Case Report

*Spinal Multiple Extradural Arachnoid Cysts: Became Symptomatic in An Elderly Age; A Case Report*

Celal İPLİKÇİOĞLU, Erdinç ÖZEK

*Okmeydani, Neurosurgery, İstanbul, Türkiye*

**Summary**

Spinal extradural arachnoid cyst is a rare disease that includes approximately 1% of all primary spinal lesions. Spinal arachnoid cysts most frequently occur in thoracic region as a solitary mass. However, multiple extradural arachnoid cysts are extremely rare pathologies and only 8 cases have been reported in the literature before. In this report we described a case of 66 year old woman who had multiple spinal extradural arachnoid cysts presented with paraparesis and became symptomatic in an elderly age.

**Key words:** Arachnoid cyst, extradural, multiple

**INTRODUCTION**

Spinal extradural arachnoid cyst is a rare disease that includes approximately 1% of all primary spinal lesions\(^3\). However, multiple extradural arachnoid cysts are extremely rare pathologies and only 9 cases have been reported in the literature before\(^7,8,10,13,14,15,16\). In this report we described a case of 66 year old woman who had multiple spinal extradural arachnoid cysts presented with paraparesis and became symptomatic in an elderly age.

**CASE PRESENTATION**

A 66 year old woman was admitted to our clinic with a one year history of back pain and 1 month history of weakness in her both legs. She also described numbness in her lower extremities. Her neurological examination revealed paresis of the lower extremities (grade 2/5) and hyperactive reflexes of the lower extremities. She also exhibited hypoesthesia below the Th7 level, the babinski sign was positive bilaterally and anal sphincter and bladder functions were normal. Thoracolumbar spine magnetic resonance imaging (MRI) showed us multiple extradural cystic lesions with an intensity similar to cerebrospinal fluid (CSF) and which were extending from Th7 level to Th11 level (Figure 1, Figure 2, Figure 3). The spinal MRI also demonstrated the multiple

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**Özet**

Spinal extradural kistler nadir görülen bir hastalik olup tüm primer spinal lezyonların sadece %1’ini içerir. spinal araknoid kistler sıklıkla torasik bölgede ve tek bir kitle olarak görülürler. multipl araknoid kistler nadir görülmesine rağmen literatürde 8 olgu bildirilmiştir. biz bu yazımızda multipl araknoid kistleri olan paraparezi ile semptomatik olan 66 yaşında kadın olguyu sunduk.

**Anahtar Kelimeler:** Araknoid kist, extradural, multipl
thoracic disc protrusions. Her lumbar MRI revealed lumbar stenosis due to L4-5 disc protrusion with facet hypertrophy, although her cervical and cranial MR examinations were normally reported.

**Figure 1:** Preoperative axial MR image

**Figure 2:** Preoperative sagittal MR image

**Figure 3:** Preoperative axial MR image
The patient underwent a laminoplasty including Th7-11 levels. Cord compression was more severe than we expected based on MR images. Multiple arachnoid cysts with their thin membrane were seen peroperatively and totally excised. In two of them, the neck of the cysts which were communicated with the subarachnoid space through the dural fistula successfully closed with silk suture. Two of them were carefully dissected from dura and easily excised. Histopathological examination of the cyst wall showed connective tissue membrane with an inner layer of arachnoid. The patient's postoperative course was uneventful. The muscle strength of the lower extremities was increased to grade 4/5. The patient was followed up with MRI (Figure 4, Figure 5) 2 months after the operation confirmed decompression of the thoracic spinal cord.

**Figure 4:** Post-operative sagittal MR image

**Figure 5:** Postoperative axial MR image
DISCUSSION
Spinal extradural arachnoid cyst was firstly described by Elsberg et al in 1934 (4). On the basis of intraoperative and histological findings Nabors et al. (11) classified the spinal meningeal cysts into three major categories: extradural meningeal cyst without nerve root fibers (Type I), extradural meningeal cysts with neural fibers (Type II) so called Tarlov cyst and intradural meningeal cysts (Type III). Type I is also subdivided into two groups; type Ia (extradural arachnoid cysts) and type Ib (sacral and intrasacral meningocele). Multiple spinal extradural arachnoid cysts are very rare and only 9 cases have been reported previously (7,8,10,13,14,15,16) (Table 1). Thoracic region lesions mainly seen in adolescents, while lumbar and sacral region cysts are most commonly seen in adults. Although origin of spinal extradural meningeal cyst is unclear the theory of congenital dural defect supported by the presence of familial tendency and associated with congenital abnormalities such as neural tube defects, is most commonly accepted (1,3). Yakubi et al. reported two cousins who had suffered from multiple extradural arachnoid cysts also supports the familial tendency (16). Also there are 4 reported cases of extradural meningeal cysts in patients with Marfan syndrome (2); however acquired factors such as inflammation or trauma may cause extradural arachnoid cysts. Many authors think that slit like communication of the cyst with subarachnoid space cause the enlargement of the lesion by valve-like mechanism. Pulsatile effect of cardiac and respiratory cycles, straining and coughing the effect on CSF dynamics increase the volume of the cysts (9). However, communication between the cyst and subarachnoid space can be demonstrated with myelographic and intraoperative examination in the half of the reported cases (11). The other theories which are osmotic gradient and active secretion have not ever been detected on histopathological examinations. The clinical symptoms are due to the compression of the spinal cord, nerve roots and adjacent tissues such as periosteum, joint capsule and the bone (5). Urinary symptoms may occur in the patients with sacral lesions. In three of multiple spinal arachnoid cyst cases became symptomatic in the second decade of life while the other two became symptomatic in the forth decade. Marbacher et al. (7) postulated that acute lumbar disc herniation led to a decompensation of the disease and causes massive spinal cord compression. In our case it is difficult to explain why the lesion became symptomatic in elderly. However lumbar canal stenosis due to L4-5 lumbar disc herniation, minimal L3-4 anterolysthesis and multiple thoracic disc protrusions may cause the lesions became symptomatic. MRI is the first choice in the diagnosis of the spinal extradural arachnoid cyst (12). Although bone erosion, foraminal enlargement and scalloping of the vertebral bodies can be demonstrated on plain radiography and computerized tomography (CT). However myelography and CT myelography can be useful for demonstrating the communication between the cyst and subarachnoid space. In some cases with a narrow neck of the cyst, contrast medium can be seen on the cyst with only delayed CT scan (6).
Histopathological findings of the spinal arachnoid cyst usually revealed a thick fibrous connective tissue of outer wall and the inner wall of the arachnoid membrane. Some authors have detected hemosiderin in the cyst wall, suggesting a traumatic origin\(^{(11)}\).

Ependymal cysts, epidermoid and dermoid tumors, cystic schwannomas, teratogenic cysts can be differentiated histologically and radiologically.

Surgical treatment of spinal extradural arachnoid cyst is recommended in the cases with symptomatic neural compression\(^{(5)}\). Excision of the cyst and closure of the cyst-dural sac communication are the surgical treatment choices although it is difficult in some cases\(^{(11)}\). Simple excision, drainage and marsupialization of the cyst, shunting procedures, percutaneous image guided aspiration and minimally invasive endoscopic approach have been reported in the literature. Total excision of the cyst is the cornerstone of therapy however total excision is not necessary if the dural association is closed. Simple aspiration of the cyst is not sufficient alone.

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### Table 1: Reported cases in the literature

<table>
<thead>
<tr>
<th>C</th>
<th>Authors</th>
<th>Age</th>
<th>G</th>
<th>Level of cysts</th>
<th>Numbe of cysts</th>
<th>Surgery</th>
<th>Recurrence</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kronborg 1967</td>
<td>13</td>
<td>F</td>
<td>T4-T12</td>
<td>4</td>
<td>Tumorectomy and closure of the dural defect</td>
<td>(-)</td>
<td>Kyphosis</td>
</tr>
<tr>
<td>2</td>
<td>Masana et al. 1986</td>
<td>33</td>
<td>M</td>
<td>T5-T10</td>
<td>3</td>
<td>Removal and closure of the ostium</td>
<td>(-)</td>
<td>unknown</td>
</tr>
<tr>
<td>3</td>
<td>Myles et al. 1999</td>
<td>9</td>
<td>F</td>
<td>T2-Sacrum</td>
<td>6</td>
<td>Total excision and cauda equine level untreated</td>
<td>(-)</td>
<td>Kyphosis</td>
</tr>
<tr>
<td>4</td>
<td>Takagaki et al. 2006</td>
<td>11</td>
<td>M</td>
<td>T5-L5</td>
<td>5</td>
<td>Total excision and cauda equine level untreated</td>
<td>(-)</td>
<td>Kyphoscoliosis</td>
</tr>
<tr>
<td>5</td>
<td>Marbacher et al. 2007</td>
<td>31</td>
<td>F</td>
<td>T7-L3</td>
<td>5</td>
<td>Subtotal excision and thoracic level untreated</td>
<td>(-)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Yabuki et al. 2007</td>
<td>12</td>
<td>F</td>
<td>T5-T12</td>
<td>3</td>
<td>Total excision</td>
<td>(-)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2007</td>
<td>13</td>
<td>F</td>
<td>T5-L5</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Samura et al. 2007</td>
<td>8</td>
<td>M</td>
<td>T5-S1</td>
<td>9</td>
<td>Total excision</td>
<td>(-)</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Suryaningtyas 2007</td>
<td>14</td>
<td>M</td>
<td>T5-T10</td>
<td>2</td>
<td>Total excision</td>
<td>(-)</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Present case</td>
<td>66</td>
<td>F</td>
<td>T7-T11</td>
<td>4</td>
<td>Total excision</td>
<td>(-)</td>
<td></td>
</tr>
</tbody>
</table>
Reaccumulation of the fluid and recurrence of the symptoms are rare. Therefore many authors suggested that the excision of the cyst or the resection of the posterior wall in difficult cases is sufficient and the closure of the communication between the cyst and subarachnoid space is not essential.

CONCLUSION
As a result of this paper multiple extradural arachnoid cysts are extremely rare pathologies regardless of the patient age. Multiple extradural arachnoid cysts primarily became symptomatic in pediatric ages; however multiple extradural arachnoid cysts became symptomatic in an elderly age like our case. Magnetic resonance imagining is the gold standard for the diagnosis and the surgery is the cornerstone therapy for the symptomatic patients.

Correspondence to:
Erdinç Özek
E-mail: erdincozek@gmail.com

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