Case 14038

Eurorad

Inflammatory myofibroblastic tumour

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ISSN: 1563-4086
Section: Chest imaging
Area of Interest: Thorax
Procedure: Diagnostic procedure
Imaging Technique: Conventional radiography
Imaging Technique: CT
Imaging Technique: PET-CT
Imaging Technique: Percutaneous
Special Focus: Neoplasia Case Type: Clinical Cases
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Patient: 62 years, male

Clinical History:

A 62-year-old man presented with breathing difficulty, dyspnoea and a squeezing sensation of the chest. There was no haemoptysis. Physical examination showed no abnormalities There was a history of asbestos exposure in the 1970s. His further medical history was unremarkable, whereas when his brother died he 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 millimetre) 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, which 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 pseudotumour (Fig. 4).

Discussion:

Inflammatory myofibroblastic tumour (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 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 cm. 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, haemorrhage 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 pseudotumour 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 pseudotumour 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].
Differential Diagnosis List: Inflammatory myofibroblastic tumour, Lung cancer, Hamartoma, Lymphoma, Chondroma

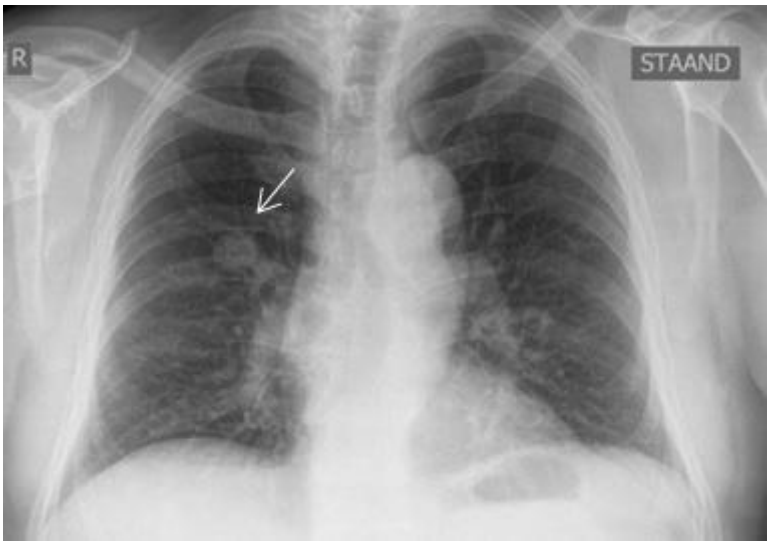
Final Diagnosis: Inflammatory myofibroblastic tumour

References:

Surabhi VR, Chua S, Patel PR, Takahashi N, Lalwani N, Prasad SR (2016) Inflammatory Myofibroblastic Tumors: Current Update. Radiol Clin North Am 54(3):553-63 (PMID: 27153788)
Narla LD, Newman B, Spottswood SS, Narla S, Kolli R (2003) Inflammatory Pseudotumor. Radiographics 23(3):719-29 (PMID: 12740472)
Singh RS, Dhaliwal RS, Puri D, Behera D, Das A (2001) Inflammatory pseudotumour of the lung: Report of a case and review of literature. Indian J Chest Dis Allied Sci 43:231–4
Morar R, Bhayat A, Hammond G, Bruinette H, Feldman C (2012) Inflammatory Pseudotumour of the Lung: A Case Report and Literature Review. Case Rep Radiol Article ID 214528, 4 pages (PMID: 3523579)
Gude D, Rayudu R, Bansal D (2011) How pseudo is an inflammatory pseudotumor?. Indian J Med Paediatr Oncol 32(4): 204–06 (PMID: 3343246)
Gleason BC, Hornick JL (2007) Inflammatory myofibroblastic tumours: where are we now?. J Clin Pathol 61(4):428-37 (PMID: 17938159)
Agrons GA, Rosado-de-Christenson ML, Kirejczyk WM, Conran RM, Stocker JT (1998) Pulmonary inflammatory pseudotumor: radiologic features. radiology 206(2):511-08 (PMID: 9457206)
Jubrail D, Charalambos Z, Niki A, Konstantinos K (1999) Inflammatory pseudotumor: a controversial entity. Eur J Cardiothorac Surg 16(6):670-73 (PMID: 10647841)
Sargar KM, Sheybani EF, Shenoy A, Aranake-Chrisinger J, Khanna (2016) Pediatric Fibroblastic and Myofibroblastic Tumors: A Pictorial Review. Radiographics 36(4):1195-214 (PMID: 27399243)

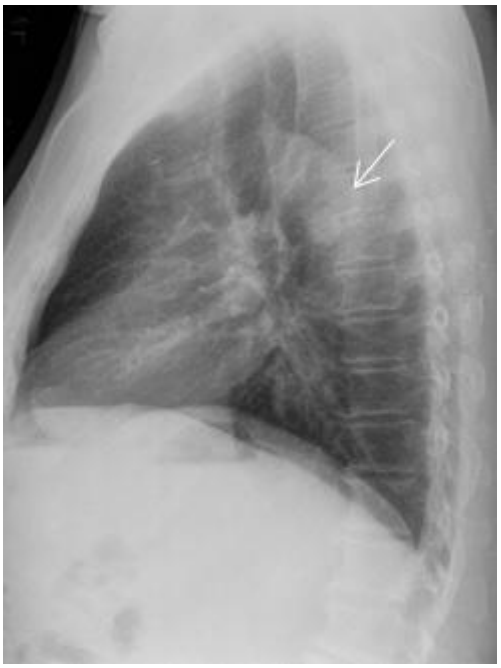
Figure 1

a



Description: Posteroanterior chest radiograph.
Standard radiography shows a well-circumscribed nodule (arrow) in the right upper lobe. **Origin:** Department of Radiology, AZ Sint-Maarten, Duffel, Belgium

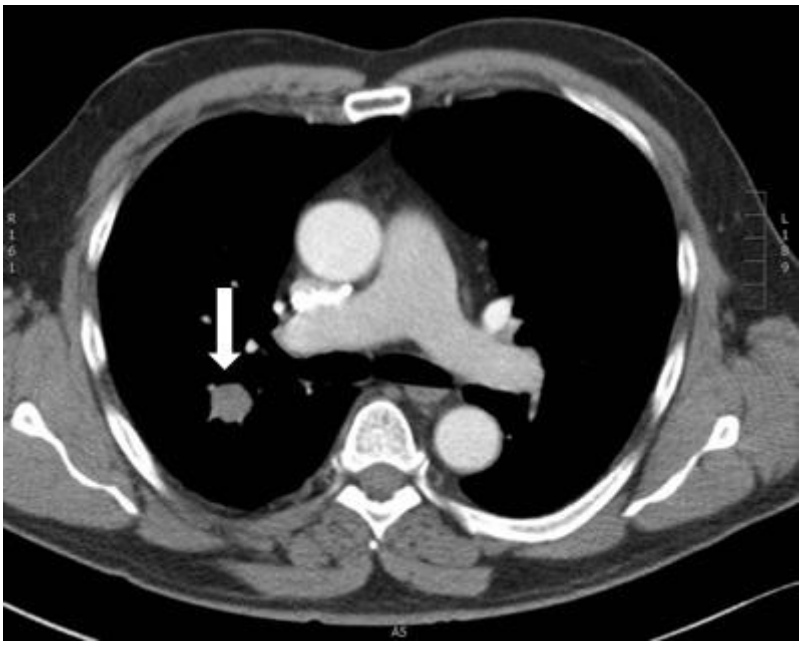
b



Description: Lateral chest radiograph.
Standard radiography shows a well-circumscribed nodule (arrow) in the right upper lobe. **Origin:** Department of Radiology, AZ Sint-Maarten, Duffel, Belgium

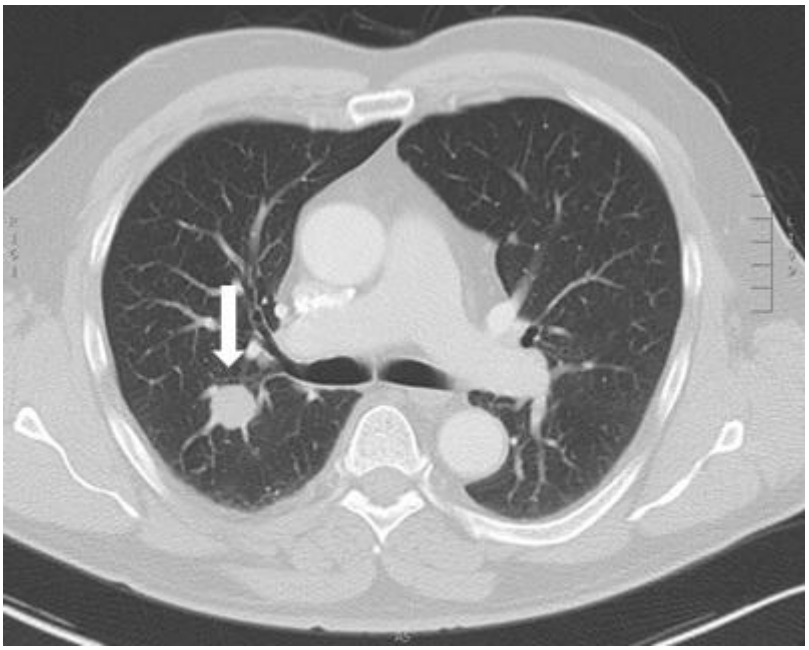
Figure 2

a



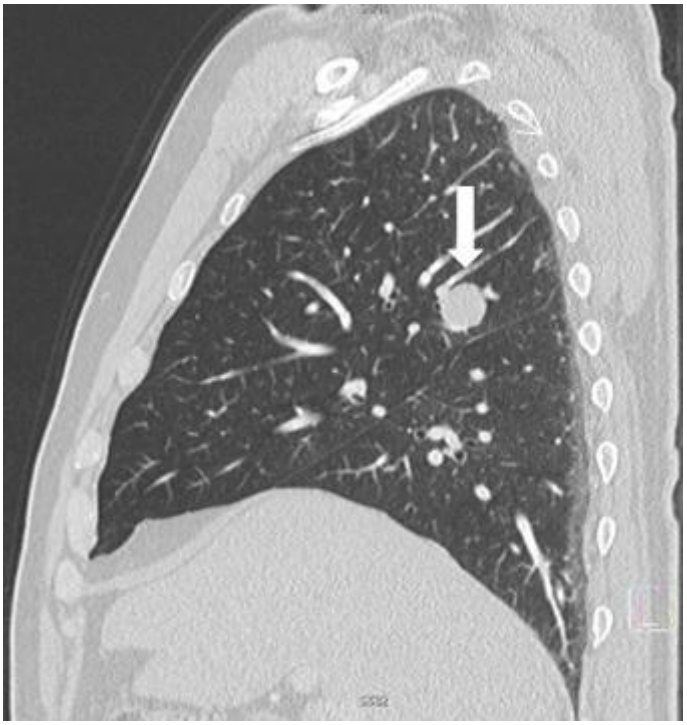
Description: Axial image (mediastinal window).
A well-circumscribed solid nodule (arrow) in the right upper lobe is confirmed. There is no contact with the chest wall. No other lesions were visualized. **Origin:** Department of Radiology, AZ Sint-Maarten, Duffel, Belgium

b



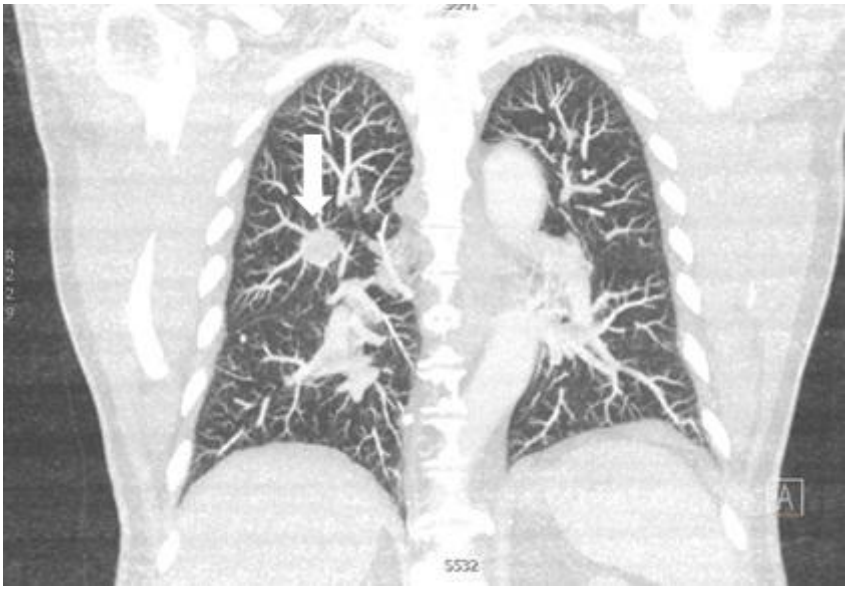
Description: Axial image (lung window).
A well-circumscribed solid nodule (arrow) in the right upper lobe is confirmed. There is no contact with the chest wall. No other lesions were visualized. **Origin:** Department of Radiology, AZ Sint-Maarten, Duffel, Belgium

c



Description: 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. **Origin:** Department of Radiology, AZ Sint-Maarten, Duffel, Belgium

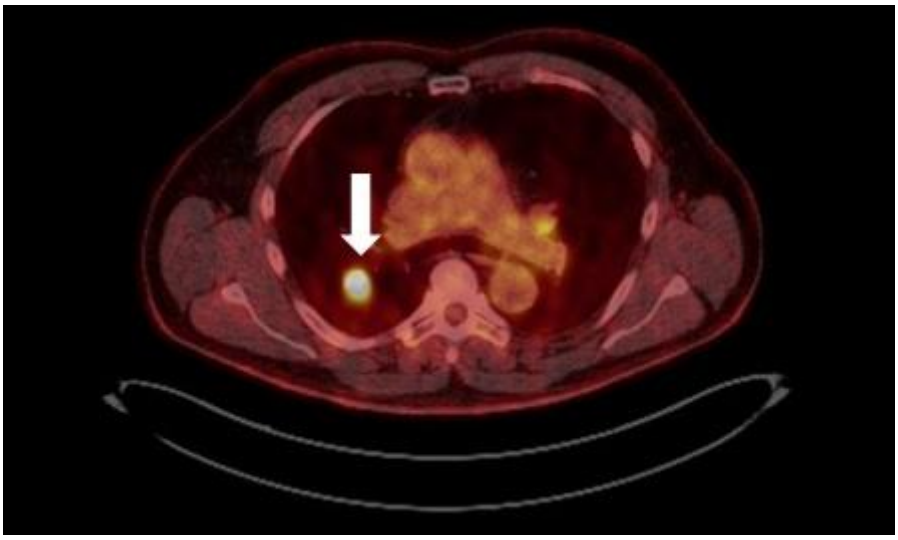
d



Description: 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. **Origin:** Department of Radiology, AZ Sint-Maarten, Duffel, Belgium

Figure 3

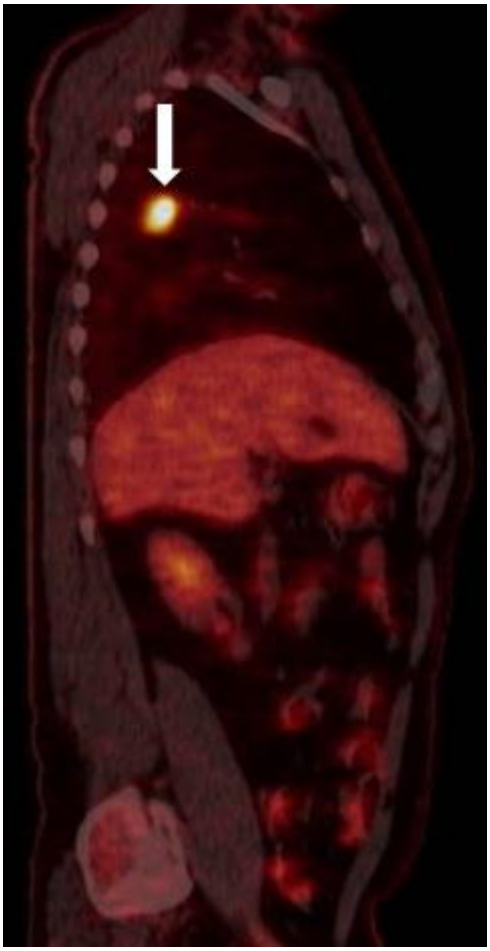
a



Description: Axial image.

Note an intensely FDG-avid solitary retrohilar nodule (arrow) within the right upper lobe. **Origin:** Department of Radiology, AZ Sint-Maarten, Duffel, Belgie

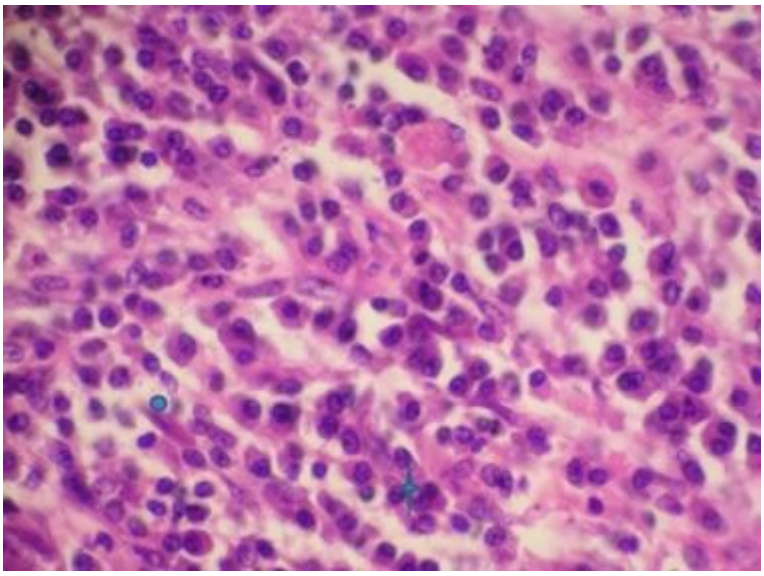
b



Description: Sagittal image.
Note an intensely FDG-avid solitary retrohilar nodule (arrow) within the right upper lobe. **Origin:** Department of Radiology, AZ Sint-Maarten, Duffel, Belgie

Figure 4

a



Description: Histopathology of the resected specimen (Haematoxylin and eosin , 200 x magnification). Note abundant inflammatory cells, including many plasmocytes (star), against a myofibroblastic background . IgG4 negative immunohistochemical staining (not shown) . **Origin:** Department of Radiology, AZ Sint-Maarten, Duffel, Belgium