CASE REPORT – OPEN ACCESS

International Journal of Surgery Case Reports 52 (2018) 5–7

Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Mediastinal ectopic thyroid mass with normal thyroid function and location: Case report

Mohamed Regal, Mohammed Maamoun Kamel, Hassan Alyami, Emad M. AL-Osail*

King Fahad Military Medical Complex, Dharan, Saudi Arabia

ARTICLE INFO

Article history:
Received 6 August 2018
Received in revised form
14 September 2018
Accepted 17 September 2018
Available online 29 September 2018

Keywords:
Ectopic thyroid tissue
Mediastinal masses
Thyroid
Substernal (retrosternal) goiter
Anterior mediastinal masses
Case report

ABSTRACT

INTRODUCTION: Mediastinal Ectopic Thyroid Gland is a rare entity, accounting for 1% of all mediastinal tumours. Here, we present a rare case of mediastinal mass that was proved to be an ectopic thyroid with normal thyroid function tests and normal thyroid gland in the cervical location.

CASE PRESENTATION: A 32-year-old lady had a road traffic accident, with the incidental discovery of a mediastinal mass on chest radiography. Thyroid function tests were normal. CT scans of the neck and chest revealed a large mediastinal mass compressing the trachea from the left side and extending to the superior part of the anterior mediastinum with normal thyroid gland in the cervical position. Midline Partial Sternotomy was done with complete surgical excision of the mass. It was well circumscribed, multinodular, had firm inconsistency, and grossly looked like a thyroid tissue. Histopathology revealed ectopic thyroid tissue negative for malignancy. Postoperative thyroid ultrasound showed normal thyroid lobes in the neck.

DISCUSSION: Ectopic thyroid tissue (ETT) occurs due to failure of the thyroid gland to migrate from foramen ceacum to its normal position in the cervical region in front of the trachea. The most common site of ETT is lingual thyroid and accounts for about 90% of all cases reported in the literature. ETT in the mediastinum is very rare, with only a few cases reported in the literature.

CONCLUSION: ETT in the mediastinum is very rare and can be associated with normal thyroid function and normal thyroid anatomical location. It should be differentiated from substernal goiter.

1. Introduction

Mediastinal ectopic thyroid gland is a rare entity of the ectopic thyroid tissue (ETT) and accounts for approximately 1% of all mediastinal tumours [1]. Only a few cases have been reported in the literature. Although it is a rare entity, it should be considered in the differential diagnosis and workout of all mediastinal masses. This work has been reported in accordance with the SCARE criteria [2].

2. Patient information

A 32-year-old lady Medically free suffered from a road traffic accident. Her X-ray and CT scans of the chest showed a well-circumscribed mediastinal mass compressing and kinking the trachea from the left side and extending into the anterior mediastinum. It was found not to be related to the trauma.

Patient had no Past Surgical History and Had no family history of cancer, genetic diseases Or Similar illness.

3. Clinical findings

The patient was asymptomatic apart from some degree of dyspnoea on exertion and heavy exercise. She was vitally stable and afebrile. Local examination of the neck and chest showed normal findings.

4. Diagnostic assessment

#CBC, LFT and RFT were within normal limit

Thyroid Function Tests were within normal limit

-TSH: 1.75 mIU/L (Normal: 0.35–4.94). –Free-T3: 4.02 pmol/L (2.63–5.70). –Free – T4: 12.35 pmol/L (9–19).

CT scan of the neck and chest with double contrast revealed (Fig. 1A and B):

A big mediastinal mass was found to compress the trachea from the left side, extending into the superior part of the anterior mediastinum and slightly into the visceral mediastinum. It measured $5.2 \times 4.4 \times 5.2$ cm, with heterogeneous and peripheral enhancement, foci of calcification and fat density, and with tracheal shift to the right. However, there is no narrowing of the airway. The mass is inferior and separate from the left thyroid lobe with mild displacement of the mediastinal vessels. There was no bony destruction or bony lesion. Both lung parenchymas were found to be normal,

* Corresponding author at: King Fahad Military Medical Complex, Dharan, P.O. Box: 3669, Saudi Arabia.
E-mail addresses: mregal1966@gmail.com (M. Regal), M_maamoun2003@hotmail.com (M.M. Kamel), dr.yami@hotmail.com (H. Alyami), emad2022@hotmail.com (E.M. AL-Osail).

https://doi.org/10.1016/j.ijscr.2018.09.033

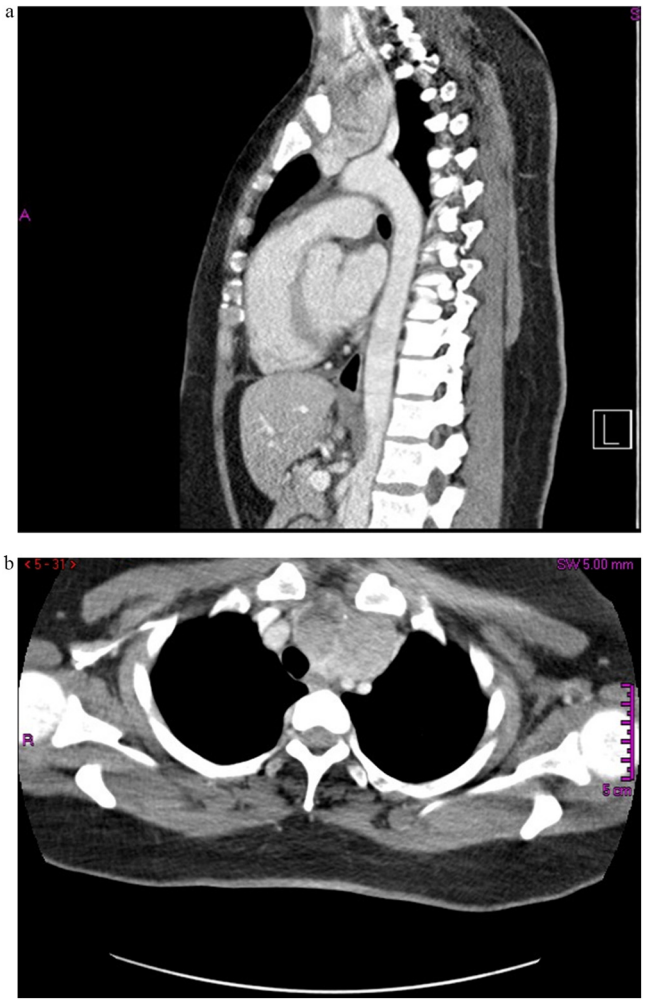

Fig. 1. (A) The mediastinal mass is extending from the neck to the anterior mediastinum, it is infront the arch and the great vessels compressing the subclavian and carotid arteries posteriorly. (A and B) Superior anterior mediastinal mass, measuring 5.2 × 4.4 × 5.2 cm, with heterogeneous and peripheral enhancement.

with no sizeable consolidation. There was no pleural effusion, and the osseous structures were normal.

The differential diagnosis of the mass in the paratracheal position extending into the anterior mediastinum included teratoma and germ cell tumours, substernal goiter, Castleman's disease, and neurologic tumours. Indeed, substernal goiter was excluded after the CT scan due to clear separation between the mass and the left thyroid lobe.

5. Therapeutic intervention

Surgical excision of the mass was planned to reach a diagnosis and avoid the development of pressure symptoms. Fibre optic bronchoscopy was done initially to evaluate the airways. There was compression of the lateral wall of the trachea on the left side with no infiltration. Midline partial sternotomy was performed. A mass was indentified in the suprasternal area, compressing the trachea from the left side. This mass was mainly located in the anterior mediastinum and was not surrounded by the pretracheal fascia. Dissection of the mass was done from the left innominate vein and from the innominate artery and common carotid artery and other surrounding structures. The mass was well circumscribed, multinodular, and had firm inconsistency. It was measured to be about 10 × 5 cm and grossly looked like a thyroid tissue (Fig. 2A and B).

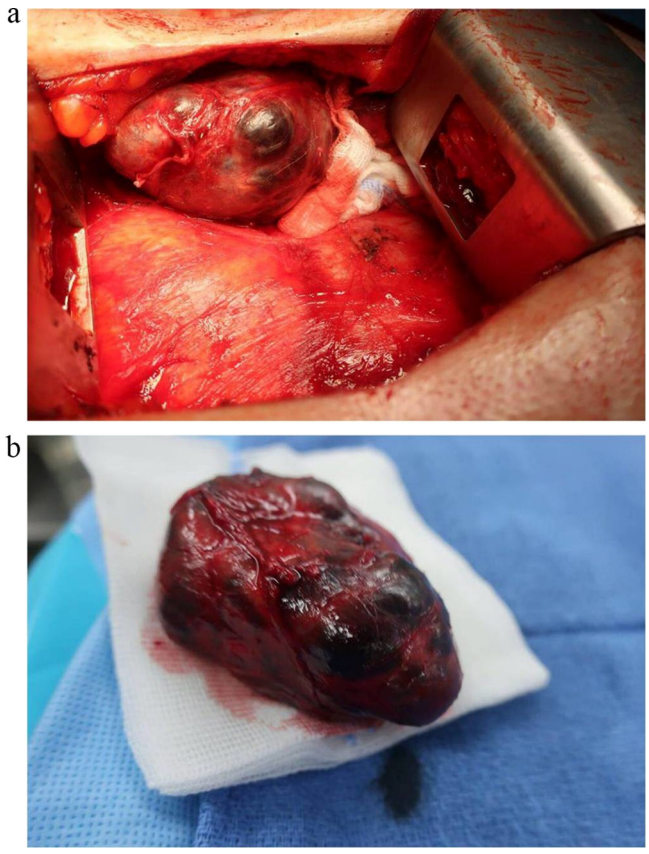

Fig. 2. (A and B) Mediastinal mass after excision was well circumscribe, multinodular, firm inconsistency, 10 × 5 cm, grossly looks like thyroid tissue.

6. Follow-Up

Histopathology of the mass revealed ETT negative for malignancy.

Postoperative thyroid ultrasound showed that both the thyroid lobes are of normal average size with normal AP diameter and homogenous texture.

7. Discussion

ETT is any thyroid tissue that is not found in relation to the anterolateral aspect of the 2nd to 4th tracheal rings. It is due to failure of the thyroid gland to migrate from foramen ceacum to the normal position of thyroid gland. The most common area of ETT is lingual thyroid and accounts for about 90% of all cases reported in the literature [3]. Other common locations include the base of the tongue, submandibular or sublingual sites and prelaryngeal sites. It is rarely present in the heart, aorta, lungs, mediastinum, esophagus, gallbladder, duodenum and adrenal glands [4].

ETT is more common in females with the female:male ratio being 4:1. It can occur at any age but is particularly observed during childhood, adolescence and around menopause. The increased demand for thyroid hormones leads to increased thyroid stimulating hormone (TSH) levels, which subsequently leads to ETT growth. Previous studies showed that 33%–62% of patients with ETT may develop hypothyroidism with increased TSH. level [5,6].

ETT is one of the pathologies that should be considered while investigating cases of mediastinal tumours. The commonest mediastinal tumours are lymphomas, germ-cell tumours, substernal goiter and neurogenic tumours and Castleman's disease.

Ectopic thyroid in the thorax without connection to the original gland in the neck is very rare, and only a few cases have been

reported in the literature [7,8]. It is also important to differentiate between substernal goiter, ectopic thyroid, and forgotten goiter.

Substernal goiter is usually defined as a thyroid formation with cervical departure that goes beyond the superior thoracic inlet for at least 3 cm. It preserves the connection between the thoracic and cervical portions and receives blood supply from the neck. The "forgotten" goiter is an extremely rare disease in which a mediastinal thyroid mass is found after total thyroidectomyn. The other important criterion of substernal extension of thyroid gland is the location in the mediastinum. It descends directly into the visceral compartment surrounded by the pretraccheal fascia and only reaches the anterior mediastinum after reaching a huge size [9–11].

Radiological imaging studies such as ultrasound, CT scan and magnetic resonance imaging may be helpful in knowing the extension of ETT, but the best diagnostic test for ETT is thyroid scanning with technetium-99 m. Tissue biopsy can be performed using many methods such as CT-guided fine needle aspiration, EBUS-transbronchial needle aspiration or surgical excision [12].

Benign mediastinal ETTs are usually asymptomatic and euthyroid and are found incidentally. Surgical intervention should always be considered in the course of diagnosing the nature of the mediastinal mass even in elderly patients. This is because of the high risk of tracheal compression and the low morbidity of the surgery [13,14].

Surgical excision of mediastinal masses is done either through thoracotomy or sternotomy according to the location of the mass [15].

In our case, the patient was a young lady, asymptomatic with the incidental discovery of the mass. Mediastinal mass excision was done through a sternotomy incision to reach the anterior mediastinum and extended into the neck to free the tumour from the trachea. The histopathology revealed benign ETT. The patient had normal thyroid function test with normal anatomical location of the thyroid gland.

8. Conclusion

ETT in the mediastinum is rare and can be associated with normal thyroid function and normal thyroid anatomical location. It should be considered in mediastinal mass evaluation and also be differentiated from substernal goiter.

Conflict of interest

All Authors denies any conflict of interest.

Funding source

There are no sponsors and there was no special funding for writing or publication of this case report.

Ethical approval

Approval has been granted by the Clinical Research Committee based on written consent from the patient.

Consent

Written consent was taken from the patient for publication of this case report and the accompanying images.

Author contribution

Mohamed Regal: Operated the patient, Review the manuscript.
Mohammed Maamoun Kamel: Operated the patient.
Hassan Alyami: Collected the data for the case report.
Emad M AL-Osail: Wrote the Manuscript.

Registration of research studies

N/A.

Guarantor

Mohamed Regal and Emad M AL-Osail.

Availability of data and materials

The datasets used during the current study are available from the corresponding author on reasonable request.

Provenance and peer review

Not commissioned, externally peer-reviewed.

References

[1] G.H. Sakorafas, A. Vlachos, G. Tolumis, G.A. Kassaras, G.K. Anagnostopoulos, D. Gorgogiannis, Ectopic intrathoracic thyroid: case report, Mt. Sinai J. Med. 71 (2) (2004) 131–133 [PubMed].
[2] R.A. Agha, A.J. Fowler, A. Saeta, I. Barai, S. Rajmohan, D.P. Orgill, The SCARE statement: consensus-based surgical case report guidelines, Int. J. Surg. 34 (2016) 180–186.
[3] A.Y. Shin, S.H. Lee, W.S. Jung, S.H. Ko, Y.B. Ahn, Ectopic thyroid nodule in thyroglossal duct, Korean J. Intern. Med. 26 (2011) 218–219 [PMC free article] [PubMed].
[4] V.V. Mysorekar, C.P. Dandekar, M.R. Sreevathsa, Ectopic thyroid tissue in the parotid salivary gland, Singapore Med. J. 45 (2004) 437–438.
[5] R. Kumar, S. Sharma, A. Marwah, D. Moorthy, D. Dhanwal, A. Malhotra, Ectopic goiter masquerading as submandibular gland swelling: a case report and review of the literature, Clin. Nucl. Med. 26 (2001) 306–309, http://dx.doi.org/10.1097/00003072-200104000-00005 [PubMed] [Cross Ref].
[6] V. Di Benedetto, Ectopic thyroid gland in the submandibularregion simulating a thyroglossal duct cyst: a case report, J. Pediatr. Surg. 32 (1997) 1745–1746, http://dx.doi.org/10.1016/S0022-3468(97)90522-4 [PubMed][Cross Ref].
[7] T.C. Gamblin, G.R. Jennings, D.B. Christie 3rd, W.M. Thompson Jr., M. Dalton, Ectopic thyroid, Ann. Thorac. Surg. 75 (2003) 1952–1953.
[8] E. Roh, E.S. Hong, H.Y. Ahn, S.Y. Park, H.I. Yoon, K.S. Park, Y.J. Park, A case of mediastinal ectopic thyroid presenting with a paratracheal mass, Korean J. Intern. Med. 28 (2013) 361–364.
[9] M. Batori, E. Chatelou, A. Straniero, Surgical treatment of retrosternal goiter, Eur. Rev. Med. Pharmacol. Sci. 11 (July–August (4)) (2007) 265–268.
[10] M. Regal, H.M. Zakaria, S.A. Ahmed, Y. Aljehani, H.S. Enani, A. Al Sayah, Substernal thyroid masses, OMJ 25 (4) (2010) 315–317.
[11] T.W. Shields, Mediastinal Thyroid Tumors. Thoracic Surgery, Churchill Livingstone Press, New York, Edinburgh, London, Philadelphia, 2002, pp. 1748–1759.
[12] J. Sand, E. Pehkonen, J. Mattila, S. Seppanen, J. Salmi, Pulsating mass at the sternum: a primary carcinoma of ectopic mediastinal thyroid, J. Thorac. Cardiovasc. Surg. 112 (1996) 833–835 [PubMed].
[13] B.K. Choudhury, U.K. Saikia, Dual ectopic thyroid with normally located thyroid: a case report, J. Thyroid Res. 2011 (2011) 159703 [PMC free article] [PubMed].
[14] A. Toso, F. Colombani, G. Averono, P. Aluffi, F. Pia, Lingual thyroid causing dysphagia and dyspnoea. Case reports and review of the literature, Acta Otorhinolaryngol. Ital. 29 (2009) 213–217 [PMC free article] [PubMed].
[15] G. Noussios, P. Anagnostis, D.G. Goulis, D. Lappas, K. Natsis, Ectopic thyroid tissue anatomical clinical and surgical implications of a rare entity, Eur. J. Endocrinol. 165 (2011) 375–382, http://dx.doi.org/10.1530/EJE-11-0461 [PubMed] [Cross Ref].