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SHORT REPORTS

Pyogenic meningitis due to a vertebral abscess

Cervical vertebral abscess is a rare cause of meningitis. Diagnosis may be difficult as its symptoms and signs may be overshadowed by those of meningitis, as shown in the following case.

Case report

A 47-year-old man was admitted in September 1978 with a history of headaches for two weeks, deteriorating vision for five days, and nausea and vomiting for two days. Three months earlier he had fallen in the snow, hurting his left shoulder, and since then he had had constant pain in the left shoulder, radiating to the left side of his neck and to the occipital region. He had suffered from night sweats and had lost 13 kg. His neck had been stiff for about two months. In June 1969 he had been treated for an extensive carcinoma of the pyriform fossa with radical cobalt radiation.

On examination he was obese, fully conscious and orientated, but aggressive and in pain. His temperature was 38.3°C; he had appreciable neck stiffness, a positive Kernig's sign, bilateral papilloedema, and small pupils. There were no focal neurological signs. A computerised axial tomographic scan was normal. Lumbar puncture showed a cloudy cerebrospinal fluid which contained 1.71×10^9 white cells/l (95% polymorphs and 5% lymphocytes); protein 1 g/l and glucose 0.5 mmol/l (9 mg/100 ml). A Gram stain showed no organisms and culture was negative. Radiographs of his cervical spine showed only minor degenerative changes.

He was treated with analgesics and high doses of penicillin and sulphadiazine and dexamethasone. Although he improved symptomatically with the loss of his headache, he continued to have neck stiffness and he remained feverish after two weeks of chemotherapy. Radiography of his cervical spine with tomography now showed erosion of the anterior margins of the fourth and fifth cervical vertebrae adjacent to the disc, together with narrowing of the disc space and soft tissue swelling at this level (see figure). A technetium scan showed a high diffuse uptake throughout the cervical spine.

He then developed weakness of the right arm and signs of cord compression at C4-5 and his general condition deteriorated. An exploration of the neck was performed through an anterior approach, and necrotic material was aspirated from the disc space between C4 and C5. Bilateral ventricular drains were inserted. Bacteriological examination of the aspirate showed numerous neutrophils, Gram-positive cocci, and Gram-negative rods. Culture of both aspirate and ventricular cerebrospinal fluid showed a heavy growth of α -haemolytic streptococci and *Bacteroides melaninogenicus*; both organisms were sensitive to penicillin. Fifty days after admission he died.

Necropsy showed evidence of a severe meningitis. The bodies of the fourth and fifth cervical vertebrae were collapsed and the centres were necrotic and infected. Pus communicated with the spinal canal through a hole in the posterior longitudinal spinal ligament which had been eroded at this level. Histological examination showed an acute purulent meningitis and the remains of an abscess within the fourth and fifth cervical vertebrae. There was no evidence of carcinoma affecting the cervical vertebrae.

Comment

The history of neck pain, night sweats, and weight loss, together with the presence of severe neck stiffness which was out of proportion to the other signs of meningitis, suggested the possibility of a cervical spine abscess. Normally a bone scan with technetium-99 is useful in diagnosing spinal osteomyelitis: in a series reported by Frederickson *et al*¹ a scan was positive in 12 out of 12 patients with spinal abscesses. But in our patient the diffuse isotope uptake in the cervical spine due to the presence of meningitis obscured the underlying abscess. Changes on radiographs of the spine occur late, and in this patient convincing evidence of an abscess was obtained only after tomography.

The organisms isolated from this patient's abscess and cerebrospinal fluid were unusual and were common throat commensals. They probably grew in an area of irradiation fibrosis in relationship to his previous treatment for carcinoma of the pyriform fossa. It is clearly important to aspirate and culture the pus. Failure of the patient's meningitis to respond to appropriate antibacterial treatment emphasises the importance of early surgical drainage when a spinal abscess is associated with meningitis.

¹ Frederickson, B, Yuan, H, and Olans, R, *Clinical Orthopaedics and Related Research*, 1978, **131**, 160.

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Radiograph of cervical spine showing erosion of anterior margins of fourth and fifth cervical vertebrae.