Editorial

PATTERNS OF MUSCULOSKELETAL INFECTION IN CHILDHOOD

Malcolm F. Macnicol

Musculoskeletal infection during childhood is a diminishing problem in the United Kingdom. The clinical presentation may be muted and often covert. The condition remains a difficult diagnostic problem in paediatric orthopaedic practice. The clinician is faced by a child who is unwell with indeterminate symptoms and worried parents, and is concerned that subdued infection, particularly within the confines of a joint, will leave destructive changes if effective treatment is delayed.

Tuberculosis presents relatively rarely, but should be considered when the social, ethnic or travel details are indicative. Pyogenic organisms are ubiquitous, often preferring the axial skeleton to a more obvious presentation in the long bones. The declaration of the inflammatory process is not simply a matter of site but reflects the effectiveness of the host response. Immunodeficiency¹ plays a role in the premature infant, in the malnourished or the child receiving cytotoxic drugs. A diminished response may also characterise ineffectual treatment with antibiotics.

The altered pattern of presentation described in the paper from Glasgow in this issue of the Journal (pp 99-102) complements an earlier report by Craigen, Walters and Hackett.² This longitudinal study, while based on data from the Information and Statistics Division of the National Health Service (ISDN) derived from the often inaccurate SMR1 form (Scottish Hospitals discharge system), confirms a lowering of the incidence of infection in long bones in a childhood population of approximately 150 000. The review does not specifically examine whether other sites of musculoskeletal infection are still as common, or more so, but it does suggest a real alteration in the pattern of disease, possibly allied to improving standards of living.

The staphylococcus is still predominant and therefore flucloxacillin remains an acceptable, if provisional, antibiotic. Surgical drainage and complications after acute osteomyelitis are unusual. The increasingly common sub-acute form³ presents after a history of at least two weeks. Pain is intermittent, with no systemic reaction. Radiographs

reveal established bone changes of cystic absorption, marginal sclerosis and possible sequestration. The site may be epiphyseal, metaphyseal, diaphyseal or vertebral^{4,5} and the tibia, femur and tarsal bones are predominantly affected. In a series reported in this issue Rasool (pp 93-8) observes that 20 of the 24 sites involved the tibia and suggests that the condition should be distinguished from chronic multifocal osteomyelitis⁶ and the SAPHO syndrome (synovitis, pustulosis, hyperostosis and osteitis).⁷ Bacteriological and histological confirmation is unnecessary if antibiotics prove to be effective.⁸ Recurrence is unlikely and the infection usually resides at one site. The difficulty in management is therefore largely diagnostic, since the insidious onset and muted clinical features evoke an alarming list of both malignant and benign possibilities.

Sclerosing osteomyelitis of Garre⁹ affects children and adults, and again is gradual in onset, eventually producing a locally enlarged, tender segment of bone. The level of C-reactive protein or the ESR are raised in the more active phases. The process may resolve for periods only to become symptomatic again over a number of years. Alteration in joint function and limb-length discrepancy are unusual; the prognosis is good. Symptoms can be relieved by intermittent administration of non-steroidal anti-inflammatory drugs. The metaphysis of the long bones and the mandible are the sites of predilection in the child.

The multifocal form, 'chronic recurrent multifocal osteomyelitis' (CRMO), is much rarer and may affect the clavicle, the limbs, the spine, thorax and pelvis. This inflammatory, apparently non-pyogenic skeletal affliction, was first described by Giedion et al⁶ who noted that the lesions were often symmetrical. The SAPHO syndrome and plasmacellular osteomyelitis¹⁰ further confuse the picture since a positive bacterial culture may not be achieved. Early co-operation with the microbiological and medical departments is advised.

The decrease in frequency of osteomyelitis of the long bones has highlighted musculoskeletal infection of the axial skeleton, particularly of the spine and pelvis. In this issue Brown et al (pp 106-11) report their experience of discitis, a condition first described by Menelaus.¹¹ The endplate of the vertebra is vascular, and infection spreads from this site into the adjoining disc. The classic, localising signs of osteomyelitis may be missing, and a syndrome is recog-

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©2001 British Editorial Society of Bone and Joint Surgery
0301-620X/01/111892 \$2.00
J Bone Joint Surg [Br] 2001;83-B:1-2.

nised consisting of a stiff spine and refusal to walk. Delay in diagnosis is common, since the presentation is neither considered early nor readily characterised in the toddler. Whether drainage is important has not been established, and in most cases conservative management will suffice. The greatest advance concerns the depiction of the disc space and a paravertebral mass using MRI. Narrowing of the disc space is apparent radiographically after one to two months, and most cases become asymptomatic.

Infective foci in the pelvis may also cause differing syndromes, variously described as spinal, abdominal or sciatic.¹² The presentation is again muted and localised tenderness is not always elicited. Ischial or pubic infection produces oedema in the obturator internus and obturator externus muscles visible on MRI, while iliac involvement results in changes in the iliacus or gluteus medius muscles. An intravenous pyelogram may show deviation of the bladder but classic radiographic changes are slow to develop. Early diagnosis depends on clinical suspicion, a request to the radiologist that the ultrasound scan should extend further afield than the hip and the early use of MRI in order to detect oedema. Bone isotope scanning is of limited value, although it may be useful when the child is unable to communicate accurately, or possibly when signs are modified by previous antibiotic therapy. The long-term outcome after pelvic or periacetabular infection is usually good if effective antibiotic treatment is given early.¹³ In the past the prognosis was often poor unless the abscess was drained surgically.

In this issue also Peckett et al (pp 103-5) describe pyomyositis affecting the iliacus in a ten-year-old child. The infection should be differentiated from septic arthritis of the hip and pelvic osteomyelitis. Once again, MRI is definitive, confirming whether the inflammatory process is localised to muscle or is secondary to an infective focus in bone.

Musculoskeletal infection presents in a confusing variety of ways and early diagnosis depends upon a high index of clinical suspicion, appropriate imaging, particularly using MRI, and relatively non-specific blood tests. Early, effective antibiotic treatment and consultation with a microbiologist comprise the routine management. Modern treatment lessens chronic morbidity although the long-term effects of conditions such as discitis are not fully known.

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