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RESEARCH ARTICLE

PRIMARY DIAPHYSIAL TUBERCULAR OSTEOMYELITIS OF RADIUS IN ADULT: A RARE CASE REPORT

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ABSTRACT

Tuberculosis is a major health issue in developing countries. It remains a major international problem despite recent advances in radiological diagnosis and anti tubercular therapy. Tubercular osteomyelitis involving primarily the diaphysis without articular involvement is very rare. The nonspecific nature of the symptoms leads to a delay in the diagnosis. Radiographs may mimic pyogenic osteomyelitis, Brodie's abscess, tumours or granulomatous lesions. Curettage of the lesion and the histopathological examination of the material obtained are necessary for confirmation of the diagnosis and offer a chance for early healing. We present a case of 23 year old immunocompetent male patient who presented to us with isolated diaphyseal involvement of radius with healed sinus.

INTRODUCTION

Tuberculosis is a major health issue in developing countries such as India. It can affect any bone of the body [1]. Isolated involvement of the shaft of the long bone is a rare presentation of osteoarticular tuberculosis. Bone pain which does not promptly respond to analgesic medication is often due to infection or neoplasia. In early stages plain radiographs are normal, but MRI & CT may help to localise the lesions [2]. On plain radiographs, more advanced lesions may mimic chronic pyogenic osteomyelitis, Brodie's abscess, tumours or granulomatous lesions [3-5]. Biopsy is mandatory to confirm the diagnosis, and antituberculous drugs are the mainstay of treatment. When operative findings at biopsy have the features of skeletal tuberculosis, debridement and curettage of the affected bone may promote early healing [4-7].

Case Report

A 22 year-old, right hand dominant male patient presented at our outpatient department with pain and on and off discharging sinus over right forearm for past one year. There was no history of injury. He had a low-grade evening rise of temperature. The pain had progressively worsened during the day but did not disturb his sleep at night. The pain was not relieved by analgesics. Maximum pain was felt while lifting weights from right hand. There was no history of cough, expectoration, haemoptysis, swelling elsewhere or other joint involvement. Past history of major illnesses like tuberculosis, diabetes mellitus was absent. The family history was non-contributory. The patient was conscious, alert and cooperative.

Figure 1 Radiograph of the right forearm showing thickened cortex of the radius with an intracortical lytic bone lesion associated with sclerosis and periosteal reaction.

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On examination of his right forearm, there was a healed sinus with puckering of skin on dorsal surface of forearm. The sinus was fixed to the underlying bone. Skin discolouration around the healed sinus was noted (Figure 3A). There was no local rise of temperature. Radiograph of the right forearm showed a thickened cortex of the radius with an intracortical lytic bone lesion associated with sclerosis and periosteal reaction (Figure 1). Mild swelling of the overlying soft tissue is also noted.

Radiograph of the chest was normal. MRI of the involved extremity was done which showed altered marrow signal intensity in upper shaft of radius with cortical thickening. A tiny dead bone is seen within the cortical thickening. Surrounding fluid is hypointense on T1 images and hyper intense on T2 images (Figure 2).

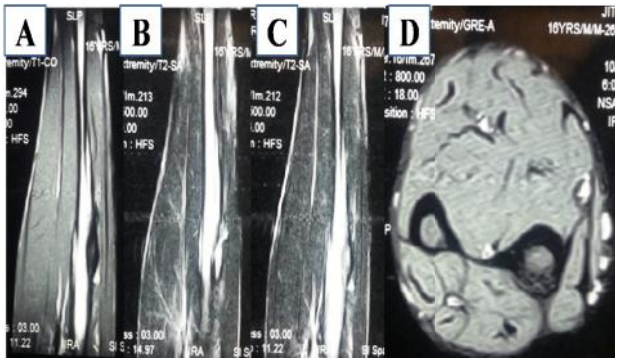

Figure 2A: T1 weighted image **2B,C:** T2 weighted image **2C:** Cross section MRI image showing altered marrow signal intensity in upper shaft of radius with cortical thickening with a tiny dead bone piece seen within the cortical thickening.

Routine laboratory workup revealed that the erythrocyte sedimentation rate was 62 mm in the first hour. C-reactive protein value was 32 mg/l. Haemoglobin level was 11.5 g/dL. TLC was 9,300/ cu mm with normal differential count. The Mantoux test was negative. Serology for hepatitis B and C as well as HIV were negative. After getting anaesthetic clearance for surgery, the patient was posted for debridement with saucerisation. The sinus tract was excised which was going into the bone (Figure 3B). Debridement and saucerisation of radius was done and medullary canal opened up (Figure 3C).

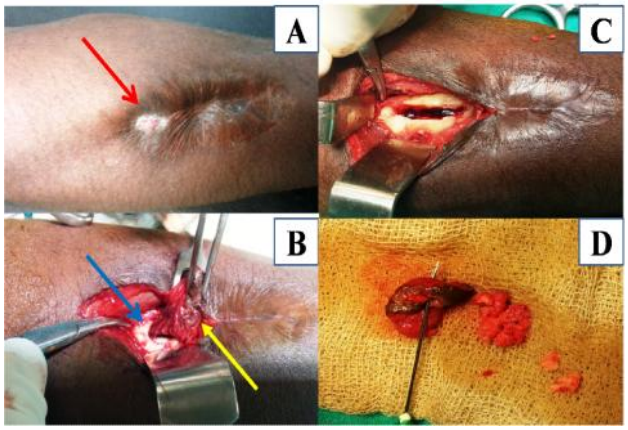

Figure 3A: Healed sinus with puckered skin and discolouration around the sinus. **3B:** Sinus (yellow arrow) seen extending into the bone (blue arrow). **3C:** After saucerisation of the radius. **3D:** Sinus tract and curreted material which was send for staining, culture sensitivity and histopathology.

The material obtained (Figure 3D) was send for cultute sensitivity, gram staining, AFB staining and histopathology.

Before closure of the wound, streptomycin was instilled in the wound. Gram staining and culture sensitivity came out to be negative. AFB staining was positive. Histopathological examination of the obtained necrotic material revealed well-formed epithelioid granuloma interspersed with characteristic Langhans giant cells in the background of eosinophilic caseous material, characteristic of tubercular osteomyelitis. The final diagnosis was isolated diaphyseal tuberculous osteomyelitis of right radius was made. The patient was started on anti tubercular treatment comprising of four drugs (rifampicin, isoniazid, pyrazinamide and ethambutol) daily initially for three months. At the latest follow up after three months post surgery, the patient was well tolerating the drugs and was shifted to three drug regimen (isoniazid, rifampicin and ethambutol) for four months. The patient's symptoms had subsided with no further formation of the sinus tract.

DISCUSSION

There has been a recent resurgence of pulmonary tuberculosis due to the pandemic of HIV infection, which has lead to an increase in the number of musculoskeletal tuberculosis as well [8]. About 1%–3% of immunocompetent patients have musculoskeletal tubercular [1]. Tuberculosis has been reported to occur in all bones of the body. Up to 50% of the extrapulmonary tuberculer infections occur in the spine. The respiratory tract is the primary portal of entry of mycobacteria. Tuberculous osteomyelitis is thought to occur secondary to lymphohematogenous dissemination to the bone at the time of initial pulmonary infection, with local reactivation at a later date. Isolated involvement of the bone without joint involvement is uncommon. Tuberculosis of the shaft of tubular bones makes up less than 1% of all cases of skeletal tuberculosis [9]. Primary diaphyseal involvement is postulated to be caused by a tuberculous emboli that remains lodged in the nutrient vessel and thus fails to spread to the common site of involvement, the metaphyseal region [10]. Commonly presenting features are pain and swelling of the bone. Abscess or sinus formation may also occur. Only about one third of patients who have tuberculosis of the bone or joint have a history of pulmonary disease, contributing to the low index of suspicion [11]. Signs like osteoporosis, bone lysis, sclerosis, and periostitis are seen in both tuberculous and pyogenic osteomyelitis, often making it difficult to differentiate these conditions. A solitary lesion in the diaphysis of the long tubular bone may mimic chronic pyogenic osteomyelitis, Brodie's abscess, cystic lesions, tumours or granulomatous lesions, either fungal or bacterial [3,4]. In a primarily diaphyseal intracortical lesion, as in our case, it is essential to exclude osteoid osteoma, intracortical haemangioma and Brodie's abscess [12]. Because of such varied clinical and radiological presentations, biopsy and culture are necessary to establish the diagnosis. This particular case merits special attention because isolated diaphyseal tuberculous osteomyelitis without articular involvement is a rarity in an immunocompetent individual [13]. Normal plain radiographs in cases of suspicion require more sensitive investigations such as Montaux test, MRI and CT scan to detect and localise the lesion. Biopsy is mandatory to

confirm the diagnosis. Antituberculous drugs remain the mainstay of treatment and judicious surgical intervention (debridement and curettage) help to promote early healing.

CONCLUSION

Tuberculous osteomyelitis requires a high index of clinical suspicion. Markers of acute inflammation such as ESR and C-reactive proteins are usually elevated, but are nonspecific. Radiographic appearances of TB osteomyelitis depend on the stage of presentation at diagnosis, ranging from mild soft tissue swelling to areas of osteolysis with local osteopenia. Similar radiological findings may be seen in many other conditions. Histopathological evaluation and culturing the organism is the mainstay of diagnosis. Antituberculous chemotherapy is the cornerstone of the management of skeletal tuberculosis. Surgery is a valuable adjunct in establishing the diagnosis by histopatholigcal analysis and in evacuation of an abscess or debridement of necrotic bone.

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