Subpleural Lipoma

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Section: Chest imaging
Area of Interest: Thoracic wall
Procedure: Diagnostic procedure
Imaging Technique: CT
Special Focus: Tissue characterisation Neoplasia Case

Type: Clinical Cases
Authors: Sergio Savastano, Leonardo Giarraputo, Alessandra Costantini, Valeria Borile, Maria Carmela Carè

Patient: 52 years, male

Clinical History:

Case 1: a 52-year-old man with cough and fever.
Case 2: a 72-year-old woman with precordial chest pain.

Imaging Findings:

Case 1: Chest radiograph (April 2004) shows an oval mass projecting on the upper left lung (Fig. 1a). The mass measures 5x2.5 cm in diameter and exhibits a sharp inner border, tapered margins, whereas the outer border is ill defined. The mass abuts the posterior chest wall on the lateral view (Fig. 1b). Non-enhanced CT shows a subpleural fatty mass with thin septa extending into the underlying intercostal space; no rib erosion is evident (Fig. 2). On a chest radiograph undertaken on December 2012 the mass is unchanged in size (Fig. 3a, b).

Case 2: Chest radiograph shows round opacity with obtuse angles measuring 2.5 cm in diameter abutting the anterior right chest wall (Fig. 4a, b). Contrast-enhanced CT shows a subpleural, transmural (“hourglass”) fatty lesion of the right chest wall containing thin septa and displacing the parietal pleura and the pectoralis minor muscle. Ribs are not eroded (Fig. 5).

Discussion:

Pleural lipomas are rare, benign, encapsulated fatty tumours mainly found in adult people [1-4]. They originate from the submesothelial connective tissue and may extend into the subpleural, pleural, or extrapleural space [2]; transmural lipomas typically exhibit a “hourglass” or “dumbbell” shape [5-7]. Pleural lipomas are slow-growing tumours usually asymptomatic and incidentally detected on a chest radiograph, which typically shows as a peripheral mass with a sharp border and tapering margins [1, 2, 5]. Masses generally measure 2 to 4 cm in size, but large lipomas have also been reported [1, 5]; a large transmural lipoma can cause rib erosion [5, 6].

A pleural lipoma can be easily characterised with CT or MRI, which depict an encapsulated homogeneous adipose mass, often containing thin septa (<2 mm) [2, 3, 8, 9]. After contrast administration the capsule and septa can faintly enhance on CT and MRI [3, 4, 10]. Sagittal and coronal reformations are helpful in distinguishing lipomas of diaphragmatic pleura from diaphragmatic hernias or focal eventrations [2]. Lipomas should be differentiated from other fat-containing masses. A well-differentiated liposarcoma is suggested by a large lesion size, thick septa, presence of intralvesional nodular tissue and an amount of adipose component <75% of the mass; lesion enhancement alone is not a reliable differential finding as septa and tissue components
can or cannot enhance on MR images after gadolinium administration [4, 9, 10]. High signal intensity of these findings in T2FS/STIR MR images can help to identify a well-differentiated liposarcoma [11]. However, it should be kept in mind that also a lipoma can show non fatty areas due to fat necrosis and associated calcification, fibrosis, inflammation, and myxoid change [10]. MRI features of lipomas and well-differentiated liposarcomas overlap in 4%–9% of cases [4].

Hibernoma is a benign tumour of brown fat appearing heterogeneous hyperintense on T1, T2 and STIR sequences. Besides lipoma-like hibernoma, lesions show intratumoural prominent vessels as internal void signal structures enhancing after contrast material injection. Moreover an intense activity is appreciable on FDG-PET [9, 12, 13]. Parosteal rib lipoma is a very rare fatty tumour adherent to the underlying periosteum but without continuity with the adjacent bone. CT well depicts osseous excrescence within the lipomatous mass whereas MRI better delineates fibrovascular septa and cartilaginous components as structures with intermediate signal on T1 sequence and hyperintense on T2-MRI [9].

**Differential Diagnosis List:** Subpleural lipoma, Well-differentiated liposarcoma, Hibernoma, Parosteal rib lipoma

**Final Diagnosis:** Subpleural lipoma

**References:**


**Description:** Posteroanterior view. An oval mass projects on the upper left lung; the mass exhibits inner sharp border and tapered margins. **Origin:** Sergio Savastano, UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Description: Lateral view. The mass abuts the posterior chest wall (arrow). Origin: Sergio Savastano, UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Description: The mass is located in the subpleural space and shows a fatty density (-115 HU) with thin septa. The lesion involves the underlying intercostal space. Origin: Sergio Savastano, UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Figure 3

Description: Posteroanterior view. The mass is unchanged in size. Origin: Sergio Savastano, UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Description: Lateral view. Origin: Sergio Savastano, UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Description: Posteroanterior view. A round opacity projects on the upper right lung. Origin: Sergio Savastano, UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Description: The mass shows obtuse angles on the lateral view. Origin: Sergio Savastano, UO Radiologia, Ospedale San Bortolo, Vicenza, Italy
Figure 5

Description: CT depicts a hourglass fatty mass of the right thoracic wall; thin septa are present within the lesion. Origin: Sergio Savastano, UO Radiologia, Ospedale San Bortolo, Vicenza, Italy