Concurrent cysts of the mediastinum, pleura and neck

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Abstract

A 14-year-old male was found to have a mediastinal mass on chest radiograph. Chest computed tomography scans showed a cystic lesion behind the left main bronchus. Magnetic resonance imaging revealed additional cystic lesions in the left chest and root of the neck. He underwent excision of mediastinal mass and a pleural cyst. The neck lesion was presumed to be a cystic hygroma. Histological examination of the two lesions resected showed them to be a foregut cyst and a benign mesothelial cyst. We know of no other report of concurrent multicystic lesions in the chest and neck and hypothesize that these cysts may have a common embryonic origin.

Keywords: Mediastinum; Foregut cyst; Mesothelial cyst

1. Introduction

Benign cystic lesions in the mediastinum can be congenital or acquired. Primary cysts of the mediastinum include bronchogenic cysts, enteric or duplication cysts, mesothelial cysts, thymic cysts and thoracic duct cysts. Bronchogenic and enteric cysts are closely related as the respiratory tree and oesophagus arise at a common origin from the primitive foregut. We report a case of multiple cysts in the chest and neck and hypothesize that these cysts may have a common embryonic origin.

2. Case report

A 14-year-old, asymptomatic, male non-smoker was found to have a large cystic mass in the posterior mediastinum on routine chest radiograph. Chest computed tomography (CT) scan revealed a well-circumscribed lesion of low attenuation measuring approximately 6.5 cm in diameter posterior to the left main bronchus. The lesion did not enhance with intra-venous contrast and was compatible with a bronchogenic cyst. The rest of the lung fields appeared clear.

Magnetic resonance imaging (MRI) showed the large mediastinal mass seen on the CT scan and another smaller cystic lesion involving the left pleura (Fig. 1). In addition, there was a lobulated polycystic mass in the suprasternal notch consistent with cystic hygroma (Fig. 2).

It was felt that the mediastinal lesions should be excised, to provide a definitive histological diagnosis and to prevent future complications by compression or infection. The neck lesion was not considered a threat and the patient was advised to seek medical help if the situation changed.

Rigid bronchoscopy revealed compression of the posterior wall of the left main bronchus. We judged that VATS would not have allowed us to adequately inspect the left hemithorax, and so the patient underwent a left posterolateral, muscle-sparing thoracotomy. There was a 7 × 7 cm, thin-walled tense cyst arising in the posterior mediastinum. The cyst was adherent to the posterior surface of the lower lobe, the inferior pulmonary vein and the pulmonary artery. It appeared to be part of the posterior wall of the main bronchus and herniated into the mediastinum. The lower oesophagus was stretched across its posterior surface.

The main cyst was mobilized from the oesophagus, the posterior aspect of the lung and pulmonary vessels, and dissected from the bronchus without breaching its lumen. A further thin-walled, uniloculated cyst was attached to the main cyst. The lung appeared normal. Smaller cystic lesions were excised from the surface of the lingula, as seen on MRI, and the inferior pulmonary ligament. All cysts contained thin clear fluid.

The post-operative course was uncomplicated. The patient was discharged on day 5 and was well and asympto-
matic at the 4 month follow-up. Histological examination of the mediastinal cyst wall showed it to be composed of connective tissue and smooth muscle, lined by benign respiratory epithelium. There were mucus glands within the wall, but no cartilage. The features were those of a simple congenital foregut cyst. The small cysts excised from the lingula and inferior pulmonary ligament had thin fibrous walls lined by cytologically bland cells that stained for calretinin, indicating benign mesothelial cells.

3. Discussion

A CT scan may suggest a specific diagnosis of mediastinal cysts by way of careful evaluation of anatomic relationships and convincing evidence that the mass is cystic. Occasionally, bronchogenic cysts may be a source of confusion because the fluid density may be relatively high due to a high protein content. In situations where the CT scans are equivocal, MRI can be used as a problem-solving tool.

Enteric cysts are discovered more commonly in childhood. Generally, they lie in the middle or posterior mediastinum adjacent to the oesophagus, or even embedded in its muscular wall. They are lined by stratified squamous epithelium or by gastric or intestinal mucosa which distinguishes them from bronchogenic cysts, which are lined with ciliated, columnar epithelium and may contain mucus glands or cartilage in their walls. Bronchogenic cysts account for approximately 60% of mediastinal cysts. They are often located posterior to the carina but may be located more distally in association with the bronchi. Rarely, they may communicate with the tracheobronchial tree. They are usually asymptomatic incidental findings, unless they compress adjacent structures. In children, bronchogenic cysts may present with severe respiratory distress and even respiratory failure [1]. Overall, complications are reported to occur in up to 26% of patients [2]. Surgery is indicated because of the unpredictable risk of haemorrhage, infection, enlargement with associated pressure symptoms or malignant change [2].

Mesothelial cysts comprise a variety of cysts that have been reported as pleuropericardial, pleural and simple mesothelial cysts. They are unilocular cysts whose walls consist of a single layer of flattened endothelial cells with an underlying connective tissue stroma, and are most often incidental radiological findings, as in our case.

Cervical cystic hygromas are believed to occur as a result of the failure of establishment of appropriate connection to the normally present lymphatic channels. They are usually encountered at birth or in early infancy. Very few hygromas extend into the mediastinum [3]. The cervical cyst in our case, which was small and found incidentally, was consistent with a cystic hygroma, although it is possible that it

![Fig. 1. MRI scan of the chest demonstrating a large multilocular mediastinal cyst and a pleural cyst (shown by an arrow) in the left hemithorax.](image1)

![Fig. 2. MRI scan of the neck demonstrating a lobulated polycystic mass in the suprasternal notch.](image2)
represented a thymic cyst. These can present as either cervical or anterior mediastinal masses, and are frequently symptomatic [4]. Hendrickson and colleagues [4] encountered 14 patients with congenital thymic cysts, ranging in age from 2 weeks to 16 years, and reported that seven patients had cervical masses, five had mediastinal masses and two had both sites involved. We elected not to surgically pursue the cervical cysts in our patient in view of the high probability that this was a cystic hygroma.

Yamauchi and colleagues [5] describe a rare case of double mediastinal cysts (one in the anterior and one in the posterior mediastinum) in a 60-year-old male, which were confirmed as a thymic cyst and a thoracic duct cyst, respectively. Their patient was managed successfully by video-assisted thoracic surgery. Indeed, selected patients with mediastinal cysts can be managed safely and effectively by thoracoscopic means [6]. We elected to perform thoracotomy in our case and this decision seemed to be indicated by the difficulty in resecting the lesion from the back of the left main bronchus, oesophagus and pulmonary vessels.

We have reported a unique case of multiple cysts in a 14-year-old boy. The concurrent occurrence of multiple cysts in the neck and mediastinum may reflect a common embryonic origin. We recommend complete excision in most instances to confirm the diagnosis, relieve any symptoms and to prevent complications.

References