

Case Report

Tuberculosis of the talus in a 2-year-old: a diagnostic dilemma

Swapnil A. Keny, Rudra M. Prabhu*, Shubhranshu S. Mohanty,
Shubham Y. Dakhode, Abhishek K. Rai

Department of Orthopaedics, Seth GS Medical College and KEM Hospital, Mumbai, Maharashtra, India

Received: 09 November 2022

Accepted: 05 December 2022

***Correspondence:**

Dr. Rudra M. Prabhu,

E-mail: rmp31395@gmail.com

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ABSTRACT

Extra-pulmonary tuberculosis involving the ankle and foot is a rare entity with its prevalence being ever rarer in the pediatric population. Here, we report the case of a two-year-old female child who presented with a gradually progressive non-traumatic swelling involving the right foot and ankle since two months. The patient was initially managed by a local doctor with immobilization of the foot and ankle in a slab for three weeks. Blood investigations were suggestive of an inflammatory process and a lytic lesion involving the talus was seen on radiographs. The patient was managed with debridement and curettage of the lesion along with anti-tubercular chemotherapy as per pediatric dosage for one year. The patient was asymptomatic at latest follow-up of one year and radiographs showed that lytic lesion had resolved.

Keywords: Talus, Tuberculosis, Pediatric, Musculoskeletal, Curettage, Anti-tubercular chemotherapy

INTRODUCTION

Although the prevalence of tuberculosis has decreased in the West, it is still a major contributor to the overall disease burden in developing countries including India with extrapulmonary tuberculosis being a major health concern as well. Foot and ankle are rare sites of tubercular affection and these cases are often misdiagnosed leading to a delay in presentation. We present a case of a two-year-old female with tuberculosis of the talus who presented to us around two months after the onset of symptoms and was managed with debridement, curettage, and anti-tubercular chemotherapy.

CASE REPORT

A two-year-old female child was brought to our tertiary-care center with a painful nontraumatic swelling involving the right foot and ankle since the past two months with a gradual increase in the size of the swelling. The patient was initially managed by a local doctor with immobilization of the foot and ankle using a below knee slab for three weeks. However, the swelling continued to increase in size even

after immobilization. The patient did not have any constitutional symptoms at the time of presentation. She had been immunized with the BCG (Bacille Calmette-Guerin) vaccine in childhood and had a scar mark on her left shoulder. On clinical examination, there was a tender swelling involving the lateral aspect of the foot near the ankle with preservation of ankle movements. The patient had an elevated leucocyte count along with an increase in the erythrocyte sedimentation rate and C-reactive protein. Radiograph of the chest and Mantoux test were normal. Radiographs of the foot revealed the presence of a lytic lesion isolated to the talus (Figure 1). An MRI was performed to know the exact extent of the lesion and the involvement of the surrounding tissues. The findings were suggestive of osteomyelitis involving the talus with a localized collection of around 2.5×2.3×1.1 cm in the lateral aspect that extended to the subcutaneous soft tissue (Figure 2). There was effusion involving the tibiotalar joint. An incision and drainage of the swelling along with curettage of the lytic lesion involving the talus was planned. The talus was approached via an anterolateral incision taken over the most prominent part of the swelling (Figure 3).

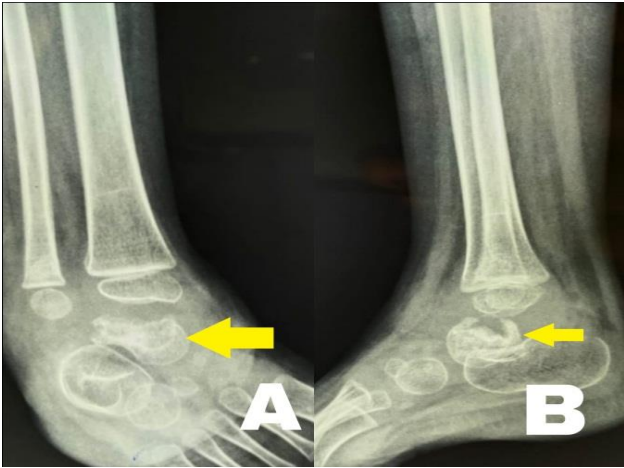


Figure 1 (A and B): Radiographs of the lytic lesion involving the talus with collapse.

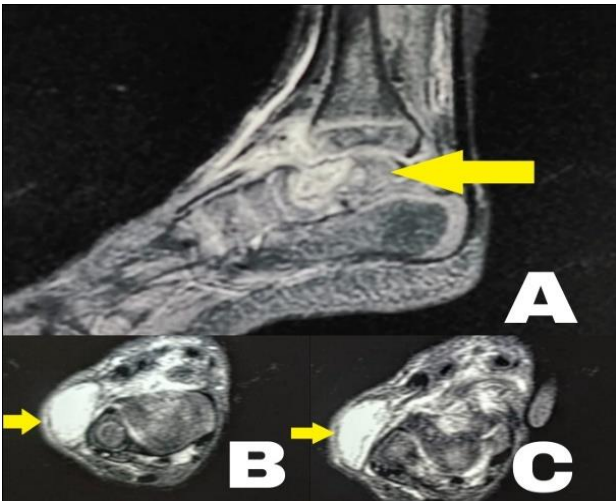


Figure 2 (A-C): Sagittal MRI cuts show destruction of the talus with a hyper-intense lesion involving the talus. A localised hyper-intense collection measuring about 2.5×2.3×1.1 cm is seen in lateral soft tissues.

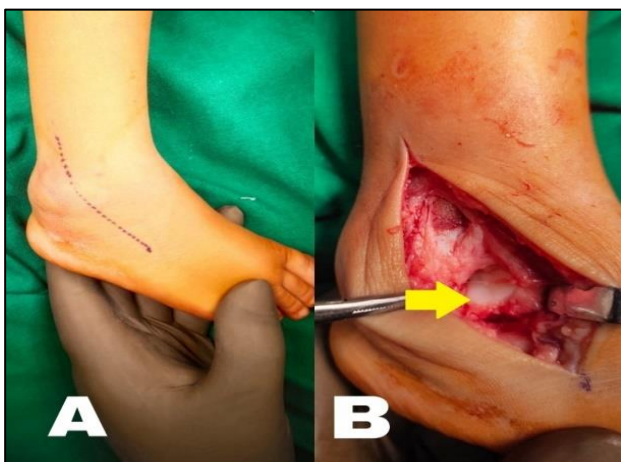


Figure 3 (A and B): The planned anterolateral incision has been marked. The dome of the talus is visible after deep dissection.

The lytic lesion was confirmed under fluoroscopy. Debridement and curettage were done and intraoperative samples were sent for investigations. The cavity that was created was filled with a local antibiotic mixture composed of Vancomycin and Streptomycin. A thorough wash was given and the wound was closed in layers after inserting a drain. Following this, the foot and ankle were immobilized for four weeks. Intra-op samples were sent for microscopy and culture, Ziehl-Neelsen staining, TB-MGIT (*Mycobacteria* Growth Indicator Tube) test, Xpert MTB/RIF (*M. tuberculosis* and resistance to rifampicin, and histopathology examination. *M. tuberculosis* complex was isolated on the TB-MGIT test. Xpert/MTB-RIF assay detected *M. tuberculosis* that was sensitive to rifampicin. Epithelioid cell granulomas, Langhans type of giant cells, few viable and non-viable bone fragments, and chondroid tissue were seen on histopathology examination (Figure 4).

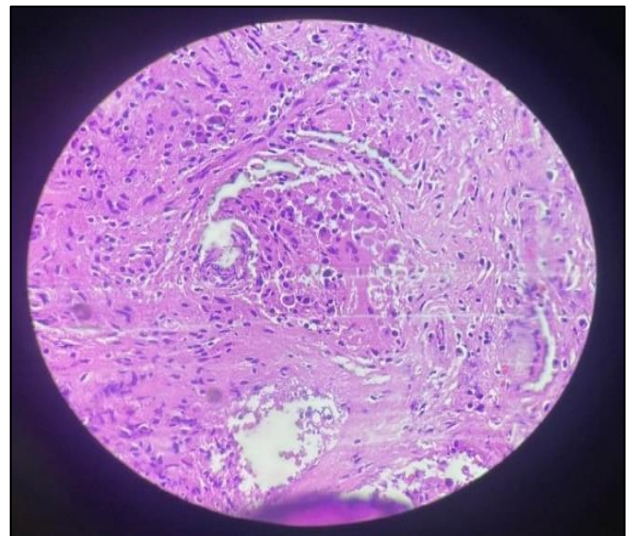


Figure 4: Histopathology images show the presence of Langhans giant cells suggestive of chronic granulomatous inflammation.



Figure 5: Clinical image at a follow-up of one year shows the healed scar.

The features were suggestive of chronic granulomatous inflammation. The patient was started on anti-tubercular chemotherapy as per pediatric regimen for 12 months. The chemotherapy regimen consisted of isoniazid (10 mg/kg/day), rifampicin (15 mg/kg/day), pyrazinamide (35 mg/kg/day) and ethambutol (20 mg/kg/day) for two months (Intensive phase) followed by isoniazid (10 mg/kg/day), rifampicin (15 mg/kg/day), and ethambutol (20 mg/kg/day) for 10 months (continuation phase). Postoperatively, the swelling reduced in size and symptoms of the patient subsided (Figure 5). The patient was asymptomatic at a follow-up of one year with resolution of the lytic lesion involving talus on radiographs (Figure 6).



Figure 6: Radiograph at follow-up demonstrates healing of the lytic lesion involving talus.

DISCUSSION

Skeletal tuberculosis accounts for less than 3% of the extrapulmonary cases of tuberculosis^{1,2} Involvement of the foot is seen in only 8 to 10% of patients with osteoarticular tuberculosis.^{3,4} Diagnostic delays are often encountered in these cases because of the resemblance of tuberculosis with other pathologies along with a lack of awareness regarding the pathological process.⁵ Moreover, the symptoms are similar to those of common pathologies involving the foot and ankle leading to a higher chance of misdiagnosis. Osteoarticular tuberculosis involving the foot commonly results secondary to a focus of infection with the primary lesion usually being difficult to localize. A granulomatous lesion that develops adjacent to a joint is the commonest pattern seen.⁶ Another presentation is that of a central granuloma which presents commonly in children and is usually seen in the phalanges or metatarsals. The other presentations include primary hematogenous synovitis and tenosynovitis.⁶ One plausible reason for the higher prevalence of foot tuberculosis in underdeveloped countries could be the commonly followed custom of walking barefoot which causes local foot trauma. Early diagnosis followed by initiation of

treatment can limit the disease extension to the adjacent joints thereby decreasing disability in the long-term and lowering morbidity. Tuberculosis involving the ankle and foot can have many differentials, including chronic pyogenic infection with arthritis and Madura foot with discharging sinuses due to similarities in the clinical and radiological picture. Benign tumors involving the talus must also be kept in mind as a differential for chronic lytic lesions. Hence, curettage serves as a diagnostic as well as a therapeutic modality in such cases. Osteoporosis is seen on radiographs in the active stages of the disease, with periarticular osteopenia resulting due to a combination of disuse atrophy and a direct insult by the tubercular toxins. In some cases, a feathery sequestrum can develop. Other features of the disease include narrowing of the joint space and subchondral cysts.⁶ MRI can be used to detect the pathological process in its initial course. The scans show non-specific marrow edema that would be seen as a bright signal on T2-weighted images and a dark signal on T1-weighted images. Other findings include subtle breaks in the cortex and cavitations that may not be detected using radiographs done in the early stages of the disease.⁶ Another investigation that better delineates the bony destruction and sequestration and also helps in obtaining a biopsy of the lesion is a CT scan. One of the drawbacks of imaging is the lagging of radiological appearances behind the biological process which can explain the persistence of lesions on imaging even after the disease has healed clinically.

Table 1: Previously described cases of tuberculosis involving the talus in pediatric population.

Author	Year	Age (years)	Management
Haraldsson ⁸	1959	2.5	Curettage and chemotherapy
Anderson et al ⁹	1979	6	Curettage, bone grafting, chemotherapy
Khan et al ¹⁰	1999	5	Curettage, bone grafting, chemotherapy
Anand et al ¹¹	2002	4	Curettage, bone grafting, chemotherapy
Sahoo et al ¹²	2021	4	Curettage, chemotherapy
Present study	2022	2	Curettage, chemotherapy

Table 1 highlights the previously described cases of tuberculosis involving the talus in patients aged less than 10 years. Such lesions are extremely rare in patients less than two years of age with hardly any cases reported.

Antitubercular chemotherapy is the backbone of treating foot tuberculosis. Debridement of such lesions can be performed via the transmalleolar approach. Halwai et al described a case of a 34-year-old male with a tubercular lytic lesion involving the talar body for which a transmalleolar approach was used.⁷ In our case, the lesion

was approached via an anterolateral incision and a transmalleolar approach was not required. Cases showing significant joint destruction and causing chronic pain may need to be managed with arthrodesis. The diagnosis of our patient was delayed because of the indolent nature of the symptoms. Moreover, the low index of suspicion for tuberculosis involving the foot led to its initial misdiagnosis. The swelling caught the attention of the parents only when it was progressively increasing in size despite the initial treatment that was given. An MRI helped in the localization of the pathology and aided in preoperative planning. Debridement and curettage acted as a therapeutic as well as diagnostic modality as they helped in obtaining the sample for culture. *Mycobacterium tuberculosis* complex was isolated after culturing the intraoperative samples. Histopathology revealed the presence of epithelioid cell granulomas and Langhans type of giant cells suggestive of chronic granulomatous inflammation, thus confirming the presence of tuberculosis.

CONCLUSION

It is important to keep in mind extra-pulmonary tuberculosis as a differential diagnosis for pathologies that are chronic in nature and involve the musculoskeletal system, especially in areas with a high prevalence of tuberculosis. Early diagnosis followed by curettage and anti-tubercular chemotherapy remains the mainstay of management of such lesions.

ACKNOWLEDGEMENTS

Authors would like to thank the Dr. Monica Kadam from the Department of Pathology, Seth G. S. medical college and K. E. M. hospital for providing the histopathology images.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Keny SA, Prabhu RM, Mohanty SS, Dakhode SY, Rai AK. Tuberculosis of the talus in a 2-year-old: a diagnostic dilemma. *Int J Res Orthop* 2023;9:439-42.