

Ankle Arthrodesis For Tuberculosis of Ankle Joint

Mizanur Rahaman Sk¹, Bibin Selvin², Shubham Taori³, Tushar Chaudhari⁴, Abhishek Singh Bhadauria⁵. Department of Orthopaedics, Dr. D.Y. Patil Medical college Hospital & Research Center, Dr. D.Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra-411018, INDIA

Corresponding author: Dr. Tushar Chaudhari⁴, Assistant Professor, Dr. D.Y Patil Medical college Hospital & Research Center, Dr. D.Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra-411018, INDIA. Email- orthotushar@gmail.com

Abstract

Introduction: Among extrapulmonary infections, tuberculosis of the ankle joint is very uncommon. Early diagnosis of tuberculosis of the ankle joint is quite difficult because of its uncommon site, non-specific sign & symptoms, and negligence

Case report: A 38-year-old female presented with right ankle pain and swelling for 3 months with a history of twisting injury to the right ankle 3 months back. She had no history of infection in the past (at least for the last 1-2 years). The only complaint she had was recurrent pain and swelling of the right ankle joint for which she was being managed conservatively for the last 3 months. When she came to the outpatient clinic, presented with a swollen and tender right ankle joint and she was afebrile. Magnetic resonance imaging was not sufficient to conclude the diagnosis. TB arthritis was diagnosed by diagnostic arthroscopy. Eventually, anti-TB therapy eradicated the infection

Conclusion: Early biopsy and synovial fluid for a polymerase chain reaction, gene Xpert should be performed in all suspicious cases to confirm the diagnosis and management

Keywords: Tuberculosis, Arthritis, Ankle joint, Ankle arthroscopy

Introduction: Tuberculosis remains a significant problem in developing countries. The most common tuberculosis in India is pulmonary TB, which accounts for 75-90% of all types of TB. 10-25% extrapulmonary TB[1]. Out of extrapulmonary TB, the musculoskeletal system accounts for only 1-2%. Spine

and other weight-bearing joints like the hip and knee[2]. TB of ankle and foot is <5% of all osteoarticular TB. Tb of the musculoskeletal system is very often misdiagnosed because it mimics a wide range of pathology[3]. More than 50% of cases of TB are associated with HIV.

Monoarticular is the rule of TB though polyarticular has also been reported[4]. The route of spread of this micro-organism is the bloodstream and it gets attached to the synovium of the joint. The subsequent infection destroys the articular joint which leads to chronic joint morbidity. In outpatient clinics or emergencies, ankle pain is a common presentation. Diagnosis of ankle pain is mainly based on clinical presentation. It is commonly presented with ankle pain and swelling, and because of repetitive ankle injury sometime the causative underlying problem is overlooked not only by the patient but sometimes by the doctor also, leading to a delay in diagnosis. Here we describe a rare case of TB arthritis involving the ankle joint.

Case report:

A 38-year-old female presented with right ankle pain and swelling for 3 months with a history of twisting injury to the right ankle 3 months back. She had no history of infection in the past (at least for the last 1-2 years). The only complaint she had was recurrent pain and swelling of the right ankle joint for which she was being managed conservatively for the last 3 months. When she came to the outpatient clinic, presented with a swollen and tender right ankle joint and she was afebrile. There was no skin lesion and the range of motion was almost full but painful. In X-ray tibiotalar joint showed normal when compared to the opposite side (normal side).



Fig-1

We suspected tibiofibular ligament injury and advised MRI and which showed erosions along the articular surface of the talus with adjoining bone marrow edema. Synovial thickening with synovial effusion in the tibiotalar joint, synovial effusion in the subtalar joint. subcutaneous edema around the ankle joint. The anterior inferior tibiofibular ligament appears thickened suggestive of chronic partial tear. And all these findings were suggestive of infective etiology rather than inflammatory etiology. Fig2,3,4,5

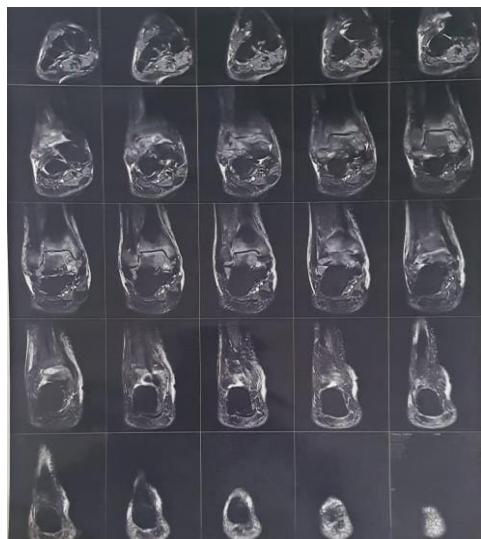


Fig 2



fig3

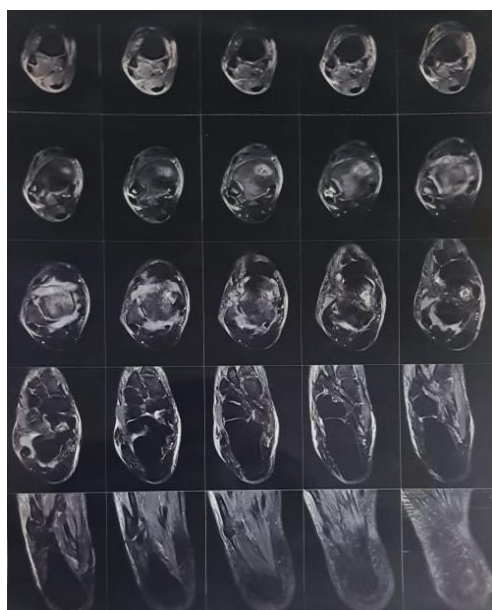


Fig 4



fig 5

laboratory findings were almost in the normal range. erythrocyte sedimentation rate was 69 mm/hr and C reactive protein was 4.16 IU/mL

As the MRI was insufficient to conclude the diagnosis, diagnostic arthroscopy was performed under spinal anesthesia. Here arthroscopy is the choice of investigation as it is minimally invasive

and the tissue of interest can also be taken for further investigation. After placing two standard portals arthroscope was inserted into the tibiotalar joint to visualize the articular surface.(Fig 6)



Fig 6

The whole articular cartilage in the distal tibia and talus was destroyed. Loose bodies, synovial tissue, and denuded cartilages all were debrided thoroughly and sent for histopathological analysis, culture & sensitivity, and CBNAAT.

The patient was given below knee slab and she was asked for non-weight bearing. Postoperative antibiotics were given prophylactically for 3 days.

On the CBNAAT report, it was mycobacterium TB. Combined anti-TB drugs (HRE) were used for 9 months. she was under follow up for the next 1 month. After 1 month she was advised for ankle arthrodesis as her articular cartilage was destroyed.

Under spinal anesthesia with proper painting and draping (figure 7)

arthrodesis of the tibiotalar joint was done using 3 CC screws (2 medially and 1 laterally in a converging fashion) under C arm guidance.(figure 8)



fig7



fig8

Postoperatively she advised non-weight bearing with below knee slab for 4 weeks.

On the 6-month follow-up evaluation,(fig 9) there was no recurrence of infection, she was painless, and she can do her daily activity with some difficulty in climbing stairs and walking on a sloping surface.



Fig 9

Discussion: In developing countries, TB is the most common infectious disease which causes morbidity and disability. Only 1-2 % accounts for osteoarticular TB out of all extrapulmonary TB. The spine is the most common structure in the musculoskeletal system followed by weight-bearing structures like the hip, and knee. TB of ankle and foot is very rare.

The most common symptoms are pain and fullness around malleoli and tendoachilis insertion, foot will be in planter flexed condition- it is an important sign of ankle foot TB. If there is any discharging sinus or non-healing sinus then it could be a sign of secondary infection. The most commonly involved bones are the calcaneum, talus, 1st metatarsal, and navicular. Pulmonary involvement is uncommon usually present in <50% of cases [5,6]

X-ray is rarely diagnostic, computed tomography scan or magnetic resonance scan should be done if there is any suspicion of TB ankle or foot as it causes morbidity and disability. Though the confirmative investigation is histopathological [7] of the bone tissue collected from the affected site, which can be easily collected by arthroscopy.

Treatment of TB ankle is conservative - immobilization of the affected joint by slab/cast along with anti-TB drug for 9-20 months as recurrence is higher after a short course [8]. Surgical interventions are reserved when the diagnosis is late and when there is a failure of conservative therapy. In our case prognosis was not good at 1 month to follow up so surgical intervention was adopted (arthrodesis).

In the conventional method - The ankle joint is exposed using the anterolateral approach, followed by thorough debridement, denudation of the articular joint, and putting of bone graft followed by placement of 2 Steinmann's pin around the joint (one proximal to the joint and another one distal to the joint). And then compression device was applied to these 2 Steinmann's pins along with a below knee slab posteriorly [9]

Here, in this case, the ankle joint was made free of infected tissues using an arthroscope unlike the conventional method, and a bone graft was not used so invasiveness is less compared to the conventional method Instead of an external compression device used 3 CC screws for arthrodesis of the ankle joint, so the burden of carrying the external compression device is eliminated here.

Conclusion: When a patient comes to outpatient clinic with pain and swelling of the ankle joint which increases on exertion, and giving similar kind of past history, it is recommended to get MRI done. If MRI is suggestive of chronic inflammatory disease, early biopsy and PCR-GeneXpert should be done along with all routine investigation.

References

1. Tuli SM. *Tuberculosis of the Skeletal System (Bones, Joints, Spine and Bursal Sheaths)* 4th ed. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2010. pp. 131–139. [[Google Scholar](#)]
2. Anand A, Sood LK. Isolated tuberculosis of talus without ankle and subtalar joint involvement. *Med J Malaysia*. 2002;57(3):371–373. [[PubMed](#)] [[Google Scholar](#)]
3. World Health Organisation. *Report on Global Tuberculosis Control*. Geneva: World Health Organisation; 2008. [[Google Scholar](#)]
4. Linares LF, Valcarcel A, Mesa Del Castillo J, Saiz E, Bermudez A, Castellon P. Tuberculous arthritis with multiple joint involvement. *J Rheumatol*. 1991;18(4):635–636. [[PubMed](#)] [[Google Scholar](#)]
5. Mariconda M, Cozzolino A, Attingenti P, Cozzolino F, Milano C. Osteoarticular tuberculosis in a developed country. *J Infect*. 2007;54(4):375–380. [[PubMed](#)] [[Google Scholar](#)]
6. Hakimi M, Hashemi F, Mirzaie AZ, Pour AH, Kosari H. Tuberculous osteomyelitis of the long bones and joints. *Indian J Pediatr*. 2008;75(5):505–508. [[PubMed](#)] [[Google Scholar](#)]
7. Shah BA, Splain S. Multifocal osteoarticular tuberculosis. *Orthopedics*. 2005;28(3):329–332. [[PubMed](#)] [[Google Scholar](#)]
8. Dhillon MS, Aggarwal S, Prabhakar S, Bachhal V. Tuberculosis of the foot: An osteolytic variety. *Indian J Orthop*. 2012;46(2):206–211. [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]
9. Tuli SM. *Tuberculosis of the Skeletal System (Bones, Joints, Spine and Bursal Sheaths)* 4th ed. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2010. pp. 131–139. [[Google Scholar](#)]