

## Hypermetabolic PET positive pleural nodular thickening five years after pleurodesis.

Published on 26.03.2017

**DOI:** 10.1594/EURORAD/CASE.14538

**ISSN:** 1563-4086

**Section:** Chest imaging

**Area of Interest:** Lung

**Procedure:** Imaging sequences

**Imaging Technique:** CT-Quantitative

**Imaging Technique:** PET-CT

**Special Focus:** Inflammation Case Type: Clinical Cases

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**Patient:** 48 years, male

### Clinical History:

A 48-year-old gentleman presented with a persistent pneumothorax despite a chest drain. The patient underwent pleurodesis with 12 grams of talc. Five years later, hypermetabolic FDG avid pleural thickening was noted on the PET scan.

### Imaging Findings:

CT scans from 2012 and 2016 were reviewed and these demonstrated increasing pleural nodular thickening around the left upper lobe and in the interlobar fissure. FDG-PET scan with CT images was performed in 2017, which was 5 years after pleurodesis, and showed a multifocal hypermetabolism of the left pleural thickening, predominating at the apex of the lung (SUV max 30 g/ml). Percutaneous CT-guided biopsy of the pleural thickening was performed. Foreign body reaction was seen in the specimen. There was no evidence of malignancy or granulomas.

### Discussion:

#### Background

The efficacy of talc pleurodesis in cases of recurring pneumothorax or pleural effusion is well known [1, 2]. Talc incites granulomatous inflammation and causes pleural adhesions within 24h of the procedure. These changes evolve into a more collagenous response after a few weeks and leads to talc granuloma formation. However, after a few months, the reaction usually leads to pleural fibrosis [3, 4].

#### Clinical Perspective

Pleural fibrosis post talc pleurodesis can be seen on CT and should not be confused with other conditions, such as pleural plaques from asbestos exposure or malignant pleural mesothelioma or metastasis. Murray et al. [5] described variable degrees of pleural thickening and nodularity with residual pleural effusion, most often loculated and located in the posterior portion of the pleural space.

#### Imaging Perspective

Talc deposits present as focal areas of high attenuation (320 H). The first report of high FDG uptake after talc

pleurodesis was by Murray et al. [6]. Other studies have since described such findings for up to 5 years after talc pleurodesis [7-10]. If FDG-PET is performed soon after the procedure, pleural uptake can be normal and then increase with subsequent exams [8-10]. Clinicians should be aware of this possibility. Follow-up of hypermetabolic pleural lesions attributed to talc pleurodesis is important for the detection of new pleural lesions.

## Outcome

Correlation between FDG-PET and CT scan images is necessary in order to compare the areas of talc deposits to regions of increased FDG uptake [10]. In patients with increased pleural uptake, monitoring the stability of lesions with increased activity is also important in order to detect new pleural lesions such as metastases or neoplastic evolution. In patients with significant asbestos exposure who are at risk for malignant mesothelioma, diagnostic tools such as transthoracic or thoracoscopic biopsy should be undertaken, especially if they present significant chest-wall pain. However, in patients with no clear asbestos exposure, radiological follow-up could be the initial first step, with a more aggressive approach for progressive lesions.

## Teaching Points

Talc pleurodesis induces a granulomatous reaction that can last more than 5 years. This can result in high FDG uptake and hypermetabolism. Clinicians should be aware of this possibility and question patients about past pleural procedures. Follow-up of hypermetabolic pleural lesions attributed to talc pleurodesis is important for the detection of new pleural lesions.

**Differential Diagnosis List:** Hyper-metabolic pleural nodules attributed to talc pleurodesis, Pleural metastases, Mesothelioma

**Final Diagnosis:** Hyper-metabolic pleural nodules attributed to talc pleurodesis

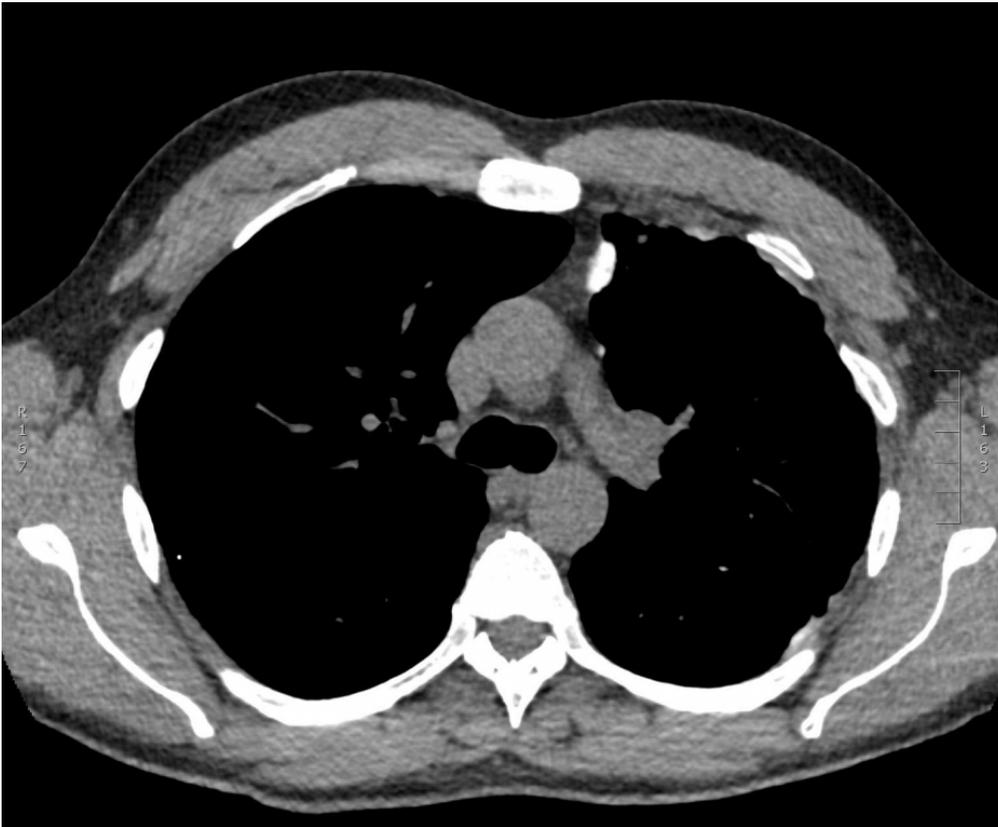
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# Figure 1

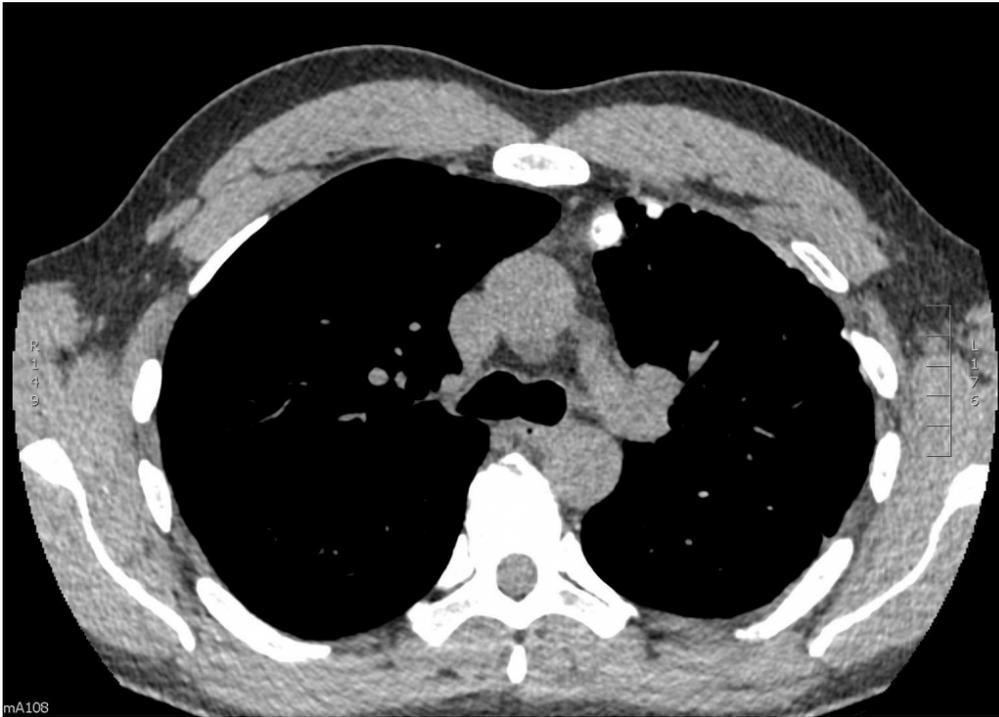
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**Description:** Dense nodular pleural thickening is seen along the left upper lobe after 12 months of pleurodesis. **Origin:** Harefield hospital, Department of Radiology, London UK

## Figure 2

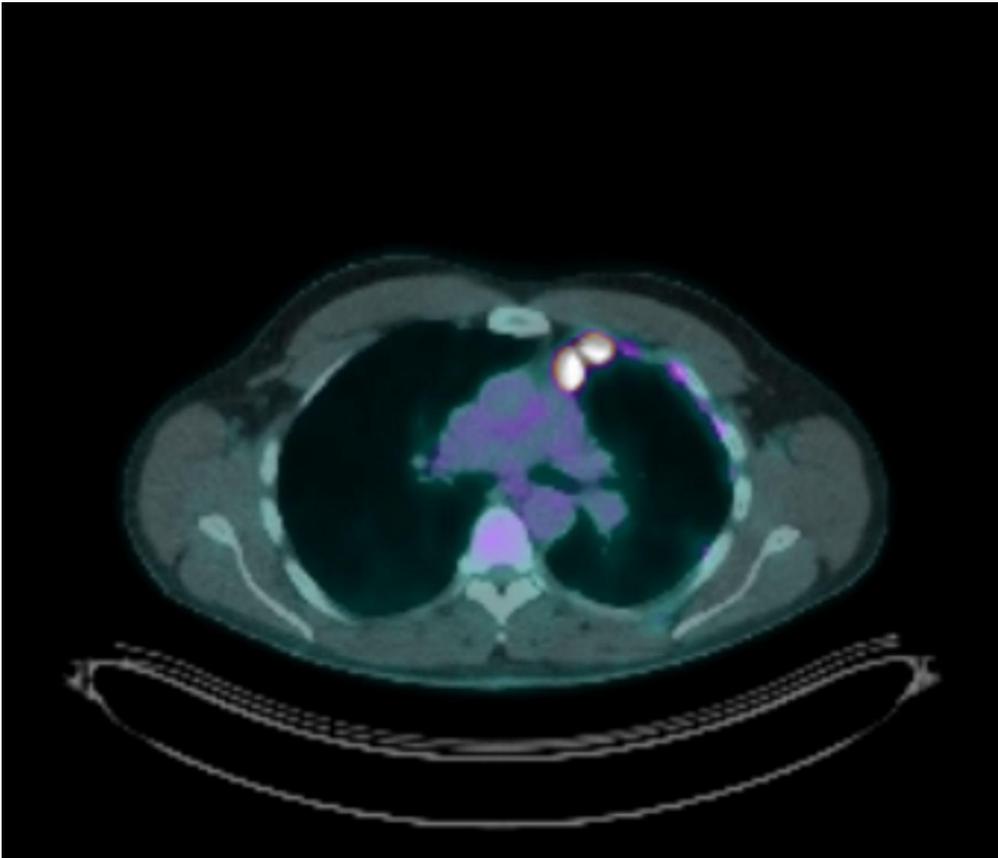
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**Description:** Increased nodular pleural thickening was seen four years after the baseline scan. **Origin:** Department of Radiology, Harefield hospital, London, UK

**Figure 3**

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**Description:** The nodular pleural thickening showed high uptake on PET (SUV 30). **Origin:** Department of Radiology, Harefield hospital, London, UK