Acute Purulent Discitis with Epidural Abscess of the Cervical Spine in an Adult
—Case Report—

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Abstract
A 52-year-old male presented with acute purulent discitis and epidural abscess of the cervical spine manifesting as neck pain and slight fever, followed by sudden onset of quadriparesis. Magnetic resonance (MR) imaging showed a low-signal-intensity area in the C6/7 disc space and epidural space ventral to the spinal cord with peripheral enhancement. Surgical exploration using an anterior approach revealed local discitis and epidural abscess, but no osteomyelitis of the neighboring vertebral bodies. Six months after the decompressive procedure to treat the purulent disc and epidural abscess, he had achieved almost full recovery. Such lesions are rare in adults, but should be considered especially when painful spinal symptoms are associated with fever. Early and definitive diagnosis can be achieved by MR imaging with enhancement.

Key words: purulent discitis, epidural abscess, cervical spine, magnetic resonance imaging

Introduction
Spinal purulent discitis is rare, especially in cervical locations. Lesions of this type are more prevalent in children than in adults, because the disc spaces of children are more vascularized and therefore susceptible to the hematogenous spread of infection, although degenerated adult discs may have a blood supply entering through the ruptured fibrous ring. Adult cases usually result from the extension of osteomyelitis of vertebral bodies. We describe an adult case of purulent discitis with epidural abscess of the cervical spine without osteomyelitis of neighboring vertebral bodies.

Case Report
A 52-year-old previously healthy male was admitted to another hospital after pain in the cervical region and slight fever had persisted for 5 days. Plain x-rays of the cervical spine showed narrowing of the C6/7 interspace. He underwent cervical spine traction under the diagnosis of cervical spondylosis. On the 8th day of hospitalization, he became acutely quadriparietic with sensory loss of all modalities under the Th4 level and sphincter disturbance. He was referred to our hospital. He had no underlying conditions such as malignancy or immunosuppression. Magnetic resonance (MR) imaging revealed a low-intensity band at the C6/7 interspace and epidural space on the T1-weighted image with peripheral enhancement of the epidural mass due to gadolinium-diethylenetriaminepenta-acetic acid (Gd-DTPA) (Fig. 1). No hypo- or hyperintensity change was detected in the vertebral bodies.

Surgical exploration through an anterior approach exposed an intact anterior longitudinal ligament with pus accumulated in the C6/7 disc space, and pus and granulomatous tissue in the epidural space ventral to the spinal cord from C5 to C7, but not in the vertebral bodies. Grooving of the C6 body, lower part of the C5 body, and upper part of the C7 body, excision of the protruded disc in the C5/6 and C6/7...
interspaces, and aspiration of epidural pus were performed.

After drainage for 7 days and intravenous antibiotic administration for 4 weeks, the inflammation subsided and neurological recovery gradually occurred. The infectious agent was *Staphylococcus aureus*. Postoperative T1-weighted MR imaging showed satisfactory decompression of the spinal cord and a central low-intensity spot in the cord interpreted as a central infarct (Fig. 2). Six months after rehabilitation, he had achieved almost full recovery and could walk without assistance, with no sphincter disturbance. However, slight motor weakness of the left lower extremity and sensory disturbance of the right lower extremity remained.

**Discussion**

Our patient had developed spinal discitis without associated osteomyelitis of the vertebral bodies, so hematogenous spread of bacteria was probably the primary cause of inflammation.

Spinal discitis with epidural abscess presents as spinal pain, fever, and neurological deficits. The clinical course has four stages: spinal ache, root pain, weakness, and paralysis. Paraplegia, loss of sphincter function, and anesthesia may occur suddenly and irreversibly. Rapid deterioration of the spinal symptoms frequently occurs in patients with this lesion. There are several hypotheses regarding the mechanism. Mechanical compression alone is not an adequate explanation, as autopsies have failed to show cord deformity caused by compression. Another possibility is a vascular mechanism, since vascular congestion and, in a few cases, arterial and venous thrombosis have been observed. This can explain the rapid onset, irreversibility, and, as in our patient, the "central cord" infarct pattern. The most reasonable conclusion is that a combination of compressive and ischemic effects produces the disastrous sequelae.

The primary diagnosis of spinal discitis and epidural abscess is based on radiographic imaging. MR imaging can distinguish other entities such as disc herniation, syrinx, spinal tumor, spinal hematoma, cord infarct, or transverse myelitis, and provide better demarcation of the lesion. Disc space infection and epidural abscess can usually be detected on routine T1- and T2-weighted images, but the appearance may be nonspecific. Disc infections characteristically appear as a low-signal-intensity area on T1-weighted images and a homogeneous high-signal-intensity area on T2-weighted images. Gd-DTPA administration causes homogeneous or peripheral enhancement of the epidural abscess. Our patient demonstrated a central low intensity with peripheral enhancement interpreted as a drainable pus accumulation surrounded by

**Fig. 1** T1-weighted MR image with Gd-DTPA enhancement, showing a low-intensity-signal area (arrow) in the C6/7 disc space and epidural space posterior to the bodies from C5 to C7, with peripheral enhancement (arrowheads).

**Fig. 2** T1-weighted MR image 3 months after surgery, showing the disappearance of the epidural mass, but a low-intensity area remaining in the spinal cord (arrow).
granulomatous tissue. Enhanced images can therefore differentiate necrotic liquid abscess from suppurative inflamed granulation tissue. Detection of a drainable abscess may influence the clinical management, requiring a more aggressive approach. Patients with spinal discitis and epidural abscess manifesting neurological deficits require operative management. Although cases have been successfully managed without surgical intervention, but most studies recognize a significant risk associated with nonsurgical medical management. An abscess located dorsal to the spinal cord has been treated by laminectomy with excellent results. However, in spondylodiscitis with epidural abscess, the abscess is usually located ventral to the spinal cord, requiring anterior decompression with stabilization. In our patient, the epidural abscess was located ventral to the spinal cord extending across three levels of vertebral bodies without osteomyelitis. Draining of the abscess therefore required grooving of the vertebral bodies. Grooving was restricted to avoid instability of the cervical spine. Although rare, spinal discitis with epidural abscess should be considered when painful spinal symptoms are associated with fever, and investigated by MR imaging with Gd-DTPA enhancement.

References


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