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Case Report

Prepontine intracerebral cyst with spontaneous resolution

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ABSTRACT

Background: Intracranial cysts in the prepontine region are rare and can lead to various complications if not managed appropriately. Symptomatic prepontine cysts may require surgical intervention. However, spontaneous resolution of such cysts is rarely reported in literature.

Case Description: We describe the case of a middle-aged lady who presented with headaches and imbalance, with no focal neurological deficits on examination. Magnetic resonance imaging (MRI) of the brain showed a prepontine cyst compressing the brainstem with craniocaudal extension through the foramen magnum. The patient was given symptomatic treatment and followed closely with repeat MRI scans. These scans showed regression and eventual disappearance of the lesion, with complete resolution of symptoms.

Conclusion: In light of the few reported cases of spontaneous resolution of prepontine cysts, we highlight the possibility of these lesions to self-resolve.

Keywords: Adult brain cyst, Prepontine cyst, Spontaneous resolution

INTRODUCTION

Intracerebral cysts, by and large, create various differentials: arachnoid, epidermoid, neuroenteric, and so on.[1,2,10] The present literature shows these make up roughly 1% of all intracranial tumors. With regard to location, the middle cranial fossa accounts for most (50%) of reported intracranial cysts, and the posterior cranial fossa takes second place (30%). Several studies have reported greater distribution among men (59%) over women, but further epidemiologic studies are required.[14]

Most intracranial cysts are asymptomatic, with few presenting with nonspecific symptoms such as headaches and visual symptoms, and rarely, neurological deficits. As clinicians opt for brain imaging, often the question arises when to intervene. Prepontine cysts may result in obstructive hydrocephalus, mass effect, spontaneous rupture, leakage of cyst contents leading to aseptic meningitis, and rarely, malignant transformation.[4,8] The complications associated with surgery in this region makes decision-making difficult, with studies showing high perioperative morbidity.[3,5,12,15]

The prepontine space exists as a potential space for many pathologies. While rare, the finding of a cystic lesion means deciding between surgical intervention and conservative treatment. Due to

the rarity of reported prepontine cysts, there is no consensus regarding management. We present a case where such considerations played a role in clinical decision-making.

CASE REPORT

A 40-year-old, right-handed, lady, with no prior comorbidities, presented to us in the clinic with complaints of headache and imbalance for the past 20 days. She described her headache as being most severe in the morning, with no associated nausea, vomiting, or visual complaints. Her vertigo was also most prominent on waking up. The patient reported pain in her neck which radiated down her whole spine. On examination, she was awake, alert, and oriented. Her pupils were 3 mm bilaterally equal and reactive to light. There was mild papilledema noted bilaterally. However, there were no other focal neurological deficits. She did not exhibit any cerebellar signs or gait disturbance at the time of examination. There was no neck stiffness. The magnetic resonance imaging (MRI) scan [Figure 1] depicted a well-circumscribed lesion along the anterior prepontine region measuring 24.8 × 14.7 × 31.5 mm, compressing the lower pons. On T1-weighted sequence, this showed hypointense signals with a hyperintense area, creating a fluid-fluid level within the cyst. There was no contrast enhancement in the wall or within the lesion. On T2-weighted images, it appeared predominantly hyperintense showing a fluid-fluid level with a relatively iso to hypointense area. There was craniocaudal extension of the lesion through the foramen magnum.

Since the neurological symptoms were not severe, she was advised to get a repeat MRI scan and come for an early follow-up. Depending on the progression of the symptoms, and increase in size of the cyst, the need for surgery would be determined. On her next follow-up visit 3 months later, her symptoms had significantly improved, with the vertigo controlled on use of prochlorperazine and headaches settled with over the counter analgesics. The repeat MRI scans [Figure 2] showed the content of this lesion to be of the same intensity as the CSF on T1 and T2 images. The previously noted hyperintense signals showed regression in size and there was no fluid-fluid level in the current study. Given the symptom resolution and reduced size of the cyst on imaging, she was advised a follow-up with MRI scans in 6 months.

On her most recent follow-up, her MRI scan [Figure 3] showed complete resolution of the previously visualized prepontine cyst. She was clinically asymptomatic and was advised a follow-up MRI scan after 1 year or earlier for possible recurrence.

DISCUSSION

A case of self-resolving prepontine cyst was previously encountered at our institution in 2017.[13] The patient was a middle-aged gentleman who presented with severe occipital headache and fever. Neurological examination yielded no findings or signs of meningeal irritation. Imaging showed a prepontine lesion that was suspected to be an epidermoid cyst. Similar to our reported case, this patient received symptomatic management and was discharged with no surgical intervention required. On follow-up scans, the cyst appeared to show spontaneous reduction in size. Unlike our case, the cyst did not completely resolve and remnants were noted on 1-year follow-up.

In our literature search, we were only able to find three reported cases of spontaneous resolution of prepontine cystic lesions. Two were pediatric patients[6] and the third was the first adult patient reported, as reported from our institution in 2017. Sugata *et al*. in 2019 were able to follow a 2-month-old boy who presented with dysarthria, dysphagia, and right-sided hemiparesis secondary to a prepontine cyst. This cyst was radiologically proven to show rapid shrinkage and then followed for two decades where it exhibited slow growth and monitored closely, with ultimately no need for surgical intervention.[11] The first adult case reported in 2017 set itself as a precedent for demonstrating the natural history of self-resolution in adult patients presenting with prepontine cysts. Our present case report adds to this.

Expanding our literature search to include all occurrences of prepontine cysts, we were able to find greater reporting for

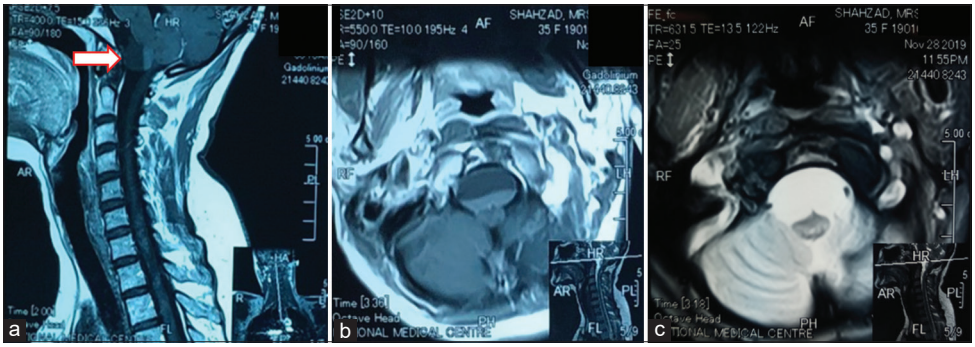

Figure 1: Magnetic resonance imaging scans from first clinic encounter. (a) Sagittal T1 postcontrast image, showing prepontine cystic lesion (red arrow), (b) axial T1 postcontrast image, (c) axial T2 image.

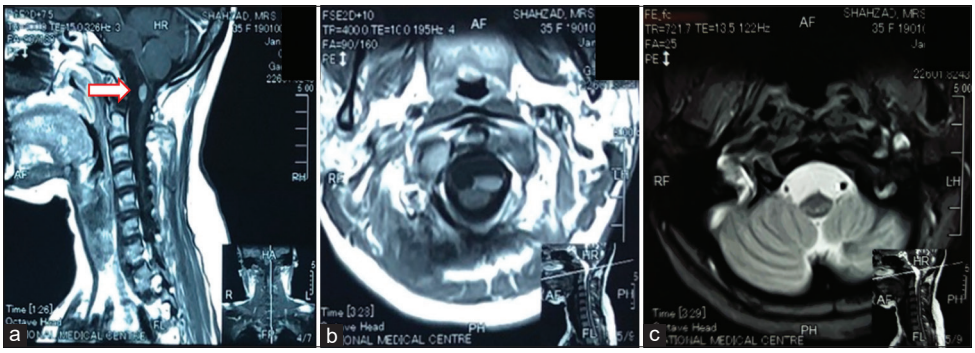

Figure 2: Magnetic resonance imaging scans from follow-up after 3 months. (a) Sagittal T1 postcontrast image showing decrease in size of cyst (red arrow), (b) axial T1 postcontrast image, (c) axial T2 image.

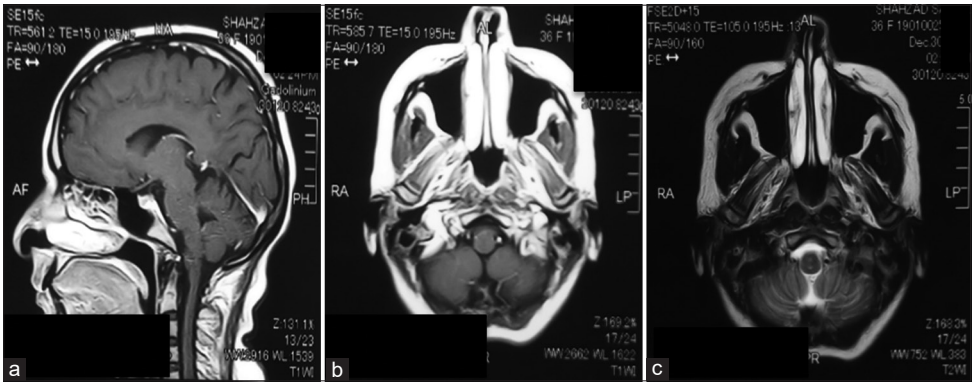

Figure 3: Magnetic resonance imaging scans from most recent follow-up. (a) Sagittal T1 postcontrast image, note the normal contour of brainstem, (b) axial T1 postcontrast image, (c) axial T2 image.

pediatric patients. This is understandable as these lesions are often derived from the remnants of embryological tissue. Adult population cases are rarely reported as we have seen.

The mainstays of surgical intervention for prepontine cysts are stereotactic aspiration, microsurgical excision, and shunting.[9] In a study of seven patients treated with endoscopic fenestration of prepontine cysts, five were pediatric and two were adult patients at the time of surgery. The adults in this study were diagnosed with prepontine cysts in their childhood and treated with the insertion of ventriculoperitoneal shunts. All of these seven patients presented with noncommunicating hydrocephalus. Fitzpatrick and Barlow showed successful and sustained postoperative outcomes with the endoscopic approach.[7]

In adult patients diagnosed with such pathology, decision-making often rests on a few key factors: the onset and severity of the symptoms, particularly with regard to neurological status, radiological evidence of warning signs (obstructive hydrocephalus and mass effect), and the timeliness of radiological and clinical follow-ups in such patients.[16]

As mentioned above, although mostly the cases reported in literature have been dealt with surgically, our experience suggests that there is a potential for natural resolution, and an expectant management can be deemed a reasonable alternative if the patient is clinically stable and followed closely.

CONCLUSION

This case highlights the possibility of close observation as a management option in a subset of patients with symptomatic prepontine cysts. These patients need close observation and follow-up to watch for worsening of the disease. We need to corroborate this viewpoint with further case reports and a case series to elaborate the natural history of the pathology in such patients.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Basheer N, Kasliwal MK, Suri A, Sharma MC, Arora A, Sharma BS. Lateral extradural, supratentorial neurenteric cyst. J Clin Neurosci 2010;17:639-41.
2. Bejjani GK, Wright DC, Schessel D, Sekhar LN. Endodermal cysts of the posterior fossa: Report of three cases and review of the literature. J Neurosurg 1998;89:326-35.
3. Berger MS, Wilson CB. Epidermoid cysts of the posterior fossa. J Neurosurg 1985;62:214-9.
4. Chen CY, Wong JS, Hsieh SC, Chu JS, Chan WP. Intracranial epidermoid cyst with hemorrhage: MR imaging findings. Am J Neuroradiol 2006;27:427-9.
5. Chowdhury FH, Haque MR, Sarker MH. Intracranial epidermoid tumor; microneurosurgical management: an experience of 23 cases. Asian J Neurosurg 2013;8:21.
6. Dodd RL, Barnes PD, Huhn SL. Spontaneous resolution of a prepontine arachnoid cyst. Pediatr Neurosurg 2002;37:152-7.
7. Fitzpatrick M, Barlow P. Endoscopic treatment of prepontine arachnoid cysts. Br J Neurosurg 2001;15:234-8.
8. Hao S, Tang J, Wu Z, Zhang L, Zhang J, Wang Z. Natural malignant transformation of an intracranial epidermoid cyst. J Form Med Assoc 2010;109:390-6.
9. Kachhara R, Bhattacharya R, Radhakrishnan V. Epidermoid cyst involving the brain stem. Acta Neurochir 2000;142:97-100.
10. Oprişan A, Popescu BO. Intracranial cysts: An imagery diagnostic challenge. Sci World J 2013;2013:172154.
11. Sugata J, Ueda T, Tanoue N, Hirahara K, Kamimura K, Arita K, *et al*. A midline prepontine cyst: Serial magnetic resonance imaging over 20 years shows very slow growth after its rapid shrinkage. Neuroradiol J 2019;32:98-102.
12. Vinchon M, Pertuzon B, Lejeune JP, Assaker R, Pruvo JP, Christiaens JL. Intradural epidermoid cysts of the cerebellopontine angle: Diagnosis and surgery. Neurosurgery 1995;36:52-7.
13. Waqas M, Khan I, Khawaja R, Quddusi A, Enam A. Selfresolving prepontine cyst. Surg Neurol Int 2017;215:1.
14. Weber F. The Prevalence of Intracranial Arachnoid Cysts: Arachnoid Cysts. Amsterdam, Netherlands: Elsevier; 2018. p. 95-100.
15. Yaşargil MG, Abernathey CD, Sarioglu AÇ. Microneurosurgical treatment of intracranial dermoid and epidermoid tumors. Neurosurgery 1989;24:561-7.
16. Zhou LF. Intracranial epidermoid tumours: Thirty-seven years of diagnosis and treatment. Br J Neurosurg 1990;4:211-6.

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