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SHORT REPORT

Salmonella osteomyelitis: A rare differential diagnosis in osteolytic lesions around the knee

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KEYWORDS

Salmonella;
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Summary *Salmonella* osteomyelitis in immunocompetent adults is uncommon. It usually has a diaphyseal location or present as spondylitis. Metaphyseal affection is extremely rare. A 51-year-old male presented with refractory knee pain. Plain X-rays showed a rounded osteolytic lesion in the proximal tibia without marginal sclerosis. A minimal C-reactive protein elevation and a normal leucocytic count were present. Further imaging raised suspicion of malignancy so that a biopsy was done. After fenestering the lesion, 15-ml turbid fluid was evacuated. Microbiological examination showed *Salmonella enteritidis*. Repeated debridements were done and antibiotic therapy with ciprofloxacin was initiated. The cavity was then filled with synthetic bone graft leading to progressive healing. Although rare, *Salmonella* bone infection usually lacks the typical periosteal reaction and the laboratory evidence of infection of pyogenic osteomyelitis. It should therefore be considered in the differential diagnosis of osteolytic neoplastic lesions.

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Introduction

Salmonella infection of bones and joints is rare, accounting for only 0.8% of all *Salmonella* infections and 0.45% of all types of osteomyelitis [1,2]. It may affect infants or adults with sickle cell anaemia or immune compromise due to general or local causes or who are chronic *Salmonella*

carriers [2–5]. Only few case reports about infection in otherwise healthy persons are available [6–16]. Some uncommon human pathogens like *Salmonella panama*, *virchow* or *arizonae* and rare modes of infections like direct or indirect contact with reptiles or ingestion of snake-based products like meat and traditional medical preparations were here described [6–8,17–21].

This report presents a case of chronic infection of the proximal tibia caused by *Salmonella enterica* in an immunocompetent adult patient that raised suspicion of a malignant lesion because of its osteolytic nature, metaphyseal location and activity in the imaging studies. To the best of my knowledge,

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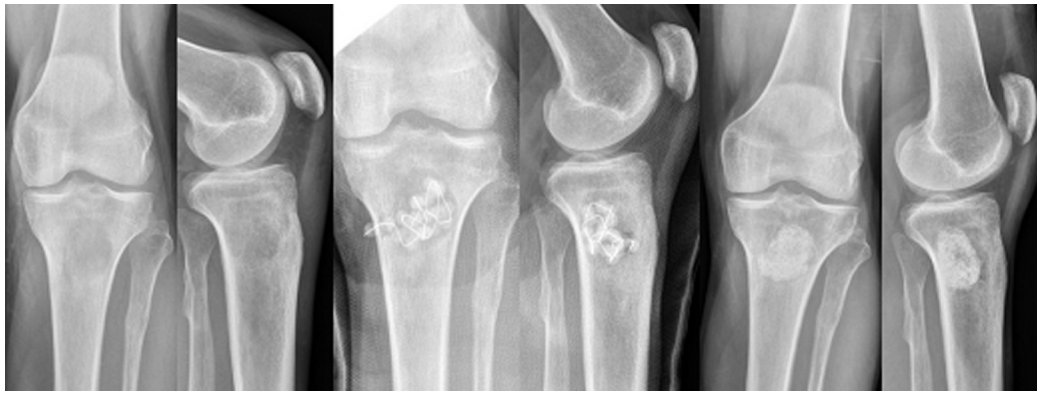


Fig. 1 An osteolytic metaphyseal bone lesion in the proximal tibia without new bone formation. Debridement of the lesion and application of antibiotic impregnated beads (Septopal®) were done. Progressive healing was seen after filling with a silicate substituted calcium phosphate (Actifuse®).

there is no similar case report with such a constellation in the literature.

The aim of the current report is to provide a clear description of the diagnosis and management of this case, to look through the available literature and highlight the consideration of atypical bone infection with unusual non-pyogenic organisms in the differential diagnosis of osteolytic lesions around the knee joint.

Case report

A 51-year-old male patient has been suffering from persistent deeply seated dull-aching pain in his left knee. There was no history of trauma, recent foreign travel or a preceding diarrheal or pyogenic infection and no knee injections or operations have been done in the past. The conservative management by his family doctor using analgesics and physiotherapeutic measures over several weeks brought no improvement. Upon presentation in the hospital, plain X-rays were done and revealed a central rounded osteolytic lesion in the proximal tibial metaphysis without cortical expansion, marginal sclerosis, new bone formation or articular encroachment (Fig. 1). The laboratory studies showed a minimal C-reactive protein (CRP) elevation (8 mg/l, normal value <5 mg/l) and a normal total leucocytic count. The examination for tumour markers was negative and the Hb%, blood electrolytes, renal and liver function tests showed no abnormalities. In order to identify the nature of the lesion, a PET-CT was done. This raised suspicion of malignancy by showing a hot osteolytic metaphyseal lesion with reactive margins and enlarged hypermetabolic inguinal lymph nodes so that we decided to do an open biopsy. After having an

informed consent, the patient was operated upon without delay.

As the lesion was fenestred, 15-ml turbid fluid was evacuated leaving a bone cavity with a fine necrotic margin behind. Surgical debridement was done, the cavity was irrigated and the wall was curetted up to healthy bleeding bone. The microbiological examination of the fluid and tissue specimens showed Infection with *Salmonella enteritidis*. Retrospectively, the immune-competent patient reported that he suffered gastrointestinal Salmonellosis 7 years ago. Repeated debridements of the abscess cavity were done and antibiotic-impregnated PMMA beads (Septopal®, Biomet, Berlin, Germany) were inserted. Systemic antibiotic therapy with intravenous then oral ciprofloxacin according to culture and sensitivity was initiated.

After normalisation of the CRP, the Septopal® beads were removed and the cavity was filled with Actifuse® (Baxter, Unterschleißheim, Germany), a synthetic bone graft material (silicate substituted calcium phosphate), approximately four weeks after the first operative debridement. The patient was discharged on oral ciprofloxacin and mobilised on crutches with a partial weight bearing to avoid fractures for 6 weeks. Free mobilisation and full weight bearing without local pain were achieved after 2 months. Progressive healing of the lesion and integration of the synthetic bone graft was shown in the follow-up radiographs.

Discussion

Osteolytic lesions of long bones occur most frequently in the metaphyseal region, specially around the knee. A neoplastic origin in form of a primary bone tumour or bone destroying metastasis should

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