

**DISSEMINATED SKELETAL TUBERCULOSIS OF MULTIPLE NONCONTIGUOUS BONES: A RARE CASE REPORT****Balbir Malhotra<sup>1</sup>, Dilbag Singh\*<sup>2</sup>, Amritpal Kaur<sup>2</sup> and Jasvir Kaur<sup>3</sup>**<sup>1</sup>Professor, Department of Pulmonary Medicine, Government Medical College, Amritsar Punjab, India.<sup>2</sup>Junior Resident, Department of Pulmonary Medicine, Government Medical College, Amritsar Punjab, India.<sup>3</sup>Senior Resident, Department of Pulmonary Medicine, Government Medical College, Amritsar Punjab, India.**\*Corresponding Author: Dilbag Singh**

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**ABSTRACT**

Disseminated Tuberculosis is when two or more than two non contiguous organs are involved, because of tuberculosis. It is a common type of tuberculosis but disseminated skeletal tuberculosis with multiple non contiguous bones involved without involvement of any other organ is very rare. We hereby report a 12 year old non immune compromised female patient who presented with multifocal skeletal tuberculosis of extremities with involvement of right elbow, left toe and right ankle without involvement of any other organ. The case is being reported because of its extreme rarity.

**KEYWORDS:** Disseminated, tuberculosis, skeletal, non contiguous.**INTRODUCTION**

Disseminated tuberculosis (TB) is defined as having two or more non contiguous site involvement resulting from lympho hematogenous dissemination of Mycobacterium tuberculosis. It is quite common in developing and undeveloped countries; even in developed countries it has become quite common due to the advent of Human Immunodeficiency virus(HIV) infection. Because the clinical manifestations are quite nonspecific, it can mimic several other disorders, and diagnosis is often difficult. A high index of suspicion and familiarity with its diverse features allow early recognition and treatment of the disease.<sup>[1]</sup> However osteoarticular tuberculosis (TB), an uncommon form of extrapulmonary TB, comprises 1–6% of all TB cases and 10–15% of all extrapulmonary TB cases.<sup>[2–5]</sup> The most frequent sites of osteoarticular TB are the spine, hip and knee. Multifocal skeletal TB is rare and accounts for 10% of all osteoarticular TB cases.<sup>[6]</sup>

The diagnosis of multifocal osteoarticular TB is often delayed due to the clinical and radiological resemblance of the disease to numerous malignant and non bone diseases.<sup>[7,8]</sup> The consequences of considerable diagnostic delays in multifocal osteoarticular TB can prove critical for patients, since such delays may lead to the spread of the infection from the bone to the adjacent joints and surrounding soft tissue, causing significant functional disabilities.<sup>[9,10]</sup> Multifocal skeletal TB has rarely been reported in non-immunocompromised patients and in patients with normal pulmonary findings. The Extra Pulmonary TB and disseminated forms of the

disease are usually more frequent in certain patients, such as those with a much older age, malnutrition and haemodialysis, as well as immunocompromised and in particular HIV-infected individuals.<sup>[11]</sup> However, the current patient was a healthy 12-year-old female with no signs of systemic involvement and a negative HIV status. This demonstrated the diagnostic difficulties of this atypical form of TB. The present study describes the case report of a patient that presented with multifocal extremity pain and swellings and was diagnosed with Disseminated skeletal TB of multiple non contiguous bones without the involvement of any other organ. The patient responded well to anti-TB medication. The case is being reported because of its rarity.

**CASE REPORT**

A 12 year old female presented to Chest and TB hospital Amritsar with complaints of multifocal painful swellings over extremities particularly involving around second left toe, right elbow and discharging sinus at right ankle for the last 2 months. She also complains of fever, loss of appetite and loss of weight for the last two months.

Upon physical examination, the proximal middle phalangeal joint of the second left toe (Figure 1.a) and right elbow joint (Figure 3.a) were swollen. There was a discharging sinus visible on right medial malleolus with undermined edges (Figure 2.a). The patient had pain and difficulty in moving her extremities. Laboratory tests had showed normal peripheral blood count values and raised erythrocyte sedimentation rate (90 mm at the end of 1 h). The enzyme-linked immunosorbent assay was negative

for human immunodeficiency virus and the radiographs of the thoracolumbar spine, chest and pelvis were normal. The plain radiograph of right elbow and right ankle showed well defined lytic lesions with narrow zone of transition. Some of the lesions are reaching till the adjacent joint surface without cortical break of the joint surface. There was no evidence of the fracture in the affected region and there was no matrix mineralisation seen. TST was highly reactive.

The biopsy of the second left toe and right medial malleolus lesion showed a granulomatous lesion with

necrosis (including Langhans giant cell and epithelioid cell central caseation), which was suggestive of TB; however the acid-fast stain (Ziehl-Neelsen) showed no acid-fast bacilli (AFB). The diagnosis of TB was confirmed by pus from discharging sinus in which MTB was detected through CBNAAT(Xpert test). Anti-TB medication was then prescribed, with four drugs consisting of isoniazid, rifampicin, pyrazinamide and ethambutol (DOTS Therapy). After 3 months of treatment, the lesions gradually healed and the pain and swelling subsided.



**Figure 1.a**

**Figure 1.a- swelling of proximal middle phalanges of left second toe.**



**Figure 1.b**

**Figure 1.b -well defined osteolytic lesion of proximal middle phalanges of left second toe.**



**Figure 2.a**

**Figure 2.a - Discharging sinus at medial malleolus.**



**Figure 2.b**

**Figure 2.b - Well defined lytic lesion at medial malleolus with narrow zone of transition without any evidence of fracture.**



Figure 3.a



Figure 3.b

Figure 3.a - Swelling and Right Elbow Joint.

Figure 3.b - Well defined osteolytic lesion at olecranon process of ulna and distal humerus, lesions are reaching the adjacent joint surface without cortical break of joint surface)

## DISCUSSION

To the best of our knowledge, this is the rare case of Disseminated skeletal TB affecting multiple non contiguous bones without involvement of any other organ in a non immune compromised patient. Highly reactive TST and positive CBNAAT results (Pus from discharging sinus) for *Mycobacterium tuberculosis* confirmed the diagnosis. Furthermore, the response of the patient to anti-TB medication revealed strong evidence of TB infection. Multifocal skeletal TB most often affects the spine, and the other weight-bearing joints.<sup>[12]</sup> The preference of TB for large joints and the spine can be explained by the rich vascular supply of the vertebra and the growth plates of the long bones, in conjunction with the hematogenous spread of TB.<sup>[13-16]</sup> In the present study, TB was observed in the left toe, right elbow and right ankle while the weight-bearing joints, such as the hips and knees and spine, remained healthy. The exact physiological mechanisms of TB remain unclear and direct inoculation cannot completely explain the symmetry of the afflictions. Those one the presence of lesions in atypical positions cannot exclude the diagnosis of TB.

Osteoarticular TB is a major cause of morbidity. Diagnosis of Disseminated Skeletal TB of multiple non contiguous bones is frequently delayed due to its rarity and the considerably vague nature of its symptoms. Furthermore, it is difficult to differentiate disseminated skeletal bone TB from other bone lesions based on clinical or radiological findings alone.<sup>[17]</sup> In the present study, lytic lesions were observed in the plain radiographs of the extremities of the patient.

## CONCLUSION

We herein reported a case of Disseminated skeletal tuberculosis of non contiguous multiple bones presenting as painful swelling and well defined lytic lesions with some lesions reaching till the adjacent joint surface

without cortical break of joint surface. Disseminated Skeletal bone TB has rarely been reported in non immuno compromised patients and in patients with normal pulmonary findings. Skeletal TB does not present any specific features on radiological images in the early stages of the disease, thus mimicking metastatic tumours or certain primary osseous lesions, such as eosinophilic granuloma, particularly if multiple destructive lesions are present. The diagnosis and treatment of disseminated skeletal TB of non-contiguous multiple bones are frequently delayed due to the rarity and vague symptoms of the disease, thus allowing progression to severe deformities and functional deficits. Pain and swelling may be presentations of osteoarticular TB infection. To the best of our knowledge, the present case report is an extremely rare case of Disseminated skeletal tuberculosis of non contiguous multiple bones without the involvement of any other organ in a non immuno compromised patient.

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