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Case Report

Spontaneous Regression of a Large Lumbar Disc Extrusion

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Although the spontaneous disappearance or decrease in size of a herniated disc is well known, that of a large extruded disc has rarely been reported. This paper reports a case of a spontaneous regression of a large lumbar disc extrusion. The disc regressed spontaneously with clinical improvement and was documented on a follow up MRI study 6 months later. The literature is reviewed and the possible mechanisms of spontaneous disc regression are discussed.

KEY WORDS : Lumbar disc extrusion · Spontaneous regression · MRI.

INTRODUCTION

Most patients suffering from radiculopathy caused by intervertebral disc herniation heal spontaneously without surgical intervention[2]. Since Guinto et al.[6] first presented a case of spontaneous regression of a lumbar herniated disc using computed tomography (CT) in 1984, an increasing number of studies have described this phenomenon. Nevertheless, a case of spontaneous regression of large extruded lumbar disc is rare. This paper presents a case of lumbar radiculopathy caused by a large herniated disc at the L4/5 level in which clinical improvement was associated with a significant decrease in the size of the extruded disc fragment, which was documented on the serial MRI scans. Possible explanations for disc spontaneous regression are also discussed.

CASE REPORT

A 53-year-old woman was referred to our clinic with a 6 month history of low-back and left lateral leg pain with numbness. Six months earlier, her symptoms had developed suddenly as severe left lateral leg pain. A neurological examination showed no neurological deficits. The straight leg raise test was negative bilaterally. The lumbar spine MRI performed 6 months earlier revealed a left posterolateral herniated nucleus pulposus which was migrated caudally and compressed the left L5 root (Fig. 1). She received conservative treatment including pain-relieving medication, physical therapy and spinal anesthetic block therapy due to her poor medical conditions : 20 years of liver cirrhosis due to a chronic hepatitis C infection and 10 years of hypertension and diabetes mellitus. After conservative treatment, her clinical symptoms subsided gradually but the numbness of her left lateral leg still remained. A second MRI study performed approximately 6 months after the prior examination reveal almost complete disappearance of the extruded fragment that had been located posterolateral to the L5 vertebral body, and no evidence of compression or displacement of the dural sac or nerve root (Fig. 2). The height of the L4/5 disc space remained decreased compared to the other levels and was unchanged from the previous MRI examination.

DISCUSSION

CT[6,17] or MRI[11-13] demonstrations of the gradual regression or disappearance of herniated intervertebral discs without surgical intervention have been reported. In addition, regression of a herniated disc has been described at different sites and with various clinical symptoms, including cervical radiculopathy and myelopathy, thoracic myelopathy and

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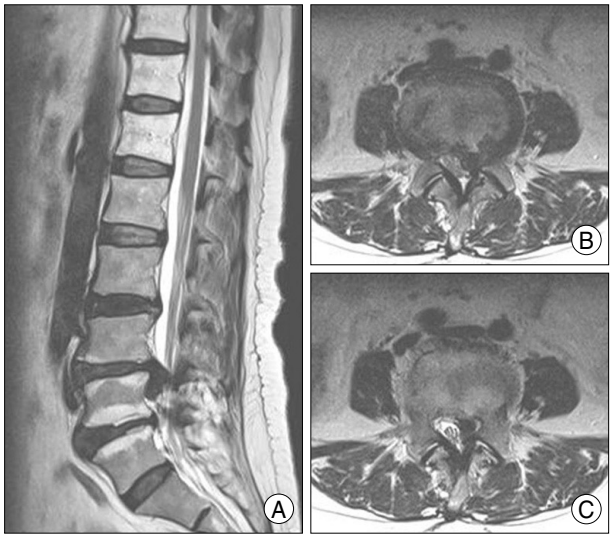

Fig. 1. Lumbar spine MRI 6 months earlier. A : Sagittal T2-weighted image of the initial magnetic resonance imaging study reveals a large herniated disc at the L4/5 level with caudal migration. B and C : Axial T2-weighted image of the initial MRI shows a left-side posterolateral extruded disc fragment and lateral stenosis at the L4/5 level.

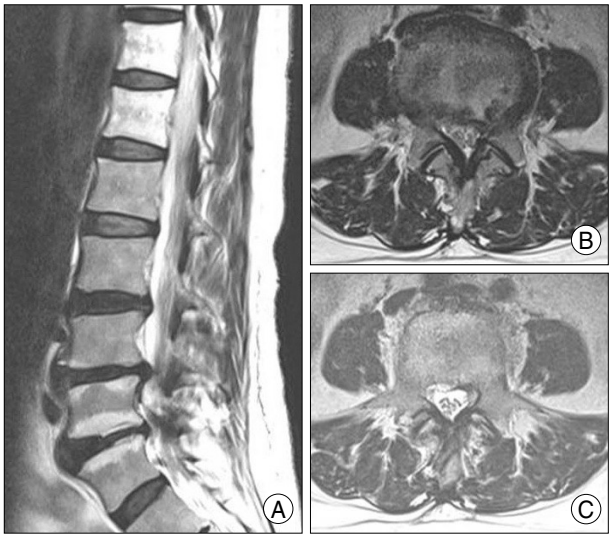

Fig. 2. Lumbar spine MRI. A : Sagittal T2WI of the second round of MRI shows almost complete regression of the herniated nucleus pulposus at the L4/5 level. B and C : Axial T2WI of the second round MRI shows almost complete regression of the herniated nucleus pulposus and the remaining lateral stenosis at the L4/5 level without nerve root compression.

lumbar radiculopathy. Nevertheless, the precise mechanisms of disc regression are unclear. Three hypotheses have been proposed to explain the process of disc regression. The first hypothesis, "retraction of a herniated disc", proposes that the herniated disc retracts back into the intervertebral space[17]. Theoretically, this can occur if there is a disc bulge or if the disc material protrudes through the anulus fibrosus but is not separated from it[6]. However, it would be unlikely in cases of completely extruded or migrated fragments. The second explanation, "dehydration of herniated disc", states that the herniated fragment would disappear due to gradual dehydration and shrinkage[16]. The third hypothesis, "inflammatory reaction and neovascularization", which is the most compelling and studied hypothesis, states that extruded disc material into the epidural vascular space of spine is recognized as a "foreign body" and induces an inflammatory reaction by the autoimmune system. This would cause neovascularization of the cartilaginous tissue along with infiltration by inflammatory cells, such as macrophages, granulocytes, and lymphocytes[7,8,10,11,15]. Several histopathology studies from surgical specimens and experimental animal research support this theory[7,9,10,14]. Nevertheless, it is possible that all 3 mechanisms play a role in the regression and disappearance of herniated disc tissue. Our patient is an example of the resolution of a large protruded disc without surgery. This phenomenon may be due in part to the fact that larger fragments have a higher water content[8] and may regress through dehydration/shrinkage, retraction and inflammation-mediated resorption[16].

Several studies have reported the percentage of spontaneous regression of herniated discs. Bozzao et al.[3] prospectively analyzed the reduction by MRI, and reported that 63% of their patients showed a decrease in disc protrusion. Autio et al.[1] reported that 68 out of 160 enrolled patients documented by MRI with decreased herniated lumbar disc volume 2 months after the development of symptoms. In other studies, the occurrence of spontaneous regression of herniated lumbar discs was approximately 35-63% on average during a 6 month to 1 year period[11,17].

Motor and sensory deficits are present in 50-90% of patients with a herniated lumbar disc[18]. Surgery can be carried out as an emergency when bladder symptoms or progressive motor weakness are present. In the absence of these symptoms, 75-90% of patients with acute sciatica due to a protruded lumbar disc experience a resolution of symptoms without surgery[5,11]. Clinical improvement frequently correlates with radiographic disc regression. However, the direct relationship between clinical and radiographic improvement has not been reported[11]. The present case confirms the cogency of nonsurgical management of herniated lumbar discs in the absence of neurological deficits. Medical treatment alone can result in an improvement in clinical symptoms, and repeated MRI scans may provide evidence of morphological regression of a herniated disc. Conservative treatment should be considered when cauda equina syndrome or progressive motor weakness are absent in the acute stage of the lumbar herniated disc. Surgical intervention should be considered in cases with neurological deficits or intractable low back and leg pain despite the initial conservative treatment[4,18].

CONCLUSION

Spontaneous regression of a herniated disc may be related to dehydration/shrinkage, retraction and inflammation-mediated resorption. Even in patients with large lumber disc extrusion, non-surgical conservative care can be considered as an option for the treatment when radiculopathy is acceptable and neurological deficit is absent.

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