

## Case Report

### Parathyroid adenoma presenting as dysphagia and nephrogenic diabetes insipidus

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#### Abstract

This case describes a patient with a parathyroid adenoma presenting with dysphagia and nephrogenic diabetes insipidus without demonstrating a parathyroid lesion on imaging. The parathyroid adenoma was detected during surgical exploration and excised which resulted in the normalization of calcium and sodium levels and led to symptomatic relief from dysphagia.

**Key words:** Parathyroid adenoma, Nephrogenic diabetes insipidus, Dysphagia

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## Introduction

Parathyroid adenoma is a benign tumour of the parathyroid gland. Most parathyroid adenomas lead to hypersecretion of parathyroid hormone and present with features of hypercalcemia. Rarely the presentation will be a complication of hypercalcemia, such as nephrogenic diabetes insipidus. A large parathyroid adenoma may also uncommonly present with compressive symptoms such as dysphagia. However, a combination of both presentations is rare.

Elevated parathyroid hormone levels whilst investigating for the etiology of hypercalcemia will suggest a parathyroid adenoma. Ultrasound scan of the neck and sestamibi technetium scans are used in the radiological diagnosis to detect anatomical and functional changes in parathyroid glands.

Surgical exploration and excision of the parathyroid gland is the recommended treatment. The parathyroid and serum calcium levels return to the baseline following excision. Moreover, in patients with nephrogenic diabetes mellitus secondary to parathyroid adenoma, the vasopressin levels, urine osmolality, plasma osmolality and serum potassium levels too return to normal subsequent to parathyroid gland excision. Hence parathyroid adenomas are associated with good prognosis.

## Case History

A 57 year old female presented to National Hospital Kandy with non-progressive dysphagia for five months duration with significant weight loss. She was emaciated and dehydrated.

Basic investigations led to identifying hypernatremia, hypokalemia, hypercalcemia, elevated plasma osmolality, low urine osmolality and elevated antidiuretic hormone levels. She was diagnosed with nephrogenic diabetes mellitus secondary to hypercalcemia. Whilst investigating for hypercalcemia, elevated parathyroid hormone levels were detected.

Investigating for dysphagia, flexible oesophagogastroduodenoscopy did not demonstrate any lesion. However, barium swallow demonstrated a narrowing in the upper oesophagus. Whilst investigating for hyperparathyroidism, both ultrasound scan and computer tomography of neck demonstrated only a solitary nodule in the left lobe of thyroid gland and no parathyroid lesion was demonstrated. Further evaluation of the left thyroid nodule with ultrasound guided fine needle aspiration cytology revealed a Bethesda III lesion with atypia of undetermined significance.

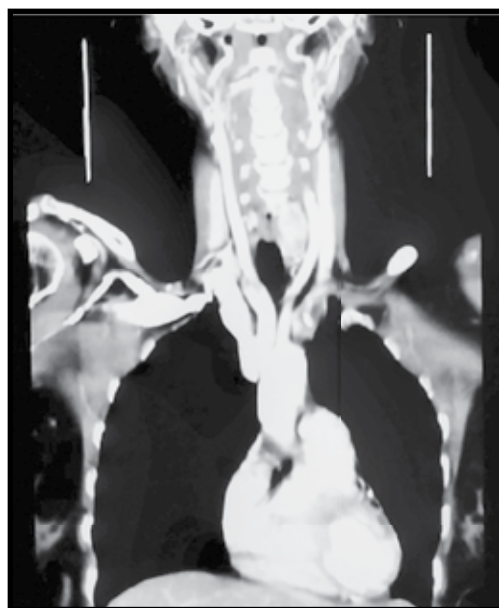


Figure 01 : Coronal view of computer tomography of neck and chest demonstrating a lesion suspected to be an enlarged left thyroid nodule

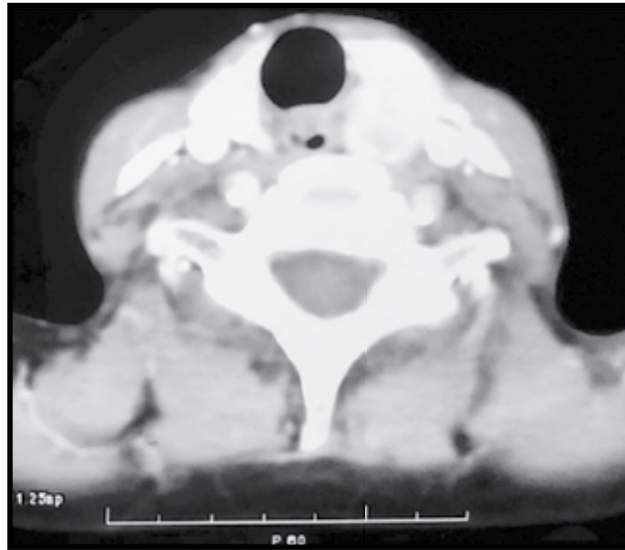


Figure 02: Axial view of computer tomography of neck and chest demonstrating a lesion suspected to be an enlarged left thyroid nodule

Patient underwent left hemi-thyroidectomy and exploration of parathyroid glands. Left hemithyroidectomy was performed as the investigations revealed a Bethesda III left solitary thyroid nodule. Subsequent to the left hemithyroidectomy, a 35 x 20 x 15mm sized enlarged left superior parathyroid gland was identified, excised and sent for histology. The left thyroid lobe measured 40 x 20 x 10 mm with no obviously palpable nodules. The pre-operative parathyroid hormone level of 1725 pg/ml dropped to 180pg/ml ( 80% reduction) subsequent to the excision of the enlarged parathyroid gland. The dysphagia settled and sodium and calcium levels were normalized by postoperative day 2. Patient was discharged on the sixth post-operative day. She was reviewed in clinic with histology which revealed an atypical parathyroid adenoma with no capsular invasion or angioinvasion and normal tissue in left lobe of thyroid.

## **Discussion**

Parathyroid adenoma is a benign tumour of the parathyroid gland. They account for 30% to 90% of all parathyroid lesions. Parathyroid adenoma causes hyper secretion of parathyroid hormone and it is the commonest cause of primary hyperparathyroidism accounting to 80 – 85% of cases followed by parathyroid hyperplasia and parathyroid carcinoma. Hypersecretion of parathyroid hormone gives rise to high levels of serum calcium<sup>1</sup>.

Parathyroid adenomas commonly present as nonspecific symptoms related to elevated levels of calcium such as fatigue, weakness, confusion, bone pain, pathological fractures, osteopenia and nephrolithiasis. Nephrogenic diabetes insipidus is a recognized complication of primary hyperparathyroidism due to autophagic degradation of Aquaporin-2 water channels as a result of hypercalcemia. Nephrogenic diabetes insipidus is classically reversed subsequent to parathyroid gland excision, most cases report normalization of serum calcium levels and serum osmolality to pre-morbid levels<sup>2</sup>.

Some patients with parathyroid adenoma may present with dysphagia which can result from direct pressure on the oesophagus from a large or an ectopic parathyroid adenoma. Nevertheless, a parathyroid carcinoma or haemorrhage into a parathyroid adenoma too can manifest as dysphagia. However, subsequent to parathyroid surgery, significant improvement has been recorded in swallowing, assessed by the Swallowing Quality of Life questionnaire - SWAL-QOL<sup>3</sup>.

Ultrasound scan of neck and technicium (Tc-99m) sestamibi scans are the most commonly used imaging techniques in preoperative localization of hyperfunctioning parathyroid lesions. Combined assessment with

both are found to have higher sensitivity as the technetium sestamibi scan provides functional information about the glands and can visualize ectopic lesions where as an ultrasound scan visualizes the anatomic relations of an enlarged parathyroid gland<sup>4</sup>.

Surgical resection of an abnormal parathyroid gland is the standard and curative treatment. When the imaging techniques fail to localize a diseased parathyroid gland, surgical exploration is of great importance. Pre-operative and intra-operative parathyroid hormone assays provide an accurate indication of the excision of parathyroid adenoma owing to the short half-life of parathyroid hormone. A focused approach to parathyroid glands is used currently which does not require exposure or visualization of all glands supported by the parathyroid hormone. A minimum of one year follow up period is recommended with both clinical and laboratorial investigations in parathyroid adenoma<sup>5</sup>.

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