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CASE REPORT

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Voluminous Free Disk Fragment Mimicking an Extradural Tumor

—Case Report—

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Abstract

A 56-year-old man presented with a rare case of a voluminous herniated disc fragment mimicking an intraspinal extradural tumor on magnetic resonance (MR) imaging. He had experienced low back pain and sciatica in his right leg for 12 months, which exacerbated suddenly 4 days before admission accompanied by right quadriceps muscle weakness. MR imaging with gadolinium demonstrated a tumor-like longitudinal lesion, extending from the L1-2 to the L3-4 intervertebral disc spaces and occupying most of the right half of the vertebral canal. L2 and L3 laminectomy, as well as L2-3 right foraminotomy, were performed. We were prepared for an oncological operation, but instead, a huge disc fragment was removed en bloc from the right epidural space. The patient's postoperative course was uneventful and he demonstrated full neurological recovery within 2 months. Sequestered lumbar disc fragments must be considered in the differential diagnosis of longitudinal extradural mass lesions in the spinal canal independently of their size. MR imaging with contrast medium can differentiate herniated disc from tumors and other epidural lesions. Nevertheless, nontypical sequestered disc herniations are extremely rare and can be misinterpreted.

Key words: intraspinal extradural mass, intervertebral disc displacement, spinal neoplasm, disc herniation, free disc fragment

Introduction

Non-typical sequestered disc herniations are extremely rare (0.4%) and were previously only identified during surgery,^{2,4)} but even after the introduction of high resolution magnetic resonance (MR) imaging are frequently misinterpreted as neoplastic masses.^{1,4)} No particular symptoms or signs are known to allow differentiation between atypical hernias and spinal tumors. Only a few and inconsistent

MR imaging findings are useful in the preoperative diagnosis of disc herniation.^{5,6,8,10)} The differential diagnosis includes not only neoplastic lesions (e.g. breast or prostate cancer metastasis) but also some other benign epidural lesions such as synovial cysts, hematomas, and abscesses.^{3,4,7,12)}

Here we describe a rare case of a huge herniated and sequestered disc fragment, which radiologically mimicked an epidural spinal tumor.

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Case Report

A 56-year-old man was admitted to our hospital having experienced low back pain and right sciatica for 12 months, but which exacerbated suddenly 4 days before admission accompanied by right quadriceps muscle weakness. Neurological examination revealed positive Lasegue sign, weakness of the right quadriceps muscle, and absence of right knee jerk. Sensory deficit over the L3 and L4 dermatomes was observed, but bladder and bowel functions were normal.

MR imaging revealed a huge, tumor-like, longitudinal lesion, extending from the L1-2 to L3-4 intervertebral spaces, and occupying almost the entire right half of the vertebral canal, which appeared homogeneously isointense on T₁-weighted imaging (Fig. 1A) and slightly hyperintense on T₂-weighted imaging (Fig. 1B, C). T₁-weighted MR imaging with gadolinium demonstrated a large lesion with peripheral rim of enhancement (Fig. 1D). Finally, the lesion showed tapering of the subarachnoid space to an acute angle above and below the mass (Fig. 1A, C) with some displacement of the dura toward the center of the spinal canal (Fig. 1B).

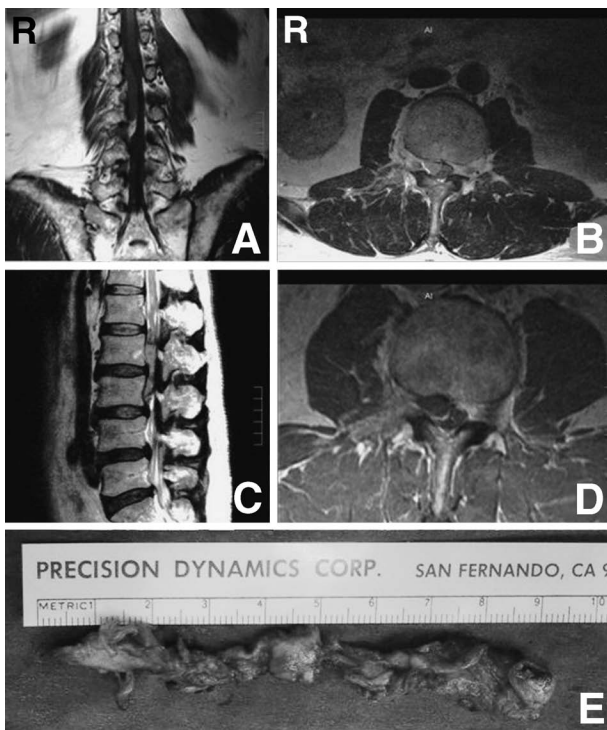


Fig. 1 A: Coronal T₁-weighted magnetic resonance (MR) image showing an isointense mass lesion extending from the L1-2 to L3-4 spaces. B: Axial T₂-weighted MR image demonstrating a hyperintense mass lesion occupying the right spinal canal (at the L2 vertebra). C: Sagittal T₂-weighted MR image demonstrating a hyperintense mass lesion extending from the L1-2 to L3-4 spaces. D: Axial T₁-weighted MR image with gadolinium showing peripheral enhancement of the lesion (at the L3 vertebra). E: Photograph of the surgical specimen, macroscopically similar to a disc fragment. Note dimensions (> 9 cm long).

The patient underwent L2 and L3 laminectomy, in preparation for an oncological operation, as well as L2-3 right foraminotomy. However, investigation of the epidural space unexpectedly found a huge mass (Fig. 1E), which was easily removed en bloc from the right vertebral canal and had the macroscopic appearance of a sequestered disc fragment. The fragment was delivered from the L3-4 level, but was completely detached from the disc space. After mass exeresis, a tear of the annulus was identified at the same level.

Histological examination confirmed the presence of disc material without neoplastic activity. The postoperative course was uneventful. The patient followed an intense rehabilitation program and gained full neurological recovery at 2 months.

Discussion

Only isolated case reports describing sequestered disc fragments simulating intraspinal benign or malignant space-occupying lesions have been published.^{1,4,8,10} Unusual findings of sequestered disc fragments on preoperative MR imaging are extremely rare. A recent report by Carvi y Nievas and Hoellerhage found only 11 of 3000 patients suffering from excised lumbar disc herniation.⁴

Current MR imaging techniques can usually differentiate lumbar disc herniation from other conditions.¹¹ However, some sequestered disc fragments still may be mistaken for other neoplastic or non-neoplastic lesions. Complete detachment and migration in unusual locations, even intradurally, as well as unusually large dimensions of the disc fragment are two of the commonest causes of confusion. Atypical sequestered disc herniations usually appear as heterogeneously hypointense to isointense on T₁-weighted sequences and hypointense or hyperintense on T₂-weighted MR images, depending on location (intra- or extradural) and time of evolution.⁴

MR imaging with contrast medium is useful to differentiate herniated disc from tumors and other epidural lesions, as the non-enhancing disc fragment is commonly associated with peripheral enhancement. Herniated disc fragment rarely includes central enhancement, a finding attributed to vascular granulation tissue infiltrating the fragment,² but is never associated with enhancement of the spinal meninges, an early characteristic finding of neoplastic lesions such as lymphoma, neurofibroma, neuroblastoma, mesothelioma, and lung cancer.⁴

In our case, the lesion appeared homogeneously hyperintense on T₂-weighted MR imaging (Fig. 1B, C), that led us to suspect a neoplastic lesion, but MR imaging with contrast medium showed peripheral enhancement of the rim of the lesion (Fig. 1D), which is typical of a disc fragment.⁹ Nevertheless, the large size and elongated shape of the lesion were confusing, leading us to misinterpret its nature, since lumbar disc herniations are usually much smaller and round. A further factor of confusion was the fact that this longitudinal mass was related to three different intervertebral spaces without either reduction of their height or changes of color (black disc) on MR imaging (Fig. 1C), misleading us from suspecting a sequestered

disc fragment. In addition, no clear radiological evidence was found of any possible connection of the mass to adjacent disc space. Furthermore, the lesion showed effacement of the subarachnoid space with smooth tapering to an acute angle above and below the mass (Fig. 1A, C) with a degree of displacement of the dura toward the center of the spinal canal (Fig. 1B). Therefore, the lesion was considered to be located in the extradural compartment, since intradural-extramedullary tumors include smooth tapering of the subarachnoid space opposite to the mass to an acute angle and capping of the ipsilateral subarachnoid space.¹³⁾

Migration and sequestration of a disc fragment associated with neurological deficit occur early (within 3 months) after the onset of pain.⁴⁾ Likewise in our case, it is plausible that the migration occurred 4 days before admission in hospital, when lumbosciatalgia was exacerbated and muscle weakness appeared.

In conclusion, sequestered lumbar disc fragments must be considered in the differential diagnosis of extradural mass lesions of the spinal canal, even when their shape and voluminous size are counter-intuitive.

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