CASE REPORT

Cervical osteomyelitis associated with intravenous drug use

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Complications of intravenous drug abuse, such as subcutaneous abscess, joint infections, osteomyelitis, overdose, hepatitis, and infective endocarditis, account for an increasing number of admissions in accident and emergency departments throughout the UK.¹ Orthopaedic problems, such as soft tissue and joint infections, are responsible for at least 30% of these acute admissions. Intravenous drug users have always experienced considerable morbidity with increased susceptibility to such infections.

We present an unusual case of cervical osteomyelitis associated with intravenous drug abuse and advise that the emergency physician should have a high index of suspicion in this patient group as these infections present in a subclinical manner. We also propose that the mechanism of dissemination of bacteraemia in this case is probably via the external jugular vein to the spinal column.

CASE REPORT

A 43 year old white man presented to the accident and emergency department with increasing pain in his neck associated with tingling in both hands. He was a long-standing intravenous drug user (approximately 20 years), injecting in his groin, antecubital fossae, and, more recently, the external jugular veins.

Clinical examination revealed no skin changes, tenderness on active and passive neck movements, or objective neurological deficits. Plain cervical spine x rays were unremarkable. He was reassured and discharged from the accident and emergency department.

He returned three months later with a deformity of his neck and persistent bilateral tingling of his hands along the distribution of the C5/6 dermatomes. A complete neurological examination revealed grade 5 power in all limbs with intact sensation. Bladder function and anal sphincter tone were intact. He was afebrile on admission, his erythrocyte sedimentation rate (ESR) was slightly elevated, and his C-reactive protein (CRP) and other blood parameters were within normal limits. Cervical spine x rays showed destruction of C5 vertebral body with subluxation of C5 over C6 (fig 1). A magnetic resonance scan of the cervical spine showed cord compression with retropulsion of the C5 vertebra and indicated infection as the most likely cause (fig 2).

He underwent computed tomography (CT) guided biopsy of his cervical spine. The biopsy was negative for tuberculosis and other infective organisms. Blood cultures, sickle cell history, human immunodeficiency virus, and hepatitis screens also had negative findings. He was empirically treated with intravenous benzylpenicillin, flucloxacillin, and oral fusidic acid for three months as an inpatient with a halo brace to stabilise the cervical spine. His ESR normalised during the course of the treatment. At this point, the neurological symptoms resolved and the collapsed cervical vertebrae had fused.

DISCUSSION

In a review of the literature up to half a century ago, approximately 20% of patients with osteomyelitis affecting any area of the body died and those who survived had significant morbidity. Currently, the risk of death is negligible and the complication rate is about 5%. The complications of chronic osteomyelitis include pathological fracture, amyloid disease, and squamous cell carcinoma in a sinus.

The organisms that usually cause chronic osteomyelitis in intravenous drug users are Gram-negative rods such as *Pseudomonas aeruginosa* and Gram-positive cocci such as

Figure 1 Cervical spine x ray of an intravenous drug user. The C5 vertebral body is destroyed and there is subluxation of C5 over C6.

Figure 2 Magnetic resonance scan of the cervical spine of the same patient as in fig 1. Along with cord compression there is retropulsion of the C5 vertebra.

staphylococci.² Early treatment is essential to prevent progressive bone destruction. The diagnosis of osteomyelitis can be difficult, particularly if the patient presents subclinically with no fever or with normal inflammatory markers.

A technetium-99 isotope bone scan is recommended whenever the diagnosis is suspected. This is supported by a literature review of 64 cases of vertebral osteomyelitis in intravenous drug users; 22% of patients with initially normal radiographs had spinal abnormalities detected by the bone scan.³ CT and MRI are invaluable in planning operative treatment. Together they demonstrate the extent of bone destruction and reactive oedema, hidden abscesses, and sequestra. MRI offers the opportunity for early diagnosis of myelopathy associated with vertebral osteomyelitis.⁴

In a series of 14 intravenous drug users with cervical osteomyelitis, only one patient had normal radiographic findings at presentation but had marked destruction of two contiguous intervertebral levels at two weeks. However, all the patients had positive results on cultures of bone biopsy material or blood.⁵ In another series, four intravenous drug users out of 12 patients were treated with prompt immobilisation, cultures, drainage and antibiotics, leading to spontaneous fusion. It is suggested that early diagnosis and prompt referral to the orthopaedic team followed by investigations in the form of MRI and bone scans will show the foci of infection; if the condition is treated early with immobilisation and antibiotics the prognosis is very good, with early spinal fusion without any neurological sequelae.⁶

Our case highlights the fact that the emergency physician should have a high index of suspicion in this patient group as the infection present in a subclinical manner. In the event that the cervical spine x ray does not show any obvious abnormality and the history is consistent with the possibility of cervical osteomyelitis secondary to intravenous drug use referral to the orthopaedic team is still advised.

We also propose that the mechanism of dissemination of bacteraemia in our patient is likely via the external jugular vein to the spinal column, given that he had more recently been obtaining intravenous access through this route. In addition, the external jugular vein receives branches from the occipital and posterior external jugular veins, and near its termination, the suprascapular and transverse cervical veins. This may explain the seeding of bacteria.

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Consent has been obtained from the patient to use all details and images in this paper.

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