A Case of Cervical Epidural Abscess — Diagnosis using MRI and non-surgical treatment—

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A 65-year-old man with cervical epidural abscess presented with high fever and severe neck pain. On admission, he had difficulty in walking, and the next day paralysis and hyposthesia below the level of C₆ developed. Magnetic resonance imaging (MRI) revealed an anterior epidural abscess at C₅₇ verteveral bodies levels. All of three blood cultures were positive for *Staphylococcus aureus*. He was treated with ceftazidame and ampicillin, supplemented with rifampicin and isoniazid for four weeks. The follow-up MRI demonstrated resolution of the abscess and cord compression. After three months, the patient was able to walk with a stick.

Key words : Staphyloccus aureus, Abscess, Antibiotics, MRI

Introduction

Spinal epidural abscess is a rare disease, of which Staphylococcus aureus is the most common cause^{1,2)}. Epidural abscess is a neurological emergency and early diagnosis prior to the onset of neurologic deficits is important, as these are usually permanent and are associated with high mortality. Recently, modern diagnostic imaging modalities such as computed tomography (CT scan) and magnetic resonance imaging (MRI) have been shown to be helpful in establishing the dignosis of spinal epidural abscess^{3,4,6)}. This report describes a case of acute cervical epidural abscess of Staphylococcus aureus, diagnosed and followed by MRI during non-operative treatment.

Case Report

A previously healthy 65-year-old man began suffering from right shoulder pain and high fever over a 6-day period. Four days before admission, he suffered a severe neck pain. Two days before admission, a radicural pain appeared over neck and legs. He was admitted to our hospital on August 5, 1991. On admission he had difficulty in walking. The next day, paralysis of the upper and lower extremities developed, and hyposthesia below the level of C_6 and urinary incontinence appeared.

On physical examination, the patient appeared acutely ill with a temperature of 38.8 °C. Redness, local heat and swelling were present on the left shoulder, the back of right hand and upper end of the sternum. There was neck stiffness, and Kernig's sign was present. Deep tendon reflexes were absent in the lower extremities, with weakness and hyposthesia below the level of C_6 were noted.

Laboratory investigation revealed an elevated erythrocyte sedimentation rate (76 mm/hr), leukocytosis (13,200/mm³) with 85 % neutrophils, and increased Creactive protein (26.3 mg/ml). Hemoglobin (13.6 g/dl), platelete counts (382,000/mm³), and fasting blood sugar (107 mg/dl) were normal. All of three blood cultures were positive for *Staphylococcus aureus*. The cerebrospinal fluid (CSF) was not xanthochromic, but was cloudy. The concentration of protein in the CSF was 910 mg/dl. The number of CSF cells was 972/mm³ with 68 % mononuclear cells and 32 % polymorphonuclear cells. Culture of CSF was negative.

MRI revealed an anterior cervical epidural collection extending from C_5 through C_7 verteveral bodies levels (Fig. 1). Compression of the spinal cord by the epidural mass was noted. The patient was treated with intravenous ceftazidame (2 g/day) and ampicillin (4 g/day), supplemented by isoniazid (400 mg/day) and rifampicin (450 mg/ day), for a period of 4 weeks. A short course of steroid treatment was started to reduce the local edema.

Two days later his clinical condition had improved. As weakness of the extremities decreased gradually, a laminectomy was not performed. The follow-up MRI demonstrated resolution of the abscess and cord compression. There was a decrease in signal intensity of the C_6 and C_7 vertebral bodies and disc on T_1 weighted image (Fig. 2). Three months after the onset of treatment, the patient was able to walk with a stick.



Figure 1. MRI on the third hospital day

MRI revealed an anterior cervical epidural collection extending from C_s through C_7 vertebral bodies levels. Compression of the spinal cord by the epidural mass was noted (arrow).

Discussion

Spinal epidural abscess describes a collection of purulent material located outside the dura mater within the spinal canal²⁰. The source of infection is a haematogenous dissemination of bacteria from a localized focus elsewhere in the body, typically, the skin^{6,7)}. A local infection adjacent to the spine, such as spondylitis or paraverteral abscess, can propagate directly to the epidural space. The risk of spinal epidural abscess increases in patients with chronic illness, underlying immunosuppression, or a history of intravenous drug abuse^{6,7,8)}. Epidural abscess was also reported as a complication of epidural catherter placement for anesthesia⁹⁾. Staphylococcus aureus is the most common cause and accounts for 40 to 60 percent of epidural abscesses^{1,2,6)}.

Infection in the epidural space may be acute or chronic. Acute infection produces severe back pain, high fever, tachycardia, leukocytosis, and acute onset of paresis²⁰. Chronic infection shows less pain, and paralysis is generally slow and incomplete⁷⁰. The common clinical course of spinal epidural adscess proceeds in four phases : spinal ache (back pain and tenderness), root pain (pain radiating from the site, headache, neck stiffness, and reflex changes), weaknesses of voluntary muscles, sphincters, and sensibilities (motor and sensory deficits relating to the level of infection), and paralyses (complete paralysis,



Figure 2. MRI one month after admission

The follow-up MRI demonstrated resolution of the abscess and cord compression after treatment with antibiotics for four weeks. There was a decrease in signal intensity of the C_6 and 7 vertebral bodies and disc on T_1 weighted image. This might indicate the presence of osteomyelitis and discitis.

frequently associated with sepsis and even death) 10 . Fever and malaise are also the rule.

CSF obtained from below the level of the abscess is xanthochromic or cloudy in appearance, with a cell count varying from a few to several hundred cells per cubic millimetter. The protein content is often between 100 and 1500 mg per deciliter. The CSF sugar content is normal, and culture of CSF is usually sterile¹⁰.

Diagnosing spinal epidural abscess is difficult. It is a rare disease, and similar symptoms may result from atypical presentations of other common diseases, such as disc herniation, inflammatory joint disease, or vertebral osteomyelitis⁴⁾. Acute epidural abscess must be differentiated from meningitis, poliomyelitis, acute transverse myelitis or multiple sclerosis. Neoplasma, usually metastatic, and malignant lymphoma should also be differentiated^{2,11)}. MRI has been reported to be superior to other procedures in localizing spinal abscesses. Characteristic changes in the vertebral bodies suggestive of discitis with osteomyelitis can also be detected. A follow-up examination of MRI is useful for demonstration of the resolving abscess as treatment progresses^{1, 4, 5)}. Our case confirmed the superiority of MRI for the evalution of epidural abscess.

The most significant factor in determining outcome is the timing of treatment. The treatment of epidural abscass is primarily surgical with emergency laminectomy

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and drainage of the abscess³. Our patient was successfully treated with antibiotics alone. Conservative treatment with antibiotics alone was reported to be successful in some patients³. Analysis of 33 previously reported patients treated with antibiotics also suggests that nonoperative treatment could be a reasonable alternative therapy under certain clinical conditions⁵.

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