Septic discitis presenting following intravenous cannulation

Sir,

The review of 22 cases of septic discitis\(^1\) highlights similarities with other deep-seated infections within the musculoskeletal system such as septic arthritis (SA). Here we present a case of septic discitis that confirms these similarities, shows that ultrasound can be useful in identifying soft tissue damage and demonstrates that distant infection can be the site of haematogenous bacterial spread. It also shows that the C-reactive protein (CRP) is particularly useful in monitoring the acute phase response and success of treatment.

A 43-year-old fireman was admitted with acute-onset lower back and left hip pain. Five weeks earlier, he had sustained a scalp laceration necessitating suture and intravenous antibiotic treatment. Subsequently, a swelling developed at the site of injection (dorsum of the right hand) and he became unable to elevate the middle and ring fingers, but did not seek further medical advice at that time. Two weeks before admission, he developed increasing neck pain and difficulty moving the right shoulder that was compounded by increasing pain and stiffness of the lower back and left hip. This had deteriorated over the preceding 72 h, and had limited weight-bearing, even though he had lost over 2 stone (14 kg) in weight. Two days before
presentation, the left knee and ankle became stiff and he noticed a painless swelling over the right elbow. He denied rigors or sweats during this time and had only noted an occasional fever. There was no history of inflammatory joint disease, and other than treated hypertension, obesity and previous excessive alcohol consumption, the patient had no other relevant history.

On examination he was apyrexial, and remained so for 24 h. The swelling of the dorsum of the right hand was still visible, and he was unable to extend the middle and ring fingers, suggesting the possibility of extensor tendon rupture. Both shoulders had a full range of movement, but there was an olecranon bursitis over the right elbow. He had restricted lumbar spine movement with pain at this site and also in the upper part of the cervical spine. There was wasting of the left quadriceps and he was unable to straight leg raise on that side. Systemic examination was otherwise normal.

Investigations showed a normochromic normocytic anaemia (haemoglobin 9.6 g/l), and a normal white cell count (10.0 × 10^9/l, NR 4.0–11.0 × 10^9/l). The raised urea (8.2 mmol/l, NR 2.5–7.5 mmol/l), and the serum creatinine of 150 μmol/l (NR 60–120 μmol/l) suggested pre-renal failure, but the biochemical profile, including liver function tests and gamma glutamyl transpeptidase, was otherwise normal. The erythrocyte sedimentation rate (ESR) of 118 mm/h, and CRP of 210 mg/l (NR <20 mg/l) were both elevated at presentation. Staphylococcus aureus was cultured from blood and the fluid aspirated from the olecranon bursa. The sepsis, initially attributed to an intrapelvic abscess near the left hip joint, was treated with intravenous flucloxacillin (2 g four times daily) and gentamicin (180 mg/day) pending further investigations. During the subsequent week his fever rose to 38.8°C and the white cell count peaked at 22.3 × 10^9/l.

A Technecium-99 bone scan revealed increased uptake over the left sacroiliac joint, the mid-cervical spine and left ankle. Magnetic resonance imaging (MRI) of the pelvis and lumbar spine showed a probable infection of the disc at L5-S1 with increased oedema over the left iliacus muscle and sacroiliac joint but no collection of pus at either site. Computerized tomography showed an area of discitis at C3/4 at a site of degenerative arthritis. Hand X-rays showed no abnormality, but ultrasound of the dorsum of the right hand revealed a complete rupture of both the middle and ring finger extensor tendons (Figure 1).

The diagnosis was revised to a multi-level septic discitis with olecranon bursitis following infection at the site of earlier injection. After discussion with our local microbiologists, intravenous antibiotic treatment was continued, but gentamicin was stopped because of deterioration in renal function, and rifampin added for better antibiotic penetration into intervertebral discs. Neurosurgical review confirmed that no disc surgery or aspiration was necessary. The CRP and ESR fell with time, but the ESR remained elevated 45 days after commencing antibiotics. By comparison, the CRP fell to normal by 32 days, implying a successful therapeutic response. After one month of intravenous flucloxacillin this was changed to oral therapy, and he was discharged to continue outpatient physiotherapy. The patient is due for readmission for extensor tendon repair after 3 months of antibiotic treatment.

Our case of septic discitis confirms many of the features outlined in the recent review, however it highlights similarities with those seen in 75 cases of SA that have been examined in our unit. The signs of systemic infection at presentation are surprisingly uncommon. Only 45% of patients with septic discitis and 31% of SA patients gave a history of sweats, and 48% of those with SA were apyrexial and 32% of those with septic discitis had a temperature of <37.5°C, indicating a high frequency of normal body temperature on admission. Underlying damage at the affected site of infection was seen in 50% of cases of discitis, and 60% of SA patients were noted to have features of underlying joint disease in the affected joint. In addition, Staphylococcus aureus is the commonest organism cultured in both conditions (41% in discitis, 60% in SA). The normal white cell count at presentation stopped because of deterioration in renal function, and rifampin added for better antibiotic penetration into intervertebral discs. Neurosurgical review confirmed that no disc surgery or aspiration was necessary. The CRP and ESR fell with time, but the ESR remained elevated 45 days after commencing antibiotics. By comparison, the CRP fell to normal by 32 days, implying a successful therapeutic response. After one month of intravenous flucloxacillin this was changed to oral therapy, and he was discharged to continue outpatient physiotherapy. The patient is due for readmission for extensor tendon repair after 3 months of antibiotic treatment.

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in our case of discitis confirms that this is also an unreliable test in the initial phase of the disease. In the two studies, the white cell count was normal at presentation in 37% of SA patients and 55% in septic discitis. This suggests that too much emphasis on temperature and white cell count at presentation in the diagnosis of deep-seated infection is inadvisable. Indeed this may be one factor in the delay in diagnosis of septic discitis after arrival at hospital.1

We also demonstrate the importance of the acute-phase response in the diagnosis of musculoskeletal infections. Only two patients with septic discitis (9%) had a normal acute-phase response at presentation, and similarly only one patient had a normal ESR and one a normal CRP in our SA study (3%). In this case of discitis, both the ESR and CRP were elevated at presentation, but the CRP was the most useful indicator of treatment, as it fell to normal within one month, while the ESR remained elevated well after this stage. The high CRP therefore appears a useful serological parameter at presentation in both instances, even when the temperature and white cell count are normal, and is clearly helpful in monitoring response to antibiotic therapy.

We also identified a potential iatrogenic source of infection in this case of septic discitis. The Staphylococcus could have entered the bloodstream at the time of the assault and subsequent scalp suture. However, swelling of the dorsum of the right hand, and confirmation of extensor tendon rupture by ultrasound highlights the importance of this technique in rapid diagnosis of soft tissue injury,3 but confirms the clinical suspicion that this was the portal of bacterial entry. As such, this draws attention to one difference between SA and septic discitis.1 In septic arthritis, a site of distant infection was identified in over 50% of cases,2 whereas in septic discitis this was only seen in 9%.1 In contrast, a local cause of infection (recent joint surgery or injection) was rarely seen in SA (13%) whereas local spinal interventions were a common predisposing factor in septic discitis (27%).

Clinical features of infection within the musculoskeletal system will help identify the site most likely to yield bacteriological confirmation of the diagnosis. However, the published data suggest that deep-seated musculoskeletal system infections display clinical and serological similarities in history and investigations that necessitate caution in their interpretation. A history of fever and sweats and the presence of a high white cell count are undoubtedly significant when present, but if they are not abnormal clearly cannot be relied on and should not detract from making the diagnosis. In contrast, the acute-phase response and particularly the CRP, is useful both at presentation and in monitoring response to therapy.

M. Hatton
M. Gupta
P. Balint
M. Field
Centre for Rheumatic Diseases
University Department of Medicine
Glasgow Royal Infirmary
Glasgow

References