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Post traumatic tuberculous osteomyelitis of mid tarsal bone - a case report

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ABSTRACT *Skeletal tuberculosis is a rare disease comprising 1-5% of the total population of tuberculosis patients and foot involvement accounts for less than 10% of osteoarticular tuberculosis. Tuberculosis osteomyelitis of the foot can also mimic a wide range of pathology. As a result, this condition is often misdiagnosed, or the true nature of the lesion is identified late in the diagnostic process. Such a rare case report of 23 year old male got blunt trauma over right foot initially managed conservatively complicated by abscess at local site treated by incision and drainage followed by non-healing discharging sinus. Diagnosis of tuberculosis was made by bone biopsy and curretage, histology of which demonstrated caseating granulomas. The patient made a full recovery on anti-tubercular treatment. A high suspicion index, careful clinical examination and modern imaging modalities and specialized tests would help to confirm the diagnosis of tuberculosis at an early stage.*

Introduction:

Tuberculosis has been reported in every bone of the body . The spine and the hip are the most frequently involved sites with the vertebrae involved in about 50% of cases(3). By contrast, tuberculosis such as the foot and ankle are less common and are often detected at a much more advanced stage(4). It is uncommon for foot surgeons to diagnose post-traumatic infection of mid-tarsal bone as tuberculous infection even in developing countries as variable spectrum of clinical and radiological appearances produced by bone and joint tuberculosis. For these reason tuberculosis has been labeled as "the great masquerader"(5). Order of decreasing frequency of such lesions in foot is calcaneum, talus, firstmetatarsal, navicular, cunieform and other bones(1). And incidence of post traumatic tuberculosis in midtarsal bones is even rarer and only few cases are reported worldwide.

Case Report:

A 23 year old male Hindu patient presented with pain, swelling and pus discharging sinus from right foot following blunt trauma by stone eight month back. Initially patient had dull aching pain and swelling immediately following injury for which he had taken household medicine. But gradually pain increased in intensity and for which he managed conservatively by analgesic by local doctor. As his symptoms continued unabated, he visited orthopedic surgeon who managed him by analgesic and immobilization. After few days he develop an abscess for which he was treated by incision and drainage and antibiotic. But patient still have continued pain, swelling, pus discharging sinus from incision site along with difficulty in walking for which he come to us. Past medical history was non-significant. He had no history of tuberculosis (TB) or any other immune-suppressive disease. There was neither any family history of TB infection nor of any rheumatic or autoimmune disease. He had been immunized with BCG vaccine at birth. Constitutional symptoms such as fever, anorexia, fatigue and weight loss were absent. He was not receiving any regular medications. On local examination fullness over midfoot and pus discharging sinus from lateral aspect of foot along with puckering and hyper pigmentation. The rest of the musculoskeletal examination was normal. Routine laboratory investigations including biochemical tests, complete blood cell count were all normal apart from an elevated ESR (102 mm in 1st hour; normal: <20 mm in 1st hour) and CRP (24 mg/L; normal: <5 mg/L). Serological tests for Anti-Nuclear Antibodies (ANA) and hepatitis viruses were negative. Tumour markers and HIV test are negative. The result of tuberculin skin test (5 tuberculin units) was negative. His chest x-ray was normal. Pus culture report shows staphylococcus org positive. X ray right foot shows coke like sequestrum in a cavity in the medial cuneiform along with localised osetopenia in midtarsal bone, irregular margin in midtarsal joints. CT Scan shows cortical bone destruction in midtarsals and intra-osseous abscess. MRI contrast shows sign of changes of osteomyelitis involving all three cuneiform bones and extending into navicular and cuboid bones with intra-osseous abscess formation. The possibility of an infection was considered but not specifically mycobacterial. He was managed operatively in form of curettage and biopsy. Per operatively dead necrotic bone along with cheesy material found which was sent for histological examination which reveals multiple granulomas among few shows caseation necrosis. A diagnosis of osteoarticular TB was made depending on the clinical, radiological and histological findings and he was started on anti-tubercular treatment and immobilization in form of below knee cast . Within 6 months of starting treatment the patient was pain free, fully weight bearing on the affected foot with normal gait, ESR returned to normal and x-rays showed no further bony destruction.

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Discussion:

Osteoarticular tuberculosis constitutes 1-3% of extra-pulmonary cases and the spine and hip are the most commonly affected sites (3). Involvement of the bones of the foot and ankle is rare and is detected at a more advanced stage (4).

Tuberculosis of foot may be synovial(rare), osseous(frequent), articular(indicative of late stage). Once intertarsal joint is involved, the tuberculous process spreads rapidly to many parts because of intercommunicating synovial channels or cavity of these joints. Isolated lesions of one joint or one tarsal or one metatarsal bone are exception(1,2).

Our case represents a number of typical features of this condition:

1) Only about one third of patients who have osteoarticular TB, have evidence of pulmonary disease and the majority of the cases have normal chest x-rays(7).
2) A history of trauma is commonly followed by inert progressive inflammation, weeks or months later(8).
3) The lack of familiarity with the spectrum of bone lesions may be one such contributory factor as patient treated for long time by analgesics(10).
4) Constitutional symptoms are usually absent & signs of inflammation are mild(9).
5) Although the symptoms may not be dramatic, chronic infection tends to be progressive and eventually results in radiologically evident destruction of cartilage and bone(8).
6) The presence of a sinus from which pyogenic organisms are grown on culture, may lead to a diagnosis of pyogenic osteomyelitis(2,6).
7) A positive tuberculin test result can be helpful, but a negative result cannot rule it out tuberculosis.
8) A high suspicion index (altered ESR,endemicity,not respond to routine antibiotic), careful clinical examination(puckered sinus) and imaging modalities (x-ray show coke like sequestrum),histological finding (caseating necrosis) help to establish the early diagnosis of tuberculosis(2).
9) Multi drug anti tubercular chemotherapy heals majority of early cases with near complete resolution of disease(1,2).

Several factors may contribute to the diagnostic delay. Skeletal tuberculosis should be a part of the differential diagnosis in all patient presenting with sub-acute or chronic osteomyelitis, synovitis or arthritis of insidious onset.(2)

The ESR and CRP by itself is not of much value in helping to make the diagnosis(6).For early detection and species identification of mycobacteria, enzyme linked immunosorbent assay (ELISA) and polymerase chain reaction (PCR) techniques are currently in wide use (11,12). Osteoarticular tuberculosis is pauci-bacillary and it is often difficult to demonstrate or culture the organism from these lesions even in endemic areas as in our case(13).Whenever the diagnosis is in doubt the diseased tissue should be obtained for microbiological and histological study by core biopsy or open biopsy as done in our case(1).

Imaging studies play a critical part in the diagnosis of tuberculosis of bones and joints. On plain radiographs the earliest changes may be erosions at the peripheral margins of a joint(14). Phemister's triad of periarticular osteoporosis, marginal erosions and narrowing of the joint space is the radiological feature of osteoarticular tuberculosis(15). Endarteritis of nutritional artery in such a lesion is common and many would show a cavity with or without a typical coke-like sequestrum on x-ray as in our case(1). The CT scan is better than MRI in detecting cortical bone destruction and calcifications within soft tissue abscesses (16). The MRI scan can detect early joint effusions and soft tissue swelling.

Conservative treatment with below knee plaster cast or a below knee orthosis with fixed ankle combined with antitubercular drugs is as a rule effective in a majority. As the healing progresses spontaneous bony fusion may occur in the involved joints especially in cases with superadded infection(1,2).Unlike pulmonary lesions, bone and joint tuberculosis should be treated with antituberculous drugs for more than nine and preferably for 18 months(9).

Operative intervention in foot is only indicated for non-responsive cases, uncertain diagnosis, for saving a joint threatened by a juxta-articular focus or a persistent painful joint or an unacceptable deformity when the disease is healed. Sometime arthrodesis required(2).Surgical excision of a large isolated osseous lesion to prevent involvement of adjacent joints, or debridement and curettage may be indicated in nonhealing lesions. Resection of a destroyed or sequestrated bone may be required rarely(1,2).

Once disease is healed the gait and function for normal activities are not restricted(1).

Conclusion:

It is important to recognize the rare presentations of this condition to enable early diagnosis and successful treatment. The diagnosis is basically inferred from a high index of suspicion, careful clinical examination and x-ray; modern imaging modalities and specialized tests would help to confirm the diagnosis of tuberculosis of osseous, synovial or articular disease at an early stage. Early detection of the lesion can lead to treat most cases with conservative management and lead to reduction of the heavy toll of skeletal tuberculosis on economy. Operative intervention is ideally reserved for selected cases.

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