

Giant thymoma successfully resected via hemiclamshell thoracotomy: a case report

Weigang Zhao, Wentao Fang

Department of Thoracic Surgery, Shanghai Chest Hospital, Shanghai Jiao Tong University, Shanghai 200030, China

Correspondence to: Wentao Fang. Department of Thoracic Surgery, Shanghai Chest Hospital, Shanghai Jiao Tong University, Shanghai 200030, China. Email: vwtfang@hotmail.com.

Abstract: Thymoma is an epithelial neoplasm of the thymus. It commonly lies in the anterior mediastinum and represents 20–30% of mediastinal tumours in adults. In this report we present a case of giant thymoma locating in the anterior-inferior mediastinum. A 46-year-old male came to our institute with slight pectoralgia and dyspnea. Chest CT shows a giant tumor measuring 19 cm × 16 cm × 15 cm in the left thoracic cavity. After careful examination, we performed surgery. At surgery, we found the tumor was adherent to left upper lobe of the lung, mediastinal pleura, and parietal pleura. The tumor was completely resected with combined resection of part left upper lobe of lung. The weight of the tumor was 2,135 g. Pathological diagnosis indicated a type AB thymoma according to the World Health Organization classification and a diagnosis of Masaoka stage IIB was made.

Keywords: Giant thymoma; ectopic thymoma; hemiclamshell

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Introduction

Thymomas usually locate in the anterior-superior mediastinum and account for 20–30% of mediastinal tumours in adults (1,2). Median sternotomy is the standard approach for normal size thymoma. Different studies showed different approaches toward giant thymoma. However, there is still no consensus on the incision of giant thymoma. We herein present a case of giant thymoma that was surgically resected through hemiclamshell thoracotomy. The resected specimen was a World Health Organization (WHO) type AB thymoma, Masaoka stage IIB.

Case presentation

A 46-year-old man with slight pectoralgia and dyspnea was referred to our hospital, chest X-ray showing an abnormal shadow in the left thoracic cavity (*Figure 1*). The CT images (*Figure 2*) show that the tumor was about 19 cm × 16 cm × 15 cm in the left thoracic cavity. The tumor had some adhesion to the left lung, mediastinal pleura, and parietal

pleural. The tumor is so huge that it pushed the heart and mediastinum to the right side. Surgical access to the mass was first chose as left anterolateral thoracotomy through the 4th intercostals space in the semi-lateral decubitus position, which was extended to hemiclamshell approach since the upper pole of tumor was difficult to expose. At surgery, the tumor was found to be closely adherent to the upper lobe of the left lung, slightly adherent to the mediastinal pleura and parietal pleura. The feeding vessels of the tumor were branching from internal thoracic vessels and collateral blood vessels were extensive surrounding the giant tumor. The tumor was completely resected with combined resection part of the upper lobe of the left lung. The excised specimen shows a tumor measuring 19 cm × 16 cm × 15 cm and the weight of the tumor was 2,135 g (*Figure 3*). Microscopic examination shows part of the tumor was spindle shaped, arranged as fasciculation, some district of the tumor with a lymphocyte rich component and oval cells were detected in it (*Figure 4*), tumor cells were seen in the capsular of tumor. The resected left lobe of lung is free from tumor. These

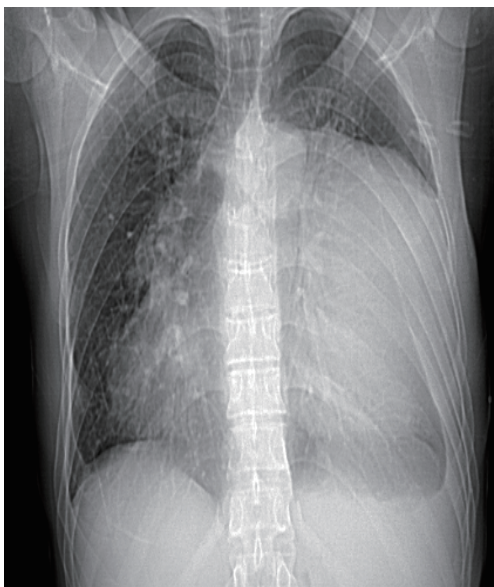


Figure 1 Chest X-ray shows a giant mass in the left chest.



Figure 2 Chest CT shows a mass measuring 19 cm × 15 cm in diameter, in contact with the left lung, mediastinal pleura, and parietal pleural.

histopathologic findings show that the tumor was a type AB thymoma according to the World Health Organization classification and Masaoka stage IIB.

Discussion

Thymomas are rare neoplasias with an incidence of 0.15 cases per 100,000 people each year. They represent 20–30% of mediastinal tumours in adults (1,2). Most thymomas are asymptomatic, but patients can feel the symptoms such as chest pain and dyspnea due to the

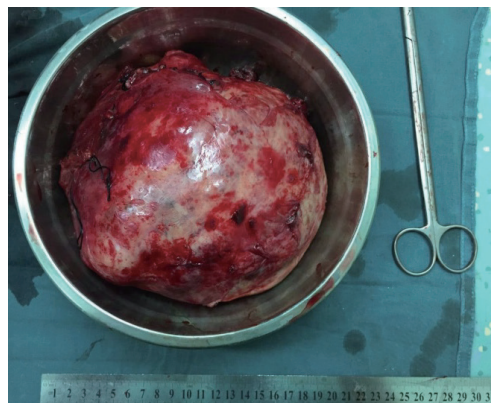


Figure 3 Gross pathological finding of the tumor: an encapsulated mass measuring 19 cm × 16 cm × 15 cm, the scissors as a contrast.

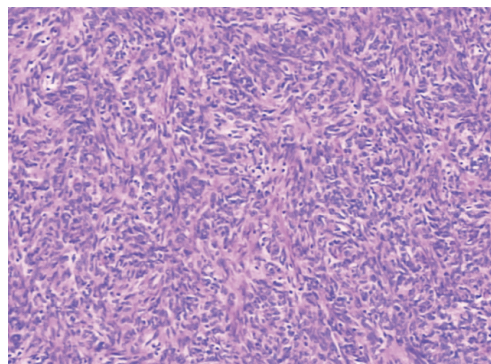


Figure 4 Pathological findings (hematoxylin/eosin staining) from the postoperative specimens (×100).

compression of the surrounding organs with the rapid growth of the tumor. Superior vena cava syndrome can be seen in patient with giant thymoma due to tumor invasion of the surrounding tissues (3). Myasthenia gravis, pure red cell aplasia, hypogammaglobulinemia are also seen in some patients with thymoma (4). In this case, the patient had symptoms such as pectoralgia and dyspnea due to the compression of the surrounding organs. Although this patient combined with cirrhosis, the surgery was performed as quickly as possible since the patient had these symptoms.

In this case, the tumor was located in the anterior-inferior mediastinum and protruded into pleural cavity. It needs to be distinguished with solitary fibrous tumors, tumors of pleural origin, chest wall tumors, and metastatic tumors. It is not easy to identify giant thymoma with solitary fibrous tumors due to the similar image features. The only way

to definitive diagnosis is pathological diagnosis. However, definitive diagnosis is difficult to obtain before surgery is performed. Biopsy or fine-needle aspiration (FNA) is limited for giant thymoma due to some drawbacks of them. First of all, we can't achieve a firm diagnosis by biopsy or FNA since we can only acquire a very small tissue of the tumor, benign histopathology obtain by FNA or biopsy does not exclude the chance of malign tumor. Secondly, there is potential risk of tumor cell dissemination and bleeding by FNA or biopsy. Filosso *et al.* suggested that transthoracic CT-guided tru-cut biopsy was preferred over FNA since the first procedure can provide more pathological tissue for correct diagnosis, they nevertheless failed to obtain a conclusive diagnosis (5). So it seems that postoperative pathological diagnosis is the only way to definitive diagnosis and giant thymoma should be suspected whenever a large intrathoracic mass is observed. Endo *et al.* reported a significant relation between the histological subtype of thymic epithelial tumors and FDG-PET accumulation (6). Terzi *et al.* confirmed SUV_{max} had strong relation with the Masoka stages (7).

Although median sternotomy is the standard approach for thymomas, only few cases of giant thymomas were resected via median sternotomy (8). Usually Median sternotomy was performed when tumor with normal size had invaded into the innominate vein (9), but was not suitable to the giant thymoma due to the bad access to the hilum or posterior thorax. Giant thymomas were resected through anterolateral thoracotomy in three studies (10-12). Hemiclamsell approach is a practical approach for giant thymomas due to better access to upper thoracic cavity compared with anterolateral thoracotomy. However, some people still choose anterolateral thoracotomy as the first choice to giant thymoma since the incision of this approach can be extended to either a posterolateral approach or a hemiclamsell approach (12). In our case, we also took anterolateral thoracotomy as first choice and extended the incision to hemiclamsell approach when the upper pole of tumor was difficult to expose. Although two cases of giant thymomas were resected via a posterolateral approach (5,13), the deficiency of bad access to anterior mediastinum limited its further application.

In conclusion, both hemiclamsell approach and anterolateral thoracotomy are reasonable approaches for giant thymomas. Anterolateral approach is suggested as first choice for giant thymoma since it is less invasive and more adaptable compared with hemiclamsell approach. The incision should be extended to hemiclamsell approach when the upper pole of tumor was difficult to expose.

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None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Informed Consent: Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

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