



MULTIPLE MENINGEAL CYSTS: CASE REPORT

MULTİPL MENİNGEAL KİST: OLGU SUNUMU

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Received : 30th September, 2015.

Accepted: 29th April, 2016.

SUMMARY:

Multiple extradural meningeal cysts of the spine are uncommon. A 58-year-old male presented with multiple meningeal cysts arising along the whole craniospinal axis, manifesting as back pain and truncal ataxia persisting for 6 months. A 72-year-old female presented with multiple thoracic extradural spinal meningeal cysts, manifesting as back pain. Two cases of the thoracic spinal extradural meningeal cysts were treated surgically with costotransversectomy and cyst was removed totally. Histological examination confirmed the diagnosis of meningeal cysts.

Key words: Leptomeningeal cyst, spinal extradural meningeal cyst, perineural cyst

Level of evidence: Case report, Level IV

ÖZET:

Omuriliğin çoklu ekstradural meningeal kistleri nadir görülür. Sırt ağrısının ve gövde ataksisinin 6 aydır devam ettiği ve tüm omurilik boyunca çoklu meningeal kistleri bulunan biri 58 yaşında erkek, sırt ağrısı şikayeti olan ve torakal ekstradural çoklu meningeal kistleri bulunan diğeri 72 yaşında bayan olgular sunuldu. iki olguya cerrahi olarak kostatransversektomi ile kistin total eksizyonu uygulandı. Histopatolojik incelemeler meningeal kist tanısını onaylıyordu.

Anahtar Sözcükler: Leptomeningeal kistler; Spinal ekstradural meningeal kistler; perinöral kist

Kanıt Düzeyi: Olgu sunumu, Düzey IV

INTRODUCTION:

Multiple spinal meningeal cysts are uncommon and rarely cause of neural compression. Meningeal cysts classification were presented extradural meningeal cyst, leptomeningeal cyst, perineural cyst, meningeal diverticulum, prolonged subarachnoid space over root¹. After then, Nabors et al.² was presented spinal meningeal cysts simplify classification. Spinal meningeal cysts are described between % 1-3 of all spinal cord lesion³. Likewise, cranial arachnoid cysts most commonly occurs in the middle cranial fossa, followed by the suprasellar and quadrigeminal cisterns, posterior fossa, cerebral convexities, and interhemispheric fissure³.

Multiple intracranial arachnoid cysts located at different sites are extremely rare. Tsutsumi et al.³ are presented case of rare multiple cranial arachnoid cysts and multiple spinal meningeal cyst. We have described two patients with multiple meningeal

cyst, firstly patient cervical, thoracic, lumbar multiple meningeal cysts and with concomitant multiple intracranial arachnoid cysts, second patient thoracic multiple meningeal cysts.

CASE REPORTS:

Case-1:

58 year old male patient, severe back pain for 6 months had increased. Neurological examination was unremarkable. Direct radiographs showed T10 foraminal enlargement and Neural sheath tumors were considering radiological investigations. Torakolumbar magnetic resonance imaging (MRI), T1- weighted images hypointense, T2-weighted images hyperintense left ekstraforaminal paravertebral area at the level of T10-11 intervertebral disc lesions 3 cm in diameter were seen (Figure-1).

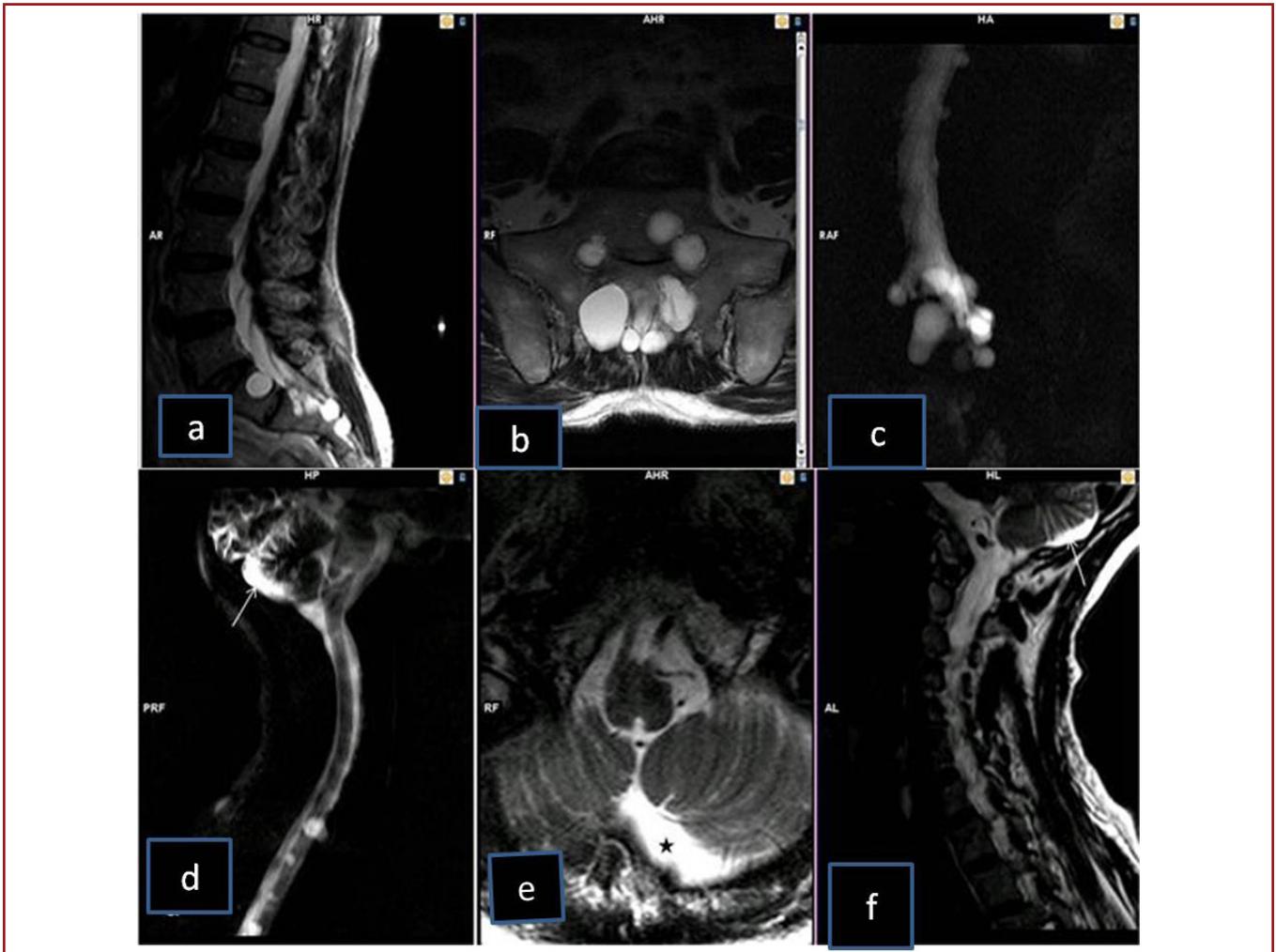


Figure-1. a-b-c. Case-1. Lumbar L5-S1 MRI T2 Image showed spinal extradural, foraminal / extraforaminal, corpus vertebrae eroded appearance of the perineurial cyst. d-e-f: Arachnoid cyst on the left side view of the left cerebellar hemisphere and pons.

The mass had a smooth-edged image without contrast enhancement. MR myelography examination, we are a large number of different locations along the vertebral column perineural / meningeal cysts have seen. L5-S1 Lumbar MRI showed bone erosion of the perineural cysts (Figure-2). The patient was evaluated for a systemic connective tissue diseases, but pathological finding was not detected.

Cranial MRI images were consistent with an arachnoid cyst on the left retroserebellar small region (Fig1). All along the spinal axis and the cranial region of the patient with multiple cysts were detected. Operation was planned because the patient had pain unresponsive to analgesics. The patient underwent a posterior approach costo-transversectomy left T10 level. Extraforaminal extradural cystic lesion was detected surrounding tissue freed and neck of the cyst was found, by combining them with silk suture was excised totally. Fluid-filled cystic lesion was similar in the CSF completely clear. Biochemistry was consistent with CSF. The histological

diagnosis was arachnoid cysts consisting of multilayered mesodermal cells lining the collagenous membrane and arachnoid cells lining the inner surface of the wall, with few blood vessels (Figure-3).

The patient's pain complaints were reduced and patients were followed for the other lesions.

Case-2:

72-year-old female patient, Available for 10 years, complained of shortness of breath and cough was admitted. Due to increases in the last 10 days, the patient complains of chest diseases clinic by thoracic CT taken application. Thoracic computerize tomography (CT), right lateral of the T10 vertebral lesion 3x2 cm with smooth margins was seen. Thoracic MRI showed, multiple levels foraminal / extra foraminal, isointense with CSF, or nerve root on the smooth contours of meningeal cyst had enlarged subarachnoid space views. (Figure-4).

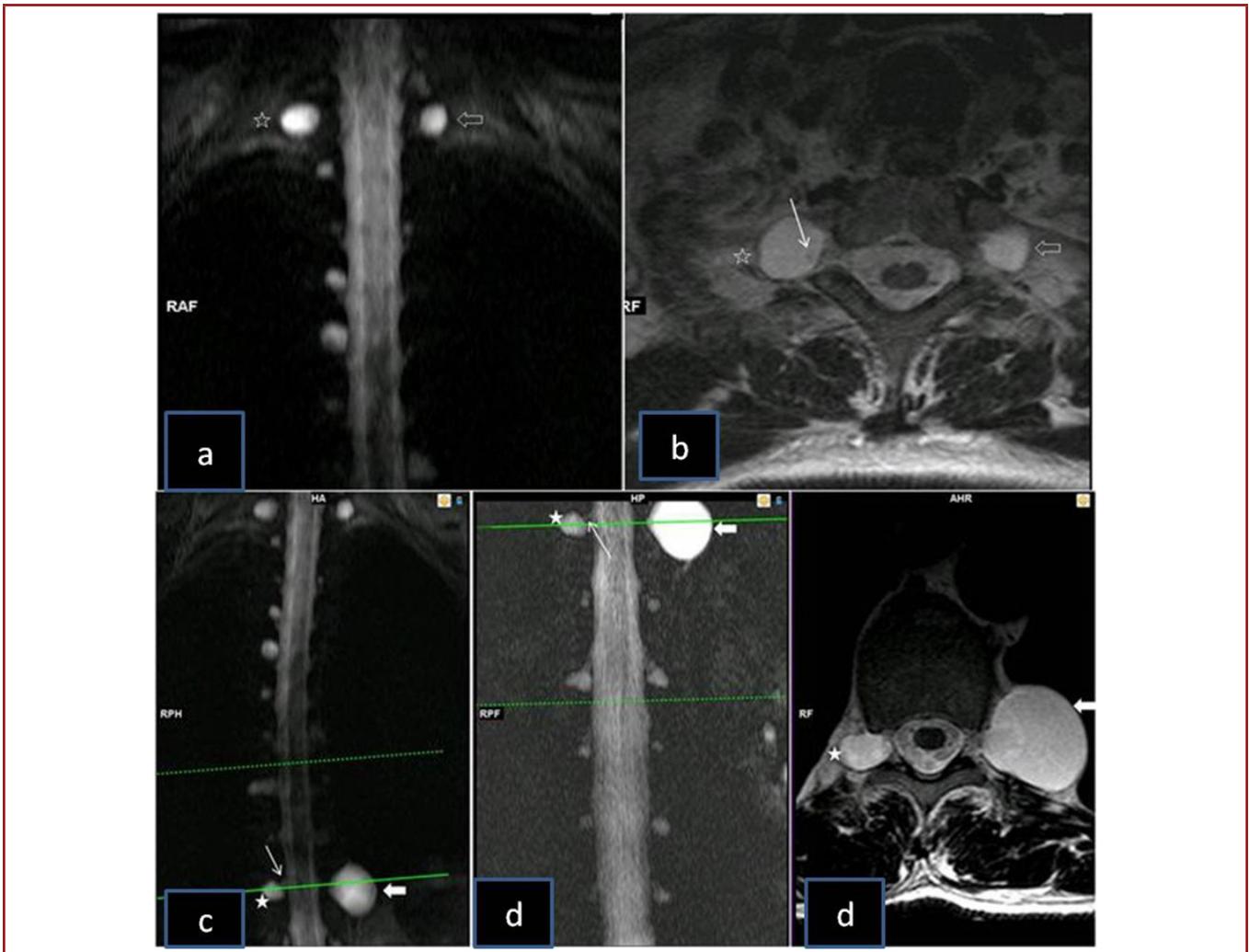


Figure-2. Case 1. C7-T1 Extraforaminal bilateral extradural meningeal cyst, prolongation of the subarachnoid space over the region of multiple thoracic nerve root, meningeal diverticulum. T10 left foraminal, extraforaminal meningeal cyst.

The patient did not respond to analgesics localization of the largest cyst had a complaint of back pain. The patient underwent a posterior approach costo-transversectomy left T10 level. Intercostal nerve was seen and follow-up, the cyst was separated from the root level of foremen, were evaluated as CSF fluid from the cyst puncture was performed. Then connected to the neck of the cyst was totally removed. Postoperative radiographs were showed the cyst was completely removed (Figure-4). Histopathologic examination of the meningeal cyst was diagnosed (Figure-3).

DISCUSSION:

A spinal extradural meningeal cysts represents a rare disease. Meningeal cysts initially develop as outpouchings from the subaracnoid space.

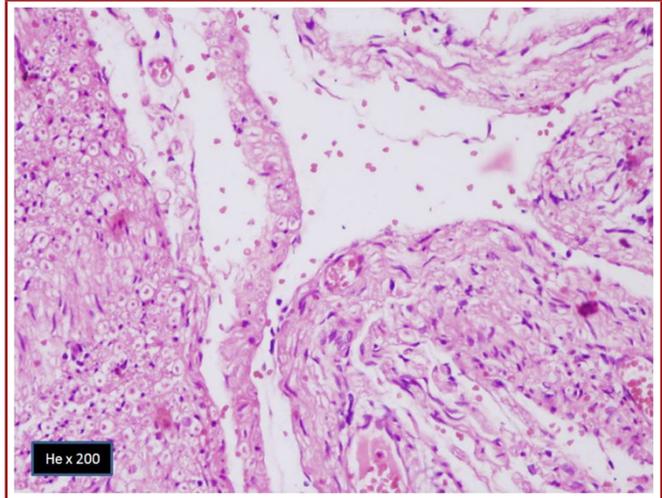


Figure-3. Histopathologic examination of the meningeal cyst. Hematoksilen eozin x200.

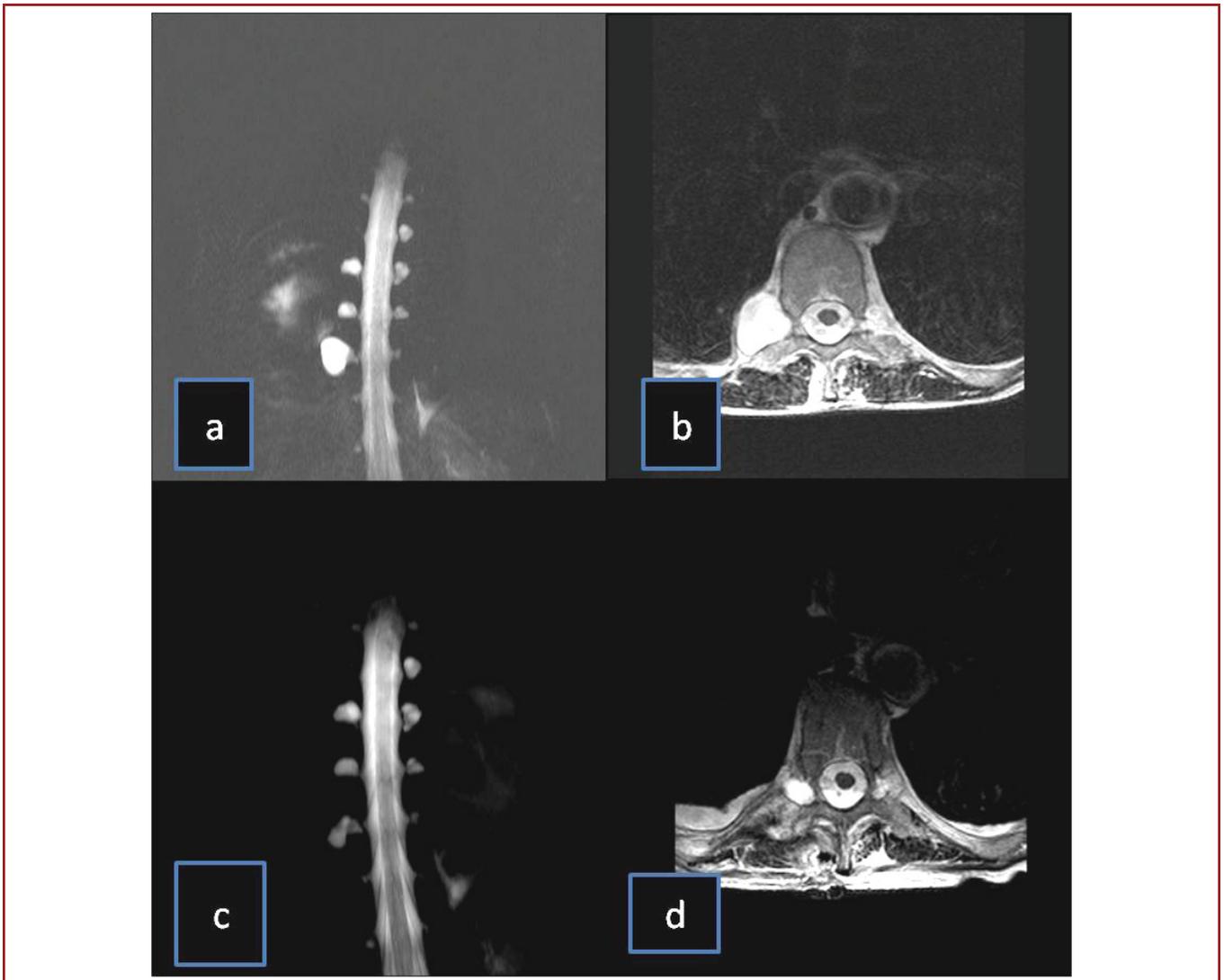


Figure-4. a-b. Case-2. T10 right foraminal, extraforaminal meningeal cyst, Prolongation of the subarachnoid space over the region of multiple thoracic nerve root, the meningeal diverticulum.

They may be either extradural, in which case they have a fibrous wall lined with arachnoid mater, or intradural and hence leptomeningeal. The extradural variety may be spontaneous or less commonly traumatic. Commonly they lie posterior to the cord at the thecal sac–nerve root sleeve junction, the dorsal midline, or the nerve root sleeve itself, but they manifest in anterior positions within the spinal canal as well¹. A few have been reported to extend into or through a neural foramen⁸.

We are presented foraminal/extraforaminal cysts rarely seen. Spinal extradural meningeal cysts most frequently develop in the thoracic spine (% 65); thereafter, in descending order, they are found in the lumbar and lumbosacral spine (% 13), the thoracolumbar spine (% 12), the sacral spine (% 6.6), and the cervical spine (% 3.3)⁶.

Reports of multiple spinal extradural meningeal cysts are extremely rare. To the best of our knowledge, there have been only seven other reported cases of multiple extradural arachnoid cysts in the world literature^{7,9,11,14,17}.

The origin of spinal extradural meningeal cysts is uncertain. A congenital origin is further supported by the fact that previous investigators have described a familial tendency^(3,16) or associated congenital abnormalities⁸. Extradural arachnoid cysts may also be caused by acquired factors such as inflammation or trauma, or by iatrogenic factors such as surgery or repeated lumbar punctures⁸. In all cases, however, the disease results from the herniation of the arachnoid through a defective or fragile dura mater regardless of whether this dural rent is acquired, congenital, or idiopathic in nature.

Spinal meningeal cysts communicated with the subarachnoid space. More debated are the mechanisms by which to explain the enlargement of extradural meningeal cysts. The exact mechanism of formation and enlargement is not known⁸. Many authors have described slitlike communications with the subarachnoid space and therefore support a valvelike mechanism with which to explain the continuous enlargement of the lesion^{4,5,10,13}. This valve mechanism, which would make intracystic pressure greater than normal CSF pressure, could explain the incidence of bone erosion at the site of spinal extradural meningeal cysts⁸.

Meningeal cysts firstly classification were presented extradural meningeal cyst, leptomeningeal cyst, perineurial cyst, meningeal diverticulum, prolonged subarachnoid space over root¹⁵. Nabors et al¹² proposed a classification of spinal meningeal cysts in to three major categories: extradural cysts without nerve root fibers (Type-I); extradural cysts with nerve root fibers (Type-II); and intradural cysts (Type-III). We cases are type 1 meningeal cysts.

The clinical symptoms are related to the compression of the spinal cord or nerve roots. Patients usually present clinically with progressive spastic or flaccid para- or tetraparesis. Bowel or

bladder dysfunction may occur in individuals with sacral cysts⁸. The disease frequently manifests with mild but intractable back pain and then with additional clinical symptoms over months or years. The intermittent exacerbations of pain and neurological symptoms are explained by postural changes and Valsalva maneuvers². We cases presently clinically with intractable back pain.

In general, asymptomatic patients do not need surgery. Surgery is usually recommended in cases involving a large cyst exerting a mass effect and with associated symptoms⁽⁶⁾. Although in all of these options favorable results have been reported, most authors recommend extirpating the cyst to eradicate the valvelike mechanism^{4-5,13}. Because of we cases presently intractable back pain, cysts were extirpated of the costotransversectomy.

Multiple spinal extradural meningeal cysts are extremely rare. The origin of the cysts in our cases are believed to be congenital. Magnetic resonance imaging is the investigation of choice. We believe that removal of the cyst, as performed in our cases, is the primary treatment in symptomatic patients. The diagnosis is established based on imaging, intraoperative, and histopathological findings.

REFERENCES:

1. Cilluffo JM, Gomez MR, Reese DF, Onofrio BM, Miller RH. Idiopathic (“congenital”) spinal arachnoid diverticula. A clinical diagnosis and surgical results. *Mayo Clin Proc* 1981; 56: 93–101.
2. Cloward RB. Congenital spinal extradural cysts: case report with review of literature. *Ann Surg* 1968; 168: 851–864.
3. Durmaz R, Öztürk Z, Delen E, Çiftci E, Atasoy M. A. Symptomatic foraminal extradural meningeal cyst. *Turkish Neurosurgery* 2009; 19(1): 91–95.
4. Gortvai P, El-Gindi S. Spinal extradural cyst. Case report. *J Neurosurg* 1967; 26: 432–435.
5. Gortvai P. Extradural cysts of the spinal canal. *J Neurol Neurosurg Psychiatry* 1963; 26: 223–230.
6. Goyal RN, Russell NA, Benoit BG, Belanger JM. Intraspinous cysts: a classification and literature review. *Spine* 1987; 12: 209–213
7. Kronborg O. Extradural spinal cysts. A literature survey and a case of multiple extradural cysts. *Dan Med Bull* 1967; 14: 46–8
8. Marbacher S, Barth A, Arnold M, Seiler RW. Multiple spinal extradural meningeal cysts presenting as acute paraplegia: Case report and review of the literature. *J Neurosurgery Spine* 2007; 6(5): 465–472.

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9. Masana Y, Yamada K, Ozaki K, Ushio Y, Hayakawa T, Mogami H, Mitomo M, Kawai R Spinal multiple extradural cyst. Case report. *Neurol Med Chir* 1986; 26: 405–408.
 10. McCrum C, Williams B. Spinal extradural arachnoid pouches. Report of two cases. *J Neurosurg* 1982; 57: 849–852
 11. Myles LM, Gupta N, Armstrong D, Rutka JT. Multiple extradural arachnoid cysts as a cause of spinal cord compression in a child. Case report. *J Neurosurg* 1999; 91: 116–120.
 12. Nabors MW, Pait TG, Byrd EB, Karim NO, Davis DO, Kobrine AI, Rizzoli HV. Updated assessment and current classification of spinal meningeal cysts. *J Neurosurg* 1988; 68: 366-377.
 13. Rohrer DC, Burchiel KJ, Gruber DP. Intraspinial extradural 135 meningeal cyst demonstrating ball-valve mechanism of formation. Case report. *J Neurosurg* 1993; 78: 122–125.
 14. Takagaki T, Nomura T, Toh E, Watanabe M, Mochida J. Multiple extradural arachnoid cysts at the spinal cord and cauda equina levels in the young. *Spinal Cord* 2006; 44: 59–62.
 15. Tarlov IM. Spinal perineurial and meningeal cysts. *J Neurol Neurosurg Psychiat* 1970; 33: 833-843.
 16. Tei R, Morimoto T, Miyamoto K. Dural repair for intraspinal extradural meningeal cyst. *Neurol Med Chir* 2007; 47(9): 434-437.
 17. Tsutsumi S, Yasumoto Y, Ito M. Multiple meningeal cysts affecting the whole craniospinal axis. Case report. *Neurol Med Chir* 2009; 49(8): 374-376.