Ventriculus terminalis or conus medullaris arachnoid cyst: a diagnostic dilemma

Sergio G Núñez Báez,1 Orlando De Jesus,1 Eduardo J Labat,2 Caleb E Feliciano1

DESCRIPTION
A woman in her late 30s complained of leg paraesthesias more prominent on the left, mild gait imbalance and bilateral leg spasms for the last 2 years. The symptoms aggravated during the prior month, and she was consulted at the emergency department. She denied urinary or faecal incontinence. The physical examination revealed numbness in the left leg and mild gait imbalance but no leg weakness. A thoracolumbar spine MRI with contrast showed a large non-enhancing cyst at the level of T11 with local compression of the conus medullaris (figure 1). Because of the progressive symptoms, the patient was taken to the operating room to drain the cyst. Under intraoperative neuromonitoring, a T11 bilateral laminectomy with a midline durotomy was completed with exposure of a supero-dorsally displaced conus medullaris due to a tense intramedullary cyst (figure 2). The cyst was fenestrated using a small midline myelotomy achieving adequate cyst drainage, decompression of the conus medullaris, and improved cranio-caudal cerebrospinal fluid flow. A cysto-subarachnoid shunt using a 4 cm segment of an MRI compatible epidural catheter was introduced into the cyst cavity through the fenestration (black arrow). The enlarged conus medullaris due to the intramedullary cyst (figure 1) was fenestrated (black arrow); (B) small central myelotomy and cyst wall fenestration (black arrow); (C) cysto-subarachnoid shunt introduced into the cyst cavity through the fenestration (black arrow).

Learning points
- Ventriculus terminalis (VT) and intramedullary arachnoid cyst (AC) exhibit identical features on MRI with a hypointense signal on the T1-weighted sequences and hyperintense in T2-weighted sequences with fluid characteristics similar to cerebrospinal fluid without cyst wall enhancement. A histopathological examination is the only way to differentiate them. The cyst wall of the AC is composed of arachnoid cells, and the cyst wall of the VT is composed of ependymal cells. Although imaging does not provide a specific preoperative diagnosis, other characteristics may support one diagnosis over another. Studies have reported a more eccentrical location for intramedullary AC than a midline location for VT. The management specific diagnosis between an intramedullary arachnoid cyst (AC) versus cystic dilation of the ventriculus terminalis (VT). These two lesions are rare cystic lesions encountered in the conus medullaris region. The VT and intramedullary AC appear identically in the MRI, showing a hypointense signal in T1-weighted sequences and hyperintense in T2-weighted sequences with fluid characteristics similar to cerebrospinal fluid without cyst wall enhancement. A histopathological examination is the only way to differentiate them. The cyst wall of the AC is composed of arachnoid cells, and the cyst wall of the VT is composed of ependymal cells. Although imaging does not provide a specific preoperative diagnosis, other characteristics may support one diagnosis over another. Studies have reported a more eccentric location for intramedullary AC than a midline location for VT. The management

© BMJ Publishing Group Limited 2022. No commercial re-use. See rights and permissions. Published by BMJ.


Figure 1 (A) Preoperative MRI sagittal T2-weighted image showing the large cyst (yellow arrow) at the T11 level compressing the conus medullaris; (B) sagittal FLAIR image showing the cyst and depicting the neural tissue around it (yellow arrow); (C) axial T2-weighted image showing the cyst expanding the conus medullaris (yellow arrow).

Figure 2 (A) Intraoperative photo showing the enlarged conus medullaris due to the intramedullary cyst (black arrow); (B) small central myelotomy and cyst wall fenestration (black arrow); (C) cysto-subarachnoid shunt introduced into the cyst cavity through the fenestration (black arrow).
of these two benign cysts is similar, with fenestration of the cyst if it causes neurological deficits. A cystic VT classification system that considers the clinical presentation and symptom progression has been reported to offer adequate management strategies. For patients with progressive non-specific complaints, focal neurological deficit, or sphincter dysfunction, surgical treatment is the most appropriate option. Although the histopathological examination of the cyst wall can provide a final diagnosis, the risks of tissue sampling must be weighed against any benefits and should only be performed if the cyst wall shows enhancement.

Contributors Drafting the article: SNB, ODJ, EJL and CEF. Revising the manuscript: SNB, ODJ, EJL and CEF. Final approval of the manuscript: SNB, ODJ, EJL and CEF.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Consent obtained directly from patient(s).

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES