Turkish Neurosurgery 2007, Vol: 17, No: 3, 193-196

Thoracic Intradural Cystic Schwannoma: A Case Report

Torasik İntradural Kistik Schwannom: Olgu Sunumu

Ayşe KARATAŞ[1]
Merih İŞ[2]
Ümran YILDIRIM[3]
Feyzullah AKYÜZ[4]
Ferruh GEZEN[5]

[1,2,4,5] Duzce University School of Medicine, Department of Neurosurgery, Duzce, Turkey
[3] Duzce University School of Medicine, Department of Pathology, Duzce, Turkey

ABSTRACT

Spinal schwannomas are benign tumors arising from spinal nerve root sheaths. These are the most common intradural exramedullary spinal tumous. Schwannomas are mostly solid or heterogenous solid tumors. Cystic schwannomas are rare lesions. We present a 27-year-old woman with an intradural extramedullary cystic tumor in the lower thoracic region who complained of back pain and walking difficulty. The patient was operated and the tumor was totally removed. The postoperative course was uneventful. The histopathological diagnosis was cystic schwannoma. Differentiation of cystic schwannomas from other cystic mass lesions can be difficult. Magnetic resonance imaging and histopathological findings are important for evaluating these tumors.

KEY WORDS: Cystic, Intradural spinal tumor, Schwannoma

ÖZ

Spinal schwannomlar, spinal sinir kökü kılıfından köken alan iyi huylu tümörlerdir. Bunlar en sık görülen intradural ekstramedüller spinal tümörlerdir. Schwannomlar genellikle solid veya heterojen solid tümörlerdir. Kistik schwannomların görülmesi nadirdir. Biz burada, sırt ağrısı ve yürümede güçlük şikayeti olan alt torasik bölgede intradural ekstramedüller yerleşimli kistik tümör tesbit edilen 27 yaşında bir kadın hastayı sunmaktayız. Hasta opere edildi ve tümör total olarak çıkarıldı. Postoperatif dönem problemsiz geçti. Histopatolojik tanı kistik schwannom olarak değerlendirildi. Kistik schwannomların diğer kistik kitle lezyonlarından ayrıdedilmesi zor olabilir. Magnetik rezonans inceleme ve histopatolojik bulgular bu tümörlerin değerlendirilmesinde önemlidir.

ANAHTAR SÖZCÜKLER: Kistik, İntradural spinal tümör, Schwannom

Received: 10.05.2007
Accepted: 06.06.2007

Presented at: 21st Annual Meeting of the Turkish Neurosurgical Society, Antalya, 2007

Correspondence address:
Ayşe KARATAŞ
Duzce University School of Medicine, Department of Neurosurgery, Duzce, Turkey
Phone: +90 380 54135 64
Fax : +90 380 54142 13
E-mail : aysekaratas@yahoo.com

INTRODUCTION

Spinal schwannomas are benign tumors arising from spinal nerve root sheaths. They are the most common intradural exramedullary spinal tumors (1,3,5,6,11). However, intraspinal cystic schwannomas are rare. We describe a rare case of a patient with cystic schwannoma in the lower thoracic region. This lesion may mimic other cystic mass lesions. The diagnosis can be difficult. Magnetic resonance imaging (MRI) and histopathological findings are important for evaluating these tumors.

CASE REPORT

A 27-year-old woman was admitted to our department with a 7-month history of back pain and walking difficulty. She had no bladder or bowel involvement. Her physical examination was normal, with no signs of neurofibromatosis. Neurological examination revealed paraparesis (4/5) and hypoesthesia below the T12 dermatome. Plain radiographs of the thoracic spine were normal. MRI of the thoracic spine demonstrated a well-delineated 3 cm x 1.5 cm intradural extramedullary lesion that was hypointense on T1- and hyperintense on T2-weighted images extending from Th11 to Th12, which was displacing the spinal cord to the right anterolateral side (Figures 1,2). After contrast administration, the lesion showed ring enhancement. The patient underwent a Th11 total and Th12 bilateral hemilaminectomy. After opening the dura, a cystic tumor that was displacing the cord to the right side was seen. The cyst was aspirated, producing yellowish fluid. The wall of the tumor was then totally removed after separating from the nerve root. The histopathological examination revealed as a cystic schwannoma (Figures 3,4,5). Postoperatively, the patient reported pain relief and showed improved motor function in the lower limbs. Her paraparesis and sensory disturbances resolved completely 3 months after surgery. Postoperative MRI confirmed total removal of the tumor (Figure 6).

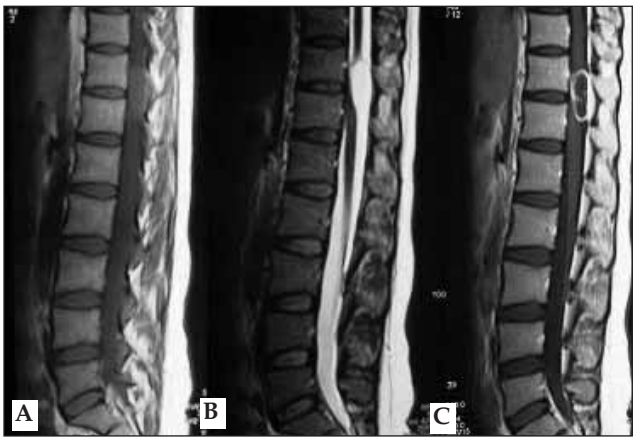

Figure 1: A,B: On sagittal T1 (a), T2-weighted (b), images, the lesion shows a lower and higher intensity respectively. **C**: Post-contrast sagittal T1-weighted image shows well-defined cystic mass.

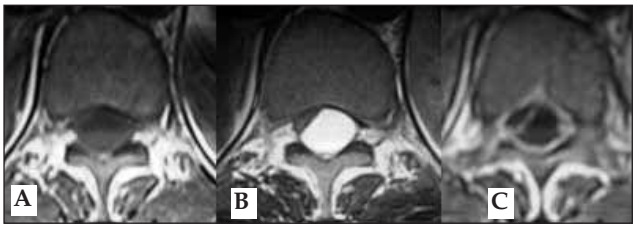

Figure 2: A,B: On axial T1 (a), T2-weighted (b), images showing a cystic tumor causing displacement of the spinal cord towards to the right side. **C:** On post-contrast axial T1-weighted image, the cystic wall shows homogenous enhancement.

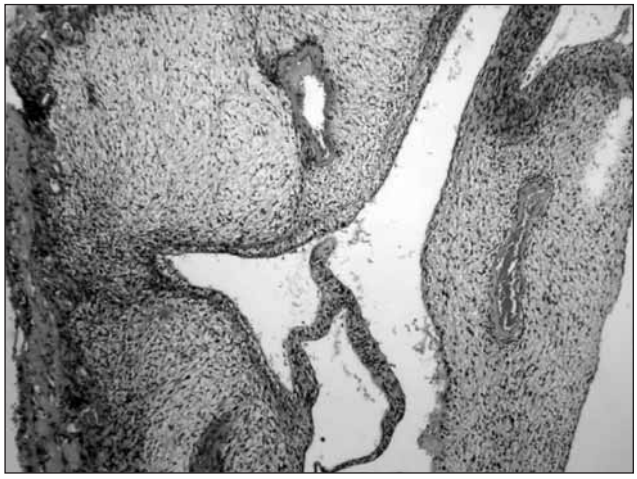

Figure 3: The tumor composed of a cystic structure with arrangement of spindle cells (HEx40).

DISCUSSION

Schwannomas are the most common primary tumors of the spine accounting for approximately one-third of the cases (2,3,9,11). More than half of all these lesions are intradural extramedullary, 25% are pure extradural, 15% are both intradural and extradural, and very rarely they are seen intramedullary (11). These tumors are solitary, well-circumscribed and encapsulated, located eccentrically on peripheral nerves or spinal nerve roots. They may become symptomatic in patients at any age but the peak incidence is around the fourth

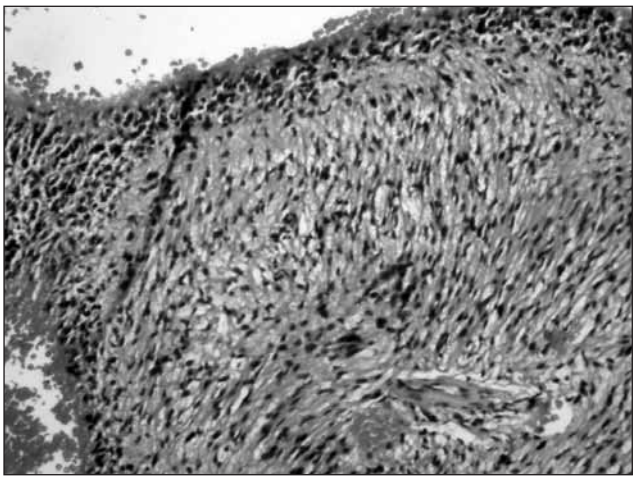

Figure 4: Histologically, schwannomas consist of sheets of spindle cells arranged in short bundles or fascicles. Interlacing fascicles of spindle cells showed foci of palisading arrangement of the nuclei (HEX200).

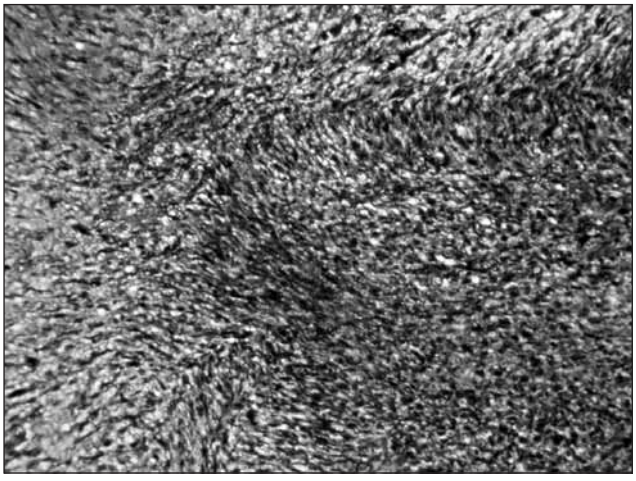

Figure 5: The tumor cells exhibited a strongly positive staining pattern for S-100 protein (X10).

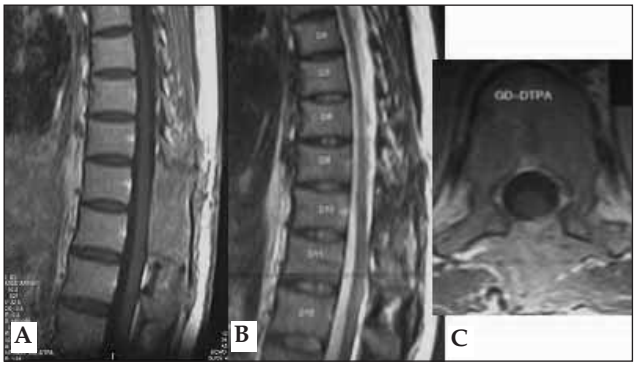

Figure 6: A,B,C. Total resection was confirmed at postoperative control MRI on sagittal T1 (**A**), T2-weighted (**B**) and post-contrast axial T1-weighted (**C**) images.

and fifth decades (3,7,9,11). There is no significant difference in prevalence between males and females (1,3,7,9,11). They are slow-growing benign tumors that are most often seen in the cervical and lumbar region (11). However, Conti, et al reported the lower thoracic region as having the second highest incidence after lumbar region (3). Seppala, et al found the lower cervical region and the thoracolumbar junction as common sites (9). Clinical symptoms are usually due to the compression of spinal cord or roots. Few symptoms are present until the tumor reaches a large mass. Local pain, paresthesias, numbness and motor weakness can be present. Cystic tumors have a high risk of causing progressive symptomatic worsening as a result of cyst expansion. The treatment of cystic schwannomas involves total excision of the lesion. This excision is recommended because inadequate removal has a risk of recurrence (3).

Schwannomas are mostly solid or heterogenous solid tumors (5,7). Various theories have been proposed to explain the cystic changes occurring in schwannomas. Degeneration of the Antoni B portion of a neurinoma can result in cyst formation and may then progress to form a larger cyst (4,7,10). Also, central ischemic necrosis can be caused by tumor growth resulting in cyst formation within the tumor (7,8,10).

MRI appears to be the most sensitive investigation for identifying the morphology of these lesions. Nerve sheath tumors have equal or less signal intensity on T1-weighhted images and mild to marked hyperintensity on T2-weighted images as compared to the spinal cord (5,6,7). Focal areas of even greater hyperintensity on T2-weighted images often correspond to cystic portions, whereas hypointensity may represent hemorrhage, dense cellularity, or collagen deposition (5). Enhancement is variable and can be intense and homogenous in some lesions, while it may only show peripheral enhancement (7,11). A contrast study is necessary in such cases to differentiate them from other cystic lesions. Peripheral contrast enhancement of an intradural extramedullary tumour on MRI should suggest the diagnosis of schwannoma (5). Various cystic lesions can occur in the spinal canal. Arachnoid cysts, epidermoid cyts, dermoid cysts, neuroenteric cyst and hydatid cysts can be differentiated from cystic nerve sheath tumours (7). Arachnoid cysts are isointense to CSF on all images

and do not enhance. Epidermoid cysts are also slightly hyperintense to CSF on T1W and have similar intensity to CSF on T2W images but do not enhance. Dermoid cysts are generally seen with a dermal sinus tract and fatty areas. Neuroenteric cysts are multilobulate and extended through long levels that are usually located in the anterior intradural extramedullary region. Hydatid cysts have multiple well-circumscribed cystic lesions, internal echoes and daughter cysts.

REFERENCES

1. Borges G, Bonilha L, Jr MP, et al. Imaging features and treatment of an intradural lumbar cystic schwannoma. Arq Neuropsiquiatr 2005; 63: 681-4.
2. Colosimo C, Cerase A, Denaro L, Maira G, Greco R. Magnetic resonance imaging of intramedullary spinal cord schwannomas. J Neurosurg (Spine) 2003; 99:114-7.
3. Conti P, Pansini G, Mouchaty H, Capuano C, Conti R. Spinal neurinomas: Retrospective analysis and long-term outcome of 179 consecutively operated cases and review of the literature. Surg Neurol 2004; 61:35-44.
4. Enzinger FM. In: Harshberger SE (ed). Soft Tissue Tumors. St Louis, Mosby 1983: 585-97.
5. Friedman DP, Tartaglino LM, Flanders AE. Intradural schwannomas of the spine: MR findings with emphasis on contrast-enhancement characteristics. AJR 1992; 158: 1347-50.
6. Hu HP, Huang QL. Signal intensity correlation of MRI with pathological findings in spinal neurinomas. Neuroradiology 1992; 34:98-102.
7. Parmar H, Patkar D, Gadani S, Shah J. Cystic lumbar nerve sheath tumours: MR features in five patients. Australas Radiol 2001; 45:123-7.
8. Sakamoto M, Harayama K, Furufu T. A case of cystic spinal schwannoma presented unusual clinical findings. Orthopedics 1985; 3:1185-9.
9. Seppala MT, Haltia MJ, Sankila RJ, Jaaskelainen JE, Heiskanen O. Long-term outcome after removal of spinal schwannoma: a clinicopathological study of 187 cases. J Neurosurg 1995; 83: 621-6.
10. Shiono T, Yoshikawa K, Iwasaki N. Huge lumbar spinal cystic neurinomas with unusual MR findings. AJNR 1995;16:881-2.
11. Van Goethem JW, van den Hauwe L, Ozsarlak O, De Schepper AM, Parizel PM. Spinal tumors. Eur J Radiol 2004; 50:159-76.