Lumbar Discal Cyst With Spontaneous Regression and Subsequent Occurrence of Lumbar Disc Herniation

—Case Report—

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Abstract

A 39-year-old man presented with an extremely rare discal cyst at the L3-4 level manifesting as a left L4 radiculopathy. Two months after onset, he suffered right L4 radiculopathy with new lumbar disc protrusion. Five months after medical treatment, the patient's symptoms improved, and the discal cyst showed complete regression on magnetic resonance imaging. Most cases of discal cyst are surgically treated, with only two previous cases of spontaneous regression. The present case suggests clinical and radiological recovery of symptomatic lumbar discal cyst can be obtained by only conservative therapy.

Key words: discal cyst, spontaneous regression, lumbar disc herniation, conservative therapy

Introduction

Discal cyst is a newly identified rare cause of radiculopathy first reported in cases compatible with discal cysts.1) Cyst in communication with herniated disks were described as "disk cyst."8) Fewer than 100 patients with discal cysts have been reported.1) In the Asian population, there is a male predominance of 91%, compared with 9% in females.1) Mean age of the patients was 33.5 ± 12.6 years, lower than the age of the population with degenerative lumbar disc herniation.1) The clinical symptoms of lumbar discal cyst were usually indistinguishable from those of lumbar disc herniation.2) Almost all cases of discal cysts were treated with surgical intervention, such as computed tomography (CT)-guided aspiration or steroid injection within the cystic structure. Only two cases of discal cysts regressed without surgical treatment.3,5) Therefore, the natural history of this pathological entity remains unknown.

We present a case of discal cyst that regressed spontaneously in its natural course through an interesting process.

Case Report

A 39-year-old man experienced an uncomfortable feeling on the anterior surface of his left leg. Two weeks later, he...
suffered “lightning” pain on the front side of his left lower extremity from thigh to leg, including the gluteal area. He visited a pain clinic, but his symptoms did not improve markedly after undergoing selective nerve root block. He then visited our hospital one month after the pain onset. Magnetic resonance (MR) imaging showed an extradural cystic component attached to the L3-4 disc appearing as low and high signal intensity on T1- and T2-weighted images, respectively. The rim of the lesion was slightly enhanced after administration of gadolinium-diethylene-triaminepenta-acetic acid (Gd-DTPA), and the left L4 nerve root was displaced medially on constructive interference in steady-state images (Fig. 1). Lumbar radiography detected no noticeable findings of facet degeneration or spinal instability. His symptoms gradually improved following a conservative medical outpatient management. However, 2 weeks after his first visit, he experienced lightning pain again on the contralateral lower extremity and was admitted to our hospital.

The pain areas of his lower extremity were the front of the thigh, knee, and anterior surface of the leg. Neurological examination demonstrated mild decrease in sensation on the anteromedial surface of his right leg and mild weakness of the right hamstring with negative nerve root tension sign. Myelography revealed hourglass stenosis at the L3-4 level, and re-examination of the MR image identified an indistinct prior cyst lesion and a new right posterolateral disc protrusion at the same level (Fig. 2). The patient was treated conservatively with nonsteroidal anti-inflammatory medication for the new lumbar disc herniation. Five months after admission, his symptoms had disappeared and follow-up MR imaging demonstrated complete disappearance of the discal cyst (Fig. 3).

Discussion

The differential diagnosis of discal cysts involves several types of intraspinal cysts, such as perineural, synovial, and ganglion cysts. These cysts manifest symptoms and signs similar to those of lumbar disc herniation. MR imaging is one of key neuroimaging examinations, because lumbar discal cysts have characteristic features different from those of other epidural cysts. For example, ventrolateral extradural cyst attached to a herniated disc appears as a thick capsule with rim enhancement after ad-

Fig. 1 Initial magnetic resonance images of the patient. A: Sagittal T2-weighted image of the lumbar spine showing a small cyst in the extradural space in contact with the left L3-4 disc (arrow). B: Axial T2-weighted image of the lumbar spine at the L3-4 level showing a small cyst as high intensity in the left ventrolateral extradural space (arrow). C: Constructive interference in steady-state image showing a small cyst close to the L3-4 disc as well as slight displacement of the left L4 nerve root medially (arrow). D: Axial T1-weighted image with gadolinium-diethylene-triaminepenta-acetic acid of the L3-4 level showing mild rim enhancement of the cyst (arrow).

Fig. 2 Magnetic resonance images obtained one and a half months after pain onset. A: Right paramedian sagittal T2-weighted image of the lumbar spine showing L3-4 disc protrusion with distinct small high intensity in the extradural space. B: Axial T2-weighted image of the lumbar spine at the L3-4 level showing posterolateral protrusion of the disc, with a distinct small high intensity lesion (arrows). C: Axial T2-weighted image of the lumbar spine of the L3-4 level showing an indistinct cyst lesion (arrow).

Fig. 3 Final follow-up magnetic resonance images. A: Left paramedian sagittal T1-weighted image of the lumbar spine showing only mildly protruding disc (arrow). B: Constructive interference in steady-state image showing the discal cyst has completely disappeared (arrow).
ministration of Gd-DTPA. However, in actual clinical practice, some cases are indistinguishable from other cystic lesions by MR imaging. In our case, MR imaging revealed that the cyst, located in the ventrolateral extradural space, contacted the left L3-4 disc with rim enhancement and was compatible with the images characteristic of discal cysts. Discography is usually recommended for a definitive diagnosis, but we did not perform discography because our patient’s symptoms had improved.

The optimal treatment of discal cysts remains controversial. Almost all reported cases involved surgical treatment such as CT-guided cyst puncture. Five cases of discal cyst were treated by microscopic cyst resection.1) One case of discal cyst treated with CT-guided aspiration and steroid injection.7) Seven cases of discal cyst were treated by minimal invasive surgical resection using microendoscopy.10)

Only two cases of discal cyst were treated conservatively and regained as confirmed by MR imaging.2,3) The first case of “disc cyst” with imaging-confirmed regression and symptomatic relief without surgery was reported in 2001, but whether any other type of medical intervention was administered is unknown.3) Another case of discal cyst regression without surgery or aspiration in 2007 was treated with both epidural injection and a selective nerve root block containing steroid agents, but whether the medical treatment contributed to the cyst regression was unclear.3) Therefore, discal cysts are less controllable with conservative treatment modalities, and surgical treatment may be considered as the initial management.1) In our case, we performed selective nerve root block, except that the agent used was a local anesthetic drug with no steroid agent. In addition, referring to the standard procedure, the cyst was unlikely to be punctured by the needle used in administration. Therefore, we emphasize that the present discal cyst regressed through a natural course.

The etiology and pathogenesis of discal cysts remain unknown. Review of the histopathological features of discal cyst included only 46 cases.11) The histopathology and the detection of hemorrhagic contents of the cyst and/or hemosiderin deposits were reported in 30.4% of the cases. Detection of myxoid degeneration was reported in 24% of the cases. Neovascularity of the cyst wall and cartilaginous contents were rarely seen.

Two hypotheses for the etiology of discal cysts have been proposed. One proposal is that an epidural hematoma is formed from hemorrhage of the epidural venous plexus at the beginning, resulting from either disc herniation or underlying disc injury. Most cysts contained either hemorrhagic fluid or hemosiderin, so the discal cyst may develop as a result of an unspecified impairment in hematoma resorption. The other proposal is that discal cysts result from focal degeneration of the disc with subsequent fluid production, similar to the mechanism by which meniscal cysts form.8) The inflammatory response causes formation of a reactive pseudomembrane which encapsulates the fluid leading to development of a discal cyst.

The specific characteristic of the present case is that lumbar disc herniation subsequently occurred at the same disc level as the discal cyst within a very short time, indicating that the lumbar disc at the same level had undergone mild degenerative change, and may directly suggest that degenerative change in a lumbar disc contributes to the formation of the discal cyst. In the present case, the cyst was treated conservatively and no specimens were obtained from the cyst. Therefore, whether the cyst contained either hemorrhagic fluid or hemosiderin is not clear in our case. The findings in our case support the hypothesis that the underlying pathology involves disc degeneration and not a vascular phenomenon. However, we cannot contradict the epidural hematoma hypothesis, because both pathogeneses may coexist.

Discal cyst is extremely rare and the natural history remains unknown, but recognition of the possibility of spontaneous regression can be helpful when treating patients with this problem. However, as in the present case, clinical and radiological recovery of symptomatic lumbar discal cyst is possible with only conservative therapy. We believe that conservative management could be a treatment option for discal cyst without severe or aggravating neurological conditions.

References


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