Interactive CardioVascular and Thoracic Surgery 34 (2022) 159–161
doi:10.1093/icvts/ivab222 Advance Access publication 11 September 2021

Cite this article as: Zhang J, Zhu X, Jiang M, Lv Y. A ruptured giant mediastinal mature teratoma mimicking an encapsulated empyema. Interact CardioVasc Thorac Surg 2022;34:159–61.

A ruptured giant mediastinal mature teratoma mimicking an encapsulated empyema

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Received 23 March 2021; received in revised form 1 June 2021; accepted 2 July 2021

Abstract

A female patient with a right-sided encapsulated pleural effusion was misdiagnosed preoperatively as having an encapsulated empyema. However, a giant mass in the anterior mediastinum was found via thoracoscopy, and a mature teratoma was detected based on the pathological result. Herein we report this case and provide lessons for cardiothoracic surgeons.

Keywords: Mature teratoma • Mediastinum • Empyema

INTRODUCTION

A mature teratoma is a rare mediastinal tumour usually located in the anterior mediastinum and rarely in the posterior mediastinum, accounting for nearly 3–12% of all mediastinal tumours [1]. Given its low prevalence, it may be clinically confused with an encapsulated empyema or a pleural effusion resulting from other diseases when cystic tumour contents flow into the chest cavity. We report a patient who suffered from a mediastinal mature teratoma that was initially misdiagnosed preoperatively as an encapsulated empyema. Fortunately, the patient received an effective treatment regimen, and we have accumulated rich experiences and lessons from the case.

CASE REPORT

A 54-year-old woman presented to the emergency room with right-sided chest pain for 1 day. After admission, the patient complained of worsening right-sided chest pain, with dyspnoea and body malaise. She held a forced standing posture because she experienced remarkable pain in the decubitus position. Thereafter, the physical examination also revealed lower right breath sounds. A computed tomography (CT) scan showed an encapsulated effusion with a low-density lesion in the anterior mediastinum (Fig. 1A and B). Subsequently, right closed thoracic drainage was performed, and the pleural fluid was confirmed to contain inflammatory exudation. However, the patient's symptoms and signs were not relieved for the next 2 days; thus, a contrast-enhanced CT was performed (Fig. 1C). Based on these findings, the patient was preliminarily diagnosed with an encapsulated empyema. To prevent deterioration of the patient's general condition, video-assisted thoracoscopic surgery (VATS) was then urgently performed to explore the thoracic cavity. Extensive pleural adhesions were found intraoperatively. In addition, a large mass was unexpectedly found in the mediastinum with a diameter of >10 cm and the innominate vein at the superior margin, the diaphragm at the inferior margin, the right middle lobe at the lateral side and the pericardium at the medial side. Furthermore, a small laceration was observed on the tumour wall with plenty of brown and opaque fluid containing granular matter spilling out from it. The right lung was also partially resected using the stapler because of the dense adhesion to the tumour. Finally, the remaining pleural effusion was cleared and the tumour was excised *en bloc* (Video 1). Adipose tissues and hairy spherical foreign matter can be identified in the gross specimen (Fig. 2A). Pathological results showed a mature teratoma (Fig. 2B). The patient was discharged without complications and had no recurrence at the 6-month follow-up.

DISCUSSION

A mature teratoma is the most common type of mediastinal germ cell tumour, belonging to the category of benign tumour without neoplastic metastasis [2]. Typically, a ruptured mediastinal teratoma may result in extensive pleural adhesions and an early empyema that raises a unique challenge in VATS due to the risk of bleeding and damage to adjacent organs intraoperatively. In this case, although the tumour was

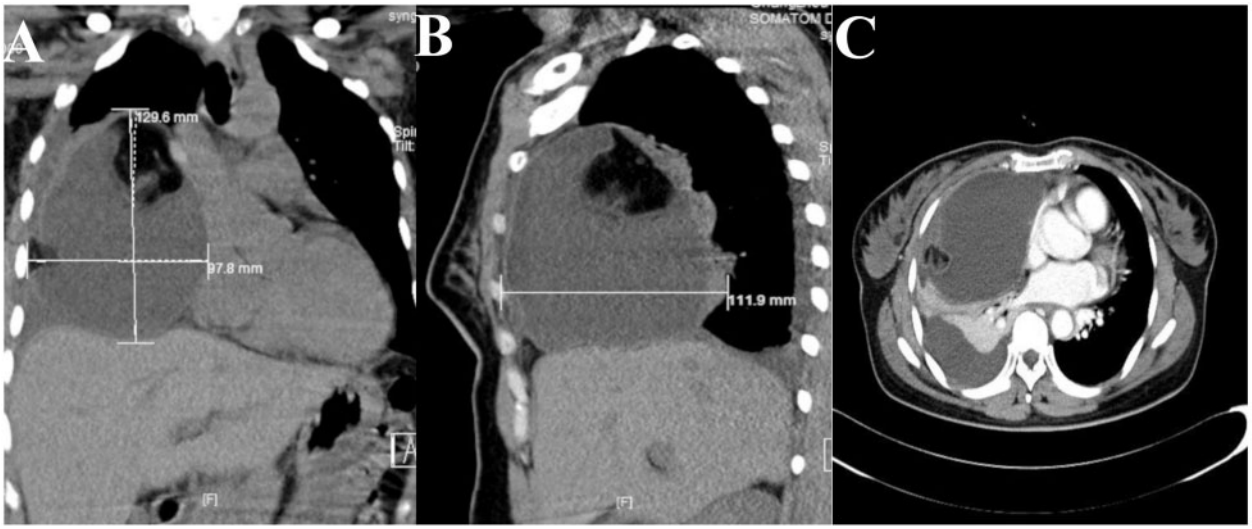


Figure 1: (**A** and **B**) Coronal and sagittal computed tomography scan showed a right-sided encapsulated effusion. (**C**) Contrast-enhanced computed tomography scan showed aggravated atelectasis and pleural effusion.

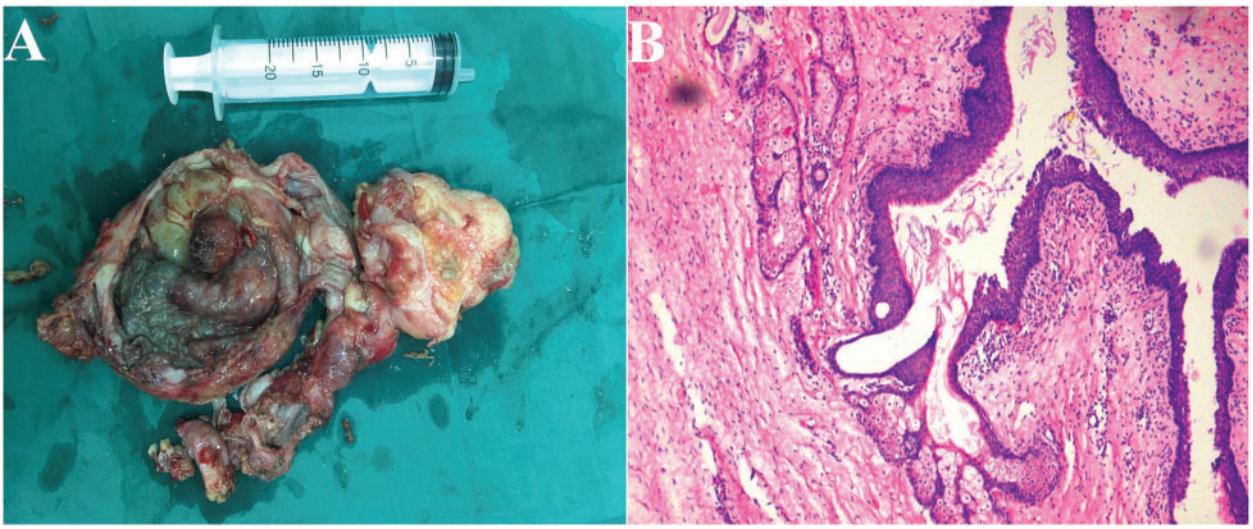
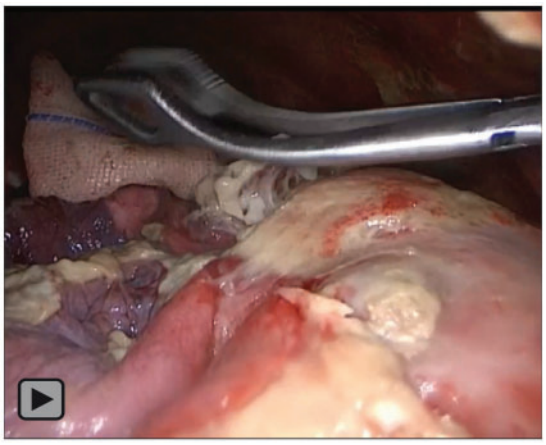


Figure 2: (**A**) Internal surface of the gross tumour specimen. (**B**) Haematoxylin-eosin staining indicated a mature teratoma.



Video 1 A giant mediastinal tumour mimicking an empyema was successfully resected *en bloc* by thoracoscopy.

misdiagnosed as an encapsulated empyema, prompt thoracic exploration and total tumour resection were successfully performed by VATS.

The patient was diagnosed with an encapsulated empyema for the following reasons: (i) symptoms such as sudden, severe chest pain and shortness of breath indicate an early empyema; (ii) pleural effusion was confirmed as an inflammatory exudation; and (iii) the CT scan revealed an obvious right-sided encapsulated effusion. The patient's symptoms, such as chest pain and dyspnoea, were incorrectly attributed to an acute empyema, and the fact that the empyema was nothing more than a complication of a ruptured mediastinal teratoma was not considered in this patient. The therapeutic method is the same as that reported by Shintani *et al.*: The cystic tumour contents were aspirated by suction and the shrunken tumour could readily be removed by performing the thoracoscopic procedure [3]. One remarkable difference was that the maximum tumour diameter was >10 cm in this patient.

To our knowledge, a mediastinal teratoma mimicking empyema or tuberculosis has rarely been reported [4]. Therefore, a mediastinal teratoma should be considered when making the differential diagnosis in patients with chest pain, dyspnoea and pleuritis of unknown origin. A patient with an encapsulated effusion with a well-demarcated margin, complete capsule and heterogeneous density containing liquid, lipid and soft tissue on a CT scan, and especially with no fever, should be highly suspected of having a mediastinal teratoma. Prompt identification, diagnosis and complete tumour excision by VATS not only relieves general symptoms but also prevents other complications such as empyema.

Funding

This work was supported by the Fourth Science and Technology Development Program of Wujin District (WS201914).

Conflict of interest: none declared.

Reviewer information

Interactive CardioVascular and Thoracic Surgery thanks Guven Olgac and the other, anonymous reviewer(s) for their contribution to the peer review process of this article.

REFERENCES

[1] Agrawal T, Blau A, Chwals W, Tischler A. A unique case of mediastinal teratoma with mature pancreatic tissue, nesidioblastosis, and aberrant islet differentiation: a case report and literature review. Endocr Pathol 2016;27:21–4.

[2] Yang CJ, Cheng MS, Chou SH, Tsai KB, Huang MS. Primary germ cell tumors of the mediastinum: 10 years of experience in a tertiary teaching hospital. Kaohsiung J Med Sci 2005;21:395–400.

[3] Shintani Y, Funaki S, Nakagiri T, Inoue M, Sawabata N, Minami M *et al.* Experience with thoracoscopic resection for mediastinal mature teratoma: a retrospective analysis of 15 patients. Interact CardioVasc Thorac Surg 2013;16:441–4.

[4] Liu J, Tian B, Zeng Q, Chen C, Zhou C, Li H *et al.* Mediastinal teratoma presenting with hemoptysis and pleuritis misdiagnosed as tuberculosis (empyema). BMC Pediatr 2018;18:382.