

Ankle and Foot Tuberculosis: A Diagnostic Dilemma

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ABSTRACT

Aim and Objective: To know the biological behavior of ankle and foot tuberculosis (AFTB) and to know the reasons for delay in diagnosis and treatment of AFTB in our population. **Materials and Methods:** Patients with non-healing ulcers/sinuses/swellings in the ankle and foot region are the subjects of present study. Detailed clinical history, physical examination and relevant investigations were done in all cases. Pus/wound discharge for acid fast bacillus (AFB) study and biopsy from wound margin/sinus tract was taken in all the cases. **Results:** During the period from July 2007-June 2012, 20 cases of AFTB were treated. Out of them five cases were difficult to diagnose and a mean period of 6 month to 5year was elapsed before final diagnosis was established. Out of these five cases — three cases were diabetic with ulcers and sinuses in the heel and ankle region. One case was wrongly diagnosed as angiodysplasia with A-V malformation of foot and diagnosis was delayed for 5 year. In one case of rheumatoid arthritis with abscess in ankle joint, the diagnosis was delayed for 1year. **Conclusion:** AFTB is very rare condition. AFTB is suspected in cases with long standing pain/swelling/discharging sinus in the foot and thorough investigations is must to differentiate from other foot diseases. Diagnosis is delayed due to lack of clinical suspicion and non-confirmatory biopsy reports. Early diagnosis and ATT for 9-18 months is must in all cases of AFTB to prevent joint involvement and other complications.

Keywords: Ankle, foot, tuberculosis

Introduction

Tuberculosis has been known to mankind since the dawn of human civilization but still remains a major health problem in India and the developing countries. Bones and joints are involved in 1 to 3% of all cases of tuberculosis and about 10% of osteoarticular tuberculosis affects the foot and upto 50% of patients do not show pulmonary manifestation.^[1,2] Although there is extensive literature on osteoarticular tuberculosis, there have been few studies on the involvement of the foot. Ankle and foot TB (AFTB) is very uncommon (<5%) of osteoarticular tuberculosis. Uncommon site, lack of awareness and ability to mimic other diseases clinically and radiologically leads to diagnostic and therapeutic delay. AFTB is a paucibacillary disease, so AFB culture becomes rarely positive. Wound biopsy is confirmatory. The successful treatment of skeletal TB requires early diagnosis and early anti-TB therapy. The definitive diagnosis of skeletal TB is isolation of bacteria from a bone biopsy. In clinical practice, non-invasive methods are useful diagnostic

tools including clinical information, imaging studies, and laboratory findings. Skeletal TB most commonly involves the spine in approximately 50% of patients, followed hip and knee joints.^[1,2] AFTB is uncommon and can mimic a wide range of acute and chronic disease conditions like pyogenic osteomyelitis, inflammatory arthritis, osteochondrosis, charcot arthropathy, and malignancy arising from bone and soft tissue.^[1-3] So if the diagnosis can be made level of primary care physician a lot of time can be saved, treatment can be instituted early with a very good outcome.

Aims and Objectives

To know the biological behavior of AFTB and to know the reasons for delay in diagnosis and treatment of AFTB in our population.

Materials and Methods

Between July 2007 and June 2012 in the department of surgery, S.C.B. Medical College, Cuttack, Orissa, India, we treated and studied prospectively 20 patients who had tuberculous infection

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of the foot. Informed consent was taken from each patient and the study protocol confirms to the ethical guidelines of the 1975 declaration of Helsinki. Patients with non-healing ulcers/sinuses/swellings in the ankle and foot region are the subjects of present study. The patients with acute skin, soft tissue or bone infection, peripheral vascular diseases were excluded from the study. Detailed clinical history, physical examination and relevant investigations (Routine hematological and serum examination, X-RAY, CT-SCAN, MRI) were done in all cases. Pus/wound discharge for AFB and biopsy from wound margin/sinus tract was taken in all cases. History, physical examination findings and radiological evidences were corroborated with biopsy reports. None had active pulmonary disease. All the patients with only a soft-tissue lesion had a biopsy for confirmation, but those with bone lesions did not undergo this, and their diagnosis was based on clinical and radiological features. The treatment for all patients began with a four drug regimen using rifampicin, isoniazid, ethambutol and pyrazinamide for 2 months, followed by rifampicin and isoniazid for 16 months. Each received 10 mg of pyridoxine daily. The patients were followed up by plain radiography, with hematological and liver-function tests every 3 months during treatment. After completion of their drug regime, they were reviewed twice at intervals of 6 months. In those in whom weight-bearing was very painful, walking with crutches, avoiding taking weight on the affected foot, was advised.

Results

During the period from July 2007-June 2012, 20 cases of AFTB were treated. Of them 18 males and 2 females with the age range between 20 and 60 years were found. Out of them five cases were difficult to diagnose and a mean period of 6 month to 5 year was elapsed before the final diagnosis was established. Out of these five cases — three cases were diabetic with ulcers and sinuses [Figure 1] in the heel and ankle region. One case was wrongly diagnosed as angiodyplasia with A-V malformation of foot [Figure 2] and diagnosis was delayed for 5 year. In one case of rheumatoid arthritis with abscess in ankle joint [Figure 3], the diagnosis was delayed for 1 year. All 20 cases of AFTB presented with non-healing ulcers/sinuses/abscess in the foot or ankle for the long duration of 3 month-5 year. Most of the cases are males who used to work outside. In five cases the diagnosis was delayed, as three cases were having uncontrolled diabetes with non-healing ulcers in foot and ankle and were treated for diabetic foot ulcer. One case was having pain and swelling of ankle region for long duration with an abscess and was treated as rheumatoid arthritis with abscess for 5 months before final diagnosis of AFTB was established. One case with similar pain and swelling of ankle and foot was initially diagnosed as calcaneal osteomyelitis and treated for that. All culture reports and scrap cytology were negative for AFB and fungus. Mycodottest for TB was also negative and the initial biopsy from the lesion was chronic non-specific inflammation. After that he was diagnosed as a case of AV malformation of foot on the basis of peripheral angiographic report. Finally, after 5 years, he was diagnosed as a case of AFTB when biopsy came to be tubercular lesion after



Figure 1: AFTB with diabetic foot ulcer



Figure 2: AFTB with angiodyplasia of foot



Figure 3: AFTB with rheumatoid arthritis and foot abscess

three previous negative results. In all cases biopsy from the wound margin/sinus tract/depth of wound or bone were done and all were positive for tubercular lesion. All cases of AFTB were given prolonged anti tubercular therapy for 9-18 months. The calcaneum was the most common bone involved, and in 7 patients, two or more bones were affected. Lesions were present in the calcaneum in 11 patients, the metatarsals in 12, the phalanges in 9 and the other tarsal bones in 12 patients. None of our patients had pulmonary tuberculosis.

Discussion

The spine and hip are the most common sites of skeletal tuberculosis. Tuberculosis of the foot and ankle is less common and is detected in late stage.^[2] Most common symptoms includes pain, swelling and stiffness, while swelling with fullness around malleoli and tendoachilis insertion, plantar flexion of ankle joint are the important signs of AFTB. There may be discharging sinus or non-healing ulcer with secondary infection. Most commonly involved bones are calcaneum, talus, first metatarsal, navicular. Mid-tarsal joint is the most commonly affected joint in this disease. Pulmonary involvement is uncommon and usually present in less than 50% of cases.^[4,5] Hematological examination usually shows decreased hemoglobin, mild lymphocytosis and ESR is almost always raised in AFTB cases.^[2,4] Peripheral marginal erosion of joint is the earliest change in plain radiography. MRI of the foot shows periarticular osteoporosis, marginal erosion, joint space narrowing (Phemister Triad). The radiological features of AFTB may be similar to rheumatoid arthritis, neuropathic joints, sarcoidosis and neoplasms so these entities should be excluded prior to institution of the therapy.^[3-6] Radionuclide imaging for evaluation osteomyelitis includes three-phase bone scans, the use of leukocytes, labeled with 99 -Tc or 111- In, 67-Ga citrate, and 18 F-FDG PET.^[7] AFTB is a paucibacillary disease, so AFB culture is rarely positive. Biopsy of ulcer margin or sinus tract is confirmatory and important in making the diagnosis. Culture-enhanced PCR is a highly sensitive and specific method for the early detection of *M. tuberculosis* in extrapulmonary specimens.^[8] But in endemic areas clinical features, radiological features, raised ESR are sufficient to diagnose AFTB and start ATT course. Clinical signs of healing are decreased pain and swelling of foot, disappearance of sinuses, improvement in gait, increase in body weight. All the above clinical findings are evident as early as 5 weeks, but radiological signs of healing are evident after 5 months of treatment. Conservative treatment with antitubercular therapy regimen to all AFTB patients is must. INH, Rifampicin, Pyrazinamide, Ethambutol for 2 months followed by INH + Rifampicin for 16 months. All patients must receive Pyridoxine 10 mg daily to prevent neuropathy. Prolonged treatment in osteoarticular tuberculosis is justified by the fact that it is a paucibacillary infection with many organisms being in a dormant state, making them resistant to chemotherapy.^[9] *M. tuberculosis* infects nearly one-third of the world's population. India contributes to one-third of the world's burden. The prevalence of multidrug-resistant tuberculosis has increased globally over the last decade. The incidence of multidrug-resistant tuberculosis in India in newly diagnosed cases varies between 1.1 and 5.3% and in previously treated cases varies between 8 and 67%.^[10] Surgical intervention is reserved only for failure of conservative therapy, such as debridement and curettage, excision of sequestered/destroyed bones and arthrodesis. Follow up is done with plain X-ray of foot, hematological and liver function test every 3 months during treatment. After completion of ATT course, patients were reviewed twice at 6 monthly interval. Patients with painful weight bearing, walks with crutches and advised to avoid taking weight on the affected foot. None of our

patients have shown signs of recurrence so far. As in our study we have some patients who have lost months to years before the diagnosis, proper knowledge about the pathology will definitely help the primary care physicians to diagnose the disease in time and institution of early treatment with good outcome, it may also reduce the financial burdens of the patient.

Conclusion

AFTB is very rare condition. AFTB is suspected in cases with long standing pain/swelling/discharging sinus in the foot and thorough investigations is must to differentiate from other foot diseases. Diagnosis is delayed due to lack of clinical suspicion and non-confirmatory biopsy reports. Delay in diagnosis makes the disease more complicated and also a cause for financial loss and psychological distress on the part of patient. Tissue materials from the depth of wound should be biopsied. Early diagnosis and ATT for 9-18 months is must in all cases of AFTB to prevent joint involvement and other complications.

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