Case 14510

Eurorad

Pleural synovial sarcoma

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ISSN: 1563-4086
Section: Chest imaging
Area of Interest: Lung Mediastinum Respiratory system
Salivary glands
Procedure: Diagnostic procedure
Procedure: Biopsy
Imaging Technique: CT
Imaging Technique: Percutaneous
Special Focus: Neoplasia Case Type: Clinical Cases
Authors: Caroline D Lu1 , BS, Susan Taylor, DO1 , Supriya Gupta MD 1, Ravindra B Kolhe MD 2 , Jayanth H Keshavamurthy MD 1.
Patient: 33 years, female

Clinical History:

A 33-year-old Caucasian female presented with acute shortness of breath and cough. Patient had a renal transplant 9 years prior and was on immunosuppressants for many years. Following biopsy and pathological confirmation of synovial sarcoma, she underwent a left lung wedge resection and radiation therapy. She is doing well one year post-radiation.

Imaging Findings:

Radiographs and CT examinations of the thorax without contrast were obtained. Radiographs showed an ipsilateral left pleural effusion with round homogenous opacity in left suprahilar region (see Fig. 1). The mass had sharply marginated borders with a lobulated, ovoid contour. CT also showed a left upper lobe posterior, suprahilar, lobulated soft tissue density measuring approximately 4.3 X 2.7 x 3.8 cm (see Fig. 2). Due to underlying renal insufficiency, no contrast was given.

Discussion:

Synovial sarcomas are rare soft tissue malignancies mostly affecting the large joints of the extremities; other locations include the chest wall, mediastinum, pleura, or heart [1]. Pleural synovial sarcoma (PSS) is a subtype comprising only 0.1%-0.5% of primary lung malignancies [2].

PSSs typically occur in adolescents and adults between the ages of 15 and 40 years without sex predilection. Symptoms can include dyspnoea, chest pain, and cough. The histogenesis of PSS is uncertain, though they are hypothesised to arise from primitive pluripotent mesenchyme and can differentiate into spindle and/or epithelial cells [2, 3]. Many subtypes exist, including liposarcoma, chondrosarcoma, osteosarcoma, and malignant schwannoma [2]. PSS was only first described in literature in 2009. Detailed history, imaging, histology, immunochemistry, and cytogenetics are useful for accurate diagnosis. It is important to distinguish PSS from histologically similar spindle cell tumours since they are often mistaken for malignant mesothelioma [3], but PSS is aggressive with a high rate of

recurrence [1].

PSS has sharp borders with round or lobulated contours [2]. On chest radiographs, PSS is homogenous, pleural-based soft-tissue mass, usually without calcifications, cavitation, or associated lymphadenopathy [4]. It is most often peripheral with ipsilateral pleural effusion [4]. On CT and MR, PSS heterogeneously enhances with nodular soft-tissue elements and occasional septa; the enhancement pattern is secondary to haemorrhage and necrosis [5]. It occasionally has thin rim enhancement. PSS is isointense to surrounding musculature on T1-weighted sequences [5] with intermediate to high signal intensity on T2-weighted sequences [5, 2]. Fluid-fluid levels can be seen on T1 and T2-weighted sequences due to haemorrhage [2]. Good history and clinical evaluation are necessary to rule out other malignancies like fibrosarcoma, mesothelioma, and leimoyosarcoma as PSS is difficult to diagnose on imaging [2]. Intravenous contrast helps to characterise more cystic PSS from other malignancies [5].

Treatment includes chemotherapy and radiation therapy, although resection is most curative [2, 1]. Synovial sarcomas are extremely sensitive to ifosfamide-based chemotherapy with a 5-year survival rate up to 60% [2]. Although the prognosis is poor in PSS [4], more targeted chemotherapy to a t(X;18)(p11.2;q11.2) translocation in 80-90% of these tumours and specific fusion proteins may improve prognosis [2, 3].

Our case emphasises the importance of synovial sarcomas as a possible primary pleural malignancy, especially ina young patient. It is important to assess for underlying malignancy in settings of unilateral pleural effusion, especially in immunocompromised patients.

Differential Diagnosis List: Pleural synovial sarcoma, Mesothelioma, Malignant fibrous histiocytomas, Carcinosarcoma, Adenocarcinoma

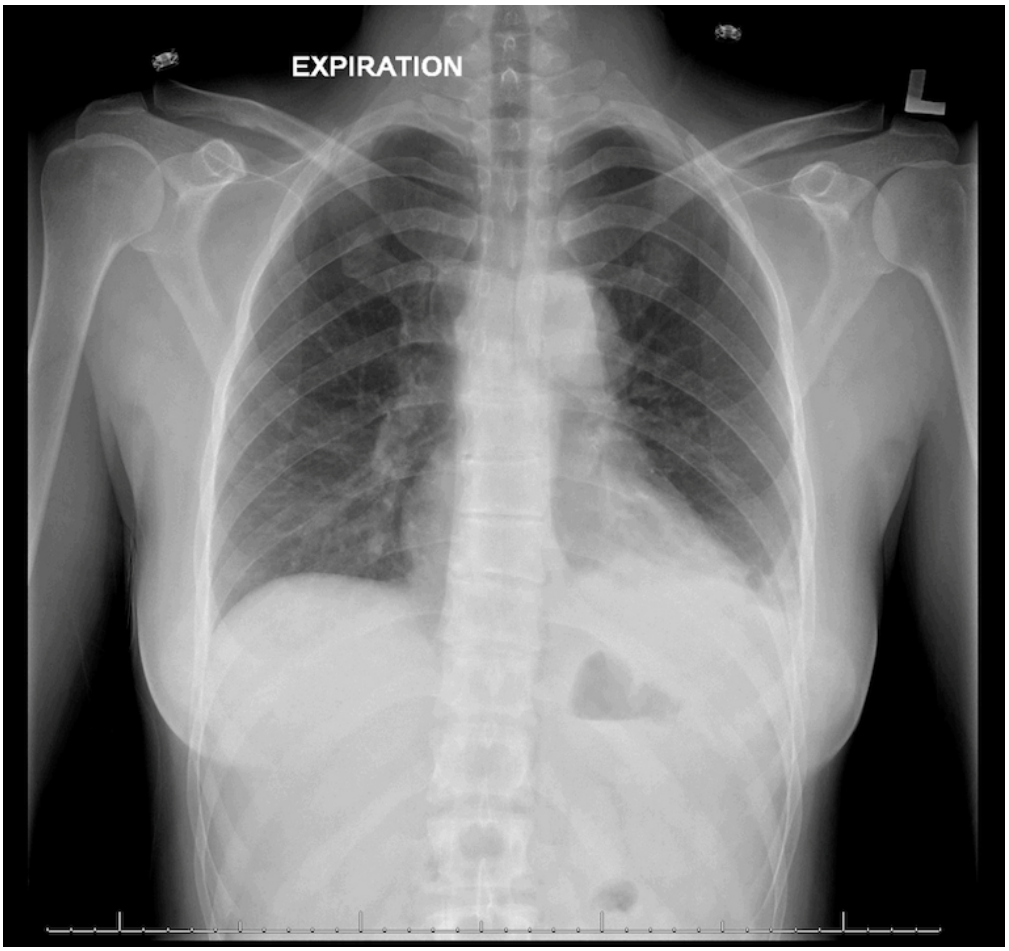
Final Diagnosis: Pleural synovial sarcoma

References:

Ng, S et al. (2003) Primary pleural synovial sarcoma: a case report and review of literature. Atch Pathol Lab Med 2003; 127:85-90 (PMID: 12521374)
Harisanker, CN et al (2015) Fluoro deoxyglucose positron emission tomography-computerized tomography in primary staging and response assessment of a rare case of primary pleural synovial sarcoma. Indian Journal of Nuclear Medicine 2015 Jan-Mar; 30(1):62-64 (PMID: 25589810)
Woo, W et al (2014) Primary synovial sarcoma of the lung: can hemothorax be first manifestation?. Journal of Thoracic Disease 2014;6(12):E249-E251 (PMID: 4283313)
Frazier, A et al (2006) From the archives of AFIP: pleuropulmonary synovial sarcoma. RadioGraphics 2006;26:923-940 (PMID: 16702463)
Devleena, Bansal et al (2014) Primary synovial sarcoma of lung. Lung India 2014;31:277-9 (PMID:25125819)

Figure 1

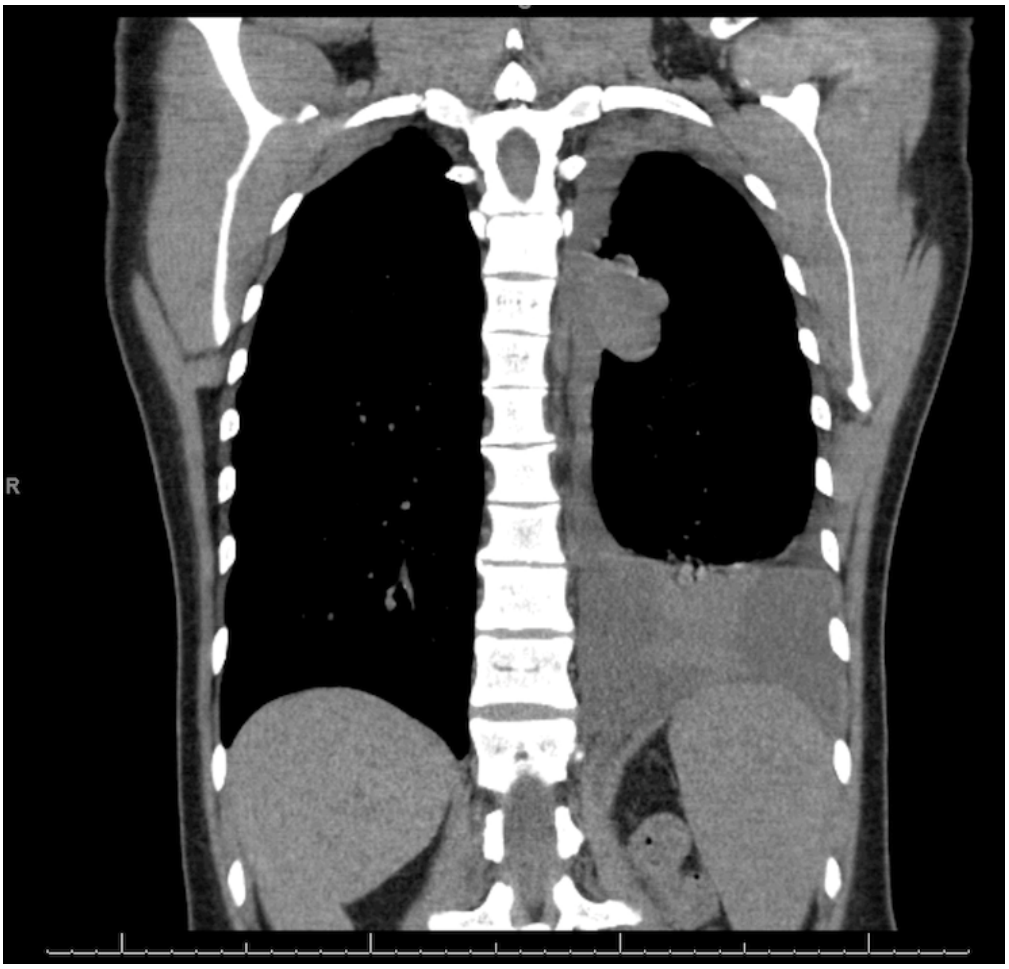
a



Description: Expiratory chest radiograph demonstrates a moderate to large left pleural effusion with superimposed consolidation, initially interpreted as pneumonia with parapneumonic effusion. There is also a rounded opacity in the left suprahilar region, concerning for mass. **Origin:** J Keshavamurthy, Department of Radiology, Augusta University, Augusta, Georgia

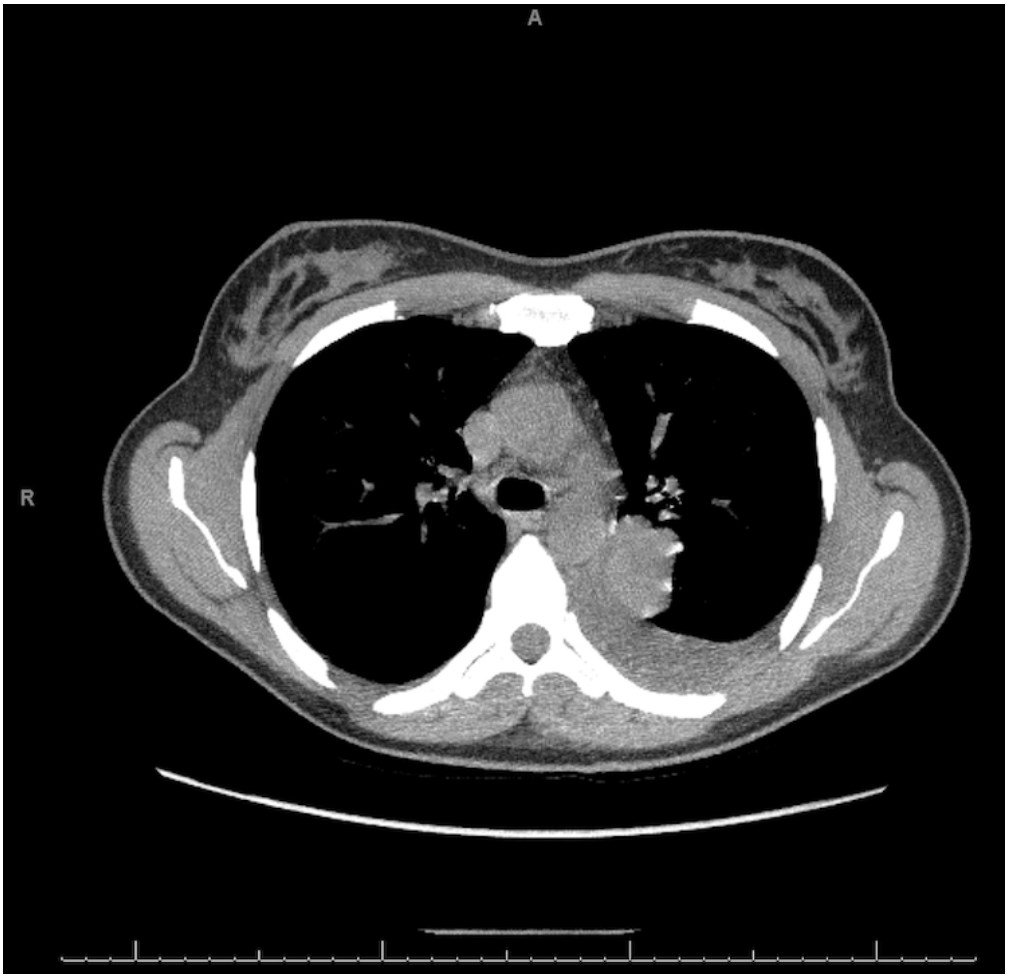
Figure 2

a



Description: Coronal (A) and axial (b) non-contrasted chest CT images demonstrate a rounded posterior mediastinal mass with associated left pleural effusion and left lower lobe atelectasis. **Origin:** J Keshavamurthy, Department of Radiology, Augusta University, Augusta, Georgia

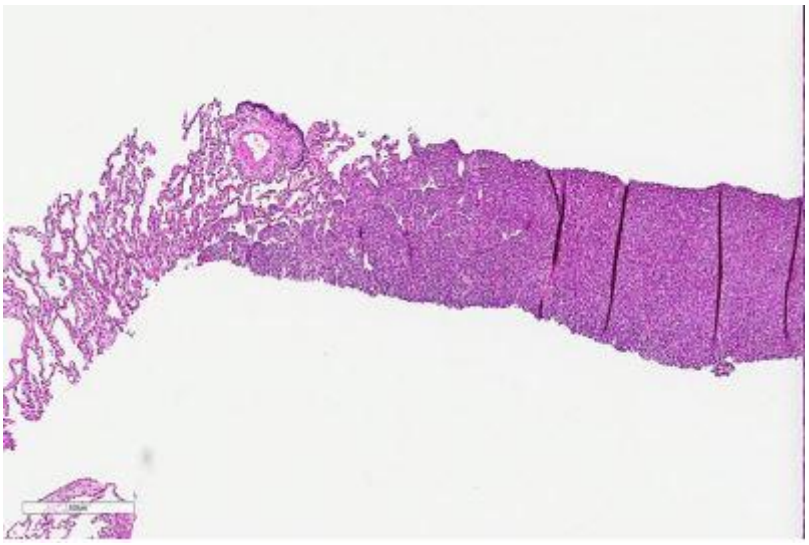
b



Description: Coronal (A) and axial (b) non-contrasted chest CT images demonstrate a rounded posterior mediastinal mass with associated left pleural effusion and left lower lobe atelectasis. **Origin:** J Keshavamurthy, Department of Radiology, Augusta University, Augusta, Georgia

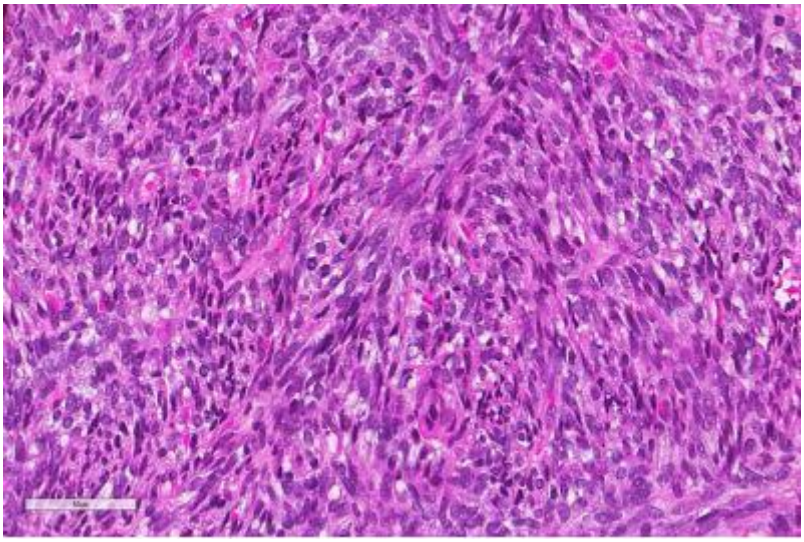
Figure 3

a



Description: 4X H&E images of pleural synovial sarcoma. Histologically, on the scanning power the lesion shows alveolar ling tissue with the sarcoma. **Origin:** Augusta University, Augusta , Georgia, USA

b



Description: 20X H&E images of pleural synovial sarcoma. Histologically, on higher power the lesion show highly cellular spindle cells areas that are densely packed into an interwoven herringbone pattern. **Origin:** Augusta University, Augusta , Georgia, USA