

Necrotic Lipoma of the Posterior Mediastinum

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Lipomas are well-differentiated, encapsulated masses composed of adipocytes. Intrathoracic lipomas are rare, but found most commonly in the pleura or anterior mediastinum. Computed tomography shows fatty, homogenous content of the mass and will establish the diagnosis. Areas with a higher fat density are suggestive of liposarcoma. We describe a case of lipoma in the posterior mediastinum that contained solid areas on computed tomography. Histology showed that these areas were fat necrosis.

Key words: *Neoplasm. Thorax. Mediastinal lipoma. Necrotic lipoma. Chest radiograph. Computed tomography.*

Lipoma infartado del mediastino posterior

Los lipomas son masas bien limitadas y encapsuladas, compuestas por adipocitos. Los de localización intratorácica son raros y se sitúan con mayor frecuencia en la pleura o el mediastino anterior. La tomografía computarizada demuestra el contenido graso y homogéneo de la masa, lo que permite establecer el diagnóstico. La presencia de zonas de mayor densidad en la grasa debe llevar a sospechar un liposarcoma. Presentamos un caso de lipoma localizado en el mediastino posterior, con áreas sólidas en su interior, detectadas con tomografía computarizada, que correspondieron a zonas de necrosis grasa en el estudio histológico.

Palabras clave: *Neoplasia. Tórax. Lipoma mediastínico. Lipoma infartado. Radiografía de tórax. Tomografía computarizada.*

Introduction

Lipomas are well-defined, encapsulated mesenchymal tumors of adipose tissue that account for 1.6% to 2.3% of mediastinal tumors and are usually located in the anterior mediastinum.^{1,2} These tumors are usually asymptomatic and go unnoticed, until they are fairly large and can be observed in a plain chest radiograph performed for other reasons. On occasions, large lipomas may cause symptoms due to compression of the bronchi, esophagus, or adjacent nerve structures. On computed tomography (CT), lipomas are homogenous and present attenuation values of -50 to -150 Hounsfield units. In magnetic resonance imaging, they have a readily recognizable signal intensity, which will aid diagnosis. Because the margins are well defined and the lipoma encapsulated, surgical resection can be performed in patients with symptoms.¹ Solid, dense areas interspersed between the fat of the lipoma will suggest liposarcoma. In the patient we describe, high-density areas were the result of fat necrosis. The lipoma found in our

patient was unusual because of the posterior mediastinal location, and because it contained necrotic tissue on histologic examination. The patient had presented with chest pain and dyspnea and a plain chest radiograph revealed a mediastinal mass. A CT scan to define the lesion more precisely indicated it was a lipoma in the posterior mediastinum. Following surgical resection, further tests showed it to be a necrotic lipoma.

Case Description

A 41-year-old man, ex-smoker (16 pack-years) who had quit 15 years earlier and who had no relevant history, was seen by his primary-care physician for an episode of nonspecific, self-limiting left-sided chest pain accompanied by low-grade fever. The symptoms were interpreted as an acute respiratory infection and improved when initially treated with antibiotics and rest. The left-sided chest pain recurred 4 weeks later; on this occasion, the patient reported dry cough and exertional dyspnea, in addition to low-grade fever. The physical examination was normal. The patient was afebrile and eupneic, and blood pressure was normal. Auscultation revealed a slight decrease in lung sounds at the left base. The basic blood and urine workup showed no abnormalities. Coagulation and arterial blood gases were normal. The α -fetoprotein concentration was 0.8 ng/mL and the test for β -chorionic gonadotropin

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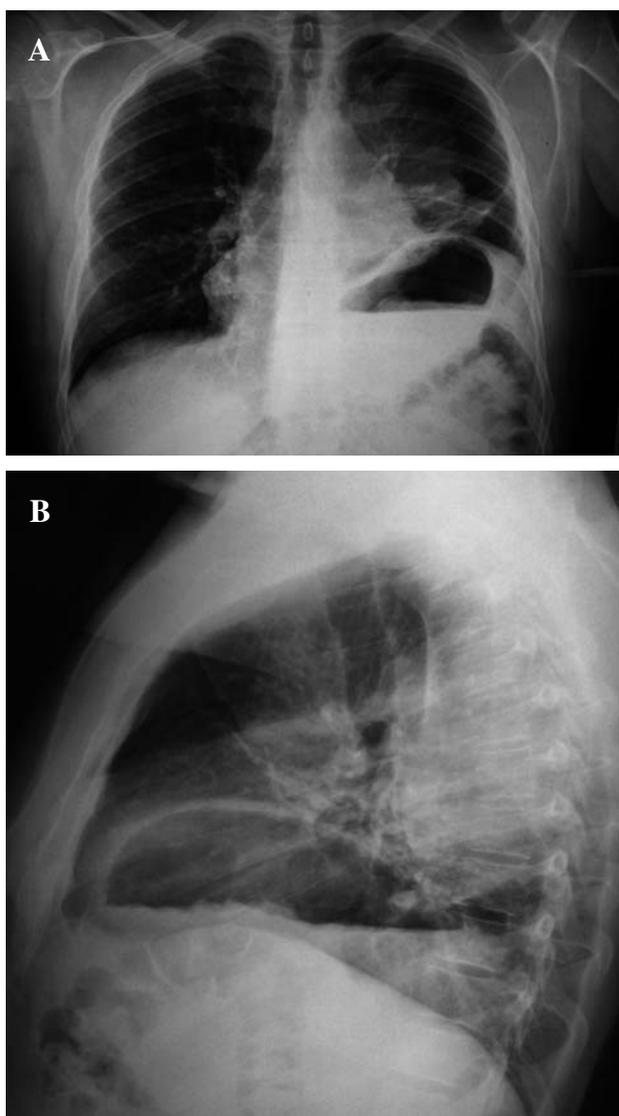


Figure 1. Posteroanterior (A) and lateral (B) chest radiograph, showing a left posterior paramediastinal mass, as well as elevation of the ipsilateral diaphragm.



Figure 2. Computed tomography scan showing a mass of fatty content in the dorsal region of the left thorax, with denser linear areas (arrow). The mass is compressing adjacent lung tissue.

was negative. Lung function tests showed a forced vital capacity (FVC) of 2.72 L (62%), a forced expiratory volume in the first second (FEV_1) of 2.32 L (64%), and an FEV_1/FVC ratio of 85%. The electrocardiogram was normal. Scintigraphy showed 79% perfusion in the right lung (Figures 1A and 1B) and 29% in the left lung.

A plain chest radiograph showed a multilobular mass with clear margins that bulged toward the left lung. The lesion did not obscure any middle or anterior mediastinal structures and, therefore, was interpreted to be in contact with the posterior mediastinum. Considerable elevation of the left diaphragm was also observed. A CT scan (Figures 2, 3A, and 3B) showed a dorsal mediastinal mass adjacent to the aortic arch and descending aorta, with areas of fat density and others with soft-tissue density. The mass extended toward the anterior mediastinum, up to the pericardium and left pulmonary artery. The left lower lobe presented partial compressive atelectasis caused by the elevation of the left diaphragm and a small amount of left pleural effusion. Fiberoptic bronchoscopy showed no abnormalities in the bronchial tree.

Left thoracotomy revealed a large mass in the posterior mediastinum, adhered to the descending aorta. The mass, which extended toward the aortic arch and the aortopulmonary window, was joined by a band to a second portion anterior to the left hilum. The lesion surrounded the phrenic nerve at that level. The mass was encapsulated, brownish, and necrotic. Surgical resection included a segment of the affected phrenic nerve, as it was unclear whether the nerve had been infiltrated. Intraoperative biopsy revealed inflammation but no malignancy around the tumor.

Pathology showed a well-differentiated nodular formulation of 11×8.5×5 cm that was bilobular and had a smooth outer surface. The consistency was firm and elastic. When cut, it was heterogeneous, of yellowish-brown color, and with lobular structures separated by fissures. Histology identified the lesion as a lipoma with extensive necrotic areas, characterized by the presence of nonnucleated adipocytes with the normal structure of adipose tissue (Figure 4). Abundant lipophages were observed at the margins of the necrotic areas. The diagnosis was highly necrotic lipoma, with considerable histiocytic reaction.

Discussion

Intrathoracic lipomas are well-differentiated, encapsulated masses composed of adipocytes, similar to normal adipose tissue. The most common sites are the anterior mediastinum, cardiophrenic angle, and cervicomedastinal region; lipomas often spread to the neck and cross the thoracic wall in the upper anterior region.¹ These masses are usually not detected until identified as lesions with well-defined borders in a plain chest radiograph performed for other reasons.¹⁻³ They grow slowly and do not produce symptoms until the mass compresses adjacent structures, such as the esophagus, main bronchi, or phrenic or vagus nerves. In our patient, the chest radiograph revealed elevation of the left

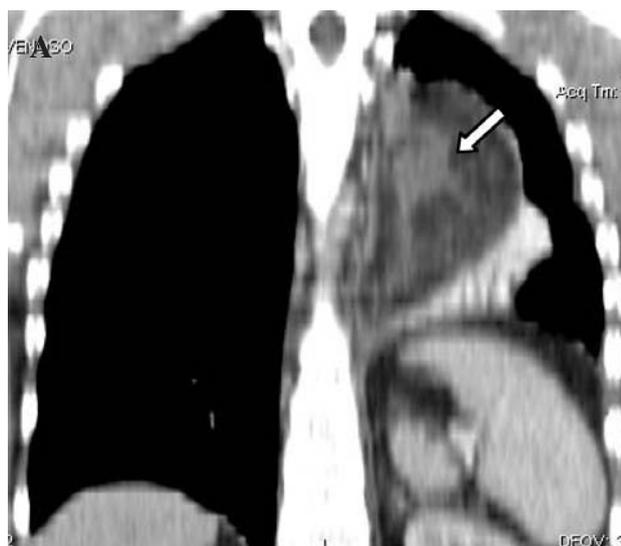


Figure 3. Computed tomography with coronal (A) and sagittal (B) reconstructions. Note the large mediastinal lipoma compressing the lung. The fatty density of the lipoma coexists with denser areas (arrow).

hemi-diaphragm and surgery confirmed this was a result of the involvement of the phrenic nerve. The usual age of onset is 50 to 70 years, almost always associated with obesity.²

Lipomas originating in the thorax are often larger than those located in superficial structures. Intrathoracic lipomas up to 20 cm long have been described; the largest ones are poorly circumscribed.³ In our patient, the lipoma was 11 cm at its longest point.

Lipoma may be an incidental finding of radiographs performed for other reasons. A lipoma will appear as a mass of well-defined borders and obtuse angles toward the mediastinum or chest wall, resembling pregnancy, which defines it as an extrapulmonary lesion. The CT scan allows the attenuation values of fat density to be assessed and help determine the origin and extension, as well as the involvement of adjacent organs. The presence of areas with nonfatty solid content will give a heterogeneous appearance to the lesion, suggesting that it may be another kind of tumor, such as a liposarcoma or thymolipoma, instead of a lipoma.⁴⁻⁹ In our patient, the CT showed areas with greater attenuation than is usual for fat; these areas were necrotic, as confirmed by histology of the resected mass. Few cases of intrathoracic lipoma with evidence of necrosis in both the radiograph and histologic study have been published.⁹ Magnetic resonance imaging reveals an internally homogeneous mass, with low-signal intensity on fat suppression and no contrast enhancement.

Another lesion of similar radiographic characteristics is thymolipoma,⁴ also known as lipoma of the thymus. This rare tumor is believed to be thymic hyperplasia with fatty replacement. The tumor only originates in the anterior mediastinum, whereas lipomas can present at other sites of the mediastinum or thorax. Thymic residue of the

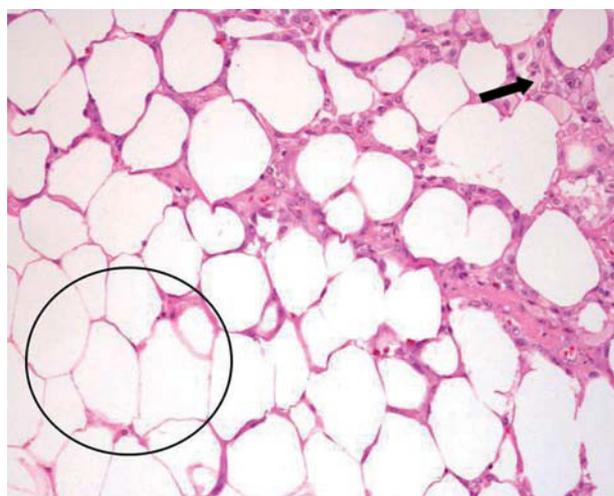


Figure 4. Histology showed necrotic adipocytes (circle) and peripheral histiocytic reaction (arrow).

thymolipoma result in areas with a higher density than fat, which can be seen on CT.

Although lipomas are usually asymptomatic, our patient reported episodes of chest pain, which could be explained by repetitive episodes of fat necrosis. However, 2 cases of asymptomatic necrotic intrathoracic lipomas have been published.^{5,9} Fat necrosis may occur after trauma, but this was not the case for our patient.

Because of the symptoms and the large size and lack of homogeneity of the mass, the lesion required surgical resection, which is the curative treatment of these tumors. The entire tumor was resected and the patient presented no sequelae in subsequent follow-up.

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