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A Rare Diagnosis Of Spina Ventosa: Case Report

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Abstract

Spina ventosa is the tuberculous dactylitis of short bones of hands and feet. It occurs in young children in endemic areas under 5 years of age. Tuberculosis of the short tubular bones like phalanges, metacarpals or metatarsals is quite uncommon beyond 6 years of age. Here we present a case of an adolescent diagnosed with spina ventosa, highlighting the diagnostic challenges in arriving at the definite diagnosis. An 18-year-old adolescent female presented with painless swelling of her right hand that had been present for nearly 4 months, along with fever, weight loss, cough, and loss of appetite. There was no history of exposure to a known tuberculosis case. She was afebrile, pallor, and emaciated when examined. There was a 1.1cmx1.0cm painless firm swelling over the right 5^{th} metacarpal bone. The systemic examination was otherwise unremarkable. Investigations revealed leucocytosis with polymorphonuclear predominance with elevated CRP and ESR levels. Chest X-ray revealed normal lung fields. Mantoux test was strongly positive (20mm). On radiographic examination, there was a focal lytic lesion with sclerotic margin and mild expansion. Based on the radiographic findings and clinical correlation, this was diagnosed as tuberculous dactylitis.

Keywords: Spina ventosa, dactylitis of short bones, tuberculosis

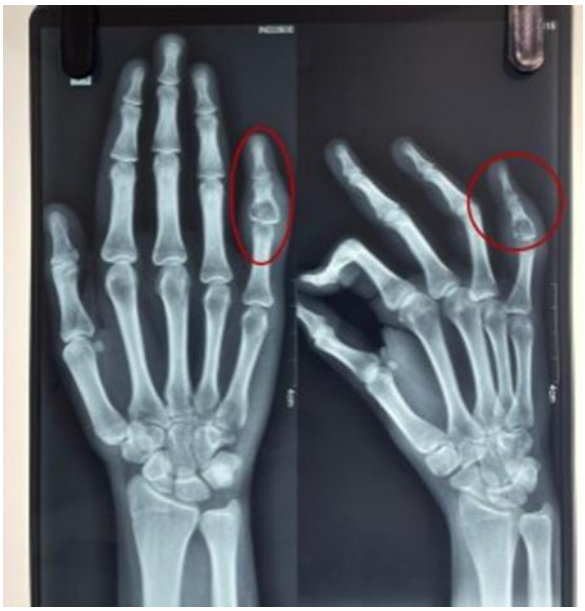
Introduction

Tuberculous dactylitis is a rare form of skeletal tuberculosis that causes tuberculous infection of the metacarpal, metatarsal, and phalanges of the hands or feet. Leung reported the first case of tuberculous dactylitis in 1978. The small size of the hand bones would explain the rarity of isolated osseous involvement. [1] Skeletal tuberculosis accounts for only 1 to 5% of all tuberculous infections, with approximately half occurring in the spinal column[2]. Although it is extremely rare in adults, it is a well-known form of tubercular osteomyelitis in young children in endemic areas. [3] Radiographic features of cystic expansion of the short tubular bones has led to the name of "*Spina Ventosa*" for tuberculous dactylitis of the short bones.[4] Spina Ventosa is uncommon after the age of 6 due to the development of the epiphyseal centers[5]. It typically manifests 1-3 years after the initial infection. As a result, the expansile granulation tissue causes a fusiform swelling of the bone with thinned cortex and a radiolucent marrow space. Cortical destruction and soft tissue swelling are inevitable outcomes [6]. It usually manifests itself as a painless swelling of a digit that lasts several months. It is possible to develop a mild fever and pain at the affected site. Anorexia and weight loss are also common clinical symptoms. Adult cases, on the other hand, were extremely rare and hardly reported.

Case Report:

An 18 yr old adolescent female presented with painless swelling of right hand noticed for almost 4 months associated with fever, weight loss, cough and loss of appetite. There was no history of exposure to known case of tuberculosis. Her past medical history revealed having cellulitis infection of lower extremities. On examination she was afebrile, had pallor and was emaciated. The pulse rate was 90/min; the respiratory rate was 26/min, and the body temperature was 36.3°C. There was a 1.1cmx1.0cm painless firm swelling over the right 5th metacarpal bone. The systemic examination was otherwise unremarkable. Investigations revealed leucocytosis with polymorphonuclear predominance with elevated CRP and ESR levels. Chest X-ray revealed normal lung fields. Mantoux test was strongly positive (20mm). There was a focal lytic lesion with sclerotic margin and mild expansion noted on radiographic examination, open biopsy of the swellings were done and histopathology revealed caseating granulomas suggestive of tubercular infection. Based on the radiographic findings and clinical correlation, this was diagnosed as tuberculous dactylitis. Laboratory evaluation revealed haemoglobin level of 9.5mg/dL, total leucocyte count of 8500/mm3, differential leucocyte counts of neutrophils 61, lymphocytes 33, eosinophils 0.06, erythrocyte sedimentation rate (ESR) 33mm and Mantoux test of 20 mm. The patient was started on ATT drug regimen following which her clinical condition improved in a period of 9months.

IMAGE 01: X-RAY OF HAND IN AP AND OBLIQUE VIEWS



X-ray of right hand showing focal lytic lesion with mild expansion and sclerotic margins in 5th metacarpal.

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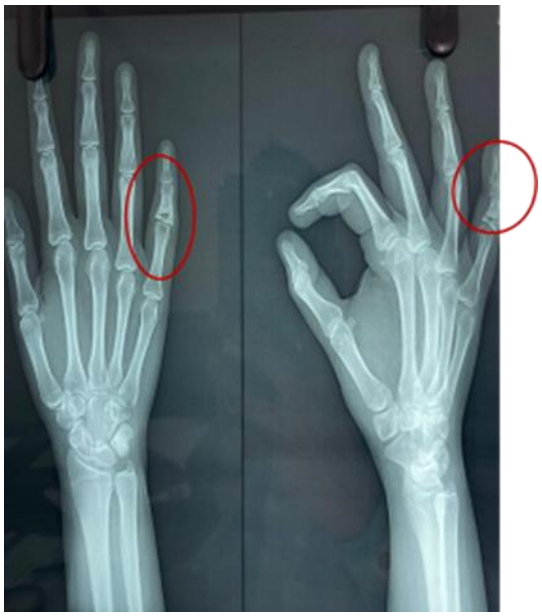
IMAGE 02 : X RAY OF RIGHT HAND AFTER TREATMENT



Radiographs revealing a decrease in size of osteolytic lesion with resolution of associated sclerosis.

The images shown here are the radiographs of the right hand taken in AP and oblique views, at the time of admission. There was a focal lytic lesion with mild expansion and sclerotic margins seen at the 5th metacarpal bone. The completion of treatment revealed a decrease in the size of the osteolytic lesion with the resolution of associated sclerosis. At 1 year follow- up, the patient had a full range of motion in fingers with no other symptoms .

Discussion:

The human strain of Mycobacterium tuberculosis causes the majority of tuberculous infections of the bones. Musculoskeletal infection is a secondary disease caused by hematogenous spread from a primary lesion; it can occur soon after the primary infection or years later as a disease reactivation. Osteoarticular involvement occurs in 1 to 3% of extrapulmonary tuberculosis patients, with the spine accounting for 50% of these lesions. [7] The most important method of disease propagation is arterial hematogenous seeding. The hematopoietic marrow in bones provides a fertile environment for hematogenous bacterial implants; pulmonary lesions are usually visible. The infection quickly spreads throughout the bone marrow space. [8] As the underlying process resorbs or infarcts the relatively soft cortex, tuberculous granulation tissue expands it. Due to trabecular destruction, the resultant fusiform expansion of the bone with thinned cortex and relatively radiolucent marrow space resembles an inflated balloon [9]. Spina ventosa refers to cystic bone expansion.

Bone infections typically affect the metaphysis, whereas diaphyseal lesions are less common. In children, as compared to adults, peripheral bone is commonly affected [10]. Sclerosis may progress in some cases over time, but it is not a common symptom, except during the healing process. [11] Because of the radiographic feature of cystic expansion of short tubular bones, tuberculous dactylitis of the short bones of the hand has been given the name Spina Ventosa.

[12] Tuberculous dactylitis is frequently misdiagnosed due to clinical and radiological similarities with other causes of dactylitis.

Despite the delayed diagnosis of tuberculous dactylitis, the combination anti-tuberculous drug regimen would lead to a full recovery from the condition. [13] Histopathology and bacteriological confirmation are critical in distinguishing tuberculous dactylitis from other pathologies of short tubular bones such as benign or malignant tumours, pyogenic osteomyelitis, sickle cell dactylitis, and others that can mimic tuberculous dactylitis [14-15]. The most

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recommended treatment for extrapulmonary tuberculosis is a 2-month initial phase of isoniazid-rifampicin-pyrazinamide-ethambutol followed by a 6- to 12-month regimen of isoniazid-rifampicin. Surgical excision may be required [16]. A majority of Spina Ventosa patients will have a favourable prognosis if they are correctly diagnosed and treated [17]

Conclusion:

This is a rare yet uncommon missed out diagnosis, which can affect any age group. This case report is one such example of spina ventosa seen in adolescent women. A delay in diagnosis can lead to systemic manifestations in other organs. Timely management is needed for favourable prognosis.

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