

# Cervical Disc Herniation Mimicking Spinal Epidural Abscess

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## ABSTRACT

The differential diagnosis between degenerative and infectious spinal abnormalities can be challenging for neurosurgeons due to the subjectivity of the patient's symptoms and physical findings, and inconclusive MRI data. This report describes a case of a cervical intervertebral disc hernia with surprising MRI findings suggesting the possibility of an epidural abscess formation.

**Key words:** epidural infection, cervical disc, MRI

## SPİNAL EPİDURAL APSEYİ DÜŞÜNDÜREN SERVİKAL DİSK HERNİSİ

### ÖZET

Servikal disk hernisi ve epidural apsenin radyolojik görüntüleri bazen ayrık tanımda karışıklığa sebep olabilmektedir. MR bulgularının her iki tanı için de benzerlik göstermesi klinisyen açısından zorluk oluşturmaktadır. Her ikisinin hazırlığı, tedavisi farklı olduğu için ayrıca tanıda ikisi de düşünülmelidir. Hastanın semptomları, nörolojik muayenesi ve MR bulguları yazıda tanımlanmıştır.

**Anahtar sözcükler:** epidural enfeksiyon, servikal disk, MRI

Spinal degeneration and intervertebral disk herniation are the most common causes of neck pain. Magnetic resonance imaging (MRI) is widely used for the diagnosis of these conditions in contemporary medicine. Rarely, clinicians are faced with ambiguous MRI findings during the clinical evaluation of their patients. With the increase in the aging population and immunocompromised hosts (1), spinal infections are now seen to occur more frequently (2). Therefore, neurosurgeons are infrequently confronted by a differential diagnosis between degenerative and infectious spinal abnormalities. The diagnosis of spinal infections is occasionally difficult, because the patient's subjective symptoms and physical findings are often inconclusive, particularly in the early stages of infection (3).

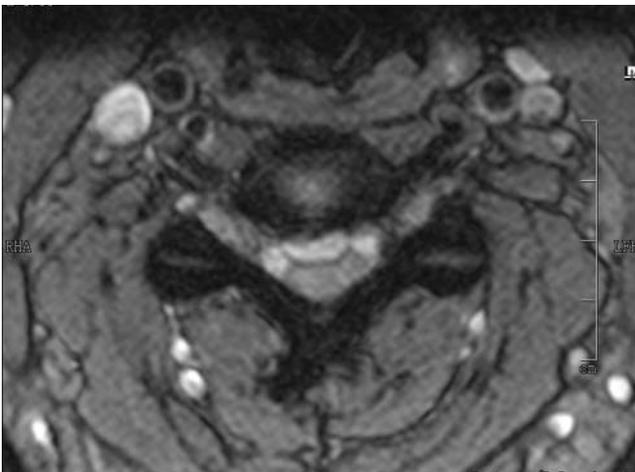
In this report, we present the diagnosis and treatment of a young female patient who presented with cervical intervertebral disc hernia and confounding MRI findings.

## Case report

A thirty-four year-old female patient presented at our clinic with numbness in both hands and radicular pain in the left arm. Significant power loss was noted on her left biceps. Her physical exam was otherwise normal. Her past medical history was unremarkable. MRI revealed a viscous mass at the anterior epidural space between the cervical 4<sup>th</sup> and 5<sup>th</sup> vertebrae. The mass lesion created an indentation on the dural sac and the spinal cord. T2W sections showed a hyperintense signal, whereas T1W sections a hypointense one (Figure 1-2). After intravenous contrast administration, cervical MRI revealed hyperintense epidural enhancement (Fig. 3). This view suggested a possible epidural abscess formation. However, her C-reactive protein (CRP) and sedimentation levels were normal as well as the leukocyte count. An anterior cervical approach was planned and the patient was prepared for the operation. Intraoperatively, the intervertebral disk tissue was anteriorly intact and the annulus fibrosus degenerated. No nucleus pulposus found. A microdiscectomy was performed and the disk tissue



**Figure 1.** T2-weighted sagittal magnetic resonance imaging of the cervical spine shows the herniated disc and anterior epidural hyperintense signals.



**Figure 2.** T2-weighted axial magnetic resonance imaging of the cervical spine shows the herniated disc and anterior epidural hyperintense signals.

was totally removed including the lower and upper end-plates. The posterior longitudinal ligament was excised and the epidural space was exposed. A soft viscous material was found which was attributed to a herniated nucleus pulposus. Dura matter was checked and there was no sign of inflammation. There were no signs of either infection or abscess formation. Therefore the patient was diagnosed as cervical intervertebral disk herniation. An intervertebral cage was implanted in the intervertebral space and an anterior cervical plate was fixated with screws between C4 and C5. Implants were introduced



**Figure 3.** T1-weighted sagittal magnetic resonance imaging with contrast of the cervical spine shows the herniated disc and anterior epidural hyperintense signals.

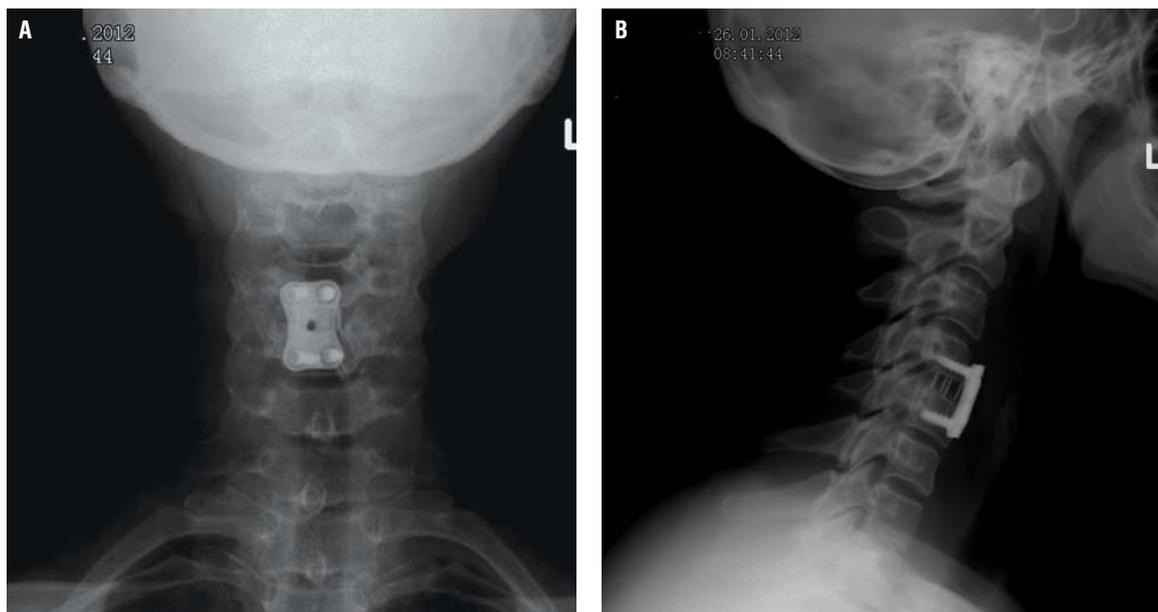
and confirmed under C-arm fluoroscopic guidance (Figure 4a and 4b). She was discharged on the following day, postoperatively. Pathological examination of the intervertebral disk tissue revealed degenerative findings without any elements of infection.

## Discussion

Cervical disk herniation is sometimes hardly distinguished from infection. Magnetic resonance imaging is the ideal diagnostic modality for identification of the pathology. Additional of gadolinium contrast can enhance the visualisation of epidural enhancement suggestive of active infection. Our patient's MRI revealed these findings and we aimed to explain in this paper that cervical disk herniation may be confused with infection.

With increasing longevity of life, the prevalence and associated clinical disability related to disc degeneration disease is on the rise. Cervical disc degeneration is the most common cause of neck pain (4). In neurosurgical practice, a major aspect of disc degeneration is disc herniation.

The most common symptom associated with servical disc degeneration is neck pain and it is due to the presence of neural tissue around the intervertebral disc. Other main symptoms of disc degeneration are unilateral or bilateral



**Figure 4.** Direct scan of C4-C5 level showing cage and plaque with screws. Posterior-anterior (A) and lateral (B) view.

pain radiating to shoulders, arms and hands as well as numbness in corresponding dermatomes (5).

Intervertebral disk is a collagenous tissue composed of a viscous nucleus pulposus surrounded by a tough shell of annulus fibrosus. Cervical disc herniation is characterized by a bulge or rupture of the nucleus pulposus through a crack in the degenerated annulus fibrosus. The pulp leaks into the epidural space and results in radicular symptoms by compression of nerve roots (6,7).

The two most common levels in the cervical spine to herniate are the C5 - C6 level (cervical 5 and cervical 6) and the C6 -C7 level. The next most common is the C4 - C5 level, and rarely the C7 - T1 level may be herniated. It usually develops in the 30 - 50 year old age group (8). Although a cervical herniated disc may originate from some sort of trauma or injury to the cervical spine, the symptoms commonly start spontaneously. Modern development of MRI scans allows an excellent, non-invasive means of imaging the entire cervical spine. Its contrast, sensitivity and multi planar images clarify the disc anatomy within or adjacent to the spine.

On the other hand, despite the progress in diagnostic technologies, diagnosing spinal infections remains to be complicated as it was in the past. The interpretation is still difficult due to non-specific clinical and laboratory findings. Many imaging techniques, including conventional plain radiography, computed tomography (CT), MRI, and radionuclide studies, have been used for radiological diagnosis of spinal infections (9,10). Plain radiographs and CTs are generally inadequate in differentiating infections from degenerative end-plate abnormalities. In recent decades, MRI has become almost the first preferred method to search for spinal infections. With the advent of diffusion weighted imaging, MRI is able to show the early signs of infection and abscess formation. IV gadolinium contrast injection, increases the sensitivity of MRI investigation and facilitates the diagnosis (11).

In conclusion, MRI is a very useful tool in identifying cervical degenerative diseases. Cervical disk herniation may challenge the neurosurgeon by presenting with confounding findings on MRI. Differential diagnosis may further be complicated when a spinal infection is in question.

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