

An Unusual Presentation of Subacute Osteomyelitis: A Talus Brodie Abscess With Tendon Involvement

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Abstract

Brodie abscess is a subacute localized osteomyelitis with a presenting report of intermittent pain of long duration.

In this article, we report a case of talus Brodie abscess with tenosynovitis of posterior tibialis and long flexor tendons of the foot. We describe the radiologic and diagnostic features of this osteomyelitis and outline its management and prognosis.

To our knowledge, this is the first report of such a case with this unusual presentation.

Brodie abscess is named after Sir Benjamin Brodie, who was the first to describe this subacute osteomyelitis.¹ He reported an abscess localized in the tibia. This abscess developed without previous acute illness and did not produce clinical signs. The disease is characterized by a localized infection that occurs most often in the long bone of the lower extremities. The presenting symptom is intermittent pain of long duration.²

Radiologically, Brodie abscess usually displays a lytic lesion with a rim of sclerotic bone, though its appearance varies.² Bone scan is highly sensitive in early detection. Plain radiographs and computed tomography (CT) may be normal in the early stages. CT is usually positive almost 4 weeks after onset of active infection.³

Brodie abscess is diagnosed on the basis of clinical history and radiologic findings,⁴ though bacteriologic investigations help in making the definitive diagnosis.

Management is controversial. Options are a conservative approach (ie, antibiotic therapy alone), a surgical approach, and a combined approach. Some authors prefer antibiotic therapy in most cases,^{5,6} but most authors prefer the combined antibiotic–surgical approach because it allows them to exclude tumors and tumor–like conditions and remove the lesion.^{7,8}

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In this article, we report a case of talus Brodie abscess with tenosynovitis of posterior tibialis and long flexor tendons of the foot. The patient provided written informed consent for print and electronic publication of this case report.

CASE REPORT

A 17-year-old male patient visited our clinic with history of left ankle and foot pain and swelling. His reports first started after a minor local trauma 15 months before visiting our clinic. He had been given the erroneous diagnosis of ankle sprain and placed in a below-knee walking cast. Given the patient's lack of clinical improvement, he was then transferred to our center. The swelling progressed gradually after onset of ankle and foot pain. Five months after pain onset, left toe flexion was lost and the condition began to worsen progressively. There was no history of chill or fever. Physical examination revealed swelling of the plantar side of the foot to the proximal portion of the medial malleolus, with no erythema. The patient could not flex his toes. All laboratory measures, including complete blood cell count differential, erythrocyte sedimentation rate, C-reactive protein, Wright test, Coombs-Wright test, and purified protein derivative test, were within normal limits.

Plain anteroposterior and lateral radiographs showed a sclerotic lesion in the talus (Figures 1A, 1B). An irregular cavity within the involved talus was confirmed with



Figure 1. Plain anteroposterior (A) and lateral radiographs (B) show lytic lesion in body of left talus with fine sclerotic border.

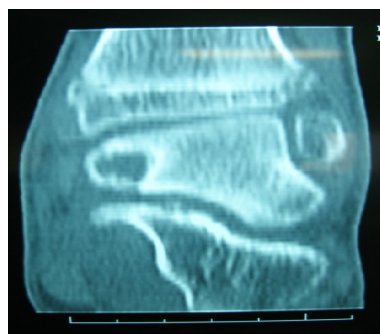


Figure 2. Coronal computed tomography of left ankle shows well-defined cavity with sclerotic margin.

CT (Figure 2). MRI showed severe inflammation of the talar bone (Figure 3), toe flexor, and posterior tibialis tendon sheath (Figure 4). Bone scan showed increased uptake in the involved areas (Figure 5).

A probable diagnosis was made: toe flexor and posterior tibialis tenosynovitis caused by talus abscess. Surgery was performed with a posteromedial incision under general anesthesia. The posterior tibialis artery and nerve were explored and protected. Then the severely swollen toe flexor tendons and posterior tibialis tendon sheath were exposed and retracted. On the posteromedial aspect of the talus, a small orifice containing granulation tissues and minimal pus was found (Figure 6). The orifice was made slightly larger to permit thorough curettage and irrigation. Several samples obtained from the talar lesion and the 1×1-cm sample of posterior tibialis and toe flexor tendon sheaths were sent for bacteria, tuberculosis culture, and histopathologic assessment. No aggressive tenosynovectomy was done. A 2-week course of antibiotic therapy (vancomycin 750 mg twice daily, amikacin 300 mg three times daily) was initiated after surgery. That therapy was followed by a 4-week course of cephalexin. Histologic examination showed tenosynovitis and Brodie abscess of talus. The intraoperative sample was positive for *Staphylococcus aureus*. The culture

study showed sensitivity to vancomycin and amikacin.

Plain anteroposterior and lateral radiographs were obtained on a regular basis for 1 year after surgery and then on a variable basis. Two months after surgery, the patient had no swelling and was pain-free. Dr. Yazdi examined the patient at all visits during the 20-month follow-up. Particular attention was paid to any swelling or tenderness at the lesion site.

At most recent follow-up, there was no infection recurrence clinically or radiographically, and toe flexor function and posterior tibialis tendon function were good.

DISCUSSION

Brodie abscess, a subacute osteomyelitis in the long bone of the lower extremities, seldom involves the tarsal bones, particularly in the calcaneus.³ Brodie abscess is extremely rare in adults. Although the pathogenesis of the disease is not well understood, presumably the benign nature of the infection reflects the low virulence of the causative pathogen, the host resistance, or both.⁸⁻¹⁰ As Brodie abscess has an insidious onset and mild signs and symptoms with no systemic reaction or specific noninvasive laboratory tests, it is difficult to diagnose. Differential diagnoses include Langerhans cell histiocytosis, osteoid osteoma, intracortical hemangioma, ossifying fibroma, and other infections, such as tuberculosis, resulting in delayed diagnosis and management.^{2,9,11-13}

Diagnosis is often based on radiologic and bacteriologic investigations.⁴ In our patient's case however, the imaging features were not specific enough to differentiate Brodie abscess and other diagnoses.

To our knowledge, this is the first report of a case of talus Brodie abscess with tenosynovitis of toe flexor tendons and posterior tibialis tendon. In this special case, we consider that the infection originated in the talus and spread to adjacent structures, as the patient's primary report was pain, with swelling of the sole and ankle gradually progressing.

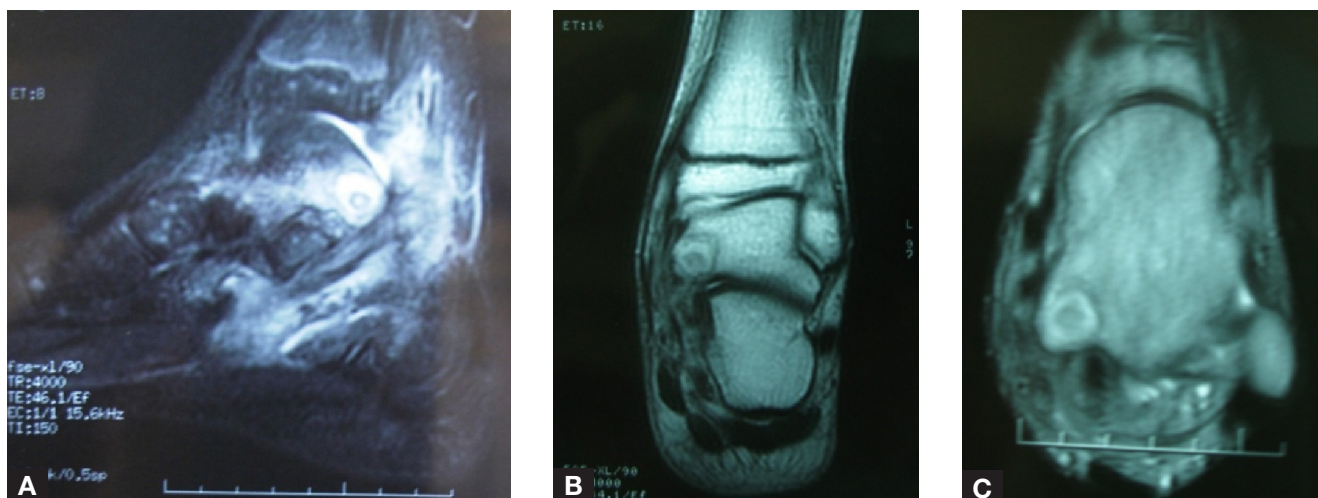


Figure 3. Sagittal (A), coronal (B), and axial (C) magnetic resonance imaging shows lesion in posteromedial aspect of talus.



Figure 4. Sagittal magnetic resonance imaging shows signal changes in posterior tibialis and toe flexor tendon sheaths in favor of tenosynovitis.

As such an infection in the foot is rare, there are few reports regarding its clinical aspects, long-term outcomes, and appropriate management. Mean delay from symptom onset to diagnosis was reported.¹ This delay can be longer in the case of Brodie abscess of tarsal bone, as it is usually maltreated because of the erroneous diagnosis of ankle sprain.

Organisms of low virulence are thought to cause the lesion. *S aureus* is cultured in 50% of cases, but in 20% of cases the culture is negative.² We believe that thorough excision of the talus lesion combined with antibiotic therapy minus aggressive tenosynovectomy produces excellent clinical result in these cases.

AUTHORS' DISCLOSURE STATEMENT

The authors report no actual or potential conflict of interest in relation to this article.

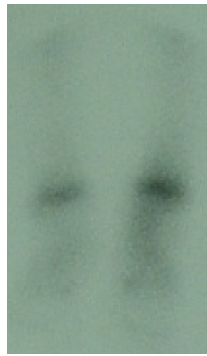


Figure 5. Bone scan of lesion shows increased uptake in involved area.

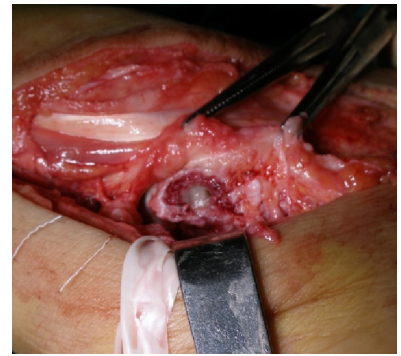


Figure 6. Intraoperative image shows talar lesion with discharge. Tenosynovitis of posterior tendon should also be considered.

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