Clinical History

A 62-year-old man presented with breathing difficulty, dyspnea and a squeezing sensation of the chest. There was no hemoptysis. Physical examination showed no abnormalities. There was a history of asbestos exposure in the 1970s. His further medical history was unremarkable, whereas his brother died was diagnosed with lung cancer.

Imaging Findings

Chest radiograph shows a well-circumscribed coin lesion in the right upper lobe which was not present on a chest radiograph taken two years previously (Fig. 1). A Computed Tomography (CT) without contrast confirmed a solitary well-circumscribed nodule (20 x 19 x 19 millimeter) without intralesional calcifications and a CT density of 35 Hounsfield Units (Fig. 2). A subsequent FDG-PET-CT was performed showing a nodule in the right upper lobe was intensely FDG-avid (SUV:10) (Fig. 3). There were no other pulmonary lesions nor evidence of mediastinal or axillary
lymphadenopathy. A transbronchial biopsy was done but the sample was insufficient for definitive diagnosis. The mass was surgically removed and histopathological examination revealed an inflammatory myofibroblastic pseudotumor (Fig. 4).

Discussion

Inflammatory myofibroblastic tumor (IMT) is believed to represent a benign neoplastic lesion with intermittent malignancy[1]. IMT has been reported in different sites of the body including the abdominopelvic region, lung, heart and central nervous system. It can virtually be found in any anatomical region but pulmonary location is the most frequent [2]. IMT comprises 0.04% to 0.7% of all the lung neoplasms but in children IMT is the most common primary lung lesion accounting for 50% of all the benign lesions [3]. The pathogenesis is still debated. It is believed to result from an organized cellular growth in association with a pulmonary infection, viral or foreign antigen-antibody reaction which is no longer identifiable at the time of diagnosis [4].

Most patients are diagnosed when in their childhood or young adulthood, half of them are younger than 40. The male-female distribution is equal. Often patients are asymptomatic although persistent cough, pulmonary infections or thoracic discomfort may be present. General symptoms such as weight loss, fever and fatigue are also reported [5]. Histologically IMT is considered as a benign lesion consisting of myofibroblastic spindle cells with a prominent inflammatory infiltrate composed of plasma cells and lymphocytes. The lesion can range from 1 cm to 20.

There's an overlap of clinical and histological features with immunoglobulin (IgG)-4-related disorders [6]. Radiography often shows a co-incidental-finding of a pulmonary solitary nodule or mass, which is usually well-circumscribed. Localisation in lower lobes is most common. Heterogeneous enhancement is seen and pleural effusion can be present. Calcifications, hemorrhage and necrosis are rare. CT is used for local and distant staging. MRI is useful to visualize the relationship to adjacent structures. A low or intermediate signal intensity is seen on T2-weighted images.

A pseudotumor has similar increased uptake of Fluorodeoxyglucose (18F) as a malignant lesion therefore FDG-PET has no or a limited role in the diagnosis but may be useful to detect multifocality [6, 7].

The main differential diagnosis is lung cancer. The optimal treatment is surgical excision which is crucial for diagnosis. Histopathologic examination of the resected specimen is the only reliable method to confirm the exact diagnosis as differentiation between cancer and pseudotumor solely on clinical and imaging findings is not possible. In case of incomplete resection or non-operable patients, radiotherapy is an alternative treatment [8]. Recurrence is seen in 2% to 25% of the cases and in less than 5% metastasis are found [9].

Final Diagnosis

Inflammatory myofibroblastic tumor
Differential Diagnosis List

Lung cancer, Hamartoma, Lymphoma, Chondroma

Figures

Figure 1 chest radiograph

Posteroanterior chest radiograph Standard radiography shows a well-circumscribed nodule (arrow) in the right upper lobe.

Area of Interest: Thorax;
Imaging Technique: Conventional radiography;
Procedure: Diagnostic procedure;
Special Focus: Neoplasia;

Lateral chest radiograph Standard radiography shows a well-circumscribed nodule (arrow) in the right upper lobe.
Figure 2 Chest CT

Axial image (mediastinal window) A well circumscribed solid nodule (arrow) in the right upper lobe is confirmed. There is no contact with the chest wall. No other lesions were visualized.

Axial image (lung window) A well circumscribed solid nodule (arrow) in the right upper lobe is confirmed. There is no contact with the chest wall. No other lesions were visualized.
Sagittal reformatted image (lung window) A well circumscribed solid nodule (arrow) in the right upper lobe is confirmed. There is no contact with the chest wall. No other lesions were visualized.

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Area of Interest: Thorax;
Imaging Technique: CT;
Procedure: Diagnostic procedure;
Special Focus: Neoplasia;

Coronal reformatted image (lung window) A well circumscribed solid nodule (arrow) in the right upper lobe is confirmed. There is no contact with the chest wall. No other lesions were visualized.

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Area of Interest: Thorax;
Imaging Technique: CT;
Procedure: Diagnostic procedure;
Special Focus: Neoplasia;

Figure 3 FDG-PET-CT

Axial image: an intensely FDG-avid solitary retrohilar nodule (arrow) within the right upper lobe.

Area of Interest: Thorax;
Imaging Technique: PET-CT;
Procedure: Diagnostic procedure;
Special Focus: Neoplasia;

Sagittal image: an intensely FDG-avid solitary retrohilar nodule (arrow) within the right upper lobe.

Area of Interest: Thorax;
Imaging Technique: PET-CT;
Procedure: Diagnostic procedure;
Special Focus: Neoplasia;
Figure 4 histopathological examination

Histopathology of the resected specimen (Hematoxylin and eosin, 200 x magnification). Note abundant inflammatory cells, including many plasmocytes (star), against a myofibroblastic background. IgG4 negative immunohistochemical staining (not shown).

Area of Interest: Thorax;
Imaging Technique: Percutaneous;
Procedure: Diagnostic procedure;
Special Focus: Neoplasia;

References


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Citation

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