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Diagnosis of a posterior mediastinal goitre via endobronchial ultrasound-guided transbronchial needle aspiration

To the Editors:

Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is a rapidly developing diagnostic tool. Its utility as a minimally invasive and safe procedure in mediastinal node staging in lung cancer is defined and gaining widespread acceptance. The role of this procedure in the diagnosis of benign diseases is less clear. We report the first case of a posterior mediastinal intrathoracic goitre diagnosed with the aid of EBUS-TBNA.

A 46-yr-old female was referred to the outpatient chest clinic for further investigation of a superior mediastinal mass. She complained of a 4-month history of progressive shortness of breath on exertion. She denied any dysphagia. Examination was unremarkable. A chest radiograph showed a right superior mediastinal mass. Her thyroid function tests were within normal limits. Contrast-enhanced thoracic computed tomography revealed a large posterior mediastinal mass, containing areas of punctate calcification (fig. 1). There was no associated mediastinal adenopathy and the lung parenchyma was normal. Histological confirmation was considered necessary to the planning of surgical intervention. Oesophageal endoscopic ultrasound-guided needle aspiration was abandoned, as the scope was unable to pass down the oesophagus due to extrinsic compression. We performed endobronchial ultrasound guided transtracheal needle aspiration of the posterior mediastinal mass under conscious sedation, using a linear array ultrasonic

bronchoscope and a 22-gauge needle. A large heterogeneous mass was identified adjacent to the posterior wall of the upper trachea. Three separate passes into the mass were performed. The procedure was well tolerated with no complications. Cytology revealed low cuboidal and columnar epithelium with follicle formation containing small amounts of colloid. Thyroglobulin (fig. 2) and thyroid transcription factor 1 stains were positive, confirming thyroid origin. A diagnosis of posterior mediastinal intrathoracic goitre was made. The patient was referred for total thyroidectomy, which was successfully performed using a transcervical approach. The histology was in keeping with a benign multinodular goitre with areas of cystic change, old and recent haemorrhage, fibrosis and patchy calcification. No evidence of malignancy was found.

The differential diagnosis of a posterior mediastinal mass is wide and includes neurogenic tumours, Castleman disease, bronchogenic cysts, Bochdalek hernia, mesenchymal tumours and intrathoracic goitre. The radiological features of a goitre include: heterogeneous attenuation, focal punctate or curvilinear calcification within the mass, rapid and prolonged enhancement of the mass after contrast injection, and continuity of the mass with one of the lobes of the thyroid gland [1].

The majority of intrathoracic goitres are acquired and arise from the cervical thyroid gland. In 1934, LAHEY and SWINTON [2] proposed anatomic factors that facilitate cervical goitres to extend downward into the mediastinum through the thoracic inlet as

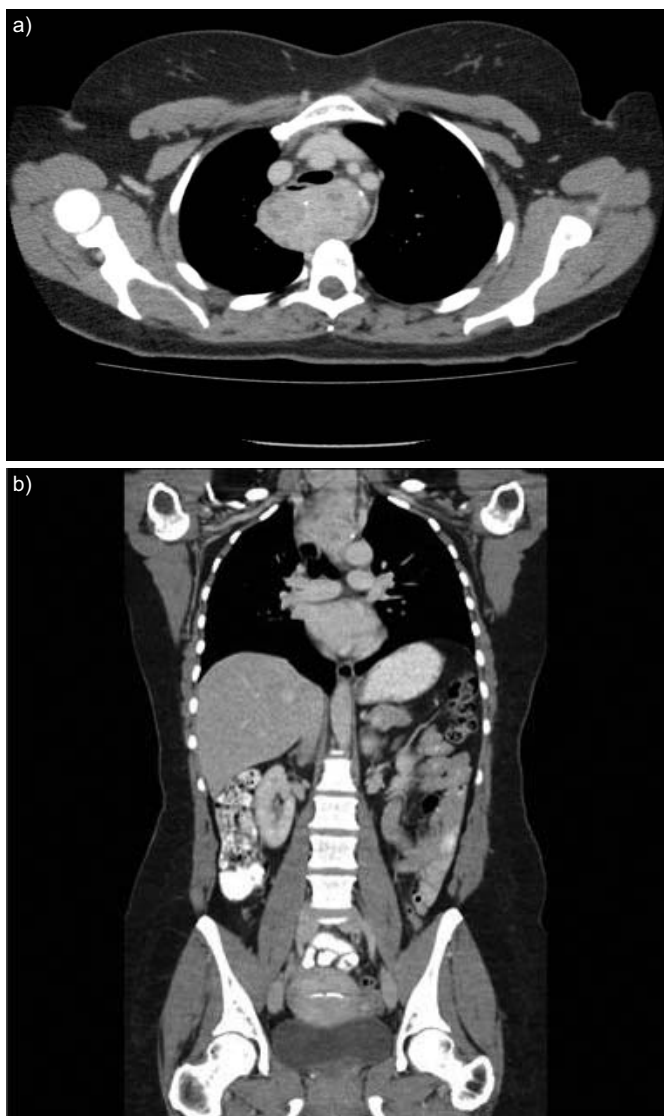


FIGURE 1. a) Contrast-enhanced computed tomography (CT) showing a large retrotracheal and retro-oesophageal mass with heterogeneous enhancement and punctate calcification. b) Coronal view of the thorax CT showing mediastinal mass in continuity with left lobe of thyroid gland.

they grow. These include gravity, the absence of fasciae inferiorly, the weight of the goitre and the intrathoracic pressure changes with respiration and swallowing. Most intrathoracic goitres are pre-tracheal and retrosternal. However, posterior mediastinal location of the goitres has been reported, with up to 15% of cases of intrathoracic goitres [3] being predominantly retrotracheal and, less frequently, as in our case, retro-oesophageal. More rarely, extension of the goitres to the contralateral side of origin in the cervical goitre has been reported [4]. Less than 1% of surgically removed goitres are aberrant thyroid tissues, which can be found anywhere in the mediastinum, with no apparent connection with the cervical goitre. These are congenital in nature and derive their blood supply directly from the intrathoracic vessels [4].

Given the progressive nature of the goitres, even in the absence of symptoms, early surgical resection is recommended, unless

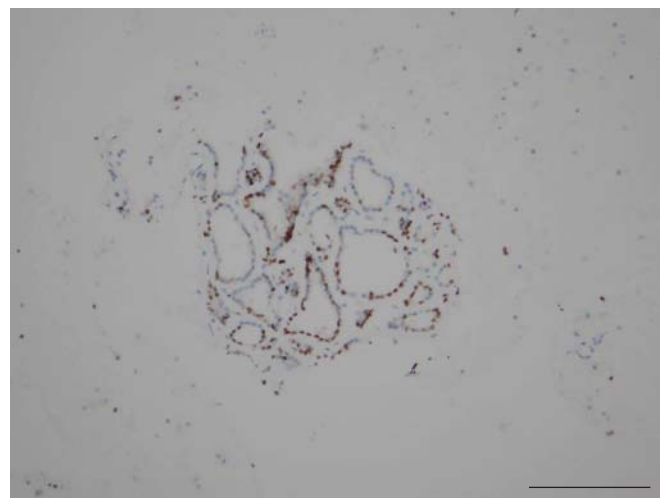


FIGURE 2. Endobronchial ultrasound-guided transbronchial needle aspiration specimen of posterior mediastinal mass showing uptake of follicles with thyroglobulin stain. Scale bar=1.5 mm.

the patient is deemed unfit [5]. The most pressing indications include the compression of adjacent organs, including the trachea, oesophagus and superior vena cava. Cases of sudden enlargement of the intrathoracic goitres with respiratory compromise have been reported and are usually due to haemorrhage into the cystic lesions or infection within the mass [6, 7]. Surgery also enables a tissue diagnosis. It is noteworthy that small foci of papillary microcarcinoma can be found within the intrathoracic goitres [8].

In cases of diagnostic doubt, particularly when surgery is being considered, histological confirmation may be needed. So far, the role of EBUS-TBNA has been predominantly centred towards the sampling of mediastinal and hilar nodes to stage lung cancer [9] and to sample peri-bronchial tumours. Increasingly, however, the technique has been used to diagnose benign disease, notably sarcoidosis [10]. To our knowledge, this is the first report of its use in the diagnosis of a posteriorly situated mediastinal goiter.

Our report highlights that endobronchial ultrasound should be considered in the diagnostic algorithm when evaluating an unexplained posterior mediastinal mass.

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