Unusual presentation of osteomyelitis: A clinical dilemma

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Introduction

Osteomyelitis is a bacterial infection of the bone[1]. In paediatric osteomyelitis, commonest mechanism is haematogenous inoculation of the bone during an episode of bacteraemia. Osteomyelitis can result from penetrative trauma or spread from a contiguous site of infection[1].

Case report

A five year old New Zealand European boy was referred for further evaluation to the Children's Emergency Department (CED), Starship Children's Health following an abnormal radiograph of the right femur (Figure 1).

He had a history of intermittent right thigh pain and limp for 4 weeks which resolved 2 weeks ago. There was no history of trauma or fever. General Practitioner had seen the child and arranged an X-ray of right femur and hip joint. X-ray showed a periosteal reaction in the proximal femoral shaft without any evidence of fracture (arrow in Figure 1).

On presentation to CED, his temperature was 36.5^0C. His pulse rate was 80/min, respiratory rate 24/min and oxygen saturation 97% on air. His gait was normal. His lower limbs were not tender and all joint movements were normal. The rest of the physical examination was unremarkable. The differential diagnoses were undisplaced fracture of femur, osteomyelitis and malignancies such as bone tumours and leukaemia.

Full blood count showed a haemoglobin level of 126 g/L, white cell count 8.78 x10^9/L with neutrophils 2.88 x10^9/L and lymphocytes 4.76 x10^9/L, platelet count 277 x10^9/L. C-reactive protein (CRP) was <0.6 mg/L and erythrocyte sedimentation rate (ESR) was 6 mm/1st hour. Serum electrolytes, calcium, phosphate, albumin and liver function tests were normal. Lactate dehydrogenase was 276 U/L which was elevated (Reference range: 120 -250 U/L). In the background of the normal physical examination and unremarkable full blood count and inflammatory markers, it was decided to perform a magnetic resonance skeletal survey. It showed nonspecific intramedullary signal abnormality with contract enhancement and smooth periosteal new bone formation in proximal right femoral diaphysis.

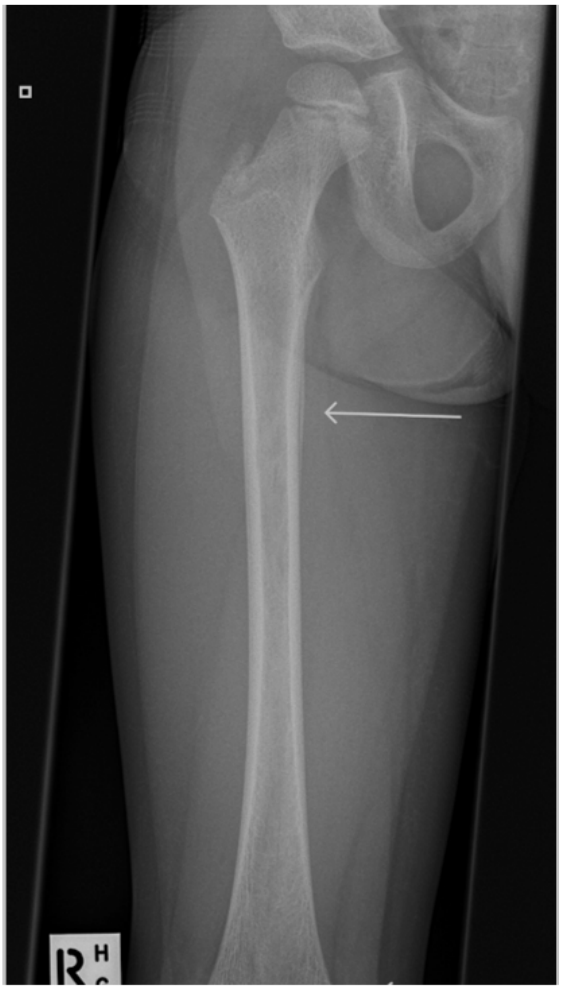

Figure 1: ***X-ray of right femur showing periosteal reaction***

Bone biopsy was carried out from the right proximal femur. Gelatinous material was noted in the medullary cavity. Histology showed evidence of chronic osteomyelitis. Peripheral blood culture, tissue culture and bone marrow culture from the

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proximal femur did not yield any growth. As the cultures were negative, it was decided to observe the child without antibiotics. He had an undisplaced pathological fracture of the proximal right femur 2 days following the bone biopsy. He was placed on a cast. Repeat radiograph in 2 weeks showed callus formation. Child was asymptomatic when reviewed 3 months later.

Discussion

A study in New Zealand estimated the incidence of osteomyelitis in New Zealand European children to be 111 per million and Maori and Polynesian children to be 428 per million[2]. Osteomyelitis is classified according to the duration between diagnosis and onset of symptoms into three groups: acute (up to 2 weeks), subacute (2 weeks to 3 months) and chronic (>3 months)[3]. Our patient falls into the subacute category.

Sensitivity of ESR and CRP in bacterial osteo-articular infection on admission was 94% and 95% respectively and combination of ESR and CRP gave a sensitivity of 98%[4]. Radiographs have low specificity and sensitivity for osteomyelitis[3]. Magnetic resonance imaging (MRI) has high sensitivity (82%–100%), and specificity (75%–99%) in diagnosis of osteomyelitis[3]. MRI, ESR and CRP were not helpful in diagnosis of osteomyelitis in our patient. Bone biopsy was carried out as history and initial investigations did not lead to a diagnosis.

There were dilemmas about diagnosis and management in our patient. The dilemma about the initial diagnosis resolved with the bone biopsy. Resolved symptoms, normal inflammatory markers, nonspecific MRI and no growth in cultures favoured observation rather than antibiotics in our patient.

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