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Case Report

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Clinical Presentation of Acute Hypocalcemic Crisis in A Post Thyroidectomy Case After One Year: A Case Report

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Abstract

A 36-year-old female patient was admitted with tetany and severe hypocalcemia. One year earlier she was treated with total thyroidectomy (with central neck dissection) for Papillary carcinoma of the thyroid and advised for radioiodine ablation therapy post-thyroid surgery. Postoperatively she was on thyroxine replacement therapy with 150 µg/day after undergoing radio-iodine therapy and also on calcium supplementation. A few months later she presented with limb spasms in ENT OPD. Examination revealed positive Trousseau's signs, while plasma calcium, decreased to 5.1 mg/dl (ref. range: 8.4-10.2mg/dl). She was then admitted to the hospital. Measurement of PTH concentrations of 3.4 pg/ml (ref. range:10-55 pg/ml) confirmed the presence of hypofunctional parathyroids. She was treated aggressively in the ward for hypocalcemia and she responded well to the treatment. It has been observed in the literature that, Low postoperative IPTH level, female sex, and presence of malignant neoplasm are all significant, independent potential predictors of hypocalcemia after total thyroidectomy and our case also signifies the same observations. Clinicians should consider these variables when deciding how to manage or prevent postoperative hypocalcemia.

Keywords: *Hypocalcemia, Post-thyroidectomy*

Introduction

The most common complication of total thyroidectomy is post-operative hypocalcemia. [1] The serum calcium levels should be regularly monitored and hence there is a need for prolonged hospitalization of these patients so as to reduce the risk of development of these complications. [2] There is an inadequate release of parathormone post-total thyroidectomy leading to hypocalcemia. Patients present with tingling, paresthesia, tetanic contractions, seizures, muscle spasms, and QT interval prolongation evident on their electrocardiograms. [3] During total thyroidectomy if there is accidental removal or trauma to the parathyroid gland chances of hypocalcemia developing post thyroidectomy increases. The symptoms of hypocalcemia usually start commencing on the second postoperative day [4].

Case Presentation

A 36-year-old female patient presented with generalized fatigue, and decreased appetite, was not able to perform her routine activities for 10 days, and is now bed-bound. Her calcium levels were assessed which were found to be low along with low PTH, low serum potassium, and serum calcium levels. She was on levothyroxine replacement post-thyroidectomy. Diagnosis of papillary carcinoma of the thyroid was made 1 year before and she underwent total thyroidectomy with central neck dissection. After surgery she was advised for ablative iodine 131 therapy. For 1 year she has been on thyroxine supplements.

On examination, the patient was conscious and oriented but drowsy. She had a carpopedal spasm, positive Trousseau's sign but negative Chvostek's sign (Figure 1). She was advised admission. Her systemic examination was normal. Routine investigations were sent and evident hypocalcemia, hypomagnesemia, and hypokalemia were noted. She was managed conservatively and the electrolyte deficiencies were corrected.

Figure 1: *Our case of post-thyroidectomy who developed carpopedal spasm, weakness, fatigue, and generalized body ache.*

She was started on intravenous calcium gluconate 10 ml of 10% three times a day, intravenous potassium chloride 2 ml in 500 NS slowly over 5-6 hours, inj. bonnax 750 microgram/3 ml subcutaneously and on oral calcitriol supplements and tab potride two tabs tid. Improvement in her symptoms was noted and her low calcium levels were back to normal levels. She is routinely followed up and no complication has been noted since then.

Discussion

Various causes have been implicated for post-thyroidectomy hypocalcemia. The risk of postoperative hypocalcemia is based on many factors like biochemical factors, surgical factors, patient-related and disease-related factors. [3,4] These factors help in identifying the essential markers of diagnosing early hypocalcemia. [5] These factors also help in grading patients who can receive treatment either on the outdoor basis or on an indoor basis. [6]

Patients usually develop carpopedal spasms, seizures and tetany. ECG of these patients sometimes shows prolonged QT interval. [7] Also these patients develop tingling sensation as well as numbness. Sometimes congestive heart failure and reversible cardiomyopathy can also be manifested in patients of post-thyroidectomy hypocalcemia. [8,9] Neuromuscular irritability is the hallmark of acute hypocalcemia. It is very well demonstrated by Chvostek's or Trousseau's sign. Chvostek's sign is performed by placing the finger and tapping the skin anterior to the external auditory canal. In Trousseau's sign, the blood pressure cuff is inflated 20 mm Hg above the systolic blood pressure of the patient for 3-5 minutes. [10] The resultant carpopedal spasm due to induced ischemia is evident as the flexion at the wrist, thumb and metacarpophalangeal joints and hyperextension of the fingers.

The decision to start treatment depends on the presenting features, severity and progression of the disease. The most commonly used medication for treating hypocalcemia is calcium carbonate. [11] Oral calcium and vitamin D supplements can be used to manage mild hypocalcemia. In certain patients with hypocalcemia, hypomagnesemia has also been reported. These patients should first undergo renal function tests. Magnesium in the dose of 400-1000 mg/day can be started if the renal function test is normal. [12-14]

Those patients who develop symptoms should be treated with intravenous calcium. Calcium gluconate is the most commonly used intravenous treatment for severe hypocalcemia. It is usually given in slow bolus injections.

Post total thyroidectomy, a post-operative weekly follow-up for 2-3 weeks with serial monitoring of calcium levels should be practised. According to calcium levels, treatment is started with calcium and vitamin D supplements.

Conclusion

Due to parathyroid dysfunction, hypocalcemia occurs. The development of hypocalcemia after total thyroidectomy is the most common complication. Early diagnosis of hypocalcemia is very crucial in post-thyroidectomy patients. Assessment of predictive factors

should always be done so as to arrive at an early diagnosis of hypocalcemia. These factors also aid in establishing proper medications which in turn help in curing acute hypocalcemic crises.

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