ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Tuberculous Dactylitis(Spina Ventosa) Of An Adolescent Thumb: A Rare Case Report.

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ABSTRACT

Tuberculous dactylitis (Spina Ventosa) is an uncommon and a rare condition which is difficult to differentiate from other lesions, particularly tumors.There is a spindle shaped expansion of the short tubular bones due to tuberculous granuloma.Hence it is also known as Spina Ventosa.We report the case of a 12-year-old, healthy, right handed boy who consulted for progressive painful swelling of 6-month duration in the left thumb, which had developed after an alleged accidental thorn prick injury.The plain radiograph of the thumb, revealed extensive destruction of the first (Thumb) Metacarpal associated with a pathological fracture. Magnetic resonance imaging (MRI) showed an Osteolytic Lesion in first Metacarpal with ballooning out and thinning of the Cortical bone and with an extra osseous lesion, breaching the cortex. The diagnosis of tuberculous dactylitis was confirmed by histological characteristics and positive acid fast bacilli using Ziehl-Neelsen stain. Surgical debridement and anti-tuberculous treatment treated the infection. 9 months post treatment, the patient had regained good function of the thumb with no significant disability interfering with his activities of daily living. Tuberculous Dactylitis is a very Rare Manifestation of skeletal Tuberculosis which should be kept in mind while dealing with any pathological lesions of short tubular bones of hand.

Keywords : Dactylitis , Tuberculosis , Osteolytic Lesion, Spina Ventosa, Granuloma

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ISSN: 0975-8585

INTRODUCTION

It is of historic interest that Feilchenfeld in 1896 described tuberculous dactylitis roentgenographically in children, and Rankin in 1886 identified tuberculous dactylitis by histological technique .Tuberculous involvement of the small bones of the hand is a rare presentation of extra pulmonary tuberculosis.The spine is the most frequent site of skeletal involvement;occurring in less than 3% of patients with extra pulmonary tuberculosis.The many non-specific manifestations of extra pulmonary tuberculosis gives room for a considerable diagnostic delay.Tuberculous dactylitis is often referred to as spina ventosa,which is a descriptive term referring to any bone lesion that causes progressive absorption of cortex bordering the medullary canal with progressive subperiosteal hyperplasia until roentgenographically the bone appears ballooned out and destroyed .We report one such rare case of Spina Ventosa in a healthy adolescent patient ,who had tuberculous dactylitis of the 1st metacarpal of the left hand associated with pathological fracture.

Case Report

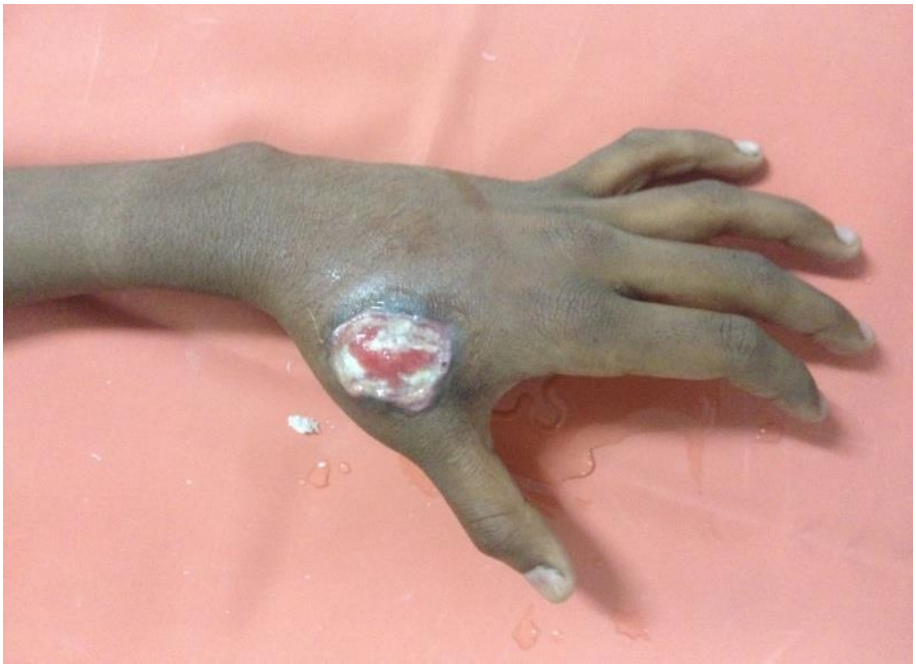
A 12 yr old healthy boy, right handed who consulted for progressive painful swelling and an non healing ulcer of 6-month duration in the left thumb, which had developed after an alleged accidental thorn prick injury. Initially he had a small wound over dorsum of thumb ,for which he underwent native treatment 6 months back and developed a non healing ulcer over dorsum of left thumb.

Patient had no history of Chronic respiratory tract infection, No history of weight loss in the past 6 months, No history of contact with open Tuberculosis , no family history of tuberculosis and not under any medication.

On Examination he was of 32 kgs weight , 110 cms in height , his resting pulse rate was 84/min , Blood pressure was 106/80 mm Hg , with no significant peripheral lymphadenopathy.

Chest examination was normal. Examination of other systems was unremarkable.

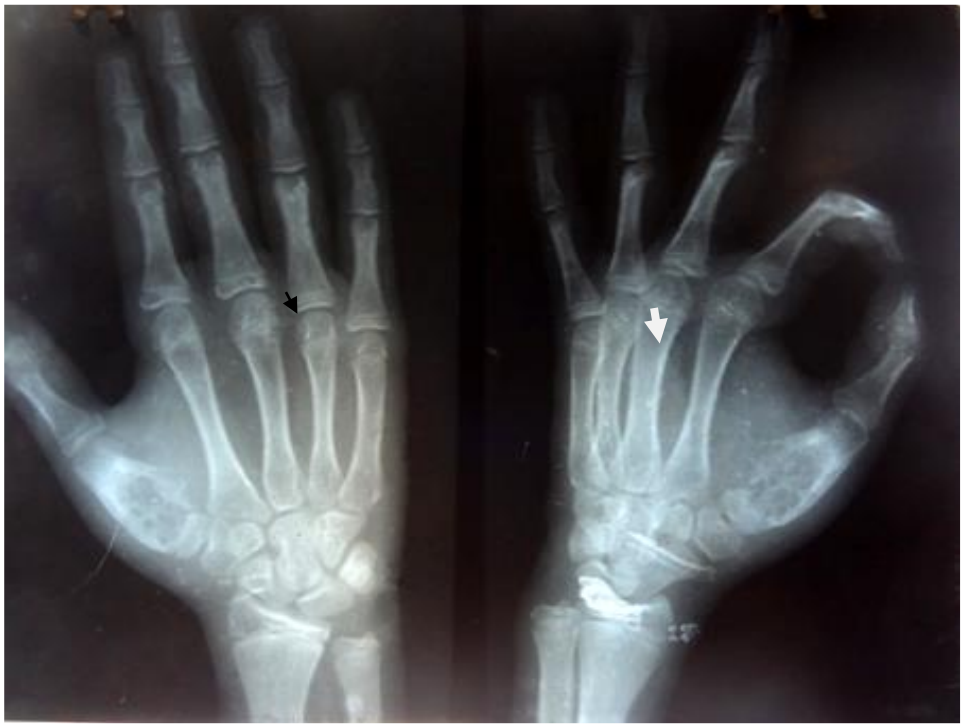
Examination of Left thumb revealed Swelling and a non healing oval shaped ulcer measuring 4x4 cm , with no discharge , undermined edge and floor with pale unhealthy granulation tissue over dorsal aspect, Tender on palpation , all movements of thumb painfully restricted .



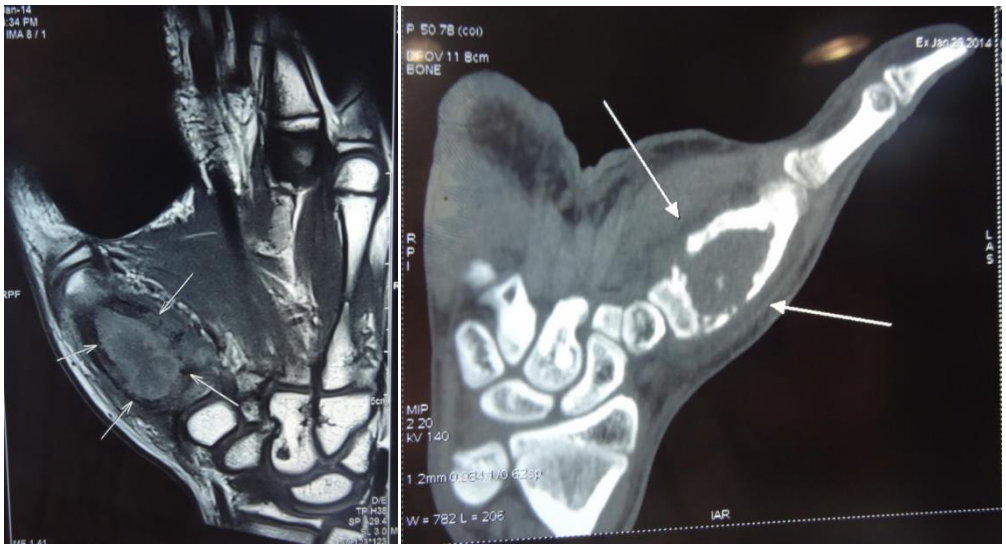
His Hb was 12.2 gm%; Total Leucocyte count was 8,500/cmm with a Differential Leucocyte count of Neutrophils 66%, Lymphocytes 32%, Monocytes 2%, Eosinophils 2% and a raised ESR level of 60 mm/hour,

his random blood sugar was 86 mg/dl, CRP was 0.6mg/dl and raised Alkaline phosphatase level of 167 IU/L (normal range 35-129 IU/L). Mantoux test was negative.

Radiographs of Left hand showed extensive cortical destruction and ballooning of 1st Metacarpal with pathological fracture , Chest X ray was normal.

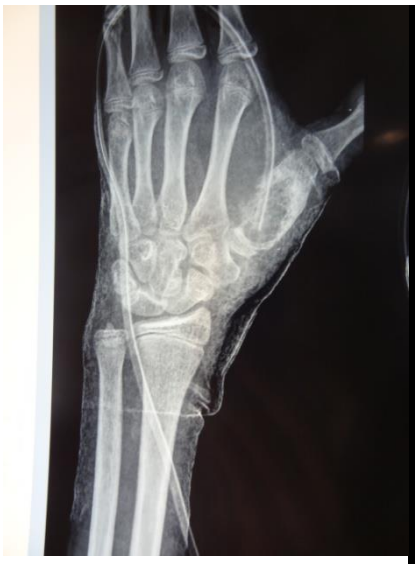


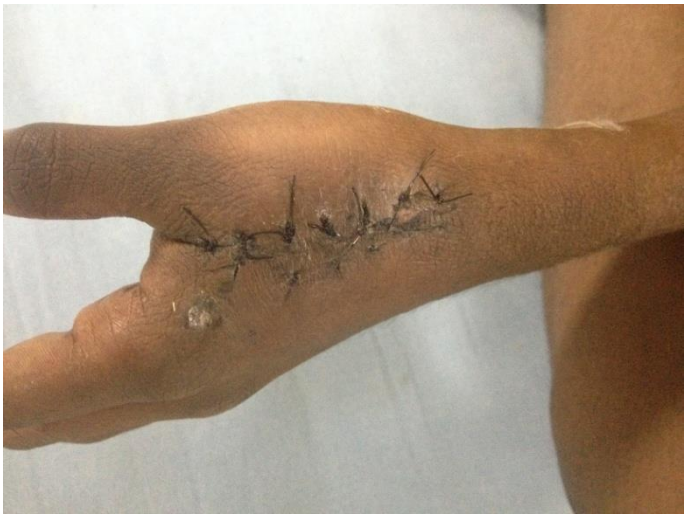
Magnetic resonance imaging showed an osteolytic lesion visualized in the medullary cavity of first metacarpal, involving the entire bone. Expansion of the metacarpal with extensive erosions of the cortical bone was visualized , the lesion was seen extending outside the bone through the cortical breaks , predominantly in the posterior aspect. The lesion appeared hyper intense in T2W and mixed signals in T1W. Reported to be a doubtful tuberculous osteomyelitis.



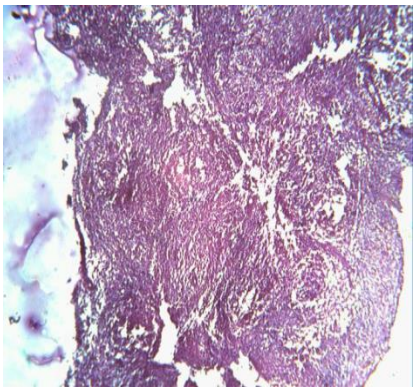
ISSN: 0975-8585

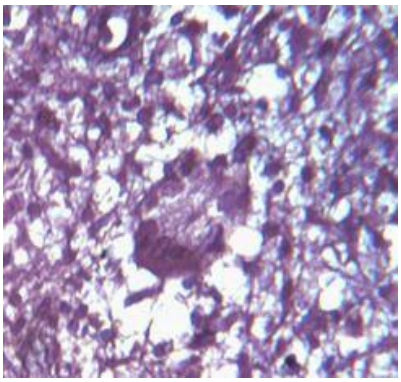
4 days after all investigations, patient was posted for Surgical Debridement ,biopsy and curettage, Caseous Material removed from the lesion site , specimen sent for Histopathological examination , Zeihl Neelsen Staining, Culture Senstivity .Wound Sutured intraoperatively

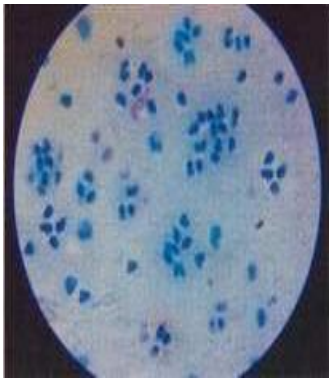




Patient was started Emperically on 4 drug ATT (Isoniazid,Rifampicin,Ethambutol,Pyrizinamide) postoperatively .Biopsy Sent for Histopathological examination revealed granulation tissue with plenty of lymphocytes , areas of caseous necrosis , few epithelioid cell granuloma with multinucleated giant cells of the Langhans type . Zeihl –Neelson Staining showed acid fast bacilli in the smear sent for examination.

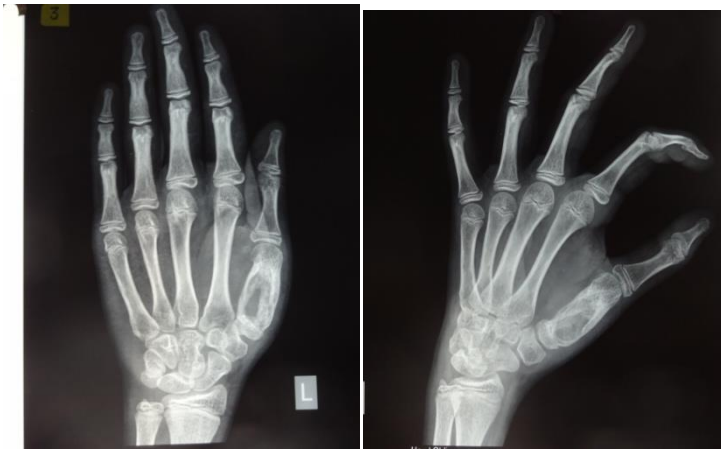




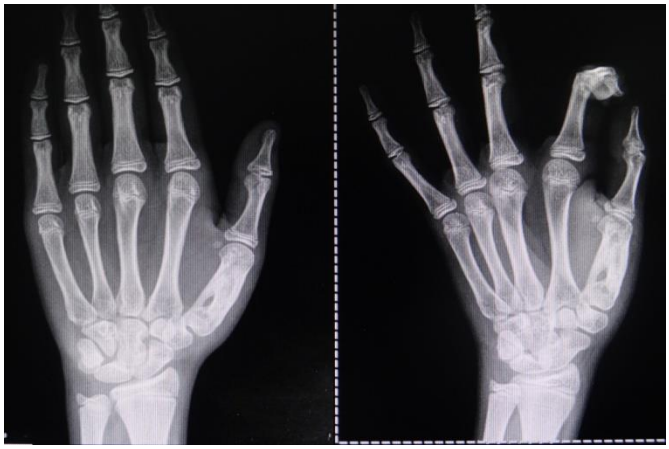


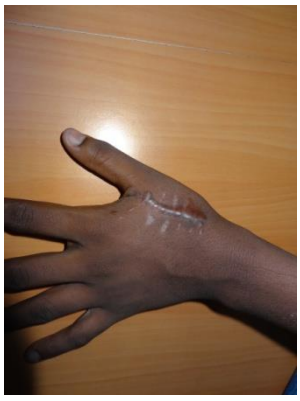
Diagnosis of Tuberculous Dactylitis was hence confirmed , Antituberculous Treatment was continued. Patient was followed up at weekly intervals for the 1st month, then on a monthly basis subsequently. The wound had healed completely by 3 weeks . 3 months after the 4 drug ATT , patient showed good functional improvement of the thumb and healing of the osteolytic lesion and new bone formation radiologically was visualized .2 drug Antituberculous treatment was initialized on completion of 6 months with removal of Ethambutol and pyrizinamide. Patient improved functionally , regained satisfactory hand grip by the 6th month and radiologically showed evidences of healing of lesion, with restoration of cortical margins . After 9 months of Post ATT patient had showed radiologically completely healed lesion and had regained full range of movements of the left thumb.

ISSN: 0975-8585



3 months follow up





9 months follow up

DISCUSSION

Skeletal tuberculosis is relatively uncommon compared to the pulmonary form of tuberculosis. Only 1/3rd of patients with bone tuberculosis are diagnosed with concomitant active pulmonary disease4. In fact, bones and joints are affected in 1%–3% of all cases and the spine and the hip are most commonly involved1. It occurs in 1–5% of children who have untreated initial pulmonary TB4. The incidence of tubercular dactylitis among children with TB is reported to be 0.65-6.9%. The bones of the hands are more frequently affected than bones of the feet. In the feet, the calcaneus is the bone most commonly involved.

In infancy and childhood before the epiphyseal centres are well established, the hematopoietic marrow in the short bones offers a fertile field for hematogenous bacterial implantation. The infection rapidly involves the entire marrow space. Tuberculous granulation tissue expands the relatively soft cortex as it is resorbed or infarcted by the underlying process. The resultant fusiform expansile lesion of the bone causes thinning of the cortex and a relatively radiolucent marrow space due to trabecular destruction resembling an inflated balloon sometimes causing the cortex to breach. Typically, there is no accompanying periosteal layering nor thickening, and the usual sequestration, ordinarily does not occur. Sclerosis may however be seen in long standing cases.

The radiographic features of cystic expansion of the short tubular bones have led to the name of ''spina ventosa'' being given to tuberculous dactylitis of the short bones of the hand. Classically, tuberculous dactylitis involves the flexor tendon sheaths and spares the joint synovium and bone in adults . Our case involved both the flexor tendon and the bone classically sparing the IP joint above and the MCP joint below mimicking with the picture of spina ventosa, that is peculiar to children.

The main differential diagnoses include sickle cell dactylitis which exhibits features similar to that of tubercular dactylitis but is characteristically bilateral and dissolution of the sickle cell lesions is typically followed by irregularly sclerotic new bone formation. Other differential diagnoses are congenital syphilis, pyogenic osteomyelitis, fungal infections and tumors. In syphilis, the bone is thickened by periosteal reaction. Clinically, pyogenic osteomyelitis tends to be acutely painful, swollen, and hot, with generalized fever. Tuberculous osteomyelitis , on the other hand, is more often only mildly painful, pyrexia is minimal, and the whole condition is relatively benign.

Diagnosis of tubercular dactylitis is made on radiographic features as explained above and culture of *Mycobacterium tuberculosis* .The nonspecific nature of the radiographic findings may delay the diagnosis. As it is a paucibacillary lesion, it becomes difficult to demonstrate or culture acid fast mycobacteria from these lesions. However, the gold standard for the diagnosis of osseous tuberculosis is culture of *Mycobacterium tuberculosis* from bone tissue.

Management is essentially by antitubercular drugs, rest to the involved part in functional position and early active exercises. Current recommendations for the treatment include a six months initial phase of Isoniazid, Rifampicin, Pyrazinamide, and Ethambutol followed by a 3 to 4 months regimen of Isoniazid and Rifampicin. Few studies argue that six month of antitubercular treatment is appropriate for tubercular dactylitis because of its paucibacillary nature.

Tuberculous Dactylitis is a very Rare Manifestation of skeletal Tuberculosis which should be kept in mind while dealing with any pathological lesions of the small tubular bones of hand.

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