

Intra-Thyroidal Parathyroid Adenoma

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ABSTRACT

The parathyroid adenoma is considered to be cause of hyperparathyroidism. But in the present study we have observed a parathyroid adenoma whose has Intra-thyroid origin. The age and general health of the patient have a significant effect in the treatment plan selection. Furthermore, the intensity of the symptoms and the variety of clinical presentations can play a role in the decision-making process.

Keywords: Intra-thyroid, Parathyroid adenoma, Hyperparathyroidism, Endocrinology

Introduction

It is known that the most common cause of the primary hyperparathyroidism is the parathyroid adenoma; however, we report a parathyroid adenoma case which has Intra-thyroid origin. The patient came with the symptoms of hypercalcemia and the treatment plan was conservative management. Interestingly, the patient has no visible masses, however came with hypercalcemia symptoms and the Scans showed having the mass.

■ Case Presentation

An 83 years old female patient who was admitted in Princess Royal University Hospital, Kings College Trust, London, United Kingdom due to lethargy, nausea and poor appetite. On her first admission, these symptoms started few days after having her flu vaccine and presented by general fatigue as well. She denied any vomiting, palpitations, chest pain, Shortness of Breath (SOB), weight loss, urinary symptoms or change in mood. In terms of her past medical history, she was diagnosed with Hypothyroidism, Hypertension, depression and esophagitis.

Having a look on the investigations, her bloods showed hypercalcemia (corrected ca 2.8), PTH 198, TSH 2.02, Vit D 35, FBC normal & ECG

showed new AF. Then she was treated with iv fluids and discharged with outpatient endocrinology clinic in 4 weeks-6 weeks with other investigations including neck US, myeloma screen, creatinine ration, serum and urinary calcium.

■ The US neck report

No parathyroid adenoma definitively seen. There is a 1.7 cm × 1.5 cm × 2.7 cm hypoechoic well defined lesion in the right thyroid with marked vascularity - possibly there is an external supply from the inferior thyroidal artery (U3). The background thyroid is mildly heterogenous. Although a thyroid nodule is most common there is the possibility of an Intra-thyroidal parathyroid adenoma, despite the implied picture of tertiary hyperparathyroidism. Correlation with nuclear medicine is advised along with ENT referral.

■ Summary of neck US

- No parathyroid adenoma definitively seen
- 1.7 cm × 1.5 cm × 2.7 cm well defined right thyroid U3 lesion with marked vascularity
- Background thyroid is mildly heterogenous
- Thyroid nodule most common, but there is possibility of Intra-thyroidal parathyroid adenoma

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■ **Nuclear Medicine Imaging (NM injection), Nuclear Medicine Sestamibi (NM parathyroid MIBI) and Nuclear Medicine Single-Photon Emission Computed Tomography (NM parathyroid scan SPECT CT)**

The early and delayed SPECT images show increased tracer uptake within the known nodule in the right lobe of the thyroid (identified on recent USS); further characterisation and localisation is limited on these CT images. A further and persistent focus of lower grade activity is shown inferior the left thyroid lobe. No clear pulmonary

nodule identified on the scanned lung volume on this low dose CT (**Figure 1** and **Figure 2**).

■ **Comments**

Evidence of a right parathyroid adenoma which would appear to support the impression of Intra-thyroidal origin, and possibly second contralateral and more inferiorly placed ectopic adenoma warranting further investigation.

Figure 1: Nuclear Medicine Imaging (NM injection), Nuclear Medicine Sestamibi (NM parathyroid MIBI) and Nuclear

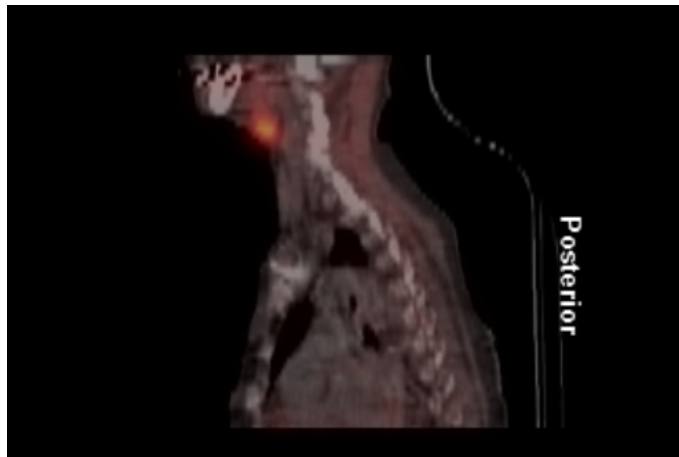


Figure 1: Nuclear Medicine Imaging (posterior view).

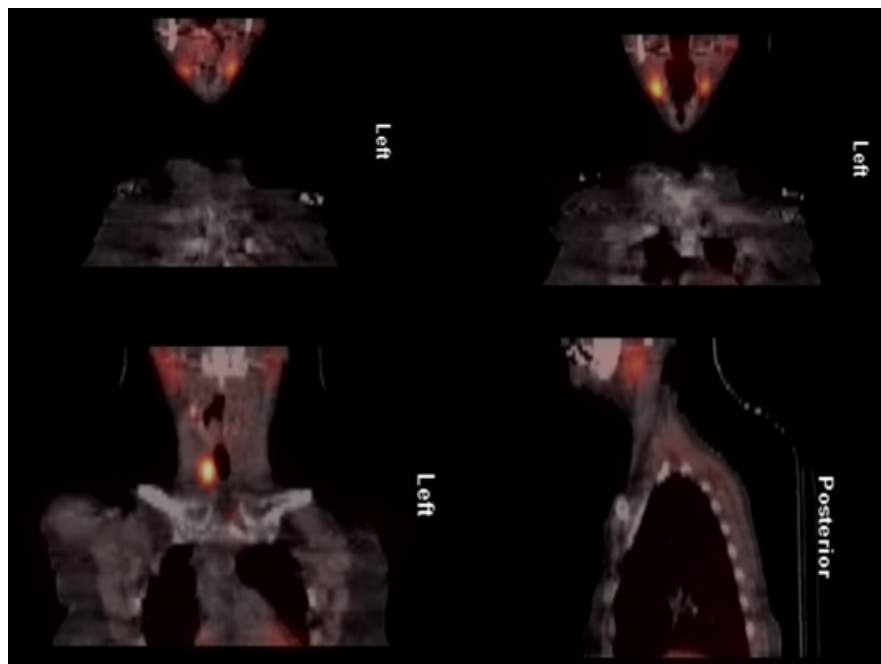


Figure 2: Nuclear Medicine Imaging (NM injection), Nuclear Medicine Sestamibi (NM parathyroid MIBI) and Nuclear Medicine Single-Photon Emission Computed Tomography (NM parathyroid scan SPECT CT)

Medicine Single-Photon Emission Computed Tomography (NM parathyroid scan SPECT CT)

Few months later, she was admitted again (2nd admission) due to five-week-history of general feeling of being unwell and lethargic, water drinking for 1 Litre per day. The patient presented with general tiredness, reduced appetite associated with nausea without any vomiting. In addition to that the patient sometimes felt slightly confused which brought him to the hospital. The patient denied any cough, seizures, headache, Shortness of Breath (SOB), foreign travel or having any urinary symptoms.

■ Investigations

CXR nil acute, ECG first AV block, corrected ca 2.93 PTH 99 na 121, was diagnosed with Hyponatremia and Hypercalcemia due to parathyroid adenoma. Then the patient was referred to the endocrine MDT for discussion and possible FNA and sestamibi scan and to assess the need for surgical review Vs conservative management. She had been seen by in the endocrinology outpatient clinic where she had more investigations in terms of bone density scan and was advised to take adequate fluid intake. The scans were discussed in the thyroid MDT and the plan was conservative management in the view of her age and medical problems with taking in consideration that if the calcium starts creeping up more than 3, then Cinacalcet would be considered. Follow up with organized in six months, but in the interim, GP checking for her calcium every 3 months' time was requested.

Discussion

Having a parathyroid adenoma with Intra-thyroid origin is an interesting condition; the parathyroid adenoma is located inside the thyroid tissue. One of the studies is showing that the Intra-thyroidal parathyroid adenoma is an important cause of the persistent hyperparathyroidism [1]. In terms of the location of the Intra-thyroidal parathyroid adenoma, the CT scan is showing two masses, the first one is on the right side of the thyroid gland and the other one is located inferiorly.

A study was done on 7 patients showing 8 Intra-thyroidal parathyroid adenomas, 7 out of these 8 were located inferiorly [2]. Another study on 42 cases showed unusual places of the adenoma, in

3 cases it was high in the neck just behind the jaw angle, 9 cases in which was encapsulated to the thyroid gland, the remaining were distributed between Para pharyngeal, mediastinal and cervical tumours [3]. In terms of the presentation, the most common symptoms of the any parathyroid adenoma are Recurrent vomiting, Visible swelling, bone pain, Enlarging neck mass, constipation, palpable nodule, however; in our case the main presentations were lethargy, nausea and poor appetite on the first admission, while having polydipsia on the second admission [6].

At the same time, it is important to give an attention to exclude any carcinoma and keep an eye on developing of any symptoms either in the parathyroid or thyroid glands especially when we know that there is a high incidence of having a parathyroid adenoma and development of thyroid carcinoma. The exact mechanism and explanation of having this high incidence is not known, however; may be the effect of the hypercalcemia on the thyroid gland gives us an accepted reason why it may happen [4]. In regards to the imaging, the Neck US gave us an idea about having a thyroid nodule which was heterogeneous with marked vascularity. However; the CT scan is showing a big diagnostic value in comparison with the Ultrasound in detecting this type of masses.

Regarding the management, in the light of her age (83 years old) and having a lot of medical problems along with having no visible swelling in her presentation might be the reason why the decision was for conservative management with follow up and not a surgical intervention. On the other side, there was another case report (52 years old) of parathyroid adenoma which was reported in Qatar, presented with a neck swelling and generalized fatigue and was treated surgically [5].

Conclusion

Intra-thyroid parathyroid adenoma is rare. Although being benign, it can present with symptoms of sever hypercalcemia. The age and general health condition play an important role in the decision of the treatment plan. In addition, the severity of the symptoms and the variety of the clinical presentation can play an important role in making the decision as well.

References

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