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Author: SR Kearns, ES Sheehan, KJ Mulhall

Abstract
Paediatric subacute osteomyelitis (SAO) presents a diagnostic and therapeutic challenge to clinicians. Typically occuring in the metaphysis of long bones, diaphyseal SAO of the upper limb is rare. We present the case of a three-year-old girl referred to our fracture clinic as an occult fracture following trauma to her forearm with normal initial radiographs. Follow-up radiographs one week later showed cortical erosion of the distal ulna, while a subsequent MRI scan showed soft tissue swelling with an area of high signal in the distal ulna. A limited biopsy diagnosed staphylococcal subacute osteomyelitis of the ulna. The patient responded to high dose antibiotic therapy and made a full recovery. We present this case to highlight the high index of suspicion required to diagnose and appropriately manage this insidious condition, which may easily be confused with any number of benign and malignant bone lesions and provide a review of the relevant literature.

Case History
A 3 year old girl presented to the Accident and Emergency department 24 hours after trauma to her left upper limb with painful swelling of her forearm. In the department she was noticed to have pseudo-paralysis of the left upper limb however initial radiographs showed no obvious fracture and the child was referred to the fracture clinic.

Discussion
Harris and Kirkaldy-Willis first described subacute osteomyelitis (SAO) in children as a clinical entity over thirty years ago. SAO develops when there is an altered host-pathogen response as a result of increased host resistance and decreased bacterial virulence. The characteristic presenting features of this condition were no previous acute attack to suggest evolution of an acute osteomyelitis to a chronic form, insidious onset of pain, absence of systemic signs, and radiographic evidence of a bone lesion at the time of presentation. A history of minor trauma has been noted in many series and may be regarded as a predisposing factor. Laboratory investigations are quite distinct from acute haematogenous osteomyelitis (AHO), the white cell count is usually normal or minimally elevated, and the ESR is usually elevated, although not as high as in AHO. In this condition blood cultures are usually negative. Radiographic changes are usually present at presentation, but may take many forms and be present in many different locations. Most commonly in children lesions are located eccentrically in the metaphysis, typically of the tibia, frequently with visible epiphysial extension, these lesions may have a sclerotic border or be irregular and ill defined. Epiphyseal lesions are the second most common location for subacute osteomyelitis in children, having a similar radiographic appearance to metaphyseal lesions. Subacute diaphyseal osteomyelitis as seen in this case, is an unusual condition, mainly occurring in adults and affecting the tibia.

The recommended treatment for subacute osteomyelitis with a lucent lesion has been curettage, biopsy and or culture followed by immobilisation and antibiotics. In diaphyseal lesions a core of bone should be taken, including periosteum, cortex and medullary contents. However, not all authors agree that biopsy and or curettage is necessary interventions. Histology normally helps confirm the diagnosis showing a mixed inflammatory response with scattered lymphocytes, plasma cells and granulation tissue, but is not always helpful. Staphylococcus aureus is regarded as the causative organism in most authors. Tissue culture yields however, are low in most series, ranging from 29% to 61%. It is important to note that other rare organisms such as Pneumococcus, Klebsiella and Kingella kingae may cause SAO. Cloxacillin remains the antibiotic of choice in the treatment of SAO and is given orally for up to 6 weeks after initial intravenous therapy.

True primary haematogenous osteomyelitis is a distinct clinical entity, which is inherently different from the acute form of osteomyelitis. Diaphyseal SAO is not commonly encountered in paediatric clinical practice, especially in the upper limb. These lesions can be confused with a variety of benign and malignant bone tumours and are a potential source of great anxiety to both parents and medical staff. Careful radiological investigation coupled with limited open biopsy may yield culture of the organism and guide appropriate antibiotic therapy without need for formal surgical debridement. This case illustrates the high level of clinical suspicion and judicious use of investigations required to diagnose this insidious condition.

Correspondence:
Stephen Kearns,
50 Radcliff Hall, St. Johns Road, Sandymount, Dublin 4.
Telephone: 00-353-1-269 2270.
Email: doc_sk72@hotmail.com.

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