CASE REPORT

A rare presentation of a huge mature mediastinal teratoma with right lung cavitation

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SUMMARY

A school-going child presented with fever and productive cough for a short period, which after laboratory and radiological survey was diagnosed as mediastinal teratoma with lung cavitation. Preoperatively the exact cause of lung pathology could not be established, although more common causes prevalent in this zone such as, tuberculosis and lung abscess were excluded. Surgical treatment was planned and excision of the mediastinal mass with segmentectomy of the right-upper lobe carried out through median sternotomy. Mature teratoma is the most common primary germ cell tumour of the mediastinum accounting for 60–70% of all mediastinal germ cell tumours. On very rare occasions it involves the adjacent lung, usually the left lung, producing secondary changes inviting suspicion of a separate lung pathology. Here we present a rare case of a huge mature mediastinal teratoma with secondary right lung cavitation.

BACKGROUND

Almost all mature mediastinal teratoma occur in the anterior mediastinum. These tumours are derivatives of ectodermal, mesodermal and endodermal cell layers. They more commonly protrude to the left side, instead of the right side, to produce a compressive effect. Nearly one-half of patients (36–62%) have no signs or symptoms at the time of diagnosis.¹

In the case under discussion, the patient presented with symptoms for 1 month, either due to tumour inflammation or secondary to lung compression and atelectasis of the right lung.

CASE PRESENTATION

A school-going girl was referred from a peripheral hospital with chief complaint of low-grade intermittent fever for 1 month, cough with expectoration and chest pain for 2 days. The only positive physical finding was mild pallor at that time. After initial evaluation and treatment, fever and chest pain subsided, but cough with expectoration persisted for nearly a week. Over that period she was investigated thoroughly to rule out all possible causes of lung pathology that can share similar signs and symptoms, but all were unrevealing.

INVESTIGATIONS

Laboratory findings were normal except for a highly raised erythrocyte sedimentation rate (124 mm in first hour) and low haemoglobin level (8 g/dL).

Chest radiograph showed homogenous opacity in the mediastinum and an adjacent right-upper lobe cavitation ([figure 1](#)). Contrast-enhanced CT of the thorax revealed a well-defined heterogeneously enhancing mass lesion with areas of fat density and multiple coarse calcifications in the anterior mediastinum extending into the right lung and a lobulated air-containing cavity in the anterior segment of the right-upper lobe ([figure 2](#)).

Serum levels of α -fetoprotein and β -HCG values were normal.

DIFFERENTIAL DIAGNOSIS

- ▶ Mediastinal teratoma
- ▶ Tubercular lung abscess
- ▶ Pyogenic lung abscess
- ▶ Hydatidosis lungs
- ▶ Broncogenic carcinoma with lung collapse

TREATMENT

Preoperatively the mediastinal mass was suspected to be a teratoma with lung cavitation its complication. Surgical excision of the mass with segmentectomy of the right-upper lobe was carried out. The mass was compressing the anterior part of the right-upper lobe, distal superior vena cava and innominate vein. During surgical procedure all care was taken to preserve the surrounding vital

Figure 1 Chest radiograph showing a cavity with fluid level in the right-upper lobe.

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Figure 2 Contrast-enhanced CT of the thorax showing a heterogeneously enhancing mass lesion with areas of fat density and multiple coarse calcifications in the anterior mediastinum extending into the right lung and a lobulated air-containing cavity in the anterior segment of the right-upper lobe.

structures. The mass contained hair, fatty tissue, cartilages and sebaceous materials (figure 3).

The excised specimens were sent separately for histopathological study. Histopathology showed mature cystic teratoma of the mediastinum (figure 4) and foreign body giant cell reaction in the alveoli (figure 5). No evidence of tubercular granuloma was found in the lung specimen. No malignant or immature component was found.

OUTCOME AND FOLLOW-UP

Postoperative period was uneventful and she was discharged on the eighth postoperative day. On 3 months follow-up the pulmonary function was good.

DISCUSSION

In the current case, the tumour was protruding to the right side which is less common as compared with the left side and producing secondary cavitation.

Complications such as rupture to the pleural cavity, pericardial cavity or to the subcutaneous plane creating cutaneous fistula and occupying whole of the hemithorax with total lung collapse have been reported previously with mediastinal teratoma. In the case under discussion, a well-circumscribed anterior mediastinal mass extending to the right lung field was revealed with lung cavitation. The probable pathogenesis of cavitation may be postobstructive necrosis or recurrent pulmonary infections following atelectasis.

Cystic teratoma can also produce proteolytic or digestive enzymes, leading to adhesion and erosion of surrounding structures.²

To make the diagnosis of teratoma, it is mandatory to find at least two of the three germ layers.^{3,4} The ectoderm tissue generally is predominant and is composed of neural tissues, skin, hair and teeth. Mesodermic tissues such as fat, cartilage or bone and endodermic tissue are less common. The endoderm layer is characterised by respiratory or intestinal epithelia.

Surgery on a mediastinal teratoma is often complicated by firm adhesions to vital mediastinal structures such as the phrenic

Figure 3 The mass containing hair, fatty tissue, cartilages and sebaceous material.

Figure 4 Photomicrograph showing mature cystic teratoma, keratinised-stratified squamous epithelium and pilosebaceous unit.

Figure 5 Photomicrograph showing pulmonary alveoli with alveolar macrophages, multinucleated giant cells.

nerve, aorta, vena cava and pulmonary and supra aortic vessels,⁵ and is even more so with a ruptured teratoma because of inflammation and infiltration.⁶

Median sternotomy is usually preferred for tumour removal, but access via either posterolateral or anteroposterior thoracotomy depends on the size, location and expansion of the tumour. Difficulty in surgical manoeuvres may be a result of the involvement of vital structures. Video-assisted thoracoscopic surgery techniques have been introduced in teratoma resection with promising results.⁷

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Competing interests None.

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Learning points

- ▶ Although primary germ cell tumour is rare in the mediastinum and mostly asymptomatic, on rare occasions it may involve adjacent organs and produce a different pathology to invite respective symptomatology.
- ▶ Such a huge teratoma extending to the right hemithorax and resulting in lung cavitation has been sparsely reported previously.
- ▶ Diagnosis at an earlier point in the disease process with exclusion of differential diagnosis yields better result.

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