ScientificScholar®
Knowledge is power
Publisher of Scientific Journals

www.surgicalneurologyint.com

Surgical Neurology International

Editor-in-Chief: Nancy E. Epstein, MD, Professor of Clinical Neurosurgery, School of Medicine, State U. of NY at Stony Brook.

SNI: Pediatric Neurosurgery

Editor
Frank Van Calenbergh, MD
University Hospitals; Leuven, Belgium

SNI
Open Access

Case Report

Cervical spinal meningioma mimicking an arachnoid cyst: A pediatric case report

Djiby Jean Marcel Okamon, Mahamadou Coulibaly, Dominique N'dri

Department of Neurosurgery, Université Félix Houphouet Boigny, Chu de Yopougon, Cote D'Ivoire.

E-mail: *Djiby Jean Marcel Okamon - marcelokamon@gmail.com; Mahamadou Coulibaly - djibe.courou.30@gmail.com; Dominique N'dri - ndriokad@gmail.com

***Corresponding author:**
Djiby Jean Marcel Okamon,
Department of Neurosurgery,
Université Félix Houphouet
Boigny, Chu de Yopougon,
Cote D'Ivoire.

marcelokamon@gmail.com

Received: 09 August 2023
Accepted: 29 November 2023
Published: 22 December 2023

DOI
10.25259/SNI_672_2023

Quick Response Code:

ABSTRACT

Background: Meningiomas are rare tumors in children. Although magnetic resonance imaging (MRI) diagnosis is usually easy, its cystic form can wrongly suggest other diagnoses, such as an epidermoid or arachnoid cyst. We describe an unusual case of cervical cystic meningioma in a child.

Case Description: A 5-year-old patient was consulted for progressive weakness of all four limbs, making walking impossible. Neurological examination revealed cervical stiffness without meningeal signs and tetrapyramidal syndrome with incomplete tetraplegia. A cervical spine MRI showed a circumscribed intradural extramedullary lesion at the level of C2–C3, which led to a suspicion of a compressive arachnoid cyst. A gross total resection was performed through a posterior approach. During surgery, it was an extramedullary intradural cystic formation containing a clear liquid and a shell adherent to the Dura mater. Postoperative MRI shows satisfactory spinal cord decompression without evidence of residual tumor. The postoperative course was uneventful, with the resumption of independent walking on the 21st day. Histopathologic examination and immunohistochemistry revealed a grade I meningothelial meningioma according to the 2021 World Health Organization classification of tumors of the central nervous system.

Conclusion: Cystic meningiomas can sometimes suggest another diagnosis on imaging, especially since they are rare in children.

Keywords: Arachnoid cyst, Case report, Pediatric, Spinal meningioma

INTRODUCTION

Meningiomas are benign extraparenchymal tumors developed from arachnoid cells. Although common in adults, meningiomas are rare in children and account for <2% of all meningiomas.[10] Meningiomas in children differ from those in adults; they occur more often in the field of neurofibromatosis and are characterized by greater aggressiveness, frequent recurrences, and significant evolution.[1,3] Spinal sites are less frequent and account for 2–3% of pediatric intraspinal tumors.[9] Usually, the diagnosis is easy on magnetic resonance imaging (MRI), highlighting an intradural lesion that is circumscribed and iso-intense on T1- and T2-weighted imaging with homogeneous contrast enhancement. However, some features on MRI can wrongly evoke other diagnoses, including an arachnoid or epidermoid cyst. In this report, we describe an unusual case of cervical cystic meningioma in a child.

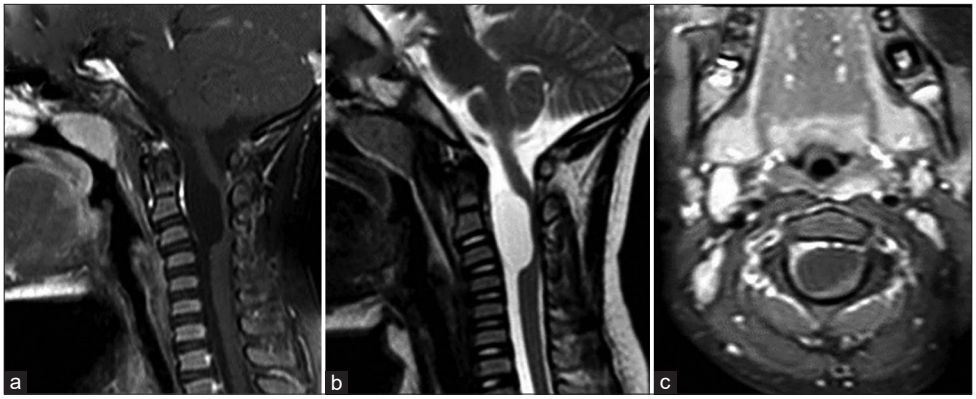

Figure 1: Preoperative magnetic resonance imaging (MRI), (a) sagittal T1-weighted MRI with contrast, (b) sagittal T2-weighted MRI, (c) Axial T1-weighted MRI with contrast, showing a cystic mass compressing the spinal cord suggestive of a compressive arachnoid cyst.

CASE DESCRIPTION

A 5-year-old patient who was consulted for progressive weakness of all four limbs, making walking impossible. He also complained of neck pain. The patient has no medical history. Neurological examination revealed a normal state of consciousness, cervical stiffness without meningeal signs, and tetrapyramidal syndrome with incomplete tetraplegia. Cervical spine MRI showed a circumscribed intradural extramedullary lesion at the level of C2–C3, which was hypointense on T1-weighted imaging and hyperintense on T2-weighted imaging, without contrast enhancement [Figure 1]. This lesion leads to a suspicion of a compressive arachnoid cyst. A decompressive resection through a posterior approach was performed. During surgery, it was an extramedullary intradural cystic formation containing a clear liquid and a shell adherent to the dura mater in front of the spinal cord, outside the foramina. There was no adherence to the spinal cord [Figure 2a]. A gross total resection (Simpson grade I) was performed. Postoperative MRI shows satisfactory spinal cord decompression without evidence of residual tumor. The postoperative course was uneventful, with the resumption of independent walking on the 21st day. Histopathologic examination and immunohistochemistry revealed a grade I meningothelial meningioma according to the 2021 World Health Organization classification of tumors of the central nervous system [Figure 2b]. No signs of neurofibromatosis type 2 (NF2) were found. In the 2-year follow-up, the patient did not present further neurological deterioration.

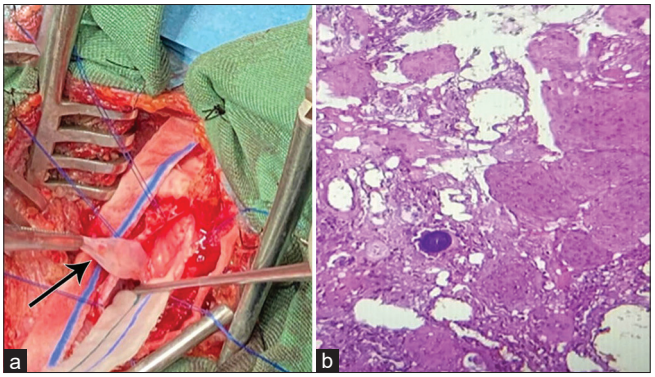

Figure 2: (a) Preoperative image showing the tumor capsule (black arrow) removed from the surgical bed; (b) Microphotograph showing histopathological findings, tumor proliferation made of cords, lobule. Arachnoid-like tumor cells are rounded, with an abundant basophilic cytoplasm containing a more or less regular nucleus. There are some cytonuclear atypia without mitosis.

DISCUSSION

Spinal meningiomas are rarely found in the pediatric population.[1,2,4,8,9,11] The main location is thoracic (80%), then cervical (16%) and lumbar (4%).[4] The meningothelial subtype is only reported in a few clinical cases. Wu *et al*., in their series, reported four cases.[11] Wang *et al*. described two pediatric spinal meningiomas.[10] This is the first case described in our department. Clinical signs commonly reported in the literature are motor deficits of the limbs and sphincter disturbances. The diagnosis is most often evident on MRI. Meningioma appears iso-hyperintense on T1- and T2-weighted images, with homogeneous contrast enhancement.[10,11] In our case, MRI features differed from typical spinal meningiomas. The lesion was iso-intense relative to the cerebrospinal fluid without contrast enhancement, which first suggested an arachnoid cyst. Intraoperative finding of a thick shell adhering to the anterolateral dura inconsistent with an arachnoid cyst. Histopathological examination and especially immunohistochemistry made it possible to rectify the diagnosis. Meningiomas in children are more often associated with NF2, which was not proven in our case. Surgical removal remains the treatment of choice.[7] The good clinical outcome agrees with the cases of pediatric meningiomas described in the literature. Simpson grade I resection is associated with a better prognosis and neurologic outcome in meningiomas not associated with

NF2.[10] Recurrence is rare in patients who underwent Simpson grade I resection.[5,6,11]

CONCLUSION

Cystic meningiomas can sometimes suggest another diagnosis on imaging, especially since they are rare in children. Surgical findings, especially histopathology, represent a major asset for the rest of the diagnostic and therapeutic management.

Ethical Approval

Institutional Review Board approval is not required.

Declaration of patient consent

Patient's consent was not required as there are no patients in this study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of Artificial Intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

REFERENCES

1. Dudley RW, Torok MR, Randall S, Béland B, Handler MH, Mulcahy-Levy JM, *et al*. Pediatric versus adult meningioma: Comparison of epidemiology, treatments, and outcomes using the Surveillance, Epidemiology, and End Results database. J Neurooncol 2018;137:621-9.
2. Greene S, Nair N, Ojemann JG, Ellenbogen RG, Avellino AM. Meningiomas in children. Pediatr Neurosurg 2008;44:9-13.
3. Grossbach AJ, Mahaney KB, Menezes AH. Pediatric meningiomas: 65-year experience at a single institution. J Neurosurg Pediatr 2017;20:42-50.
4. Hao Z, Hu S, Yu NZ. Rare intraspinal clear cell meningioma in children: A case report and literature review. J Int Med Res 2020;48:300060520952266.
5. Kobayashi K, Ando K, Matsumoto T, Sato K, Kato F, Kanemura T, *et al*. Clinical features and prognostic factors in spinal meningioma surgery from a multicenter study. Sci Rep 2021;11:11630.
6. Nakamura M, Tsuji O, Fujiyoshi K, Hosogane N, Watanabe K, Tsuji T, *et al*. Long-term surgical outcomes of spinal meningiomas. Spine (Phila Pa 1976) 2012;37:E617-23.
7. Piątek P, Kwiatkowski S, Milczarek O. Spinal meningiomas in pediatric patients - A case series and literature review. Surg Neurol Int 2022;13:445.
8. Sheikh BY, Siqueira E, Dayel F. Meningioma in children: A report of nine cases and a review of the literature. Surg Neurol 1996;45:328-35.
9. Vaneckova M, Seidl Z, Kemlink D, Zamecnik J, Burgetova A. Cervical meningioma in childhood. A case report. Neuroradiol J 2008;21:383-7.
10. Wang XQ, Zeng XW, Zhang BY, Dou YF, Wu JS, Jiang CC, *et al*. Spinal meningioma in childhood: Clinical features and treatment. Childs Nerv Syst 2012;28:129-36.
11. Wu L, Yang C, Liu T, Fang J, Yang J, Xu Y. Clinical features and long-term outcomes of pediatric spinal meningiomas. J Neurooncol 2017;133:347-55.

How to cite this article: Okamon D, Coulibaly M, N'dri D. Cervical spinal meningioma mimicking an arachnoid cyst: A pediatric case report. Surg Neurol Int. 2023;14:441. doi: 10.25259/SNI_672_2023.