



Spontaneous regression of herniated lumbar discs: Report of one illustrative case and review of the literature



Xiaohui Yang^a, Qin Zhang^a, Xiaoning Hao^a, Xinghua Guo^a, Liping Wang^{b,*}

^a Yuncheng Central Hospital, Shanxi 044000, China

^b Lanzhou University Second Hospital, Gansu 730000, China

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ABSTRACT

Lumbar disc herniation (LDH) is a common disease that induces back pain and radicular pain. The most efficient method for the treatment of lumbar disc herniation is still controversial. Spontaneous regression of LDH has been recognized with the advancement of radiological diagnostic tools and can explain the reason of spontaneous relief of symptoms without treatment. The proposed hypotheses are; dehydration, retraction of the disc to the hernia in the annulus fibrosis, enzymatic catabolism and phagocytosis. In this study, the case of a patient with huge lumbar disc hernia regressing by itself has been presented and the potential mechanisms of disc regression have been discussed.

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1. Introduction

Lumbar disc herniation is a common disease that induces back pain and radicular pain, with an estimated annual incidence of 5% adults [1]. Radicular pain has been described for the first time by Dandy in 1929 as a clinical syndrome due to the extradural mass [2], inflammation of the nerve root and intervertebral disc tissue may be a major factor to radiculopathy [3]. Mixter and Barr established the surgical treatment of the herniated lumbar disc and its surgical treatment in 1934, and many patients have been subjected to different surgical procedures for discectomy due to persistent severe pain. However, in most cases, pain can be relieved with

conservative treatment or in some, spontaneously. Spontaneous regression of LDH is thought to occur via an inflammatory reaction with macrophages and molecular mechanisms of phagocytic processes [4–7]. In literature, there are many studies showing the regression of huge disc hernia without surgical intervention [8,9]. The aim of this study is to describe patients with spontaneous resorption of sequestered intervertebral disc herniation observed using MRI after they refused surgery and were treated conservatively. In addition, the probabilities of disc regression and complete resolution among different types of lumbar intervertebral herniation were discussed and reviewed in the literature.

2. Case presentation

A 45-year-old man was admitted to our hospital with a 3-months history of low back and right leg pain. Acute low back pain,

* Corresponding author. Fax: +86 0359 8477371.

E-mail address: wangliping19762@126.com (L. Wang).

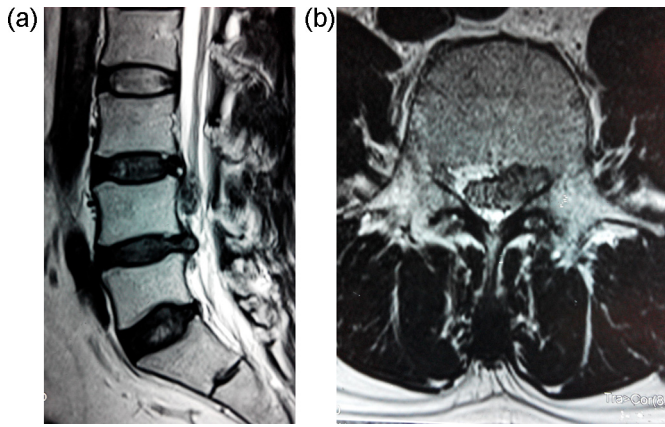


Fig. 1. Sagittal (A) and Axial (B) T2-weighted MRI of the lumbar spine images show a large extruded disc fragment on the left side at the L3–L4 level.

bilateral buttock pain, and neurogenic claudication appeared after the patient lifted a heavy load. Straight leg raising test was positive on the right side and the neurological exam was decreased sensation of touch and pain in the left ilioinguinal area and a hypoactive left Knee-jerk Reflex. The patient was relieved by an oral administration of NSAIDs for pain control. The large extruded disc fragment was found on the left side of spinal canal at the L3–4 level on T2-weighted MRI and the left nerve root was seen to be compressed by the fragment (Fig. 1). The patient preferred to have conservative treatment that included physical and medical therapy with bed rest. Over nine months, the patient's complaints were resolved and normal Knee-jerk Reflex was found in next neurological exam. Follow-up MR images showed total regression of the extruded disc fragment was found without compression of the nerve root on T2-weighted MRI (Fig. 2). The height of L3–4 disc space was not reduced significantly compared to other levels and was unchanged from the previous lumbar spine MRI examination.

3. Methods

We reviewed all published case reports and case series of lumbar disc herniations, sequestered subtypes. Patients monitored with serial MRIs were included in the literature review. Subjects with spinal infections, tumors, spondylolisthesis, spinal stenosis or previous lumbar surgery were also excluded because

of different pathophysiology. The clinical course of lumbar disc disease and radiographic studies of the patients were discussed with mechanisms, features of MRI, immunohistological pathology and treatment options of past clinical studies.

4. Results

We carried out a literature review of 22 cases of spontaneous regression of herniated discs (Table 1) [8,11,15,26–31]. On clinical examination, 40.9% of patients with sequestered discs in our literature review reported radiculopathy. Similarly the literature demonstrates positive straight leg tests in 54.5% of cases, hyporeflexia in 36.3% of cases, weakness in 40.95% of cases, and sensory disturbances in 45.4% of cases. On radiographic studies, the spinal levels affected included L2–L3 (13.6%), L3–L4 (27.2%), L4–L5 (36.3%), and L5–S1 (22.7%) level and mostly affected disc were extrusion or sequestration in classification of disc herniation.

The average time from the first diagnostic MRI of a herniated disc to radiographic resolution was 5.54 months ($N=22$ cases reporting MRI intervals).

5. Discussion

The literature contains some reports of the spontaneous regression of herniated intervertebral discs without surgical management. Although the spontaneous regression of non-operated symptomatic disc hernia has been proposed, the exact mechanism of spontaneous disc regression remains unknown. The spontaneous regression of disc hernia has been proposed firstly in 1980 by Guinta et al. [10]. Many papers have been published about this disease [8,10,11].

5.1. Mechanisms of spontaneous disc regression

These popular mechanisms about spontaneous disc regression are present in the literature. The first hypothesis states that dehydration which is explain the spontaneous disc regression; dehydration within the nucleus pulposus leads to subsequent mechanical retraction of extruded material back into the annulus fibrosus [8,12]. The second hypothesis states that the herniated disc may retract back into the intervertebral disc space, but this theoretically occurs when the herniated disc protrudes through the annulus fibrosus without separating from it [13]. The third mechanism proposes that enzymatic degradation and phagocytosis of

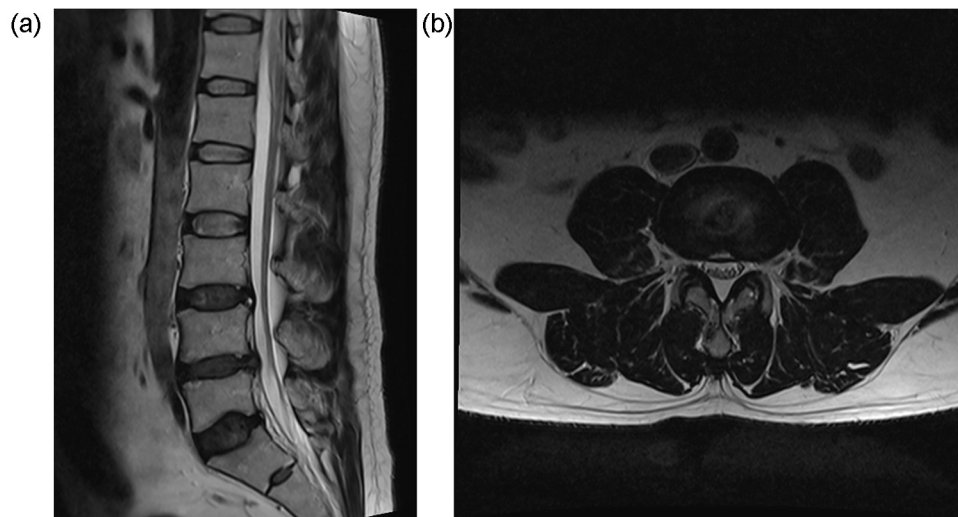


Fig. 2. Lumbar disc herniation is seen to be resorbed on follow up Sagittal (A) and Axial (B) T2 weighted MRI of the lumbar spine at the L3–L4 level after 9 months.

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