

Extrapericardial Pleural Lipoma: A Surgical Case Report and Current Literature Review

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Case report

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Abstract

Background

Lipomas arising from the intrathoracic pleura are exceedingly rare. Few cases have been reported worldwide. To our knowledge, this presented case is one of the few cases reported. Here we report a single case as intrathoracic lipoma that arose from the mediastinal pleura of the left pericardium. Here the tumor was completely resected by uniportal video assisted thoracic surgery.

Case presentation

A 64-year-old female presented with a symptomatic left chest pain, which was confirmed to be an lipomatous tumor using computed tomography. An oval extrapericardial lipoma originating from the mediastinal pleura was resected through uniportal video assisted thoracic surgery. Pathological examination indicated a diagnosis of pleura lipoma.

Conclusion

The tumor was infectious and relatively hyperemia when detected during a medical checkup. We enabled the successful tumor excision via uniportal video assisted thoracic surgery approach. Extratumoral haemorrhage was confirmed during the operation. Although intrathoracic pleural lipomas are histologically benign, careful observation and follow-up are crucial due to the possibility of recurrence.

Introduction

The intrathoracic pleural lipomas are exceptionally rare, which are usually located at the mediastinum, bronchial tree and pulmonary levels^[1]. Few cases have been reported worldwide^[2]. While typically asymptomatic, pleural lipomas may cause symptoms such as dyspnoea, nonproductive cough, chest pain, and dysphagia if they compress adjacent structures^[3,4,5]. Although pleural lipoma is benign tumor, it should be completely resected from diagnostic and therapeutic perspectives^[6,7]. Here we report a case of mediastinal pleural lipoma adjacent to the pericardium which has been successfully excised through uniportal video assisted thoracic surgery(VATS).

Case Presentation

A 64-year-old Chinese rural woman was admitted to our department with complaints of mild chest tightness, left anterior chest pain over the past 3 days without any past medical history. She was a nonsmoker, and maintained a healthy weight of 64 kg for her 162 cm height. No history of trauma and physical examination was revealed decreased breath sounds in the left upper lung field. Laboratory workup revealed no leukocytosis, a normal plasma D-dimer level, renal and liver function at baseline, and negative troponins. An electrocardiogram showed normal sinus rhythm with iso-electric pattern. A computed tomography (CT) scan with contrast of the thorax was performed which demonstrated a well-

delineated nodule of fat attenuation(-116 Hounsfield units, HU), not enhanced after intravenous contrast injection, situated on the pericardium of the left hemithorax compressing left upper lobe (**Figure 1**). There were no enlarged mediastinal or hilar lymph nodes. As the nodules originated from the pleura, were well-delineated, and lacked an identifiable invasive component, a provisional diagnosis of intrathoracic pleural lipoma was made.

Surgery was performed using left uniportal VATS, single lung ventilation and **general anesthesia**, which revealed an oval, yellowish, hyperemia, consistently soft tumor with a smooth surface. This intrapleural lipoma attached with one vascular pedicle to the mediastinal pleura of the left pericardium required cutting by the ultrasonic scalpel. Blunt and electrocautery dissection performed for the minimal adhesion to the surrounding organs are required. The entire mass was successfully extirpated en-bloc and subsequently the left lung is fully expanded and inflated (**Figure 2**). The tumor weighed a total of 85 grams and measured 2.5 × 1.3 × 1.3 centimeters. Final histopathological examination (**Figure 3**) was pleural lipoma. The growth formed of variegated cellular elements were encompassed of exuberant proliferated mature adipocytes infiltrated by dense sizable lymphoid follicles with germinal centers, ischemic infarctions and mixed inflammation. No evidence of sarcomatous changes could be seen.

The patient's postoperative course was uneventful, with no recurrence on half-year follow-up.

Discussion

Conventionally, intrathoracic lipomas are rare and can be categorized according to their location of origin. Mediastinal, bronchial, and pulmonary parenchymal lipomas are most common^[8]. Intrathoracic pleural lipomas are exceedingly rare, which originate from the submesothelial layer of parietal pleura^[9]. While pleural lipomas often grow slowly and subsequently are detected at a relatively late stage of evolution, others consider that such development was not so slow^[10-11]. Intrapleural lipomas can enlarge with time and lead to lung compressive symptoms such as dyspnea, nonproductive cough, chest pain and compressive effect on the esophagus and diaphragm. An episode of chest pain, could be explained by pressure effect in huge size lipoma or due to repetitive episodes of fat necrosis as in our current case^[12]. Other complications that may arise include rib lysis, hand paresthesias and intra-tumoral hemorrhage^[13,14].

It is reported that the majority of intrapleural lipomas occurred in individuals between the ages of 40 and 60 years without gender difference and were associated with obesity^[15,16]. In current case the patient was 64 years old and fat with the BMI of just 24.4 kg/m². Clinically, this case belongs to pleural lipoma which originates from the extrapericardial parietal pleura and may extend into subpleural, pleural or extrapleural spaces. Some authors have reported a case of an intrathoracic, extrapericardial lipoma which was presented in an old patient with severe left ventricular dysfunction^[17]. Our patient's complaint of left chest pain was relieved, which maybe due to **anti-inflammatory treatment**. The pain could be caused by repetitive episodes of fat necrosis, which was confirmed after the surgery. In current case the pleural lipoma was evaluated through CT scan with contrast enhancement for accurate detection. The CT scan

allows the attenuation values of fat density (-50 to -150 Hounsfield units, HU) to be assessed and help determine the origin and extension, as well as the involvement of adjacent organs^[18,19]. The density may not be entirely uniform because lipomas often contain fibrous stroma. Additionally, magnetic resonance imaging (MRI), especially with fat saturation, is supportive for assessing the lipomatous nature of the tumor. Furthermore, MRI helps to distinguish between lipomas and well-differentiated liposarcomas based on homogeneity, margins and septa or nodules^[20,21]. Positron Emission Tomography (PET) scanning may also be an objective and useful tool for preoperatively evaluating tumors involving adipose tissue^[22].

Lung **malignant tumor** especially in our case the pulmonary liposarcomas is the most important differential diagnosis in most unexplained Chest X Ray (CXR) lesions. However, it is also important to consider benign disorders and intrapleural lipoma particularly when the lesion is with fatty pattern on CT scan. This can potentially avoid unnecessary invasive investigations and alleviate patient anxiety^[23]. CT scanning is a very helpful modality in clinical diagnosis, but surgical excision, with thoracotomy or VATS, remains a valuable procedure for establishing a definitive diagnosis and complete resection^[7,11,22,24]. Liposarcomas of the pleura are very rare tumors diagnosed mainly by CT scans with lipomas being the main differential diagnosis. The challenge of diagnosis remains in identifying its origin and some advocate the needle biopsy if the radiological diagnosis is not clear. So it needs careful inspection from the surgeon before resection^[25].

The management strategy for pleural lipomas remains controversial. Conservative clinical and radiological follow-up may be suitable for elderly patients and those in poor general condition, especially in the presence of small asymptomatic lesions^[11,16]. Although pleural lipoma never evolves towards liposarcoma, most authors argued surgical excision would be recommended for diagnostic and therapeutic considerations, because the possibility of liposarcoma occurrence and/or infiltrating development of the tumor cannot be excluded preoperatively^[5,16]. If compressive symptoms occur due to progressive enlargement then surgical resection should be considered in a fit patient. It is also the reason why we did not performed fine-needle aspiration biopsy, which was such a less invasive method. Removal can be performed via different surgical approaches including video assisted thoracoscopic surgery or robotic assisted thoracoscopic surgery(RATS)^[26]. In this case of pleural lipomas, surgical resection is then inevitable to diagnose and to treat via uniportal video assisted thoracic surgery approach. It has been reported that successful extirpation of a pleural lipoma with uniportal VATS become a common technique for thoracic tumor which was pedunculated in form and small enough in size^[6,27]. VATS is an effective well-tolerated procedure and have greatly reduced the morbidity and mortality rate of these benign tumors and hospital stay^[22], especially if performed early on a small, uncomplicated adhesion free tumor^[11]. The outcome of excision of lipomas is usually good. Most cases of recurrence are probably attributed to incomplete resection of the lesion. Factors such as infiltration of adjacent structures may impede complete excision of the lipoma and lead to its recurrence. Recurrence

rates after surgical resection have been reported to be less than 5%^[16]. After a complete surgical resection, further radiographic follow-up is still required to evaluate for recurrence.

Conclusions

Pleural lipomas, although extremely rare, should be maintained in the differential diagnosis for any well-defined, fat-attenuating pleural mass. Our case was symptomatic and relatively small when detected during a medical checkup. This enabled the complete tumor resection via uniportal VATS. Although intrathoracic pleural lipomas are histologically benign, careful observation and follow-up are crucial due to the possibility of recurrence.

Abbreviations

BMI: Body mass index; CXR: Chest X Ray; CT: Computed tomography; HU: Hounsfield units; MRI: Magnetic resonance imaging; PET: Positron emission tomography; VATS: Video assisted thoracic surgery; RATS: Robotic assisted thoracoscopic surgery

Declarations

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Authors' contributions

PL, DWZ and FXD performed surgery. PL carried out the patient diagnosis. PL and DWZ were major contributors in writing the manuscript. XJZ was the anaesthesiologist. All authors read and approved the final manuscript.

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Availability of data and materials

All supporting data are available with the corresponding author.

Ethics approval and consent to participate

The study was approved by the independent local ethics committee of Affiliated Sir Run Run hospital of Nanjing Medical university(internal no.2061), and we have signed consent from the participating patient to use her history and operative data to be published as research information.

Competing interests

The authors declare that they have no competing interests.

Consent for publication

We have signed consent from the participating patient for publication.

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Figures

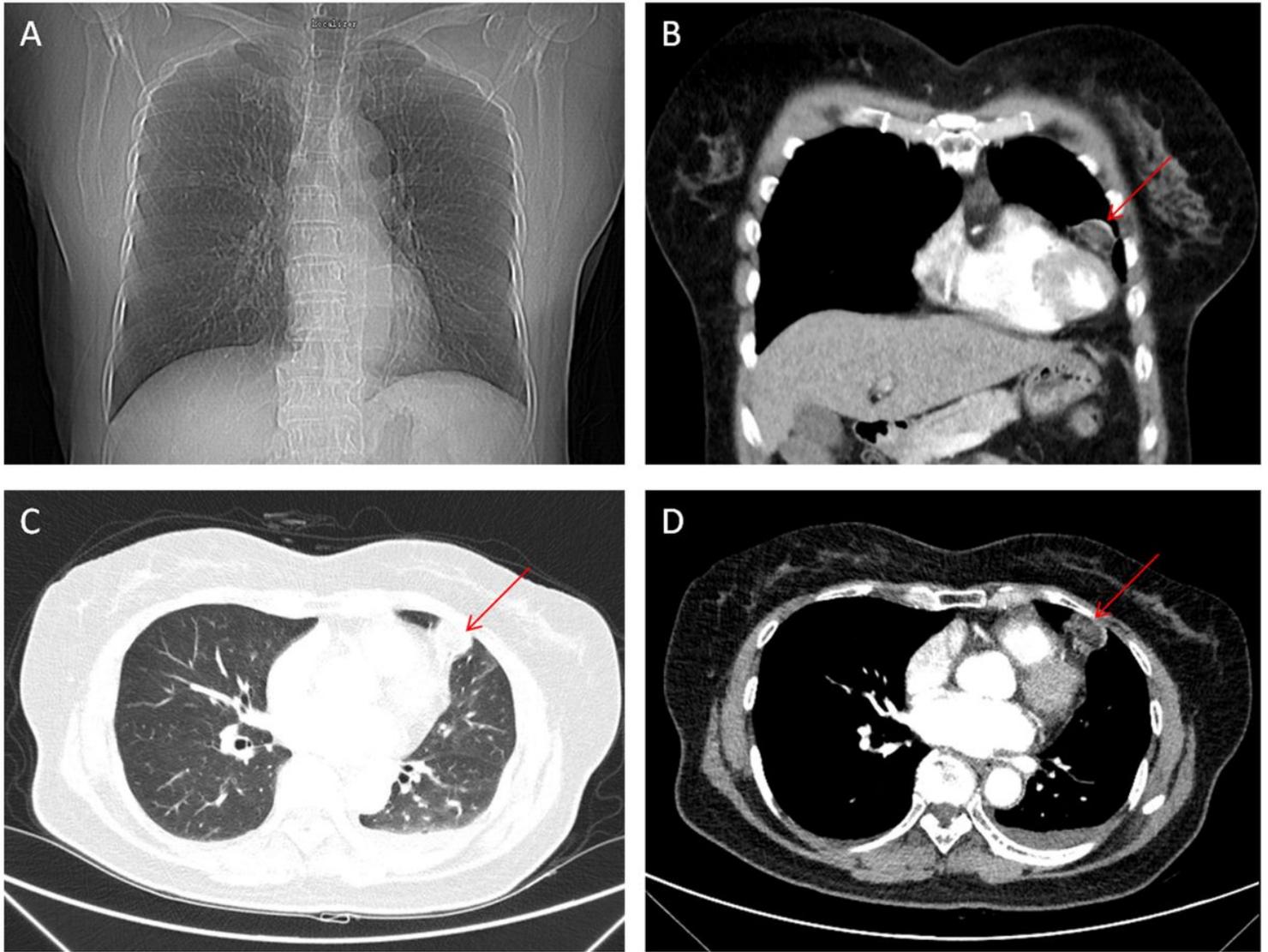


Figure 1

CT scan chest with contrast showing a well-defined intrathoracic mass, (A) spinal X-ray, (B) coronal, (C) with normal lung parenchyma surrounding and (D) axial.



Figure 2

Pleural tumour (A) prior to excision and (B) operative specimen.

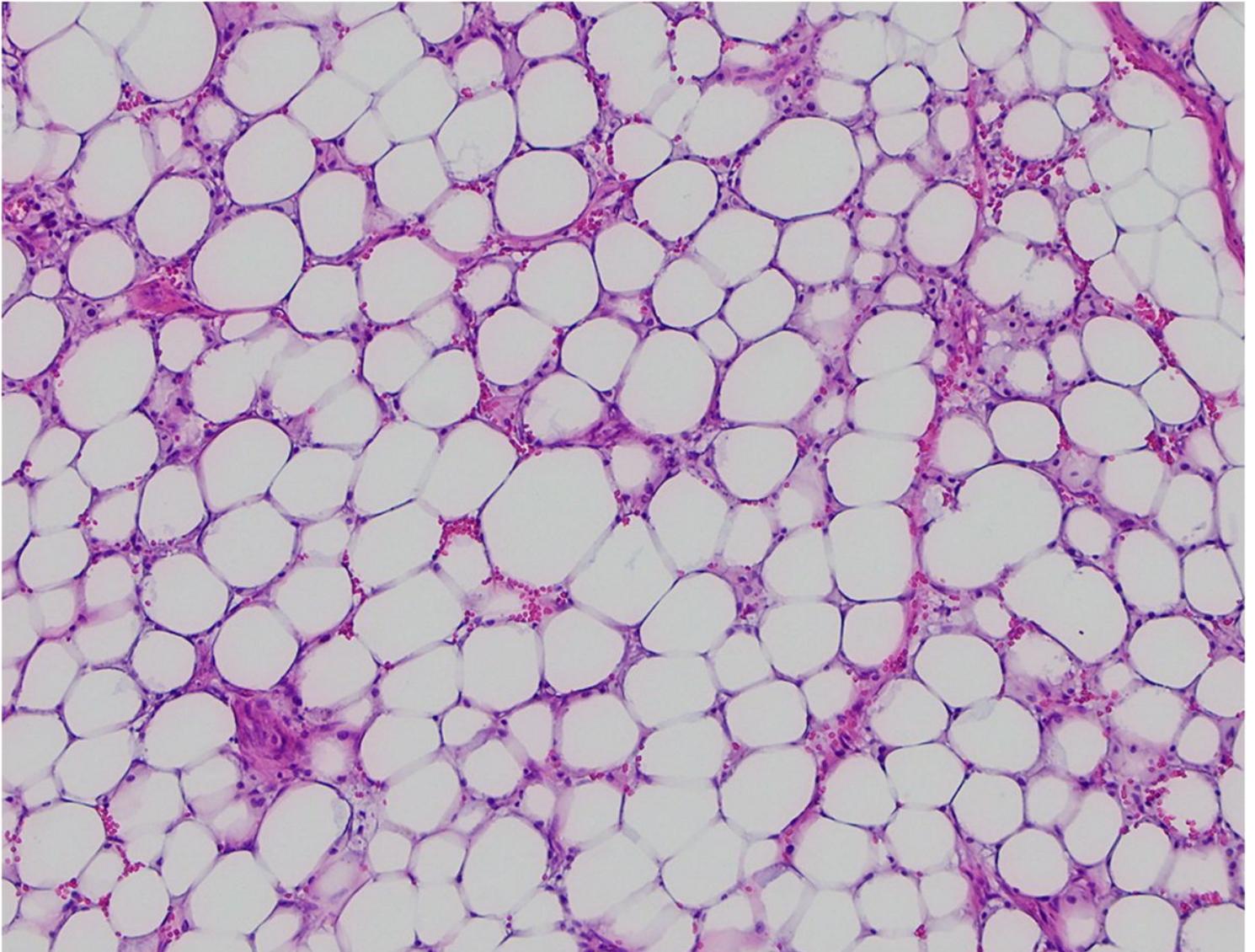


Figure 3

Histological examination consistent with pleural lipoma (H&E,×200).