Ruptured mediastinal teratoma mimicking a lung parenchyma lesion

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A 28-year-old man presented with recurrent hemoptysis for 14 years. He had been informed that he had a mediastinal mass 6 years ago, but he had refused surgery. One month before this admission, he suffered from cough with profuse hemoptysis. Chest radiographs showed an irregular mass lesion in the perihilar region of the right upper lung, abutting the mediastinum. Chest CT scan revealed a 6.8-cm tumor mass with irregular tumor margins, involving the upper lobe of the right lung (RUL) and right anterior mediastinum. The mass had inhomogeneous density with fat density within the tumor. Histologic diagnosis was compatible with a ruptured mature teratoma of the anterior mediastinum with involvement of the RUL.

Key words: Computed Tomography (CT), Lung, Mediastinum, Teratoma

A 28-year-old man had suffered from recurrent hemoptysis for 14 years. Six years ago he had been informed that he had a mediastinal mass in a clinic, but he refused surgery. He was then treated with antitussive and hemostatic agents. One month before this admission, he had suffered from cough with profuse hemoptysis. Chest radiographs showed an irregular mass in the right upper perihilar region, obliterating the hilar shadow (Fig. 1). Chest CT revealed a tumor mass with irregular tumor margin, measuring $4.7 \times 6.8$ cm, involving the right upper lobe and right anterior mediastinum (Fig. 2). The mass had inhomogeneous density with fat within the tumor. Areas of consolidation and ground-glass opacities were noted in the right upper lung.

Bronchoscopic examination was obtained one day later, and revealed numerous white hair-like materials from the orifice of the anterior segment of right upper lobe (B3). Transbronchoscopic biopsy revealed chronic inflammation and granulation tissue.

Lobectomy of the right upper lobe, wedge resection of the right lower lobe and total excision of the
tumor and the thymus were performed. At surgery, a brown, elastic tumor was seen in the right upper lobe of lung and mediastinum, with adhesion to the thymus, pericardium and superior segment of the right lower lobe. Grossly, the tumor was cystic and filled with hairs. The cystic wall contained some adipose tissue. Fibrosis and congestion were seen in the lung parenchyma around the tumor.

Microscopically, the surgical specimen showed a picture of a mature teratoma of the anterior mediastinum with involvement of the upper lobe of the right lung. The teratoma was cystic and lined mainly by stratified squamous epithelium, and occasionally by respiratory epithelium. Some adipose tissue, hair follicles, sweat glands, sebaceous glands, and smooth muscle bundles were seen in the cyst wall. Focal intestinal mucosa was noted. No immature element was found in the teratoma. The lung around the tumor revealed chronic pneumonia with dense chronic inflammatory cell infiltrate, including lymphocytes and macrophages and fibrosis. The pericardium and superior segment of the lower lobe of the lung was not involved by the teratoma. The lymph nodes from the mediastinum and bronchus were not remarkable.

The postoperative course of the patient was smooth.

**DISCUSSION**

Mediastinal mature teratomas usually occur in the anterosuperior mediastinum. These tumors can occur in all age groups but are most often diagnosed in young adults. Fifty-three percent of patients have no symptoms at presentation [3]. The clinical symptoms may be caused by the large mass, which com-

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**Figure 1.**

a. Chest radiography shows an ill-defined mass with an acute angle at its margin in the upper lobe of the right lung (arrows).

b. Computed tomography shows a fat-containing (H.U. = –50, arrow) mass in the right upper lung and right anterior mediastinum. The margin of the mass is irregular and the internal architecture is relatively homogeneous.

c. Some infiltrations and ground-glass opacities (arrow) are noted in the right upper lung adjacent to the tumor, indicating pneumonitis.
presses the mediastinal structure, or by functional activity, including sebaceous secretion, insulin production, secretion of chorionic gonadotropin, or exocrine secretion by pancreatic, salivary, or intestinal tissue [4-6].

Rarely, these tumors may rupture or erode into adjacent structures, such as the pleural space, the pericardium, the lung, or the tracheobronchial tree. [7]. Tumor rupture into the bronchial tree may produce hemoptysis and expectoration of hair or sebaceous material, as in our case, which indicates a fistula between the tumor and the tracheobronchial tree. Rupture into the lung can cause pneumonia. Patients may have fever, cough, sputum, and dyspnea. Rupture into the pleural space results in chemical pleuritis with severe chest or back pain [2].

Most unruptured teratomas appear as well defined round or lobulated masses in the anterior mediastinum. The presence of fat tissue or calcification, especially bone or tooth-shaped calcification, is a diagnostic clue [7].

Ruptured teratomas show several different radiologic manifestations. Rupture into the lung parenchyma can cause chemical pneumonia associated with pleural effusion, sometimes producing an abscess. Imaging findings often resemble those of bacterial pneumonia. Rupture into the pleural or pericardial space may result in effusions and pulmonary edema [2]. Since 90% of unruptured cystic teratomas exhibit homogeneous density in each compartment on CT, loss of homogeneity in each compartments has been reported as the only distinguishable CT feature of a ruptured teratoma [8]. In our case, the ruptured cystic teratoma showed relatively homogeneous density on CT. The fat density was preserved and could be still well seen. Rupture was suspected due to irregular tumor margin and adjacent lung parenchymal infiltration. The surrounding lung parenchyma exhibited chronic inflammatory change, attributed to a mass with a spiculated margin and an acute angle to the mediastinum on chest radiographs.

Surgical management of ruptured tumors often is more complicated than that of unruptured tumors because the internal components of the teratoma leak into the thoracic cavity, causing inflammation and adhesion. Therefore, preoperative diagnosis of ruptured teratoma is important for deciding the appropriate timing for surgery and the surgical approach [8].

In summary, ruptured mediastinal teratomas may cause chemical pneumonia. Clinically, the patients may have hemoptysis, chest pain, fever, cough, and dyspnea. A mediastinal tumor usually has a broad base on the mediastinum and a smooth edge. Ruptured mediastinal teratoma can show a spiculated mass with acute angle at its margin that can mimic a primary lung parenchymal lesion.
REFERENCES

縦膈腔畸胎瘤破裂造成類似肺臟內病灶之影像：
病例報告

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一名二十八歲男性患有反覆性咳血長達十四年。六年前被告知有縦膈腔腫瘤，但他拒絕開刀。一個月前，他又咳嗽並且大量咳血。胸腔X光片發現右上肺葉靠近肺門的地方有一不規則腫塊。胸腔電腦斷層掃瞄發現右上肺葉及縦膈腔有一個6.8公分不規則腫塊。腫塊的密度不均勻且裡面有脂肪密度的組織。病理組織結果為一破裂的成熟畸胎瘤在縦膈腔並且影響到右上肺葉。

關鍵詞：電腦斷層；肺臟；縦膈腔；畸胎瘤