Tuberculous Pseudotumor of the Proximal End of the Fibula

A Case Report

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Abstract

A 72-year-old Asian woman who had immigrated from Vietnam 10 years ago presented with a soft tissue mass around the proximal fibula. Conventional radiographs and magnetic resonance imaging demonstrated a destructive lesion of the head of the fibula with an intact superior tibiofibular joint and an abscess surrounding the destroyed bone. Histopathology obtained by a CT-guided needle biopsy revealed necrotizing epithelioid granulomata without demonstrating acid-fast bacilli. However, culture grew Mycobacterium tuberculosis. When tuberculosis affects the end of a long tubular bone, the adjacent synovial joint is usually involved. Cases where joint involvement does not occur are extremely rare and unusual. We report such a case.

A seventy-year-old Asian woman who immigrated from Vietnam to the United States ten years previously presented with pain and swelling of the lateral aspect of left knee of four weeks duration. She had injured the same knee in an accident 45 years earlier. She received no treatment at that time and had regained full range of motion after several months. She had no pulmonary symptoms. On examination, she was afebrile, well nourished, and in no distress. There was a fluctuant, non-mobile, tender, soft tissue mass over the proximal end of fibula. The overlying skin was normal, without scars, rash, or sinuses. There was 20° loss of flexion, but no other loss of motion. The peroneal artery and nerve were normal. Plain radiography showed lytic lesion involving the head of the fibula, breaking through the cortex and extending into the soft tissue. There was a questionable pathological fracture at the neck of fibula (Fig. 1). Depression of medial tibial plateau with sclerosis was consistent with the history of an old fracture. The provisional diagnosis was plasmacytoma or metastasis. Magnetic resonance imaging, post IV gadopentetate dimeglumine, demonstrated a destructive lesion of the head of the fibula surrounded by a fluid collection with enhancing rim, raising the possibility of an abscess (Figs. 2, 3, and 4). The erythrocyte sedimentation rate was high at 64 mm hr⁻¹ (normal 0-10 mm h⁻¹). The white blood cell count was 4 x 10⁹ L⁻¹ (normal 3.8 to 10.8 x 10⁹ L⁻¹). There was anemia; Hb 8.2 g dL⁻¹ (normal 14 to 18 g dL⁻¹). The fasting blood sugar level was 120 mg dL⁻¹ (normal 110 mg dL⁻¹). Serum alkaline phosphatase measured 170 UL⁻¹ (normal 30-115 UL⁻¹). A tuberculin test was not done. Chest radiograph was normal and previous abdominal CT was unremarkable.

CT-guided needle biopsy was taken from the femorotibial joint and the lesion of the fibula. Eleven milliliters of turbid serous fluid were aspirated from the abscess surrounding the fibular lesion.

Histology of the tissue in the fibular lesion showed caseous necrotizing epithelioid granulomata with no microorganisms. Mycobacterium tuberculosis grew on culture from this specimen and from the fluid aspirated. Histology from the femorotibial joint did not show caseous granulomata and the culture was sterile.

The patient was given six months treatment of isoniazid (300 mg), rifampin (300 mg), pyrazinamide (500 mg), and pyridoxine (50 mg) daily, after which she had full range of motion of her knee and resolution of the soft tissue swelling.
Discussion

After the introduction of antituberculous drugs, the prevalence of tuberculosis in Europe and North America declined considerably. However, since 1986 its prevalence in the United States has been rising mostly because of pulmonary tuberculosis, but there has been an associated rise in the number of adults and children who have musculoskeletal tuberculosis.\textsuperscript{1-3} Although the human immunosuppressive virus remains the leading known risk factor for activation of latent tuberculosis infection, other factors contributing to the increased rate of tuberculosis are an aging population and the emergence of drug-resistant strains of Mycobacterium.\textsuperscript{4} There has been an increase in the number of patients who have tuberculosis in North America not associated with acquired immune deficiency syndrome.\textsuperscript{5}

Tuberculosis is usually transmitted to bone through an active or dormant focus in the lungs or genitourinary tract and in about 30% of musculoskeletal tuberculosis, the chest is positive for tuberculosis.\textsuperscript{3}

The typical radiographic appearances of osteoarticular tuberculosis in the extremities, the second most common form after tuberculous spondylitis, are metaphyseal or epiphyseal lesions that lack sclerosis, sequestra, or periosteal bone reaction. The adjacent joint space is involved. The normal sharply defined subarticular cortical outline becomes blurred, or even invisible. Secondary marginal erosions follow. In due course, destruction of the articular cartilage leads to narrowing of the joint space. Marginal erosions are especially characteristic in tight joints that lack mobility, such as the sacroiliac or weightbearing joints (for example, hips, knees, and ankles). The joints of the upper extremity are less commonly affected than those of the lower extremity.\textsuperscript{6-9}

With the increase in musculoskeletal tuberculosis in North America the pattern of disease has changed. The typical radiographic appearance is not always encountered, particularly among non-white patients.\textsuperscript{6-10} Abdelwahab and colleagues described two cases of tuberculosis of the proximal tibia causing bone destruction and marginal sclerosis without involvement of the knee joint.\textsuperscript{9,11} Such solitary lytic lesions involving the subarticular region of large joints may mimic bone neoplasms and may be called “tuberculous pseudotumors” or “tumor-like tuberculous granulomata.”

Our patient was a non-white woman of 70. The lesion in the head of the fibula broke through the cortex and had surrounding cold abscess. The adjacent superior tibiofibular joint and the adjacent proximal tibia were not involved. In view of the age of the patient, the differential diagnosis included metas-

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\caption{Anteroposterior view of the left knee with slight internal rotation showing osteolysis in head of fibula, cortical destruction and soft tissue involvement, and questionable pathological fracture at the fibular neck. The opposing tibial cortex is intact. The femorotibial malalignment and depression and sclerosis of the medial tibial plateau is attributed to the trauma sustained 45 years earlier. Note the scattered fine calcifications in the soft tissue lateral to the proximal fibula, the site of the cold abscess.}
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\caption{A, Axial T1-weighted image (TR 400/TE 12) of the proximal end of fibula. B, Coronal T1-weighted image (TR 533/TE 12) of the proximal end of fibula. Both images demonstrate destruction of the head of the fibula which has an isointense signal with that of the surrounding muscles. Note the normal marrow signal intensity of the proximal tibia adjacent to the lesion.}
\end{figure}
tasis, plasmacytoma, lymphoma, fibrosarcoma, or malignant fibrous histiocytoma. Although there is no pathognomonic finding on MRI that differentiates tuberculosis from other skeletal infections or from neoplasm, MRI is the best test for soft tissue masses. Magnetic resonance imaging in this patient was helpful as it demonstrated an abscess around the bone lesion, suggesting “tuberculous pseudotumor.”

This case is rare because of the involvement of the head of fibula that destroyed cortex but spared the adjacent synovial joint, mimicking a neoplastic rather than infectious process. Secondly, the patient had no pulmonary or other extra-pulmonary tuberculosis. Additionally, although monostotic tuberculous pseudotumors have been reported in the proximal end of the tibia,9,11 we know of no case affecting the end of fibula.

Necrotizing granulomata are strong presumptive evidence of tuberculosis. Confirmation requires the demonstration of acid-fast bacilli by special stains or growth of *Mycobacterium tuberculosis* on culture. Both apply to this case.

Tuberculosis remains a major public health problem. It is axiomatic that before the disease can be treated it must be diagnosed, and before this is possible, it must be considered as part of the differential diagnosis. Since tuberculous lesions may be mistaken for neoplasm, a small amount of fresh tissue should always be sent for culture, even if a clinical diagnosis of a tumor seems likely.

References