathyroid glands, resulting in permanent hypocalcemia[7,9].

• Hypocalcemia occurs due to manipulation, resection, or devascularization of the parathyroid glands during surgery[2]. It will often arise within 24-48 hours following surgery[5].

• Given its short half-life, PTH levels can decrease within 10-15 minutes, which drives the onset of hypocalcemia[10].

• PTH levels have been identified as a potential marker for assessing risk of hypocalcemia, however, current studies have not specified an ideal timeline to measure PTH levels following thyroidectomies[10].

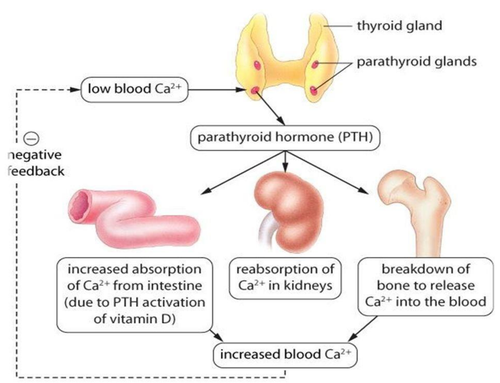

Figure 1. Flowchart of calcium homeostasis between the parathyroid glands and related organ systems

Case Report

• 53 y.o Caucasian male presented with a new right thyroid mass. Initial US biopsy returned benign but due to the size of mass, a right hemi-thyroidectomy was scheduled. Repeat pathology was sent with excised mass and returned as poorly differentiated thyroid papillary carcinoma.

• Due to the new diagnosis, he returned for a complete thyroidectomy to removal the remaining left lobe of his thyroid. Surgery was uneventful and intra-operative nerve monitoring was used. Upon completion of thyroidectomy, patient was extubated. However, upon extubating, patient had significant stridor that was not improving. Due to concerns for possible recurrent laryngeal nerve injury and possible impending airway crisis, patient was reintubated.

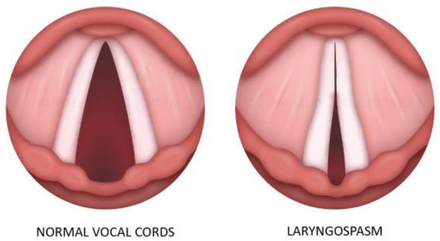

Figure 2. Drawing of normal vocal cords when inhaling vs an episode of laryngospasm with the vocal cords clamped shut during inhalation

Treatment

• Following re-intubation, immediate post op labs were drawn. Patient was found to have hypocalcemia at 8.3mg/dL, PTH levels < 1.0, and active vitamin D levels significant decreased.
• Transferred to ICU for high dose steroids, calcium and vitamin D repletion. Plan for repeat extubation in 24 hours with backup plan for tracheostomy if unsuccessful.
• Patient was successfully extubated without signs of stridor or respiratory distress. He did not have any hoarseness or vocal cord dysfunction after.

• During the rest of his hospital stay, his calcium continue to drop despite supplementation. At discharge, his calcium was 7.8 mg/dL (N: 8.5-10.2 mg/dL).
• Discharged home on calcitriol 0.25 mg BID, Ca carbonate 1000 mg TID, continue ergocalciferol 50 000 units weekly.
• He continued to have episodes of hypocalcemia post-operatively requiring multiple ER visits for supplemental IV calcium and calcitriol. His lowest hypocalcemia episode was 6.6 mg/dL occurring 5 days post-op.

Outcome

• After 1 month post-operation, his PTH levels normalized to 13.1 pg/mL, indicating his parathyroid glands were not incidentally removed, but instead stunned from surgery. He was weaned off supplemental calcitriol and calcium.

Discussion

•Our case report highlights hypocalcemia being a source for hoarseness and stridor, which mimicked RLN injury.

•Many risk factors for surgical hypoparathyroidism can help predict if a patient will develop postsurgical hypocalcemia[2].

Risk Factors	
Age	Obesity (BMI > 40)
Concomitant thyroid/parathyroid surgery	Vitamin D deficiency prior to surgery
Pediatric Patients	Malignancy
Trans-oral surgical approach	Central lymph node dissection level VI dissection
Reoperative Surgery	Surgery time > 3 hours

•Studies that examined PTH levels drawn at differing time points, ranging from intraoperatively until postoperative day 1 found similar accuracy for predicting hypocalcemia[4]. Mazota et al. identified the first 4 hours postoperatively as an optimal period for PTH evaluation[4].

•Certain situations have been identified in which routine supplementation is appropriate, such as total thyroidectomy with central compartment neck dissection[11].

Recommendations

•Always check PTH levels following neck surgery to stratify risk for postoperative hypocalcemia and initiate prophylactic treatment as needed.

•If PTH levels were not checked following neck surgery, we recommend anesthesiologists assess preoperative calcium levels prior to any future surgeries that will be occurring within 6 months of any previous neck surgery, especially for cases that will use an endotracheal tube.

References (QR code)