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Should We Operate all Extradural Spinal Arachnoid Cysts? Report of a Case

Tüm Ekstradural Spinal Araknoid Kistler Opere Edilmeli mi? Vaka Sunumu

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ABSTRACT

Spinal canal extradural arachnoid cyst is an uncommon, expanding lesion which may communicate with the subarachnoid space. They may be either intra or extradural with intradural cysts being less common. Spinal arachnoid cysts are usually in the thoracic spine, and they may cause symptoms due to spinal cord compression. Although surgery is the preferred way of management, there are reported cases with long term follow-up in the literature. Here we present a 14-year-old female who presented with intermittent low back pain for 1 year and a spinal arachnoid cyst that was followed for two years without any neurological deterioration.

KEY WORDS: Spinal arachnoid cyst, Arachnoid cyst, Spinal cord compression

ÖZ

Spinal kanal extradural araknoid kistleri nadir görülen, subaraknoid alan ile bağlantısı olan genişleyen lezyonlardır. İntradural ve extradural olabilirler. İntradural olanları daha nadir görülürler. Spinal araknoid kistleri genellikle torakal bölgede bulunurlar. Spinal kord basısı yaparak semptomlara yol açabilirler. Cerrahi en sık tercih edilen tedavi yöntemi olmasına rağmen literatürde uzun takip süreli vakalar da bulunmaktadır. Biz burada iki yıl nörolojik bozulma gözlenmeden takip edilen bir spinal araknoid kist vakasını sunduk.

ANAHTAR SÖZCÜKLER: Spinal araknoid kist, Araknoid kist, Spinal kord kompresyonu

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INTRODUCTION

Spinal arachnoid cysts are usually located in the posterior parts of the middle or lower thoracic spine. They usually communicate with the subarachnoid space through a small dural defect and stalk. These defects may be congenital or acquired. Arachnoid cysts may cause symptoms by compressing the spinal cord or nerve roots (1). The mechanism through which the spinal cord can be compressed by such cysts is unknown, but many authors have speculated that a one-way valve mechanism causes intermittent increased pressure within the extradural cyst, leading to expansion and compression (6). The diagnosis is relatively easy using magnetic resonance imaging (MRI). The standard management is surgery, which includes complete resection of the cyst wall and the subarachnoid space after laminectomy of the affected vertebrae. We report a case of an extradural thoracolumbar arachnoid cyst followed up for two years without surgery without any additional neurological impairment.

CASE REPORT

A 14-year-old female presented with an intermittent low back pain of 1 year duration. Her medical history and physical and neurological examinations were non-specific.

Radiography of the thoracolumbar spine revealed thinned pedicles and increased interpedicular distance. MRI showed anterior displacement of the dural sac and a cyst located posterior to the spinal cord (Figure 1). The cyst was isointense with the cerebrospinal fluid (CSF) on all sequences and was adjacent to the posterior epidural fat (Figure 2).

The parents of the patient did not allow any surgical intervention and we planned radiological and clinical follow-up with MRI scans. She did not develop any neurological impairment during the 2-year follow-up. The cyst did not show any enlargement on MRI scans (Figure 3). The frequency and the severity of low back pain decreased during this period.

DISCUSSION

The etiology and pathogenesis of spinal extradural arachnoid cysts are not clear. The cysts have a pedicle which connects them to the subarachnoid space, located dorsally or along a root sleeve. An association with congenital neural tube defects has been reported. Another theory suggests that they represent a congenital diverticulum of the dura mater. Our patient had no penetrating trauma, contrast media application, inflammation, hemorrhage, or surgical history. The mechanism of cyst enlargement may be due to active CSF secretion from residual arachnoid matter or a ball-valve effect in which CSF is trapped in the cyst since the backward reflux is prevented at the neck of the diverticulum.

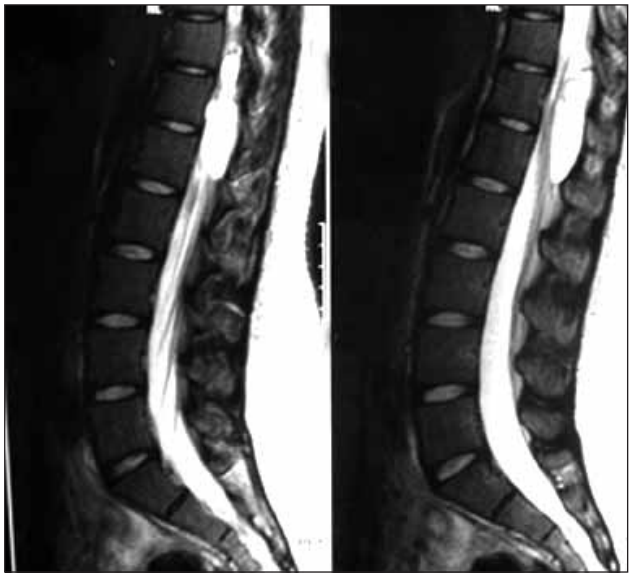

Figure 1: *Sagittal MR image demonstrating patient's arachnoid cyst on first admission.*

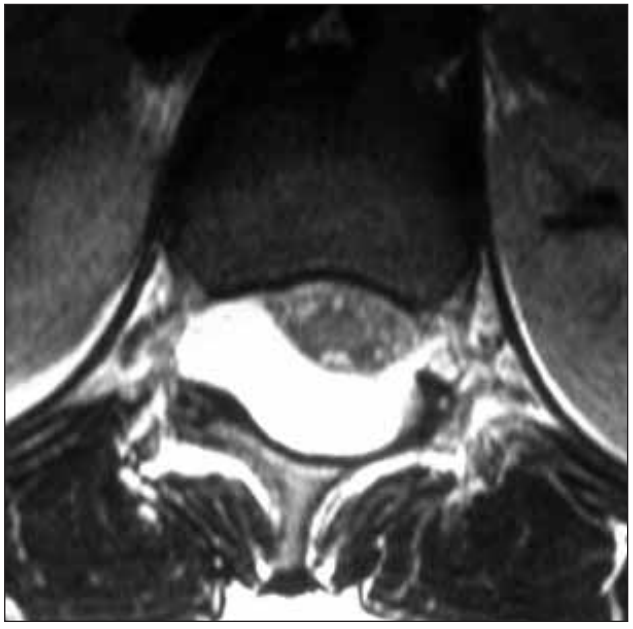

Figure 2: *Axial MR image demonstrating patient's arachnoid cyst on first admission.*

Figure 3: *Sagittal MR image two years after first admission without any increase in the size of the arachnoid cyst.*

Extradural arachnoid cysts usually occur in the middle or lower thoracic spine, less frequently in the lumbar region. These lesions are twice as common in males and usually present in the second decade. Lumbar and sacral cysts are usually present in the third and fifth decades. The most common presenting symptoms are pain, paresthesia, intermittent claudication, and variable degrees of spastic weakness. Bowel or bladder dysfunction may occur with sacral cysts.

Radiographs of the spine usually show bone erosion with widening of the canal, erosion of pedicles, foraminal enlargement, and scalloping of the vertebral bodies or the sacrum. The valve-like mechanism with intermittent surges in CSF pressure is thought to explain expansion of the cyst and bone erosion. The diagnosis is usually established by myelography, which demonstrates an extradural defect with smooth displacement of the margin of the thecal sac. As an invasive procedure, computed tomography (CT) myelography also has diagnostic value. CT myelograms may demonstrate the communication between cysts and the subarachnoid membrane. MRI is the diagnostic procedure of choice as it is noninvasive and can demonstrate the cyst nature, exact size, and anatomic relationship with the spinal cord (2). In a previous study, cine-MRI was used to detect this communication site, enabling the treatment of a giant extradural arachnoid cyst with selective closure of the dural defect (4) Extradural arachnoid cysts must be differentiated from neuroepitelial, neuroenteric, dermoid, epidermoid and teratoid cysts (5).

The management of these cysts has not been standardized. Treatment methods include complete surgical excision of the cyst wall with closure of the communication site between the cyst and the subarachnoid space after laminectomy, partial resection of the cyst wall and closure of the communication site between the cyst and the subarachnoid space, only closure of the communication site between cyst and the subarachnoid space or percutaneous aspiration of arachnoid cyst (3). The preferred treatment is excision whenever possible, and it is usually followed by the recovery of neurological function. Extensive laminectomy can result in worsening of scoliosis. The aim of surgical treatment is not only neural decompression but also the prevention of cyst refilling. Partial resection of the cyst and simple aspiration are inadequate and not recommended.

The literature contains some studies on patients with extradural spinal arachnoid cysts, published between 1963 and March 2006. Only one clinical study involved conservative treatment of extradural spinal arachnoid cysts. Rimmelin et al reported a case in which surgery was not performed because of the mild symptoms (6).

The dura cleft appears to be the predisposing factor for extradural arachnoid cysts. MRI was successful in detecting the pathology. Radical cyst removal and dural cleft repair are the preferred treatments in patients with extradural arachnoid cysts. Another treatment modality is following the patient with mild symptoms. Because of the morbidity after surgery, clinical and radiological follow-up may be the choice of treatment in cases with extradural arachnoid cysts.

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