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Tuberculosis of the manubriosternal joint and concurrent asymptomatic active pulmonary tuberculosis in a patient presenting with a chest wall mass ☆

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ABSTRACT

A 62-year-old woman presented to our hospital with an anterior chest wall swelling. Computed tomography (CT) and magnetic resonance imaging showed findings consistent with an infectious arthritis of the manubriosternal joint, and CT images also demonstrated multiple centrilobular nodules in both lungs, suggesting an infectious bronchiolitis. A CT-guided fine needle aspiration of a presternal mass yielded growth of *Mycobacterium tuberculosis*. Bronchoalveolar lavage confirmed an active pulmonary tuberculosis. Septic arthritis of the manubriosternal joint is exceedingly rare.

1. Introduction

Septic arthritis of the manubriosternal joint is extremely rare, and the scientific literature concerning it is sparse, with only about 11 cases reported in the peer-reviewed journals in our literature review (a MEDLINE search using the keywords *manubriosternal* and *septic arthritis*), with *Staphylococcus aureus* involved in most of the cases [1]. Tuberculous osteomyelitis of the sternum is also very rare, even in countries where tuberculosis is endemic, and it accounts for less than 1% of cases of musculoskeletal tuberculosis [2]. Tuberculous involvement of the sternum may be seen as a late complication of pulmonary tuberculosis or as a reactivation of latent foci formed during hematogenous or lymphatic dissemination of primary tuberculosis. Unlike pyogenic sternal infections, which are characterized by a more rapid and fulminant course, tuberculous osteomyelitis of the sternum usually presents insidiously as swelling and pain over the bone. The body of the sternum is most commonly involved, followed by the manubrium [3].

We describe the case of a previously healthy 62-year-old woman who presented to our hospital with an anterior chest wall swelling and mild pain of 2 months duration. Thoracic computed tomography (CT) and magnetic resonance (MR) imaging showed findings consistent with an infectious arthritis of the manubriosternal joint with soft-tissue masses centered on the joint. MR imaging better depicted bone marrow changes on both sides of the manubriosternal joint. Interestingly, thoracic CT images also demonstrated multiple centrilobular nodules and tree-in-bud opacities in both lungs, suggesting an infectious bronchiolitis. A CT-guided fine needle aspiration of the presternal soft-tissue component demonstrated the presence of caseated granulomas, and a culture of the aspirated material yielded growth of *Mycobacterium tuberculosis*. Bronchoscopy and bronchoalveolar lavage confirmed an active pulmonary tuberculosis. To the best of our knowledge, tuberculosis of the manubriosternal joint has not been previously described in the scientific literature.

2. Case report

A 62-year-old woman presented to our hospital with a 2-month history of chest swelling and presternal discomfort. Her past medical history was noncontributory, and she denied trauma or contact with tuberculosis. Physical examination only demonstrated a 4×6-cm presternal swelling. Pulmonary auscultation was normal, and neck and axillary palpation revealed no abnormal lymph nodes. Laboratory examinations were unremarkable.

A lateral sternal radiography only showed presternal soft-tissue swelling but no cortical sclerosis or bone defects. The manubriosternal joint was not widened. A thoracic CT demonstrated a more prominent soft-tissue presternal mass centered on the manubriosternal joint. A smaller posterior collection, also centered on the manubriosternal joint, was also seen. The anterior and posterior bone cortex of the

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Fig. 1. Sagittal reformat image of the sternum in mediastinal window demonstrates a more prominent soft-tissue presternal mass (long arrow) and a smaller posterior mass (short arrow) centered on the manubriosternal joint.

sternum was not thickened or permeated. The only osseous change on CT (just seen with bone window settings) was a subtle sclerosis of the juxtaarticular bone on both sides of the manubriosternal joint (Fig. 1). In light of the CT findings, an MR imaging of the anterior chest wall was performed. On the MR images, the manubriosternal joint space was not widened, but the space was hypointense on T1-weighted images and mildly hyperintense on T2-weighted images. The anterior and posterior soft-tissue masses showed low signal intensity on T1-weighted images. The bone marrow signal intensity of the juxtaarticular bone (the distal manubrium and proximal body of the sternum) was markedly decreased on T1-weighted MR images. Both the juxtaarticular bone marrow and the soft-tissue masses exhibited high signal intensity on T2-weighted MR images. Gadolinium-enhanced T1-weighted MR images revealed intense enhancement of the juxtaarticular bone marrow and of the peristernal soft-tissue masses. The presternal soft-tissue mass was largely necrotic, and its central necrotic part did not enhance (Fig. 2). Bone scintigraphy (Fig. 3) showed a nonspecific intense tracer uptake in the sternum.

Interestingly, review of the thoracic CT images (lung windowing) also demonstrated multiple centrilobular nodules and tree-in-bud opacities in both lungs, suggesting an infectious bronchiolitis (Fig. 4). A CT-guided fine needle aspiration of the presternal abscess demonstrated the presence of caseated granulomas and acid-fast bacilli, and a culture of the aspirated material yielded growth of *M. tuberculosis* by the fifth week. Bronchoscopy and bronchoalveolar lavage confirmed an active pulmonary tuberculosis. Surgical drainage of the presternal abscess was performed. The patient was also started on antituberculous treatment with isoniazid, rifampin, ethambutol, and pyrazinamide. After 8 weeks of treatment, the sternal swelling had reduced considerably in size, the presternal discomfort had disappeared, and a follow-up chest CT performed 12 weeks later showed almost complete

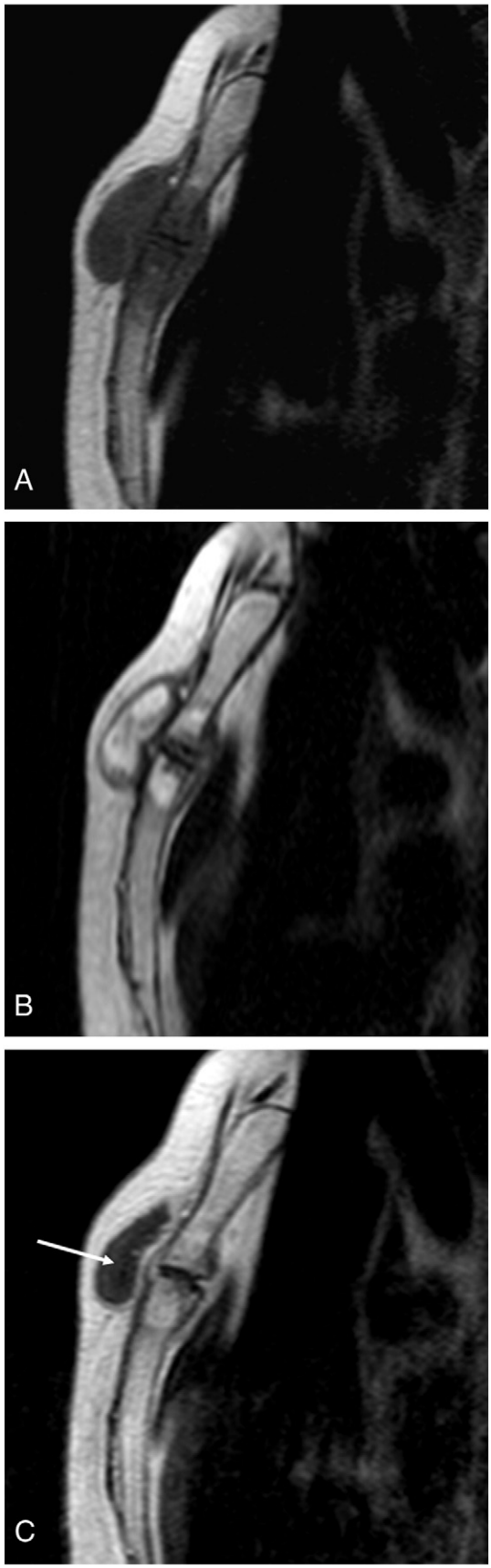

Fig. 2. T1-weighted (A) MR sagittal image shows low signal intensity of the anterior and posterior soft-tissue masses as well as marked hypointensity of the juxtaarticular bone marrow. T2-weighted (B) MR image of both the soft-tissue masses and the juxtaarticular bone marrow exhibited high signal intensity. Gadolinium-enhanced MR image (C) shows intense enhancement of the juxtaarticular bone marrow and of the peristernal soft-tissue masses (with a nonenhancing central necrotic area in the presternal mass, arrow).