CASE REPORT

Hoarseness of voice, respiratory distress and dysphagia due to giant primary posterior mediastinal ectopic goitre: a rare clinical entity

Ikram Ulhaq Chaudhry,¹ Ahsan Iqbal Cheema,² Zahra AlShamasi,² Hadi Mutairi²

¹Department of Chest Surgery, King Fahad Specialist Hospital, Dammam, Saudi Arabia

²Division of Thoracic Surgery, King Fahad Specialist Hospital, Dammam, Saudi Arabia

Correspondence to
Ikram Ulhaq Chaudhry, drihc@hotmail.co.uk

Accepted 11 April 2016

SUMMARY

Primary posterior mediastinal ectopic goitre is an extremely rare entity; we report a case of a 28-year-old man who presented with dysphagia, respiratory distress and hoarseness of voice, gradually worsening over a period of 3 months. CT scan of the thorax revealed a giant posterior mediastinal ectopic goitre. The mass was removed through a right posterolateral thoracotomy. The patient's symptoms, respiratory distress and dysphagia disappeared immediately after surgery while his voice gradually returned to normal after 6 weeks.

BACKGROUND

The most common site for extension of the thyroid neoplasm and primary ectopic goitre is the antero-superior mediastinum. The reported incidence of mediastinal goitre is 0.16–3.3% of all thyroid masses and 4.4% of all mediastinal neoplasms. Posterior mediastinal goitre represents only 10% of all intrathoracic goitres.^{1 2} Primary posterior mediastinal ectopic goitre is very rare, as almost 95% of tumours in this region are of pleural, oesophageal, bony, neurogenic and vascular origin. These patients are initially asymptomatic and may later, as the mass increases in size, present with a variety of signs and symptoms due to its mass effect, such as dysphagia, respiratory distress, exertional or postural dyspnoea, hoarseness of voice, Horner syndrome and obstruction of large vessels.³

CASE PRESENTATION

A 28-year-old man presented to our tertiary care hospital, with a history of dysphagia for solids, respiratory distress and stridor of 3 weeks duration.

Chest X-ray showed a widened mediastinum. CT scan of the thorax showed a large heterogeneous mass of mixed solid and cystic components located in the retro-tracheal region, measuring 12×10×5 cm and extending up to the carina, causing significant mass effect on the oesophagus and trachea ([figure 1A](#)). Ultrasound of the neck revealed a normal thyroid gland. On physical examination, there was neither palpable thyroid swelling nor lymphadenopathy. Basic blood investigations including complete blood count, and hepatic, renal panel and thyroid function tests, were normal. Echocardiogram showed a mass compressing the superior vena cava and right atrium laterally with a left ventricular ejection fraction of 55%. Pulmonary function tests showed compression effect on the inspiratory and expiratory phase of the flow volume loop. Fine-needle

aspiration cytology showed a colloid goitre predominantly with no malignant cells. Endoscopy revealed external compression and no intraluminal oesophageal pathology. Flexible bronchoscopy showed impaired right vocal cord movement. Indirect laryngoscopy revealed normal vocal cord movements. Histopathology report revealed several benign thyroid follicles containing colloid in their lumina, with adjacent large cystic areas containing abundant colloid H&E stain magnifications (H&E ×200), (H&E ×400), respectively ([figure 2C, D](#)).

INVESTIGATIONS

- ▶ Chest X-ray
- ▶ CT of the neck and chest scan
- ▶ Ultrasound of the neck (thyroid)
- ▶ Thyroid function tests
- ▶ Indirect laryngoscopy
- ▶ CT-guided fine needle aspiration
- ▶ Pulmonary function tests
- ▶ Endoscopy

DIFFERENTIAL DIAGNOSIS

- ▶ Ectopic goitre
- ▶ Mediastinal germ cell tumour
- ▶ Lymphoma
- ▶ Bronchogenic cyst

TREATMENT

The mass was approached through right posterolateral thoracotomy. We observed a large retrotracheal mass compressing the oesophagus and displacing the trachea. The superior vena cava was dissected and secured with vascular loops. The oesophagus was dissected free from the posterior margin of the mass, and the mass was later meticulously dissected from the trachea by blunt and sharp dissection. That part of the mass extending across the mediastinum to the left was retrieved after blunt dissection. The mass was excised in total without any difficulty after ligating the vascular pedicle originating from the right innominate vessels ([figure 2A, B](#)).

DISCUSSION

Thyroid tissues originate at the foramen caecum and in 3 to 7 weeks the gland migrates to the pre-vertebral position. Ectopic thyroid tissues occur due to abnormal embryological migration of the thyroid gland along the path of its descent from primitive foregut to prevertebral position. During embryonic development of the thyroid gland, thyroid blastoma as a whole or partially is pulled

CrossMark

To cite: Chaudhry IU, Cheema AI, AlShamasi Z, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2016-215132

Figure 1 CT scan of the chest shows a posterior mediastinal ectopic thyroid mass, measuring 15×8 cm, abutting the superior vena cava, and compressing and displacing the trachea and oesophagus (A). Postoperative CT scan of the thorax shows normal position and lumen of the trachea and oesophagus (B).

into the thorax by the descending heart and great vessels. There it continues to grow and eventually ends up as a primary intrathoracic goitre. The most common sites of ectopic thyroids are the base of the tongue and the cervical area.⁴ Rarely, they are found in intrathoracic locations. Retrosternal and isolated cases of ectopic thyroid tissues have been reported in the thymus, tracheal wall, lungs, aorta and intracardiac and extracardiac positions.⁵

Primary posterior mediastinal ectopic goitres are very rare—their incidence is less than 1%. They are more common in females than in males, in a ratio of 3:1. The main diagnostic features of ectopic thyroid masses are that their blood supply is from the thoracic vessels, the cervical thyroid is normal and the masses have no connection with the cervical gland. Also, there should be no history of surgery for a thyroid neoplasm.⁵ CT scan of the thorax is the best diagnostic modality, as this reveals

typical radiological features of the goitre. Ultrasonography and radioisotope scan have low diagnostic yield. Radioisotope uptake is usually very poor in ectopic thyroid tissues. Ectopic intrathoracic goitres should be removed as when they enlarge they can cause obstructive symptoms. Rarely, they can give rise to life-threatening conditions due to sudden intraglandular haemorrhage. Malignancy has been reported rarely in ectopic intrathoracic thyroid.³

In our literature review, we found that few cases have been reported on ectopic thyroid in the anterosuperior mediastinum. However, there is only one documented case of a posterior mediastinal ectopic goitre causing dysphagia.⁶ We report an extremely rare case of a posterior mediastinal ectopic goitre patient who presented with hoarseness of voice, stridor, respiratory distress and dysphagia, due to its mass effect.

Figure 2 Gross specimen after excision, showing capsulated mass (A). Right posterolateral thoracotomy specimen with intact vascular pedicle (B). Histology slides showing several benign thyroid follicles containing colloid in their lumina, with adjacent large cystic areas containing abundant colloid (H&E ×200) (H&E ×400) (C and D).

In conclusion, surgical management for a posterior mediastinal ectopic goitre is mandatory while the patient is symptomatic, due to compression of related structures such as the

Patient's perspective

I am an Arab by ethnicity so I allowed my brother to write on my behalf, stating that my voice has come back to normal and I feel very comfortable, and I have returned to my job and have a better quality of life.

Learning points

- Surgical management for posterior mediastinal ectopic goitre is mandatory.
- A large mass can cause compression of related structures such as the trachea, oesophagus, recurrent laryngeal nerve, sympathetic trunk and large vessels.
- Sudden intraglandular haemorrhage can be a life-threatening condition.
- Rarely, there can be a malignant transformation.
- The prognosis is excellent after surgery and patients can have a better quality of life.

trachea, oesophagus, recurrent laryngeal nerve, sympathetic trunk and large vessels. The prognosis is excellent, as surgical resection immediately relieves the mass effect, giving the patient a better quality of life.

Twitter Follow Hadi Mutairi at @hadimutairi

Acknowledgements The authors thank Ms Rana J Al Ghamdi for transcription of this manuscript.

Contributors IUC was an operating surgeon; wrote the manuscript and part of discussion. AIC was an assistant surgeon; searched the literature. ZA helped with pathology and CT scan images. HM wrote part of discussion and references.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Vadasz P, Kotsis L. Surgical aspects of 175 mediastinal goitres. *Eur J Cardiothorac Surg* 1998;14:393–7.
- 2 Newman E, Shaha AR. Substernal goiter. *J Surg Oncol* 1995;60:207–12.
- 3 Shah BC, Ravichand CS, Juluri S, *et al.* Ectopic thyroid cancer. *Ann Thorac Cardiovasc Surg* 2007;13:122–4.
- 4 Neinas FW, Groman CA, Devine KD, *et al.* Lingual thyroid. Clinical characteristics of 15 cases. *Ann Internal Med* 1973;79:205–10.
- 5 Gamblin TC, Jennings GR, Christie DB, *et al.* Ectopic thyroid. *Ann Thorac Surg* 2003;75:1952–3.
- 6 Demirhan R, Onan B, Oz K, *et al.* Posterior mediastinal ectopic thyroid: an unusual cause for dysphagia. *Ann Thorac Surg* 2009;88:656–9.

Copyright 2016 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow