ORIGINAL ARTICLE

Modes of Presentation, Diagnostic Pitfalls and Treatment of Non-Spinal Extra-Articular Osseous Tuberculosis

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ABSTRACT

Back Ground: Tuberculosis is a necrotizing bacterial infection with protean manifestation and wide distribution. The incidence and prevalence of tuberculosis has increased tremendously during present decade and is expected to rise further.

Objective: To study the effect of anti-tubercular chemotherapy with curettage of the lesion when indicated, to suggest guide lines of assessing the healing of these lesions both clinically and radiologically and to analyze its various modes of presentations.

Study Design: Prospective study design was used.

Setting: Department of Orthopedic surgery and Traumatology Unit I, Mayo Hospital Lahore.

Patients: 21 patients with osseous tuberculosis were selected.

Interventions: In ten patients diagnostic and in eleven patients diagnostic as well as therapeutic curettage was performed.

Results: Young adults in teen age were found to be common sufferers. Females were more common with 61.9%. Sinus was found to be most common mode of presentation in this study. 14 patients presented with discharging sinuses 13 painless and one painful sinus. Mostly patients presented after more than six months of their symptoms. 18 lesions were in metaphyseal regions while only three were in diaphyseal regions. In 14 patients the gross appearance during biopsy was caseous, in three caseous with pus and one had granulation with caseation, two has pus debris and sequestration, and one had fleshy appearance resembling giant cell tumor.

Conclusions: Osseous tuberculosis is common in young adult females and present late. The metaphyseal region is more commonly affected, biopsy and PCR is more reliable. Minimal periosteal reaction, slow enlargement of the focus, irregular area of destruction and formation of pus are specific radiological features. A nine month course of antitubercular drugs is the basis of treatment. Surgery is an adjunct to drugs. Debridement and curettage is required in lesions more than 5cm in size and if the lesion is more than 10cm it needs additional bone grafting. Resection of a destroyed or sequestrated bone is rarely necessary.

Key words: Osseous tuberculosis, PCR, debridements & curettage

INTRODUCTION

Tuberculosis is a necrotizing bacterial infection with protean manifestation and wide distribution, lungs are most commonly affected but many other organs may be affected or it may disseminate throughout the body. Mycobacterium tuberculosis can involve virtually any organ of the body[1]. The incidence and prevalence of tuberculosis has increased tremendously during present decade and is expected to rise further. It contributes to high morbidity and mortality in adult age group particularly in the adult population[1]. There is resurgence of tuberculosis in the developed countries which is mainly due to an increased incidence of HIV infection. The factors responsible in the developing countries are mainly HIV infection, poor case finding, improper treatment in dosed and duration. Poor compliance of the patient results in emergence of multidrug resistance tuberculosis[2]. Osseous tuberculosis is usually caused secondary to a primary focus located in the body elsewhere. Evidence of active pulmonary disease however is present in 50% of cases[3]. Early diagnosis and detection of osteomyelitis and differentiation of soft tissue infection from bone involvement is a difficult clinical and imaging problem[4]. Before a biopsy is taken diagnosis is confirmed by Polymerase Chain Reaction. This is relatively a new technique[5]. Biopsy is mandatory to confirm the diagnosis and anti-tubercular drugs are mainstay of treatment[6]. The regimen used in this study consists of four drugs, isoniazid, rifampicin, pyrazinamide and ethambutol in the initial stage for three months and in continuation phase two drugs isoniazid and rifampicin are used for six months further[7]. Surgery may be diagnostic or therapeutic. Therapeutic surgery is indicated for

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larger symptomatic lesions of weight bearing bones that contain significant sequestra or are in danger of structural collapse, fracture or extension to adjacent joints. Surgery may not be indicated for small lesions of the upper extremity that do not contain large sequestra or endanger nearby joints. Curettage of the affected bone may promote early healing[6].

PATIENTS AND METHODS

The patients in this study presented in Orthopaedic department of Mayo Hospital Lahore from December 1997 to December 2000. 21 patients in total were included in this study. Patients of both sexes and of all age group were included. The patients did not represent any cross section of population but persons from different parts of the country forming a non homogeneous social group. The aim was to study the effect of anti-tubercular chemotherapy with curettage of the lesion when indicated, to suggest guide lines of assessing the healing of these lesions both clinically and radiologically and to analyze its various modes of presentations. Prospective study design was used. On presentation, patient's biodata and history was recorded, the mode of presentation, duration of symptoms, other associated illness, history of previous treatment and its effects, history of contact in close family members was recorded in a specially designed performa. Patients were fully evaluated. Local examination included bone involvement, site of lesion, size of lesion and adjacent joint movements both active and passive. Systemic examination focused on any primary lesion. Routine laboratory investigations were performed including blood, urine and renal functions, radiographs of chest and involved region and bone scan. Patients with hemoglobin less than 10gm% were considered anemic. Eight patients were anemic and three patients showed pulmonary involvement on chest radiographs. After that patients were operated under appropriate anesthesia and curettage of the lesion was performed. The material thus obtained was divided into three portions, one for biopsy, second for culture and sensitivity and third for polymerase chain reaction. In 13 patients presentation was with sinus so excision of the sinus was also performed. In two patients lesion was more than 10 cm involving weight bearing area so primary one grafting was also needed. Wounds were closed in layers over drains but in six patients wounds were left open because of overlying skin condition. Drains were removed after 48 hours. Prophylactic antibiotics were continued for three days. Antitubercular therapy was started on confirmation by PCR and biopsy, this included rifampicin 10mg/kg, isoniazid 5-10 mg/kg, pyrazinamide 20-40 mg/kg and ethambutol 20-30 mg/kg. The dosage was adjusted according to weight and age of the patient. Pyridoxine 50mg/day was added to this regime. Two drugs ethambutol and pyrazinamide were discontinued after three months for total of nine months. Patients were discharged on chemotherapy on the advice to visit after every month for four months and then after every two months. On each visit patients were examined for response of the drugs that included pain by visual analogue scale, healing, swelling, sinus, improvement in gait and gain in weight. Bone healing was assessed by radiographs. Hemoglobin, ESR, LFT, visual acquity were checked to assess effectiveness and any complication.

RESULTS

Young adults in teen age were found to be common sufferers. Females were more common with 61.9%. Sinus was found to be most common mode of presentation in this study. 14 patients presented with discharging sinuses 13 painless and one painful sinus. Mostly patients presented after more than six months of their symptoms. 18 lesions were in metaphyseal regions while only three were in diaphyseal regions. In 14 patients the gross appearance during biopsy was caseous, in three caseous with pus and one had granulation with caseation, two had pus debris and sequestration, and one had fleshy appearance resembling giant cell tumor.

Pretreatment radiograph

Post treatment radiograph

Post treatment radiograph

Pre treatment radiograph

Post treatment radiograph

DISCUSSION

Literature on nonspinal, extra articular osseous tuberculosis is limited but common on tubercular arthritis and Pott's disease so comparison with previous studies was found to be a difficult task. Tuberculosis remains a major cause of skeletal infection in many parts of the world. Our aim was attention to tubercular osteomyelitis which is rare as compared with skeletal tuberculosis involving the spine and joints. In about 50% of the patients vertebrae are the site of involvement [7]. Because of the subtle nature of the symptoms, the diagnosis is made until the process is well advanced. The variable clinical and radiological pictures may mimic chronic pyogenic osteomyelitis, Brodies's abscess, tumor or granulomatous lesion. In this study, adults in teen age group are found to be common sufferer. Among 21 patients 14 are 11-20 years age group with a percentage of 66.67%. It is alarming and significant showing high prevalence of tuberculosis in our country. These results are in accordance with Hugh G 1996 who stated that when the prevalence of tuberculosis in a community is high most of the population in that community has been infected by the age of 20 years[8].

Females are predominant in the study with 61.9%. It is perhaps due to less access to health care and more prone to live with risk factors, low socioeconomic status, poor housing conditions with poor or no ventilation and sun light.

Sinus was found to be most common mode of presentation in our study. 13 patients presented with painless sinus (61.9%) one with swelling and pain, one with pain and one with pathological fracture. Other studies also revealed this[6,9,10]. The reason might be late presentation of the patients.

Eighteen lesions were detected in metaphyseal region (85.71%) and only three in diaphyseal region (14.29%). This is the same observation made by Rasool in 1994. This metaphyseal predilection is probably due to vascular structure of long bones[11]. Two patients had multifocal disease. These findings are in accordance with study by Hugh G. Tuberculosis was reported in all bones of the body but tibia and its metaphysis was found most common vulnerable site for infection. Multifocal form constitutes less than 5% of all cases of osseous tuberculosis. Majority of our patients (n=14) had lesions less than 5cm, six patients had lesions 5-10cm and in one lesion was more than 10 cm. Size of the lesion depends upon chronicity of disease. Radiological picture of the lesion was different in different patients. Osteolytic defect with cortical erosion was most common in 12 patients, followed by cystic expansion of the bone or Brodies abscess in seven patients, while in two patients the finding were closely related to chronic pyogenic osteomyelitis with sequestrum.

CONCLUSIONS

Osseous tuberculosis is common in young adult females and present late. The metaphyseal region is more commonly affected, biopsy and PCR is more reliable. Minimal periosteal reaction, slow enlargement of the focus, irregular area of destruction and formation of pus are specific radiological features. A nine month course of antitubercular drugs is the basis of treatment. Surgery is an adjunct to drugs. Debridement and curettage is required in lesions more than 5cm in size and if the lesion is more than 10cm it needs additional bone grafting. Resection of a destroyed or sequestrated bone is rarely necessary.

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