Sir,

Though serious joint infections such as septic arthritis (SA) and osteomyelitis account for a small number of musculoskeletal problems in children, a recent case highlights the importance considering SA in children presenting with vague joint symptoms even in the absence of pyrexia. A nine-year-old previously healthy Caucasian girl presented with 2 weeks history of being generally unwell, aches and pains and low-grade pyrexia. At presentation, she complained of pain in right leg and foot, she was limping and refusing to weight bear. She also reported a painful left shoulder with restriction of movement. There was no history of trauma. Investigations were reported as up-to-date. Initial observations revealed heart rate of 78/minutes, temperature at 37.1°C, respiratory rate of 22/minutes and a central capillary refill time of < 2 seconds. Systemic examination was normal. There was no joint tenderness, warmth or swelling, but distress was elicited on movement of left shoulder and right ankle joints. A clinical diagnosis of reactive arthritis of both joints was made, and she was admitted for observation and pain relief.

Blood investigations to exclude co-morbid pathologies (including leukaemia, SA and osteomyelitis) showed unexpectedly raised inflammatory markers: C-reactive protein (CRP) 227 mg / L, white cell count (WCC) 21 x 10^9 /L and erythrocyte sedimentation rate (ESR) 107 mm / hour. An Orthopaedic opinion was sought, intravenous ceftriaxone was started and adequate pain relief was achieved. Chest and joint X-rays were normal although increased density of calcaneal epiphysis of the right heel was reported. In view of the persistence of the shoulder joint symptoms, ultrasound scan was performed 2 days later which revealed a collection near the left bicep tendon sheath raising suspicion of SA of the left shoulder joint.

In view of the clinical picture, X-ray findings and absence of fluid collection on ultrasound scan of right ankle joint, the ankle pain was diagnosed as Sever's disease (the commonest cause of heel pain in children aged 8 - 15 years). This was managed conservatively with rest and plaster cast.

Arthroscopic joint aspiration and lavage of the shoulder joint was performed under general anaesthesia on day 4; pus was aspirated and sent for culture. Intravenous ceftriaxone was continued and intravenous flucloxacillin added to the antibiotic regimen. Pus culture showed no bacterial growth, however, the sample was obtained after 72 hours of starting antibiotic therapy. The ESR and CRP had normalized at the time of discharge, and was prescribed oral flucloxacillin for further 4 weeks. She was reported to be doing well with no residual joint symptoms at the outpatient clinic follow-up a month later.

The shoulder joint is an uncommon site of SA in the developed world. A study of 821 children with SA in South Africa reported joints most commonly involved were knee (37%), hip (30%), ankle (14%), elbow (10%), shoulder (5%), wrist (3%) and subtalar joint (1%). The same study also reported absence of bacterial growth in most cases; this possibly resulted from antibiotics been administered prior to joint aspiration. However, SA of the shoulder joint is more commonly seen in young children from sub-Saharan Africa and clinicians dealing with children from that region should remain aware of this.

In septic arthritis, the commonest causative organism is *Staphylococcus aureus* although joint infections with *Haemophilus influenza*, *Streptococcus pneumonia* and (in recent times) *Kingella kingae* have also been reported. A study in Karachi, Pakistan involving 39 children with SA of 40 hip joints, symptoms of pain, fever and restricted range of movement in the affected hip joints were seen in all patients. In the same study, *Staphylococcus aureus* was the commonest organism detected in 14 patients; the mean WCC was 14 x 10^9/L and the mean ESR was 63 mm / hour.

It is a common clinical practice to treat children with SA with prolonged course (up to six weeks) of antibiotic therapy. A prospective multicentre randomized controlled trial in Finland involving 130 children aged 3 months to 15 years; follow-up at 1 year with culture-proven SA and single joint aspiration, demonstrated that treatment with high doses of well-absorbed antimicrobials for 2 weeks (initially administered intravenously) was sufficient in uncomplicated cases. However, cases which required extensive surgical treatment, when normalization of CRP took a long time or where late-onset infections occur; longer duration of antibiotic therapy is necessary.

Clinical suspicion of SA in children should be followed by blood and radiological investigations, with rapid microbiological sampling, preferably before administering antibiotics which should be initiated intravenously at an early stage. Good response to treatment can be monitored by normalization of inflammatory markers and early diagnosis is associated with a better outcome. Clinicians need to consider that SA does not always present in typical sites or with classical acute inflammatory features.
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