ARCHIVES OF HELLENIC MEDICINE: ISSN 11-05-3992

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Medical Imaging Quiz – Case 82

ARCHIVES OF HELLENIC MEDICINE 2025, 42(5):716–717
ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2025, 42(5):716–717

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A 45-year-old male patient presented with cough and sensation of chest heaviness and dyspnea for the past three months. The patient had no significant past medical history, and systemic symptoms such as fever, weight loss, or night sweats were absent. Immediately, a chest X-ray was performed revealing pathological findings. Subsequently, a computed tomography (CT) scan and a magnetic resonance imaging (MRI) were conducted, further confirming the pathological condition (figures 1, 2). Diagnosis was confirmed with a CT-guided fine needle biopsy.

Comments

Synovial sarcoma is a rare mesenchymal malignancy, typically present in adolescents and young adults (15–40 years of age) accounting for approximately 5–10% of soft tissue sarcomas, with thoracic involvement being uncommon. There may be a mild male predilection (M:F = 1.2:1). They account for 2.5–10% of all soft tissue sarcoma. While typically arising in the extremities, primary thoracic synovial sarcoma can involve the pleura, lung, mediastinum, or chest wall. Monophasic variants consist only of spindle cells, distinguishing them from biphasic tumours, which contain both epithelial and spindle cell components.

Although hematogenous spread to the lungs is the most common metastatic pattern, lymph node involvement, is relatively rare but clinically significant. 18-Fluoro-deoxyglucose positron emission tomography (FDG-PET)/CT plays a crucial role in staging and treatment planning, particularly in assessing nodal and distant metastases. Initial contrast-enhanced CT of the chest revealed a well-defined, lobulated soft tissue mass in the thoracic cavity. The lesion demonstrated heterogeneous enhancement with areas of necrosis, but no significant calcifications. No evidence of direct invasion into adjacent structures was observed.

Subsequent MRI of the thorax was performed for further characterization. The mass exhibited: (a) T1-weighted imaging: Intermediate signal intensity. (b) T2-weighted imaging: Heterogeneous hyperintensity with the presence of the "triple sign", indi-

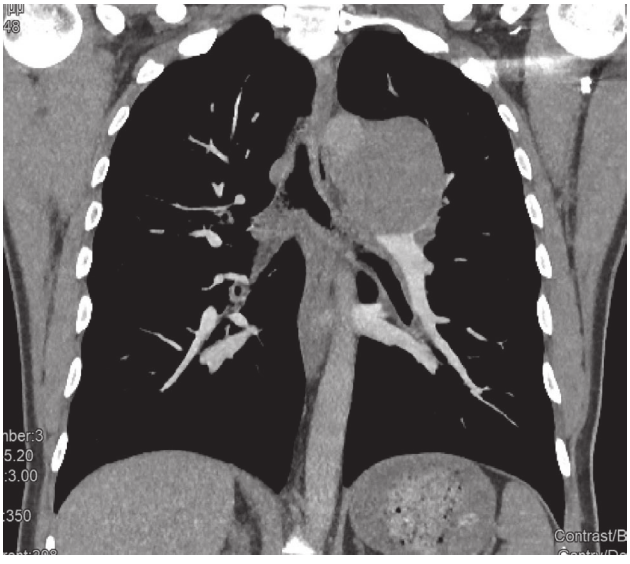

Figure 1. Coronal contrast-enhanced computed tomography (CT) scan of the chest showing a large heterogeneous mass in the right lung, with extension into the mediastinum and associated bronchial compression.

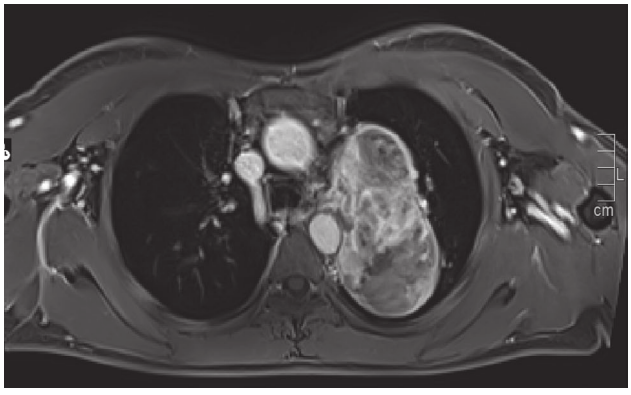

Figure 2. Axial T1-weighted magnetic resonance imaging (MRI) with contrast demonstrating a hyperintense, heterogeneous mass in the thoracic cavity, with increased signal suggestive of high vascularity or necrotic components.

cating a mix of hemorrhage, necrosis, and viable tumour tissue. (c) Post-contrast imaging: Marked heterogeneous enhancement and (d) diffusion-weighted imaging (DWI): Restricted diffusion with low apparent diffusion coefficient (ADC) values, consistent with high cellularity.

A CT-guided core biopsy of the thoracic mass confirmed the diagnosis of monophasic synovial sarcoma. Histopathological examination revealed densely packed spindle cells with scant cytoplasm and a fascicular growth pattern. Immunohistochemical staining was positive for TLE1, BCL2, and EMA, while cytokeratin expression was focal. Molecular analysis confirmed the presence of the SS18-SSX fusion gene (t(X;18)), confirming the diagnosis.

This case highlights the importance of a multimodal imaging approach in the diagnosis and staging of thoracic synovial sarcoma. MRI aids in local tumor characterization, PET/CT is essential for detecting metastatic disease, and molecular testing confirms the diagnosis. Given the aggressive nature of the disease, a multidisciplinary approach involving surgery, chemotherapy, and radiotherapy is crucial for optimal management.

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Diagnosis: *Thoracic monophasic synovial sarcoma*