

Group G streptococcus—a rare cause of osteomyelitis simulating bone tumour: A case report

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ABSTRACT

We report a case of osteomyelitis of the proximal femur caused by Lancefield group G streptococcus in a 71-year-old otherwise healthy man. The organism has rarely been identified as the cause of osteomyelitis. The subacute nature of the symptoms and the radiological appearance of the femur in this patient mimic bone tumour. The patient was successfully treated with conservative methods, including a prolonged period of oral antibiotics. We stress the importance of histological and bacteriological evidence in avoiding misdiagnosing patients with equivocal clinical and radiological presentation.

Key words: bone tumor; osteomyelitis; streptococcus

INTRODUCTION

Osteomyelitis due to Lancefield group G streptococcus is rare. We report a case of such an infection involving the hip joint of an otherwise healthy patient. The subacute presentation of the infection initially led to diagnostic confusion. We stress the importance of early

and accurate histological and bacteriological evidence in diagnosing subacute osteomyelitis, because the wide clinical spectrum and unusual radiographic findings may mimic a neoplastic condition.

CASE REPORT

A non-diabetic ambulatory 71-year-old man, who had no prior remarkable illness, was admitted to the Department of Orthopaedic Surgery, Queen Mary Hospital, Hong Kong, because of right-side hip pain and subjective lower limb weakness for 2 months. There was no history of trauma or tuberculosis. The patient reported that the hip pain had gradually worsened and rendered him unable to walk 2 weeks before admission. The patient's only constitutional symptom on admission was anorexia. Physical examination revealed that the patient was cachectic and afebrile, and his right lower limb was externally rotated and shortened by 2 cm in comparison to the left. There was also a palpable soft tissue swelling, hard in consistency, in the right proximal thigh between the groin and gluteal area. The only abnormality of his left lower limb was oedema.

Laboratory investigations revealed haemoglobin level of 8.1 g/dL, red blood cell count 2.99×10^{12} /L, haematocrit 0.249, white cell count 9.9×10^9 /L (a



Figure Anteroposterior X-ray of the hips, showing complete erosion of the right femoral head.

differential count of neutrophils 8.40 and lymphocytes 1.00), and erythrocyte sedimentation rate (ESR) 140 mm/h. Plain anteroposterior radiography of the hips showed complete erosion of the right femoral head with soft tissue calcification around the right proximal thigh (Fig.). Subsequent computed tomography (CT) suggested the presence of an aggressive lesion at the right hip joint, with enlarged aorto-caval and para-aortic lymph nodes. Magnetic resonance imaging (MRI), on the other hand, gave the impression of an extensive, cystic, and calcified mass, suggestive of tuberculous infection of the right hip with iliopsoas muscle extension. Bone scan revealed abnormally increased bone tracer uptake at the right hip, which was indicative of bone malignancy. Trucut biopsy of the lesion showed non-specific fibrogranulation tissue, chronic inflammatory changes, foci of calcification without caseous necrosis, and no evidence of malignancy. Culture of the tissue obtained from biopsy was positive for group G streptococcus. C-reactive protein (CRP) was then measured and was found to be much elevated (14.4 mg/dL).

The patient was treated with intravenous penicillin for 6 weeks and oral cephalexin for another 6 months. His ESR dropped to 23 mm/h after 1 week of antibiotic treatment. The right hip pain improved gradually, and the patient was able to walk with one stick at the time of discharge. The patient was subsequently managed conservatively. His ESR and CRP remained normal at the time of writing this report, which was 3 years after the diagnosis of group G streptococcal osteomyelitis.

DISCUSSION

Osteomyelitis caused by group G streptococcus is rare, with fewer than 15 cases reported in the literature.¹⁻⁵

The infection is usually associated with co-morbidities such as malignancy and liver cirrhosis,¹ but it can also occur in association with orthopaedic implants.¹ The subacute presentation of the reported case has never been found in other streptococcal arthritis or osteomyelitis. The subacute presentation and the imaging results suggested a malignant condition. A similar diagnostic dilemma is exemplified by Lindenbaum and Alexander's report⁶ on 15 cases of subacute osteomyelitis that were misdiagnosed as bone tumours based on initial clinical (absence of fever and intermittent joint pain) and laboratory findings (normal or elevated ESR). According to Kandel and Mankin,⁷ subacute osteomyelitis is easily confused with osteoid osteoma. This confusion may occur because of the absence of specific symptoms other than pain at presentation and the long delay before the final diagnosis of osteoid osteoma is made, factors that are common to both osteomyelitis and osteoid osteoma. Differentiating between osteomyelitis and Ewing's sarcoma can also be difficult. In a case series of 23 patients with subacute or chronic osteomyelitis by Cabanela et al.,⁸ the most common initial misdiagnosis was Ewing's sarcoma, followed by osteogenic sarcoma. Conversely, McCormack et al.⁹ reported that out of 24 patients with Ewing's sarcoma, 17 had their tumour initially misdiagnosed as osteomyelitis. Both Ewing's sarcoma and osteomyelitis are characterised by pain and swelling, while fever and elevated ESR are also common. Both lesions may show reactive periosteal new bone formation with destructive changes on plain radiographs.¹⁰ Therefore, we stress the importance of early tissue diagnosis. The tissue obtained from biopsy should be examined both histologically and bacteriologically, because opportunistic infection could complicate musculoskeletal malignancy.

Since group G streptococcus is known to be highly penicillin-sensitive,^{11,12} high-dose intravenous penicillin is now the standard treatment for group G streptococcal arthritis.¹³ The optimal dosage and duration of antibiotic therapy for group G streptococcal osteomyelitis, as well as the therapeutic role of surgical debridement, are still controversial. Ordinary cases of osteomyelitis are classically managed by antibiotics and debridement.^{3,14} However, antibiotics alone may already be adequate for treating group G streptococcal osteomyelitis. We successfully managed our patient with 6 weeks of intravenous antibiotics, followed by 6 months of oral antibiotics without debridement; and the patient has been disease-free since. With a definite bacteriological diagnosis, this treatment protocol might be beneficial to those debilitating patients with co-morbidities such as liver cirrhosis and malignancy.

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