

# Bilateral Pleural Lipoma: Radiological Findings

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## Abstract

Lipoma is a benign neoplasm composed of adult adipose tissue and occasionally fibrous stroma. Lipomas originating from the pleura are very rare. It is possible to make a diagnosis of lipoma preoperatively by computed tomography (CT) and magnetic resonance imaging (MRI). Definitive diagnosis is made at CT with occasionally lesions have fat attenuation (approximately -100 HU). MRI may also be useful to better characterize these lesions. We report radiological findings an unusual case of bilateral lipoma in a 70-year-old female that presented as a pleural-based mass. The present case represents the only example of this bilateral entity.

**Keywords:** Bilateral Pleural Lipoma, Computed Tomography, Magnetic Resonance Imaging

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## INTRODUCTION

Pleural lipomas are benign soft-tissue neoplasms that originate from the submesothelial layers of parietal pleura and extend into the subpleural, pleural or extrapleural space. They are soft, encapsulated fatty tumors that demonstrate slow growth (1). In addition, lipomas can occasionally arise from the diaphragm. Most patients with these types of lipomas remain symptomatic until incidental detection of the lesions at radiography. Symptoms may include nonproductive cough, back pain, exertional dyspnea or a sensation of heaviness in the chest (1). Pleural and diaphragmatic lipomas appear as soft-tissue lesions on chest radiographs and may become extremely large (2).

At CT, they are homogeneous and demonstrate fat attenuation (approximately -100 HU) (3). If the lesion is near the diaphragm, the differential diagnosis may include hernias and localized eventrations. The resulting soft-tissue shadow can be confused with pleural thickening at conventional radiography.

We report radiological findings of bilateral lipoma and also to the best of our knowledge the only example of this bilateral entity in the literature.

## CASE REPORT

A 70-year-old female patient admitted to our hospital with chest pains, dyspnea, and cough. The medical history

was unremarkable and laboratory data on admission were within normal limits.

P-A chest X-ray demonstrated an abnormal soft-tissue shadow in the bilateral inferior pleural space (Figure 1). Intravenous contrast-enhanced CT showed a smooth edged mass, with homogenous hypodensity in the bilateral inferior pleural space. There was no contrast enhancement and density values mostly ranged from -90 to -111 HU at the central region, and which size was increasing 8x4x7 cm on the right, and 7x3x6 cm on the left (Figure 2).

T1 weighted MRI demonstrated homogeneous, smooth-lobulated edged, semicircular, oval or polygonal shape mass, with high signal intensity. T1 weighted-fat saturation MRI showed bilateral pleural mass have low signal intensity due to fat suppression and also at the T2 weighted MRI, lesions were seen as high signal intensity in the bilateral inferior pleural space (Figure 3a-b). Imaging findings showed that the patient has bilateral pleural lipoma.

Biopsy was performed to mass. Biopsy specimen approved by histopathologically as a lipoma (Figure 4). Surgical treatment was recommended but the patient refused. Medical treatment used for her complaint and followed for per 6 months.

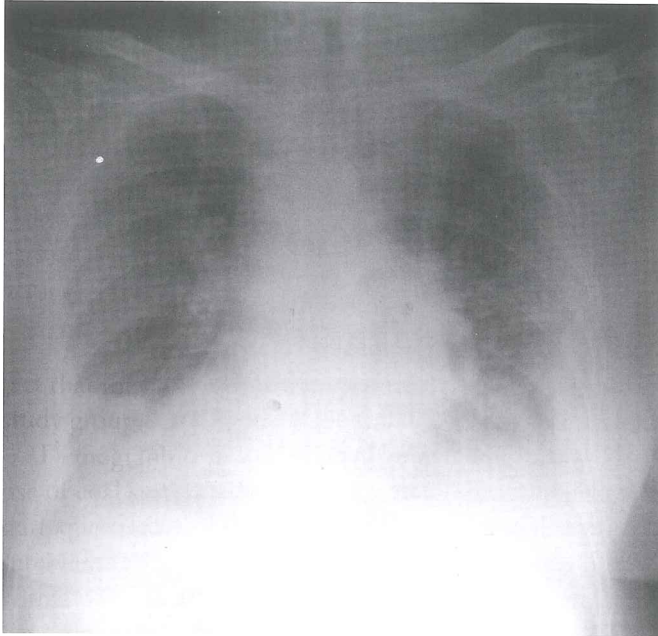
## DISCUSSION

Lipoma is a benign neoplasm composed of adult adipose tissue and occasionally fibrous stroma. These lesions occur most often in adults and rarely in the pleura.

Primary benign pleural tumors are much less common than metastatic cancers or diffuse malignant mesothelioma. However, because of their better prognosis and potential for successful treatment, including complete resection, benign pleural neoplasm must be recognized and differentiated from pleural malignancies. Eight primary benign pleural lesions are discussed: solitary fibrous tumor, nodular pleural plaque, lipomatous tumors, adenomatoid tumor, calcifying fibrous tumor, simple mesothelial cysts, multicystic mesothelioma, and schwannoma (4).

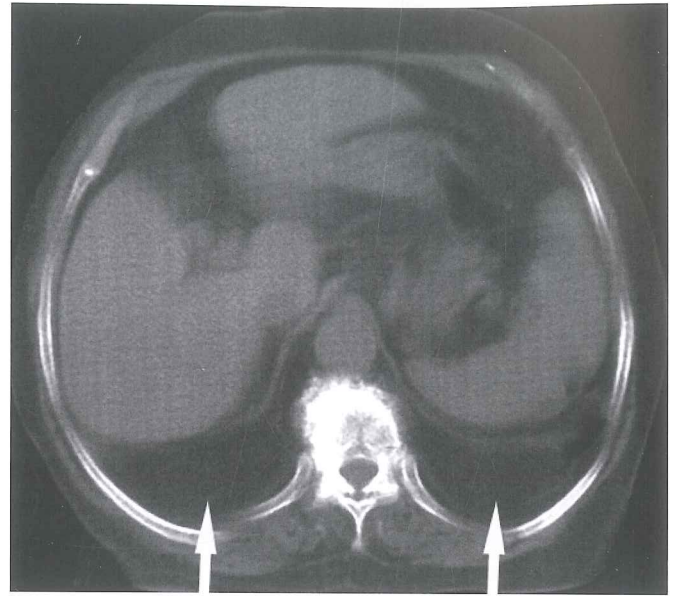
A number of different imaging modalities can be used in the assessment of pleural disease. Although ultrasound has been the more traditional method, CT has found increasing utility for the assessment of the empyema and

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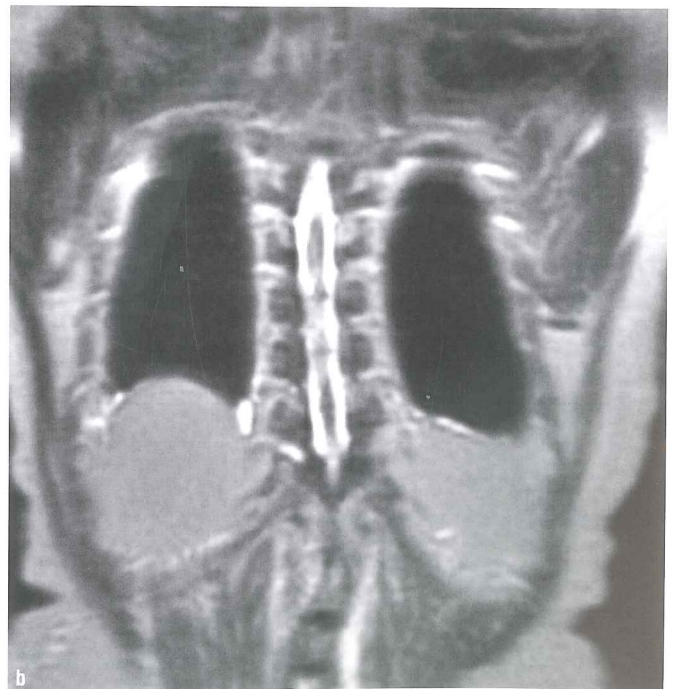
**Figure 1.** Postero-anterior chest radiographs show soft-tissue increased opacity in the bilateral inferior pleural space.

loculated pleural fluid collections prior to drainage and the evaluation of benign and malignant pleural tumors. MRI has a limited but important role particularly in the evaluation of focal pleural tumors such as lipomas and in determining the extent of malignant mesothelioma prior to therapy (5).

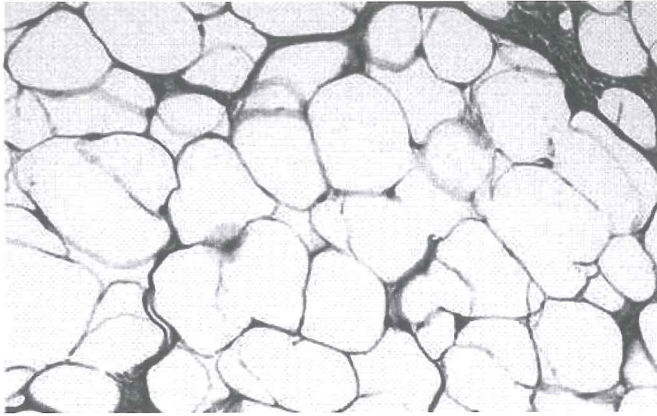


**Figure 2.** CT scans obtained with mediastinal windowing show the mass with fat attenuation (arrows), finding that is consistent with a bilateral pleural lipoma.

Although most lesions that occur in the chest have a nonspecific soft tissue appearance, fat-containing lesions are occasionally encountered at cross-sectional CT or MRI. The various fat-containing lesions of the chest include parenchymal and endobronchial lesions such as hamartoma, lipoid pneumonia and lipoma. Mediastinal fat-containing lesions include germ cell neoplasms, thymolipomas, lipomas, and liposarcomas (2).



**Figure 3.** Coronal T1 weighted (a) and T2 weighted (b) MRI demonstrate; smooth-lobulated edged mass with high signal intensity in the bilateral inferior pleural space (arrows).



**Figure 4.** Histologically, pleural lipoma consists of mature adipose tissue (hematoxylin-eosin).

Lipomas of the visceral pleura are rare incidental findings (6,7). These lesions are typically asymptomatic and detected incidentally. Only 1 case of a symptomatic subpleural lipoma has been reported, due to torsion of the pedunculated lesion that resulted in infarction and chest pain (8).

Lipoblastomas of the pleura are rare incidental findings. More than 90 % of cases are diagnosed in children less than 3 years of age. These lesions are typically asymptomatic. Histologically, lipomas consist of mature adipose tissue and lipoblastomas are composed of lobules of immature fat cells. Lipoblastomas are seen as a soft-tissue-opacity mass on conventional radiographs and can often be identified on CT scans.

Liposarcomas of the pleura are rare and usually present in adult men. The tumor often shows myxoid liposarcoma morphology. It may have a similar CT appearance with lipoblastoma but are relatively uncommon in children and also MRI imagings include intratumoral streaks and whorls that correspond to the tumor's fibrovascular network (2).

If the lesion is near the diaphragm, the differential diagnosis may include hernias. Hernias of Morgagni represent 2%–3% of all diaphragmatic hernias. The underlying developmental defect allows herniation of abdominal contents. The defect is anterior and retrosternal in location and is usually a right-sided process. The other one Bochdalek hernia is developmental defects in the posterior part of the diaphragm. The herniated contents contain fat and

omental tissue in a majority of cases. For the differential diagnosis of other fat containing lesions further evaluation and diagnosis can be performed with CT or MRI imaging. Especially sagittal and coronal reformatted images can add valuable information by showing diaphragmatic defects and hernia contents.

It is possible to make a diagnosis of lipoma preoperatively by CT and MRI. At CT, they are homogeneous and demonstrate fat attenuation (approximately -100 HU). However, the correct differential diagnosis of lipoma and liposarcoma is imperfect only by radiological findings necessitating biopsy or surgical removal if possible (9).

We report a rare case that presented as a bilateral pleural-based mass. Imaging findings showed that the patient has bilateral pleural lipoma and also biopsy was compatible by histopathologically as a lipoma.

The use of CT and MRI is extremely valuable in the evaluation of fat-containing lesions. When such lesions are detected, identification of their location and imaging characteristics significantly reduces the time required for differential diagnosis. Often, a definitive radiological diagnosis can be preventing unnecessary surgery.

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