Case Report

Unusual presentation of isolated metacarpal tuberculosis

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ABSTRACT

Metacarpal tuberculosis is a rare presentation of the disease; it represents only 1% of all bone sites. The following report documents the case of a 28-year-old female who sought a consultation for a painful right hand following an injury. Radiographs showed a fracture of the distal fifth metacarpal through a lytic lesion. Histology of a biopsy specimen revealed granulomas with caseous necrosis, specific to tuberculosis. The patient experienced a complete recovery with anti-tubercular treatment. This case of an unusual presentation of isolated metacarpal tuberculosis was reported with the intention of highlighting the rarity of this location. It is therefore imperative to bear in mind the possibility of such atypical presentations of tuberculosis when making a rapid and correct diagnosis and prescribing adequate treatment.

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Introduction

Tuberculous osteomyelitis represents 10% of bone sites [1]. The location of the disease in this study is much rarer even in endemic areas. As a result of this clinical case study of an unusual presentation of isolated metacarpal tuberculosis, the current clinical, radiological, biological and therapeutic data are presented.

Case presentation

A 28-year-old female patient with no medical history presented at an orthopedic outpatient clinic after sustaining an injury to her left hand as a result of falling down some stairs. She had subsequent pain in the hand and difficulty moving it. Upon examination of the injury, a lump was discovered at the base of the fifth metacarpal, with swelling of the dorsal lateral border of the left hand. Wrist movements were normal, but limited by pain. There was warmth of the overlying skin, without rash (Fig. 1). An X-ray survey was performed and showed no signs of fracture. Symptomatic treatment was given by her general practitioner. Two months later, the patient had persistent hand pain and a non-healing wound. At the time of admission, the patient presented with a draining sinus from the dorsum of the ulnar border of the left hand, overlying the previous injury area (Fig. 2). Paradoxically, she felt generally well. No abnormalities were detected in other bones, and systemic examination was normal with no lymphadenopathy or fever and unremarkable respiratory, cardiovascular and abdominal examination. She had a slightly raised CRP of 12, a normal ESR of 10, and radiographs of the left hand and wrist showed lytic lesions over the base of the fifth metacarpal bone (Fig. 3). She reported no contacts with tuberculosis (TB), and on direct questioning had no respiratory symptoms, fevers, night sweats or weight loss, and no other past medical history. The patient had a positive Mantoux test, and her chest X-ray was normal. The overall appearances were suggestive of either osteomyelitis with associated septic arthritis, bony tumor or mycotic lesions. The Ziehl-Neelson test and fungal stains were negative. An
open biopsy with curettage confirmed TB. A Lowenstein culture revealed *Mycobacterium tuberculosis*. Histology of the bone specimen demonstrated multiple granulomas, with ‘a hint of caseation’. Debridement and anti-tuberculosis treatment resulted in complete recovery of the lesion. Thus, the patient was treated with anti-tuberculin medications for 9 months and conservative management of the bony lesions with a complete resolution of symptoms. She was started on quadruple anti-tuberculous therapy for 2 months, which included: isoniazid (300 mg/d), ethambutol (15 mg/d), rifampicin (600 mg/d) and pyrazinamide (2 g/d). She was given prophylactic vitamin B6 (pyridoxine 10 mg). Daily therapy with isoniazid and rifampicin was continued for an additional 7 months. Within 4 months, the patient was pain free, the swelling disappeared and the sinus healed on the affected hand (Fig. 4), and X-rays showed no further bony destruction (Fig. 5).

**Discussion**

TB is an infectious disease caused by *Mycobacterium tuberculosis* and is manifested by the formation of tubercles and caseous necrosis in the tissues. In the musculoskeletal system,
tuberculous spondylitis is the most typical form of the disease occurring in 1% to 3% of patients with extrapulmonary tuberculosis [1]; however, joint changes in extra-spinal sites, such as the hip, knee, wrist and elbow, also may occur. Tuberculosis of short bones, like metacarpus, metatarsus, and phalanges, is uncommon mainly after the age of 5 years [2,3]. Tuberculosis involvement of the metacarpals is a rare presentation of extrapulmonary tuberculosis in adults [4]. Isolated metacarpal tuberculosis is much rarer even in endemic areas [5,6]. The majority of patients with metacarpal tuberculosis are young [2]. This localization in adults is rare [4]. Musculoskeletal tuberculosis is difficult to diagnose [7]. Only about one third of patients with tuberculosis of the bone have pulmonary involvement [7], making chest X-ray screening less useful. The classic presentation with localized pain, together with fever and weight loss is rarely seen. The non-specific nature of radiographics can often delay the diagnosis. Radiological features of musculoskeletal TB are non-specific, but may include bone marrow edema, osteoporosis or lytic lesions [8,9]. The surrounding tissue may show synovitis, joint effusions, tenosynovitis, soft tissue collections, or myositis [8,9]. The affected bone appears expanded on the X-ray with lytic lesions in the middle (as seen in the present case) and subperiosteal new bone formation along the involved bone. The cavity may contain soft, coke-like sequestra [10]. 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 expansion of the bone with thinned cortex and relatively radiolucent marrow space as a result of trabecular destruction resembles an inflated balloon. Typically, there is no periosteal layering or thickening, and sequestration ordinarily does not occur [10]. To reach a definitive diagnosis, a bone biopsy should be taken for microscopy, culture and histology [7]. Tuberculous bacilli are rarely seen (with Ziehl-Neelsen staining) or grown in culture, and the diagnosis often has to be made based on the granulomatous appearance histologically along with high clinical and radiographic suspicion [11]. Chronic pyogenic osteomyelitis, luetic osteitis and mycotic lesions in the fifth metacarpal bone have to be differentiated [3,5,6]. Tuberculous osteomyelitis is more often only mildly painful, pyrexia is minimal, and the whole condition is relatively benign [7,11].

Management is essentially by conducting a bony debridement combined with anti-tubercular drugs, rest of the involved part in functioning position and early active exercise [3,5,6,12,13]. Current recommendations for the treatment of osseous tuberculosis include a 2-month initial phase of isoniazid, rifampicin, pyrazinamide, and ethambutol followed by a 6- to 12-month regimen of isoniazid and rifampicin [14]. A few studies argue that a 6-month course of anti-tubercular treatment is appropriate for metacarpal tuberculosis because of its paucibacillary nature [3,5,6]. The diagnosis of metacarpal tuberculosis is often difficult; partly because of its atypical clinical presentations, and the non-specific nature of the clinical examination and X-rays. Specialized morphological investigations are a capital contribution, but histology is diagnostic. Specific chemotherapy, combined with a bony debridement, generally allows desiccation of the bacilli in the lesions and the fixation of bone lesions.

**Conflict of interest**
None declared.

**REFERENCES**