

Solitary Presentation but Multiple Etiologies in Foot: A Case Series

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Learning Point for this Article:

This case study helps us understand the broader perspective in terms of etiologies and management of cases with similar presentations.

Abstract

Introduction: The swellings of foot are common but the lesions of metatarsals are rare. The purpose is to highlight these four cases which had almost common presentations but had different etiologies.

Case Report: A series of four cases all of which had similar presentation, but different etiologies. One case had foreign body (FB) granuloma, one had tibialis anterior (TA) tendinosis and the other two cases had osteomyelitis, one pyogenic and the other tubercular. All cases underwent curettage and removal of the pathogenic foci, and were diagnosed with tissue biopsies.

Conclusion: Clinical signs in tuberculous (TB) osteomyelitis, pyogenic osteomyelitis, FB granuloma, and tendinosis are generally subtle and lead in most cases to a late diagnosis. In developing countries, where most of the people walk barefoot, FB granuloma due to thorn prick should always be considered as a differential diagnosis. Although rare to find tendinosis of TA, TB osteomyelitis, pyogenic osteomyelitis, and FB granuloma of metatarsals, these conditions should always be considered as differential diagnosis along with tumors.

Keywords: Foreign body granuloma, tendinosis, osteomyelitis, foot.

Introduction:

The lesions of the metatarsals and foot are uncommon. We are discussing these four interesting cases with different etiologies but with similar presentation.

Case Report:

A series of four cases with an average follow-up of 13.5 months (range 12–18 months).

Case 1

A 65-year-old woman from a low socioeconomic background presented with pain and swelling of the right foot for 2 months. There was no history of trauma, fever, chronic cough, or weight loss. There was no history of pulmonary tuberculous (TB) or any Koch's contact. The patient was taking analgesics on and off

as prescribed by a general practitioner. On physical examination, there was a diffuse swelling over the lateral aspect of the dorsum of the midfoot and was associated with tenderness. There was no regional lymphadenopathy. The laboratory values showed haemoglobin of 11 g % and raised erythrocyte sedimentation rate (ESR) of 32 mm/hr. Total leukocyte count was 11,950 cells/cu mm with lymphocytosis (differential leukocyte count- P 32, L 62, E 4, M 2). HIV and hepatitis B virus surface antigen were negative. Foot radiograph and computed tomography (CT) scan showed osteolytic lesion in the bodies of fourth and fifth metatarsal (Fig. 1 and 2). Chest radiograph was normal. The patient underwent curettage which revealed cheesy material. K-wiring of the fifth metatarsal was done and the tissue was sent for histopathological examination. Biopsy of the lesion showed granulomatous lesion with Langhans giant cells. Ziehl–Neelsen staining was negative for

Author's Photo Gallery



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Access this article online

Website:
www.jocr.co.in

DOI:
2250-0685.1044





Figure 1: Tuberculous osteomyelitis of the 5th metatarsal-radiograph.



Figure 2: Tuberculous osteomyelitis of the 5th metatarsal-computed tomography scan.

acid-fast bacilli. At latest follow-up of 12 months, the lesion healed and anti-TB treatment was stopped.

Case 2

A 20-year-old young woman came with complaints of pain in the right foot for 3 months. She also complained of on and off fever. There was neither any history of trauma nor of Koch's contact. On examination, there was a mild swelling over the dorsum of right foot just around the fourth metatarsal. The laboratory values showed- hemoglobin of 12.1 g%, total count of 6710 cells/mm³, differential counts of N30/L66/E1/M3/B0, ESR of 54 mm/hr, and C-reactive protein of 1.2 mg/dl. The radiograph showed a lytic lesion in the head of the fourth metatarsal (Fig. 3) which was also confirmed on magnetic resonance imaging (MRI) (Fig. 4). Curettage of the lesion was done and tissue sample was taken for histopathological examination. The biopsy report was suggestive of chronic osteomyelitis. A sample was sent for pus culture which showed no growth. Broad spectrum antibiotics were given for 6 weeks. At 18-month follow-up, the patient was asymptomatic.

Case 3

A 5-year-old boy presented with pain and swelling of his left foot for 3 months. The child was unable to remember any antecedent



Figure 3: Pyogenic osteomyelitis of the 4th metatarsal-radiograph.



Figure 4: Pyogenic osteomyelitis of the 4th metatarsal-magnetic resonance imaging scan.



Figure 5: Foreign body granuloma-radiograph.

trauma. He was otherwise healthy with a tender mass on dorsolateral aspect of his left foot and thickening and irregularity of the fifth metatarsal. His blood tests were normal except for raised ESR of 30 mm/hr.

Radiograph of the left foot showed an osteolytic lesion of base of the fifth metatarsal with periosteal reaction and soft tissue swelling around it (Fig. 5). MRI was suggestive of osteomyelitis of base of the fifth metatarsal (Fig. 6). Due to inconclusive diagnosis, the child underwent surgery. Intraoperatively, it was found that the dorsolateral aspect of the cortex of the fifth metatarsal was destroyed and replaced by granulation tissue. In the cavity, a thorn measuring about 1 cm was found and removed along with unhealthy granulation tissue. Histopathological examination was suggestive of foreign body (FB) granuloma. Tissue culture showed no growth. At 12-month follow-up, there was a healed lesion and the patient was asymptomatic.

Case 4

60-year-old woman came with complaints of pain and swelling in the left foot over the medial aspect of the mid-foot for 6 months. There was no history of antecedent trauma, fever, and constitutional symptoms. The blood investigations were normal. The patient was regularly taking analgesics for the same complaints. Radiograph revealed no bony pathology, and hence, MRI was done which revealed tibialis anterior (TA) tendinosis with a small split longitudinal tear in the tendon with an intact insertion (Fig. 7). We went ahead and explored the site of pathology and intraoperatively found that the TA tendon was torn which was surrounded by fibrous tissue (Fig. 8). The tendon tear was sutured with vicryl. At latest follow-up of 12 months, patient's symptoms of pain decreased but a mild swelling persisted.



Figure 6: Foreign body granuloma-magnetic resonance imaging scan.





Figure 7: Tibialis anterior tendinosis-magnetic resonance imaging scan.



Figure 8: Tibialis anterior tendinosis- intraoperative.

Discussion:

Osteoarticular involvement in extrapulmonary tuberculosis occurs in around 1–3% of patients. Around 50% of these lesions are found in the spine. Involvement of the metatarsals is infrequent [1]. Tuberculous osteomyelitis of metatarsal bones has been reported, though it is considered as a rare site of involvement. Vohra et al. found out that four of 28 patients had their metatarsal bones involved [2]. Agarwal et al. [3] reported two cases of tuberculosis of the fifth metatarsal in his series of 21 cases of foot and ankle tuberculosis. Typical presentations such as discharging sinus and ulcer, and constitutional symptoms such as fever and weight loss are uncommon. Diagnosis of TB osteomyelitis is usually delayed because the signs and symptoms are subtle. Laboratory tests such as ESR, complete blood count, and joint fluid aspiration are inconclusive most of the time. There may be no radiological change initially except mild soft tissue swelling. In advanced stage, it may mimic chronic pyogenic osteomyelitis, tumors, or granulomatous lesions. The typical radiological appearance of TB osteomyelitis is a small focal area of osteolysis located eccentrically with the presence of local osteopenia. To make a definite diagnosis, a high index of clinical suspicion and an open biopsy for bacteriological and histological examination is needed. Chest radiography is also not a reliable tool for diagnosis as only around 15–20% of patients have concomitant active pulmonary lesion. In developing countries like India, most of the population live in rural areas and majority of them walk barefoot and are prone to get thorn prick injuries with subsequent development of granuloma. The healthcare system is inadequate and hence the delay in treatment. Exposed parts of the extremities, especially the upper limb (hand), are common locations of FB granuloma. Acacia thorn injuries are common in India and children who walk barefoot are more prone to these injuries as the connective tissue is soft and pliable and hence penetrates the bone easily [4]. Dürr et al. in his series on thorn-induced FB granuloma have mentioned five cases of FB granuloma in metatarsals [5]. In this study, most of them had

osteolysis which was a consequence of infection. Some authors have named them “thorn-induced tumor” while others as “thorn-induced pseudotumor” [6, 7]. Many of these lesions occur due to trivial injuries when the patient removes most of the thorn leaving the tip inside. This retained thorn/wood contains an alkaloid substance which causes an inflammatory response eventually causing synovitis, osteomyelitis, or a granuloma. According to Dürr et al., [5] organic material in bones can produce osteolysis or sclerosis or both. Plain radiographs are helpful and may show radiopacity or osteolysis or periosteal reaction. Recently, the diagnosis has been made easy due to modalities such as ultrasonography (USG), MRI, and CT. USG is helpful in diagnosis of FB granuloma but MRI is very sensitive. The mainstay of treatment is removal of the FB along with the granulation tissue and initiation of culture-specific antibiotics, if any. *Pseudomonas aeruginosa* is the most common offending organism in osteomyelitis of foot according to Johanson [8], but in our case, there was no growth on culture. Tendinosis of the TA tendon has been infrequently reported. Distal TA tendinosis is a condition that seems to predominantly affect overweight elderly women. Usually, it presents as burning medial midfoot pain which is worse at night along with swelling [9]. TA tear usually occurs due to a laceration or sudden force or due to a spontaneous rupture secondary to an underlying degenerative process. Tendon degeneration is often an age-related phenomenon [10].

Conclusion:

Clinical signs in TB osteomyelitis, pyogenic osteomyelitis, FB granuloma, and tendinosis in foot are generally subtle and lead in most cases to a late diagnosis and late therapeutic intervention which causes irreversible damage. In developing countries, where most of the people walk barefoot, FB granuloma due to thorn prick should always be considered as a differential diagnosis. Although rare to find tendinosis of TA, TB osteomyelitis, pyogenic osteomyelitis, and FB granuloma of metatarsals, these conditions should always be considered as differential diagnosis along with tumors.

Clinical Message

This case study helps us to understand the broader perspective in terms of etiologies and the management for cases with similar presentations.

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Conflict of Interest: Nil
Source of Support: Nil

Consent: The authors confirm that Informed consent of the patient is taken for publication of this case report

How to Cite this Article

Srinivasalu S, Thakre KR. Solitary Presentation but Multiple Etiologies in Foot: A Case Series. *Journal of Orthopaedic Case Reports* 2018. Mar- April; 8(2): 47-50.