

Discal cyst of the lumbar spine: MR imaging features

Ho Kyu Lee*, Deok Hee Lee, Choong Gon Choi, Sang Joon Kim, Dae Chul Suh,
Shin Kwang Kahng, Sung Woo Roh, Seung Chul Rhim

Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea

Received 16 January 2006; accepted 10 May 2006

Abstract

We describe MR imaging features of discal cyst of the lumbar spine in nine patients who presented with low back pain and leg pain.

Discal cyst of the lumbar spine has characteristic MR imaging features different from other epidural cysts: a ventrolateral extradural cyst attached to a herniated lumbar disc, consisting of a thick fibrous capsule without disc material, and having occasional extension into the lateral recess with rim enhancement on contrast-enhanced MR imaging.

© 2006 Elsevier Inc. All rights reserved.

Keywords: MRI; Discal cyst; Lumbar spine

1. Introduction

The term discal cyst, a new disease entity, was initially coined by Kono et al. [1]. Discal cyst communicates with the intervertebral disc, and this has been reported in the literature [1–5].

There is a variety of spinal epidural cysts mimicking a discal cyst. The spinal epidural cysts can arise from various sites including the disc material [6,7], facet joint [8,9], posterior longitudinal ligament [10], anulus fibrosus [11], ligamentum flavum [12], or intervertebral foramen [13].

The purposes of this study were to distinguish discal cyst of the lumbar spine from other intraspinal epidural cysts, to demonstrate its MR characteristics, and to discuss the pathogenic mechanism of this cyst.

2. Materials and methods

In the last 5 years, the subjects of our study consisted of nine patients (seven males and two females; mean age,

32.2 years) with pathologically proven discal cyst who underwent MR imaging. All patients presented with a history of low back pain, and seven had leg pain. MR images were obtained in the sagittal and axial planes on a Magnetom 1.5-T scanner (Siemens, Erlangen, Germany). The study was conducted using the following: 512 × 210 matrix, 28–30 cm field of view, and 4 mm section thickness with 0.4 mm section gap. Fast T1 (TR/TE, 600–650/12–18) and T2 (TR/TE, 4300/92–112) spin echo sequences were performed on all patients. Five obtained contrast-enhanced T1-weighted sagittal and axial images. MR images after administration of 0.1 mmol/kg gadolinium were retrospectively reviewed by two radiologists (HK Lee and SJ Kim), attaining a general agreement.

All patients underwent partial hemilaminectomy and cyst resection. The tissue diagnosis was established by surgical resection of the cystic membrane and its contents. MR imaging of the cysts was analyzed retrospectively according to level, signal intensities, enhancement, peripheral rim, presence of intracystic hemorrhage, grade of extension into the lateral recess, bony erosion of the adjacent bone, its attachment to either the adjacent facet joint or intervertebral disk, and association with herniation or bulging of the intervertebral disk. One patient underwent follow-up MRI imaging for a recurrent discal cyst (Patient 1).

* Corresponding author. Neuroradiology Section, Department of Radiology, University of Iowa College of Medicine, Iowa City, IA 52242. Tel.: +1 319 356 3764.

E-mail address: hokyu-lee@uiowa.edu (H.K. Lee).

3. Results

The summary of cysts is listed in Table 1. Operators (SC Rhim and SW Roh) detected the presence of the communication of the cyst with the adjacent intervertebral disc in seven cases.

Cysts were located at L4–L5 in four patients (44.4%), at L2–L3 in two patients, and at L3–L4, L5–S1, and L1–L2 in one patient each. All cysts were positioned vertically, attaining an oval shape, and were separated from the adjacent facet joints (Fig. 1). All cysts were seated in the ventrolateral epidural space of the spinal canal without extension to the neural foramen or crossing the midline. Cysts extended into the lateral recess in four cases and were associated with mild bony erosion of the lateral recess in two cases (Fig. 2). All cysts had hypointense rims on T2-weighted imaging, thus reflecting fibrosis in the cystic capsules; five cysts revealed dense rim enhancement after contrast injection (Fig. 2). High signal intensity in the cysts on T1-weighted imaging proved intracystic hemorrhage in two patients (Fig. 2). Herniation of the intervertebral disc was noted in five patients (Fig. 1), and bulging disc was found in four. On cyst resection, the mass was found to be tightly adherent to both the anulus fibrosus and the posterior longitudinal ligaments. The contents of the cysts were serous fluid in seven patients and hemorrhage in two. There were no cysts attached to the facet joint.

Histopathologically, the resected sample consisted of a thick fibrous capsule with myxoid degeneration. There was no disc material in the sac. The inner wall of the cyst did not contain synovial lining cells (Fig. 1). In one patient, the cyst recurred 1 year after its removal (Fig. 2).

4. Discussion

Discal cyst is a new disease entity; it communicates with the intervertebral disc and is assumed to be caused by underlying disc injury, which is different from an extruded disc fragment [2]. In our study, the communication of the

cyst with the adjacent intervertebral disc was found at surgery in seven cases.

Kono et al. [1] initially described discal cyst as a well-defined homogeneous cyst located in the ventrolateral extradural space, which displaces the dural sac dorsomedially and communicates with the intervertebral disc.

The exact pathogenesis of discal cyst is still unclear. Kono et al. [1] hypothesized that a discal cyst results from focal degeneration of an intervertebral disc, thus producing a herniated disc with subsequent spilling of fluid from the herniated disc material. Then, pseudomembrane formation subsequently develops and the fluid is encapsulated, thus eventually causing a meniscal cyst to form. Initially, prolonged mesenchymal stimulation of the bulged intervertebral disc occurs, causing swelling, mucous degeneration, localized cleavage of the anulus fibrosus, and finally, the formation of a discal cyst [3]. In addition, migrating disc fragments can be changed to the degenerative change and cystic softening of collagenous connective tissue of the disc with fluid production, which appears different from discal cyst [6,7].

The most common vertebral area where discal cysts form is the lumbar area and, more specifically, in the L4–L5 interspace, which is related to the greatest range of movement in the lumbar region. The disc adjacent to the cyst showed disc herniation in 56%. From these MRI findings, the authors speculated that these strongly suggest that the discal cyst is developed from cleavage of the anulus fibrosus, which is caused by disc degeneration.

Similar to our cases, the lower end of the discal cyst goes down into the ipsilateral lateral recess but does not cross the midline, just like in an extruded disc herniation. The lateral recess is thought to be a less-resistant space in the intraspinal epidural spaces. In addition, discal cyst caused bony erosion due to the long-standing taut cystic sac in two cases; this was described in a previous report [1]. In all cases, a peripheral low signal ring accentuated on T2-weighted images, as well as thick rim enhancement on contrast-enhanced T1-weighted imaging, which suggested fibrotic tissue, and an old hemorrhage were found.

Table 1
Summary of nine patients with discal cyst

Patients	Age/Sex	Location	Disc	Symptom	Side	Duration of symptom	Attach	Enhance	Hemorrhage	Lat rec	Bony erosion
1	69/m	L1–L2	Bulging	LBP	Left	1 year	+ ^a	+	+	+	+
2	29/m	L2–L3	Herniation	LBP	Right	1 year	+ ^a	+	–	+	–
3	54/m	L2–L3	Herniation	LBP+LP	Right	2 months	+ ^a	+	–	+	+
4	18/f	L3–L4	Herniation	LBP+LP	Left	1 year	+	NA	–	+	–
5	19/m	L4–L5	Herniation	LBP+LP	Left	4 months	+ ^a	+	–	–	–
6	21/m	L4–L5	Bulging	LBP+LP	Left	5 months	+	NA	–	+	–
7	28/f	L4–L5	Bulging	LBP+LP	Left	3 months	+ ^a	+	–	–	–
8	30/m	L4–L5	Bulging	LBP+LP	Left	4 months	+ ^a	NA	–	–	–
9	34/m	L5–S1	Herniation	LBP+LP	Right	2 months	+ ^a	NA	+	–	–

Abbreviations: Attach, attachment to the disc; Enhance, enhancement on contrast-enhanced T1-weighted image; Lat Rec, grade of extension into the lateral recess; m, male; f, female; L, lumbar; LBP, low back pain; LP, leg pain; NA, not available.

^a Detection of communication of the cyst to the adjacent intervertebral disc.

Download English Version:

<https://daneshyari.com/en/article/4223176>

Download Persian Version:

<https://daneshyari.com/article/4223176>

[Daneshyari.com](https://daneshyari.com)