

Spinal Foraminal Arachnoid Cyst Associated With Lumbar Disc Herniation

Lomber Disk Hernisi ile Birlikte Olan Spinal Foraminal Araknoid Kist

ABSTRACT

Lumbar spinal extradural arachnoid cysts are rare, expanding lesions and they commonly occur in the thoracic spine and lie posterolaterally. Their pathogenesis is still unclear and it is claimed that arachnoid cysts are the result of a widening of the septum posticum. The mechanism of cyst enlargement may be active CSF secretion from residual arachnoid matter or ball-valve effect. Congenital, hereditary, idiopathic, and inflammatory etiologies have been proposed. We report an extradural lumbar arachnoid cyst associated with a lumbar disc herniation. We only performed L1-2 discectomy and left L1-L2 foraminotomy to evaluate the role of disc herniation and spinal canal stenosis on the development of ball-valve effect which made the cyst enlarge.

KEY WORDS: Arachnoid cyst, lumbar spine, foraminal enlargement, disc herniation

ÖZ

Lomber spinal araknoid kistler genişleyici nadir lezyonlardır. Sıklıkla torasik bölgede ve posterolateral yerleşimlidir. Patogenezleri halen tam olarak açıklanabilmiş değildir ve araknoid kistlerin septum postikumun genişlemesi sonucu oluştuğu ifade edilmektedir. Kist genişlemesinin mekanizması rezidüel araknoidden aktif beyin omurilik sıvısı (BOS) sekresyonuna veya ball-valve etkisine bağlı olabilir. Konjenital, herediter, idiopatik ve inflamatuvar etyolojiler sorumlu tutulmaktadır. Biz burada bir lumbar ekstradural araknoid kist ile lomber disk herniasyonunun birlikteliğini rapor ettik. Disk herniasyonunun ve kanal daralmasının kistin genişlemesine neden olan ball-valve etkisinin gelişmesine olan etkisini değerlendirmek amacıyla sadece L1-L2 distektomi ve sol L1-L2 foraminotomi gerçekleştirdik.

ANAHTAR SÖZCÜKLER: Araknoid kist, lomber omurga, foraminal genişleme, disk herniasyonu

Doğa GÜRKANLAR
Mehmet DANEYEMEZ
Cem ATABEY
İlker SOLMAZ
Çağlar TEMİZ
Serhat PUSAT

Department of Neurosurgery,
Gülhane Military Medical Academy,
Ankara, Turkey

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Correspondence address
Doğa GÜRKANLAR
Gülhane Askeri Tıp Akademisi
Beyin ve Sinir Cerrahisi AD
06018 Etilik-Ankara, Turkey
GSM : +90 532 5013905
Fax : +90 312 3045300
E-mail: dgurkanlar@hotmail.com

INTRODUCTION

Spinal extradural arachnoid cysts are uncommon lesions that can cause neurological symptoms when they become enlarged (1, 11, 15, 19). They either have no epithelial lining or may have an attenuated lining of arachnoid like cells (13). They are in communication with the subarachnoid space by a narrow neck (4, 12). Magnetic resonance imaging (MRI) is very effective for the diagnosis and follow-up (15). The etiology and pathogenesis is still controversial. Surgical intervention is indicated when there are progressive neurological symptoms.

We present a lumbar spinal foraminal arachnoid cyst associated with a lumbar disc herniation at the same level, presenting with radiculopathy and neurogenic claudication in spite of its small size.

CASE REPORT

A 50-year-old man presented with a three-year history of low back and bilateral thigh pain, which had got worse especially on the left side during the last 6 months. He had also suffered from intermittent claudication for the last 3 months. His neurological examination revealed weakness of left hip adduction.

Plain x-ray films of the lumbar spine revealed enlargement of the left L1 foramen (Figure 1). MRI demonstrated a cystic lesion extending into the left L1 foramen, compressing the left L1 root and an extruded right L1-2 centrolateral intervertebral disc herniation displacing the thecal sac posteriorly (Figure 2).

We operated on the patient and performed L1-2 discectomy, left L1 hemipartial laminectomy and L1-L2 foraminotomy. He was free of pain after the operation.

DISCUSSION

Spinal arachnoid cysts are rare expanding lesions; they arise from a congenital dural defect which allows the arachnoid membrane to herniate through the dura mater. The cyst has a pedicle which connects them to the subarachnoid space, located dorsally or along a root sleeve (4, 12). They commonly occur in the thoracic spine, less frequently in the lumbar region and lie posteriorly or posterolaterally within the spinal canal. Only a few extend into or through the neural foramen (8, 20). Perret believed arachnoid cysts to be the result of a widening of the septum posticum (14). This septum is a thin membrane partition in the upper dorsal thoracic spinal canal which divides the spinal

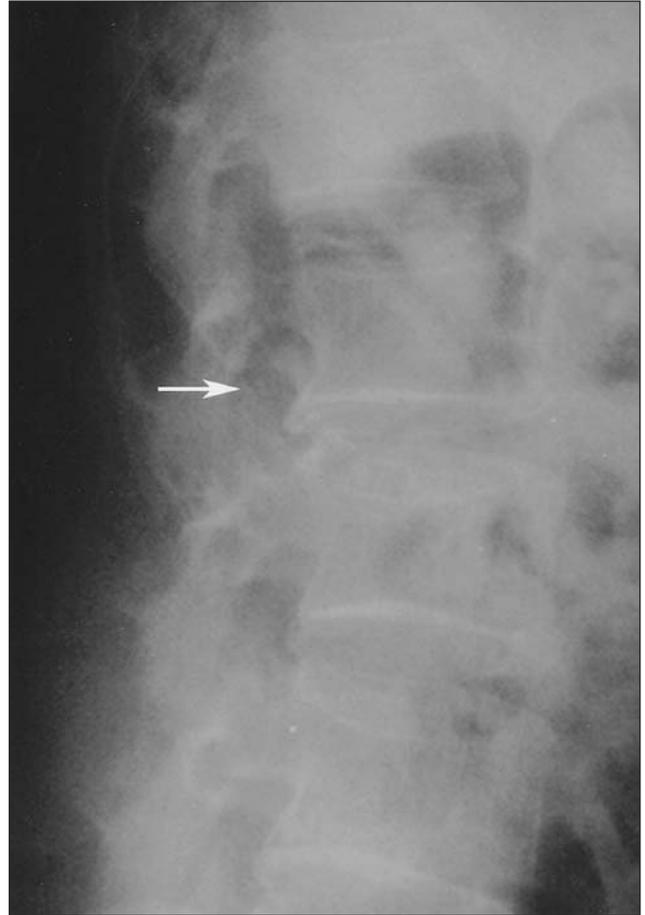


Figure 1: Plain x-ray film of the lumbar spine revealing enlargement of the left L1 foramen (white arrow).



Figure 2: T2-weighted MRI revealing a cystic extradural lesion extending into the left L1 foramen, compressing the left L1 root (white arrow) (A) and an extruded right L1-2 centrolateral intervertebral disc herniation (B).

subarachnoid space longitudinally. This hypothesis accounts for the frequent occurrence of dorsal cysts. The mechanism of cyst enlargement may be active CSF secretion from residual arachnoid matter or ball-valve effect in which CSF enters the cyst and reflux is prevented at the neck of the diverticulum (3, 9, 10, 15, 16).

A spinal arachnoid cyst is often an incidental finding on imaging and patients are asymptomatic even if the cysts are large. Lumbar cysts typically exhibit lower back pain and radiculopathy with or without sensorimotor deficits. Symptoms can be intermittent or slowly progressive and can be aggravated by increasing intraspinal pressure (13).

Plain radiographs have not been proven to be useful in the diagnosis of spinal cysts except for indirect signs such as an enlarged spinal canal, bony erosions of the spine, slender pedicles, widened foramina or an increased interpedicular distance (1). MRI is the diagnostic procedure of choice for the detection of spinal arachnoid cysts. In all MRI sequences, the signal within the lesion is iso-intense to cerebrospinal fluid (CSF) (17, 18). Extradural CSF-containing lesions are revealed by displacement of the subarachnoid space or extension of the cyst through one or several foramina (7). The widening of the spinal bony canal implies a slow-growing, space occupying intraspinal lesion. The associated dura defect appears to be the predisposing factor for an extradural arachnoid cyst. Such cysts may either be a congenital diverticulum of the dura mater or a herniation of the arachnoid membrane through a congenital defect in the dura (3, 5, 9).

The treatment of symptomatic lesions is believed to be the complete resection and excision of the cyst. Evacuation or aspiration of the cyst will result in only temporary improvement of the symptoms (2, 6, 7, 18).

Our case presented with radicular symptoms due to an arachnoid cyst extending through the L1-L2 foramen. There was also a L1-2 disc herniation associated with the cyst and this herniation developed lumbar canal stenosis causing neurogenic claudication. This herniation probably facilitated the occurrence of arachnoid cyst by increasing the CSF pressure and ball-valve effect. Although we only performed L1-2 discectomy and left L1-L2 foraminotomy, the neurological examination was unremarkable after the operation. We did not perform complete resection and excision of the arachnoid cyst to evaluate the role of disc herniation and stenosis on the development of the ball-valve effect, which made the cyst enlarge.

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