CT Imaging of Solitary fibrous tumour of the pleura (SFTP): Typical Patterns and pitfalls

Luciano Cardinale

Department of Radiology, University of Torino, San Luigi Gonzaga Hospital Orbassano (Torino)

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Solitary fibrous tumour of the pleura (SFTP) is a mesenchymal tumour that tends to involve the pleura, although it has also been described in other thoracic areas (mediastinum, pericardium and lung) and in extrathoracic sites (meninges, epiglottis, salivary glands, thyroid, kidneys and breast) (1,2). SFTP usually presents as a peripheral mass abutting the pleural surface, to which it is attached by a broad base or, more frequently, by a pedicle that allows it to be mobile within the pleural cavity (2-4). Unlike mesothelioma, SFTP is not asbestos-related and is usually a benign, rarely aggressive, tumour, although a small percentage of patients may develop locoregional recurrence (2,5,6). The aetiopathogenesis of SFTP remains uncertain and controversial.

The most accredited hypothesis is that these tumours originate from submesothelial stromal cells with fibroblastic or myofibroblastic phenotype, whose growth is promoted by an aberrant reaction to inflammatory or hormonal stimuli (7). Most patients are asymptomatic at the time of the diagnosis, with the lesion being discovered as occasional findings (4,8). In the remaining patients, particularly those with large and aggressive masses, the most common clinical manifestations are chest pain, cough and dyspnoea (4,6,9). The rate of incidental diagnoses on my experience is increasing, in which symptomatic patients did not exceed 30% and confirmed by a comparison of studies published between 1942 and 1972 and between 1973 and 1980 in which symptomatic patients decreased from 72% to 54% (4). This decrease can be attributed to more widespread (at times inappropriate) imaging, with resulting detection of a larger number of incidental tumours. SFTP, owing to its large size or unusual locations (paraspinal, paramediastinal, intrafissural and intraparenchymal), can pose interpretation problems or, indeed, point towards a diagnosis of diseases of a totally different nature.

Typical patterns

The size of the lesion will strongly affect its appearance on computed tomography (CT). Smaller SFTPs usually appear as homogeneous, well-defined, rarely lobulated masses forming obtuse angles against the pleural surface (3,10,11,12). Large lesions appear inhomogeneous and connected at acute angles. A smoothly tapering margin at the junction of the mass with the pleural surface (10,11) is another reliable CT sign of a neoplasm of pleural origin. In intrafissural tumours, the sign is bilateral, facilitating differentiation from an intraparenchymal mass (10).However, multidetector CT provides improved visualization of interlobar fissure and its relationship with the tumor. Associated signs include compression on the pulmonary parenchyma, mass effect on the mediastinum and pleural effusion. Intralesional calcifications (punctate, linear or coarse) constantly

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Corresponding to: Luciano Cardinale, MD, PhD. Department of Radiology, University of Torino, San Luigi Gonzaga Hospital Orbassano (Torino), Regione Gonzole 10, Orbassano, 10043, Italy. Email: luciano.cardinale@gmail.com.

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associated with areas of necrosis may be recognised in larger lesions (3,4,8,10). The presence of the pedicle is rarely identified on CT but can be inferred by evaluating lesion mobility (4,13). SFTP exhibits medium to high attenuation on baseline scans owing to the high physical density of the collagen fibres and the abundant vascular network of the lesions (4,13,14). On contrast-enhanced CT images of larger lesions, constant findings include geographic areas of heterogeneity or serpiginous areas of hyperdensity, an expression of the rich vascular network, possibly associated with areas of hypodensity due to cystic and myxoid degeneration, or intralesional haemorrhage or necrosis (3,11,12,15).

Local invasion is rarely reported, and lymphadenopathy is not afeature of SFTP (4).Chest wall involvement manifesting as sclerosis or pressure erosion on adjacent ribs, a characteristic feature of chest wall and mediastinal neoplasms of neurogenic origin that is rarely reported in association with SFTP (4).

Pitfalls

(I) When the tomor arises from a fissure, it can appear to be surrounded by lung and simulate an intraparenchymal nodule (16); (II) When the tumor abut the ipsilateral hemidiaphragm, conformed to its shape can simulate diaphragmatic elevation or eventration (4); (III) When the tumor have a mediastinal pleural origin with maximum diameter abutting the mediastinal pleural surface, can mimic a medistinal neoplasm (17); (IV) When the tomor involved the costovertebral recess it can simulate a peripheral neurogenic tumor (18).

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