Acute osteomyelitis complicating a simple fracture

A case report

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Summary

Osteomyelitis complicating a simple fracture is unusual, but the reason for its rarity is unknown. We report on a 9-year-old Black boy who developed acute osteomyelitis after sustaining an acute simple fracture of the femur. The causative role of trauma in acute osteomyelitis is discussed and the relative resistance of healthy bone questioned.

Case report

A 9-year-old Black boy sustained a simple fracture of the left femur as the result of a fall. He was treated conservatively by means of skin traction and subsequently discharged. The only complication during hospitalization was the contraction of measles. Fifteen weeks after his initial injury he was readmitted to hospital with a fracture of the same leg. Radiological examination (Fig. 1) showed that he had fractured his femur distal to the original fracture, which was healing well with no evidence of osteomyelitis. The only notable feature at this stage was pain, which was severe and unremitting even after immobilization. On the 8th day of hospitalization the erythrocyte sedimentation rate rose to 85 mm/1st h (Westergren). He became pyrexial and developed a leucocytosis. Radiological examination demonstrated a possible periosteal reaction which subsequently became more apparent (Fig. 2).

Osteomyelitis was diagnosed and treatment with intravenous antibiotics (ampicillin and cloxacillin) instituted. The patient responded well to the antibiotics and his pain disappeared. He recovered completely and was discharged without experiencing any sequelae.

Discussion

The incidence of acute osteomyelitis complicating a simple fracture is said to be low because of the relative resistance of healthy bone to infection. We believe that this relative resistance depends upon certain factors: (i) the site of the fracture; and (ii) pre-existing systemic factors.

It is well documented that the metaphyseal area is more susceptible to infection. The reasons for this susceptibility are given as: (i) the fact that arteries in this area are end-arteries, resulting in a sluggish flow in the sinusoids; (ii) the relative absence of polymorphonuclear leucocytes in the vessel walls of this area; and (iii) the fact that the metaphyseal area is the weakest point in a growing bone and therefore more likely to be damaged by trauma. Hence, trauma affecting the metaphysis is more likely to lead to the establishment of a nidus for infection and subsequent osteomyelitis. On the other hand, the diaphyseal area does not have the above drawbacks, so that osteomyelitis complicating trauma is unusual. Many authors have questioned the significance of antecedent trauma in the pathogenesis of acute haematogenous osteomyelitis, but we feel that trauma
Fig. 2. Radiograph taken 9 days after admission; the pathological periosteal reaction is seen.

affecting the metaphyseal area can be significant (the commonest site of osteomyelitis in children is the metaphyseal plate).6,7

Pre-existing systemic derangement could explain the occurrence of osteomyelitis in the diaphysis of our patient; the measles infection could have depressed the patient’s immune status.1,8 Watson and Whitesides9 pointed out that in their group of patients with osteomyelitis complicating closed fractures systemic factors, namely diabetes, debilitation and alcoholism,1 were present.

REFERENCES