



Case Report

Intradural spinal arachnoid cyst contributing to sudden paraparesis

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ABSTRACT

Background: Spinal arachnoid cysts are cystic lesions filled with cerebrospinal fluid that contributes to neurological deficits depending on their size/location within the spinal canal. Here, we report a patient with a spinal subarachnoid cyst who suddenly developed paraparesis.

Case Description: A 37-year-old female with a thoracic spinal arachnoid cyst at the T7 level suddenly developed lower abdominal pain followed by immediate paraparesis. Two weeks following the onset of symptoms, she underwent a T6-T8 laminectomy; this included with full cyst excision. By the 4th postoperative week, her signs/symptoms fully resolved.

Conclusions: A 37-year-old female with a T7 thoracic spinal subarachnoid cyst who presented with acute paraparesis regained normal function 2 weeks following a T6-T8 laminectomy.

Keywords: Paraparesis, Spinal arachnoid cyst, Sudden onset, Valsalva-like maneuver

INTRODUCTION

Spinal arachnoid cysts are filled with cerebrospinal fluid (CSF). They may be congenital or acquired (e.g., occur after trauma, hemorrhage, infection, or iatrogenic insults). They can be extra- and intra-axial or intramedullary lesions and are maybe communicating or noncommunicating with the CSF space. Symptoms of spinal compression are rare but may include pain, hypesthesia, paresis, and sphincter dysfunction.^[5] Here, we report a 37-year-old female with an intradural thoracic arachnoid cyst at the T7 level whose rapid onset of paraparesis was attributed to acute cyst expansion. Following surgical decompression, her symptoms and signs fully resolved.

CASE REPORT

A 37-year-old female presented with the sudden onset of abdominal pain rapidly accompanied by numbness and weakness in both lower extremities. On examination, she was paraparetic (right 3/5 and left 4/5 proximally/distally) and exhibited decreased pin, temperature, vibration, and position perception below the T8 level.

Diagnostic studies

The thoracic magnetic resonance image (MRI) revealed a dorsal intradural extramedullary cyst at the T7 level, compressing, and displacing the cord anteriorly. The T2-weighted image is showed

a high-intensity uniform cyst (filled with cerebral spinal) [Figure 1]. The myelogram further demonstrated a near complete block at the T7 level (e.g., intrathecal contrast only slowly passed the T7 level extending cephalad). The thoracic computed tomography myelography confirmed the presence of a uniformly filling arachnoid cyst [Figure 2a-c].

Hospital course

Initially, the patient was treated conservatively with steroid therapy; indeed, she exhibited some gradual spontaneous improvement (e.g., able to walk without any support within 1 day). However, her ataxia and proprioceptive deficits in both legs persisted, and the spinal arachnoid cyst did not regress on the follow-up MRI. Surgery consisting of a T6-T8 hemilaminectomy, therefore, was performed 2 weeks after the onset of symptoms. Upon opening the dura mater, we found an arachnoid cyst with a thick whitened wall compressing the spinal cord. Notably, the cyst pulsated with each heartbeat and contained clear CSF fluid. There was, however, no documented communication between the cyst and the subarachnoid space. After removing the cyst, the histological examination confirmed the diagnosis of an arachnoid cyst. Two weeks postoperatively, the patient fully recovered.

DISCUSSION

Spinal arachnoid cysts are rarely symptomatic but occasionally contribute to slowly or occasionally rapidly progressive motor/sensory paraparesis and sphincter disturbance.^[1,2] Ventral cysts contribute more to myelopathy/ paresis, while dorsal cysts usually contribute to greater sensory disturbances.^[6] The median duration of symptoms before diagnosis was 8 months–3.6 years, with radicular pain being present an average of 4.7 months. Alternatively, three studies reported the acute onset of spinal arachnoid cysts.^[4,6,7]

Compression by enlarging cysts may contribute to spinal cord dysfunction. The mechanism of growth is typically due to fluid secretion from the cyst wall cell themselves, active transport of water according to osmotic gradient, or a one-way valve allowing fluid movement to the cyst after CSF pressure fluctuations.^[1]

Valsalva-like maneuvers during daily activities, such as coughing, straining, standing up, and compressing the abdomen, can make large CSF pressure fluctuation due to distension of the epidural vein influenced by abdominal or thoracic cavity pressure changes.^[3] Only this one-way valve with CSF pressure, fluctuation theory could explain acute-onset symptoms.



Figure 1: Initial thoracic magnetic resonance image (T2-WI) (a) Sagittal view – an intradural extramedullary cyst was located at the T7 level dorsal to the spinal cord. (b) Axial view, serial cross-section around T7 – the cyst compressed the spinal cord anteriorly. The high intensity of the cyst on T2-WI is consistent with a cerebrospinal fluid filling.

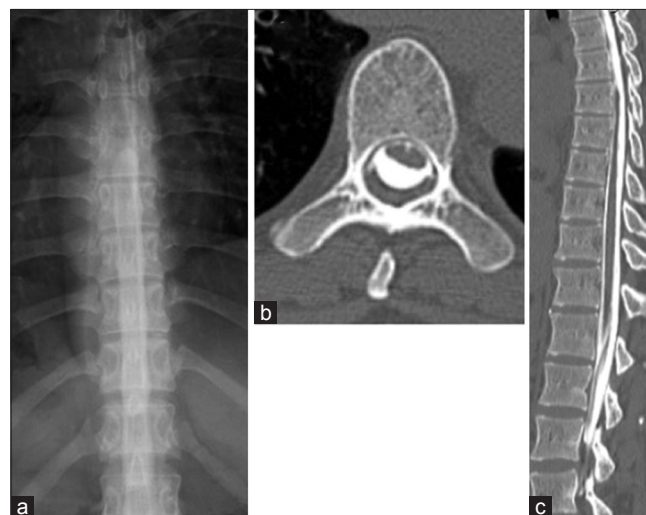


Figure 2: (a) Thoracic myelography (A-P image) – the contrast medium was blocked at the T7 level. (b) Thoracic axial computed tomography after myelography at the T7 level – the cyst was filled with contrast medium. (c) Thoracic sagittal computed tomography after myelography – the contrast medium filled both the subarachnoid space and the cyst uniformly.

All instances of intradural extramedullary cysts, including our case, undergoing decompression/cyst removal, resulted in complete recovery.^[4,6,7]

CONCLUSIONS

A 37-year-old female with a symptomatic intradural spinal arachnoid cyst at the T7 level presented with the sudden onset of paraparesis. The patient underwent a T6-T8 laminectomy

2 weeks after presentation, and she was asymptomatic by the 4th postoperative week.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Basaldella L, Orvieto E, Dei Tos AP, Della Barbera M, Valente M, Longatti P, *et al.* Causes of arachnoid cyst

- development and expansion. *Neurosurg Focus* 2007;22:E4.
2. Bassiouni H, Hunold A, Asgari S, Hübschen U, König HJ, Stolke D, *et al.* Spinal intradural juxtamedullary cysts in the adult: Surgical management and outcome. *Neurosurgery* 2004;55:1352-9.
3. Kerr JM, Ukpéh H, Steinbok P. Spinal extradural arachnoid cyst presenting as recurrent abdominal pain. *Childs Nerv Sys* 2015;31:965-9.
4. Lee HJ, Cho DY. Symptomatic spinal intradural arachnoid cysts in the pediatric age group: Description of three new cases and review of the literature. *Pediatr Neurosurg* 2001;35:181-7.
5. Maiuri F, Iaconetta G, Esposito M. Neurological picture. Recurrent episodes of sudden tetraplegia caused by an anterior cervical arachnoid cyst. *J Neurol Neurosurg Psychiatry* 2006;77:1185-6.
6. Petridis AK, Doukas A, Barth H, Mehdorn HM. Spinal cord compression caused by idiopathic intradural arachnoid cysts of the spine: Review of the literature and illustrated case. *Eur Spine J* 2010;19:S124-9.
7. Wang MY, Levi AD, Green BA. Intradural spinal arachnoid cysts in adults. *Surg Neurol* 2003;60:49-55.

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