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The Clinical Picture

A 78-year-old smoker with an incidental pulmonary mass

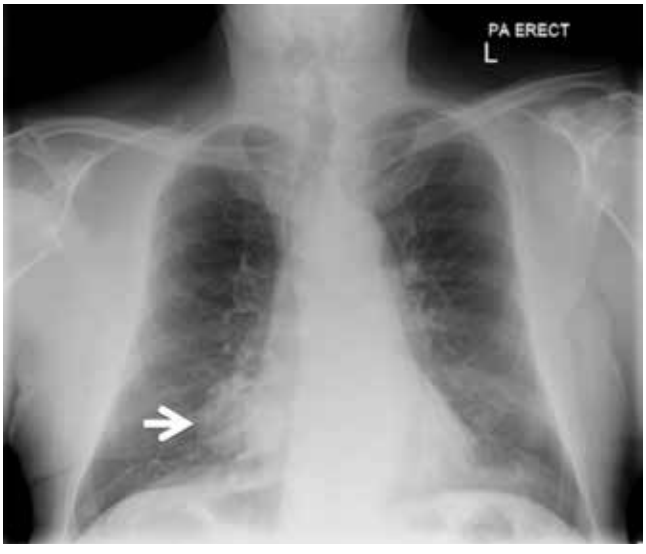

FIGURE 1. Chest radiography demonstrated a round, 5-cm, soft-tissue mass (arrow) in the right lower lobe.

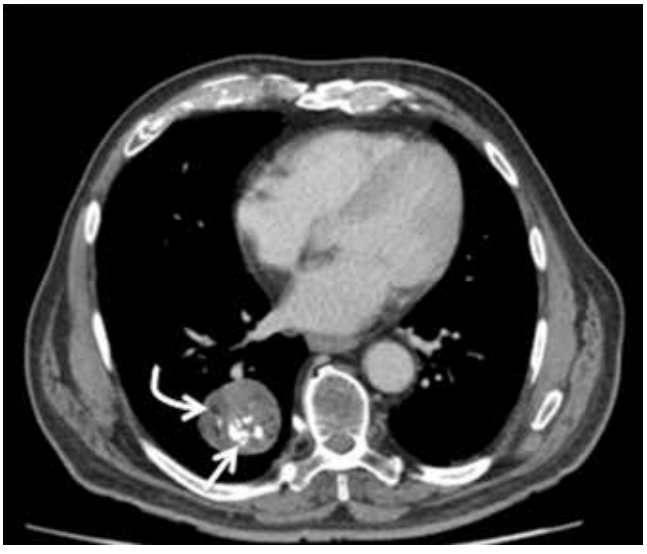

FIGURE 2. Computed tomography with contrast confirmed a lobulated soft-tissue mass in the right lower lobe, with internal calcification (curved arrow) and areas of fat (arrow). No thoracic lymphadenopathy was noted, and the abdominal viscera appeared normal.

When a 78-year-old man underwent magnetic resonance imaging of the lumbar spine because of back pain, the scan revealed a mass in the right lung. He had no respiratory symptoms but had a 40-pack-year smoking history. Physical examination and routine blood tests were unremarkable.

Radiography (**FIGURE 1**) showed a large rounded opacity in the right lower lobe. The patient's age, smoking history, and imaging findings raised concern for lung cancer, so computed tomography (CT) was performed (**FIGURE 2**).

DIAGNOSIS: PULMONARY HAMARTOMA

The findings of a well-circumscribed solitary pulmonary nodule or mass containing areas of fat, either as focal islands or more generally distributed, and chondroid "popcorn" calcification are virtually pathognomonic for pulmonary hamartoma.[1,2] Unfortunately, although this pattern of calcification is strongly diagnostic, it is present in only a minority of cases of hamartoma.

Pulmonary hamartoma is the most common benign tumor of the lung, accounting for approximately 75% of benign neoplasms and 6% to 8% of all focal lung parenchymal masses.[3]

Like hamartoma elsewhere in the body, pulmonary hamartoma consists of disorganized overgrowth and aberrant arrangement of normal tissues, including

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cartilage (which may calcify), smooth muscle, epithelium, and fibrostroma. Pulmonary hamartoma is twice as common in men as in women, and it has a peak incidence in the seventh decade of life.[4]

Although size ranged from 0.2 to 6 cm in a large case series,[4] hamartomas are usually less than 2.5 cm in diameter. As noted in **FIGURE 1**, our patient's lesion was 5 cm.

Pulmonary hamartomas grow slowly and are often asymptomatic, although up to 39% of patients may have symptoms such as cough, dyspnea, and chest tightness.[5] The nonspecific nature of these symptoms makes it difficult to be certain that they are caused by the hamartoma; in many cases, they are likely to be coincidental. Lesions tend to occur in the periphery of the lobe and do not favor a particular lobe. Endobronchial lesions can occur but are uncommon.

The internal heterogeneous elements are difficult to see on radiography; CT is usually required to further characterize the lesion and to exclude more sinister differential diagnoses. In some cases the characteristic features of fat and calcification are absent, making a certain diagnosis difficult or impossible radiologically; in such cases, biopsy or resection may be required.

CT showed a well-circumscribed solitary nodule containing fat and 'popcorn' calcifications

Hamartomas usually do not take up fluorodeoxyglucose avidly on positron-emission tomography CT. However, nuclear medicine studies such as this are superfluous if the classic features are present on CT.

FOLLOW-UP AND TREATMENT

Given the benign nature, slow growth, and usually incidental detection of pulmonary hamartoma in patients without symptoms, no follow-up imaging or treatment is usually required. In the few cases in which symptoms are attributable to the lesion, the lesion can be resected.[5] Resection is also an option when the patient is very anxious about the mass, or when imaging studies do not provide a clear diagnosis and tissue needs to be obtained for study.

Because patients often present to different institutions during their lifetime, it is important to counsel them about the natural history of pulmonary hamartomas. Giving them a copy of their imaging may help avoid unnecessary repetition.

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