

Intracranial Neurenteric Cyst in a 9-Year-Old Child: A Radiological Case Report

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Abstract

Background: Intracranial neurenteric cysts are rare congenital lesions arising from endodermal remnants misplaced during embryogenesis. They are mostly located in the posterior fossa or spinal canal and rarely found in supratentorial regions.

Case Presentation: We report the case of a 38-year-old woman presenting with chronic headaches. MRI demonstrated a well-defined, non-enhancing cystic lesion in the left parietal region, with characteristic T1 hypointensity, T2 hyperintensity, and partial suppression on FLAIR sequences. Findings were consistent with a neurenteric cyst.

Conclusion: Neurenteric cysts should be considered in the differential diagnosis of parietal cystic brain lesions. MRI remains the gold standard for characterization and surgical planning.

Keywords: Neurenteric Cyst; Parietal Lobe; MRI; Intracranial Cyst; Adult

Introduction

Neurenteric cysts (also known as enterogenous or endodermal cysts) are congenital, benign lesions derived from abnormal separation of the notochord and foregut during early embryogenesis [1]. They are rare within the intracranial compartment, comprising less than 0.01% of intracranial cysts [2].

Most cases occur in the posterior fossa or ventral spinal canal. Supratentorial forms, particularly in the parietal lobe, are exceptionally rare [3].

The clinical presentation depends on cyst size and location, often manifesting as headaches or seizures.

MRI is the imaging modality of choice, offering superior soft-tissue contrast and diagnostic specificity [4].

Case Presentation

A 38-year-old woman with no prior medical history presented with a 4-month history of intermittent headaches, without seizures or focal neurological deficits.

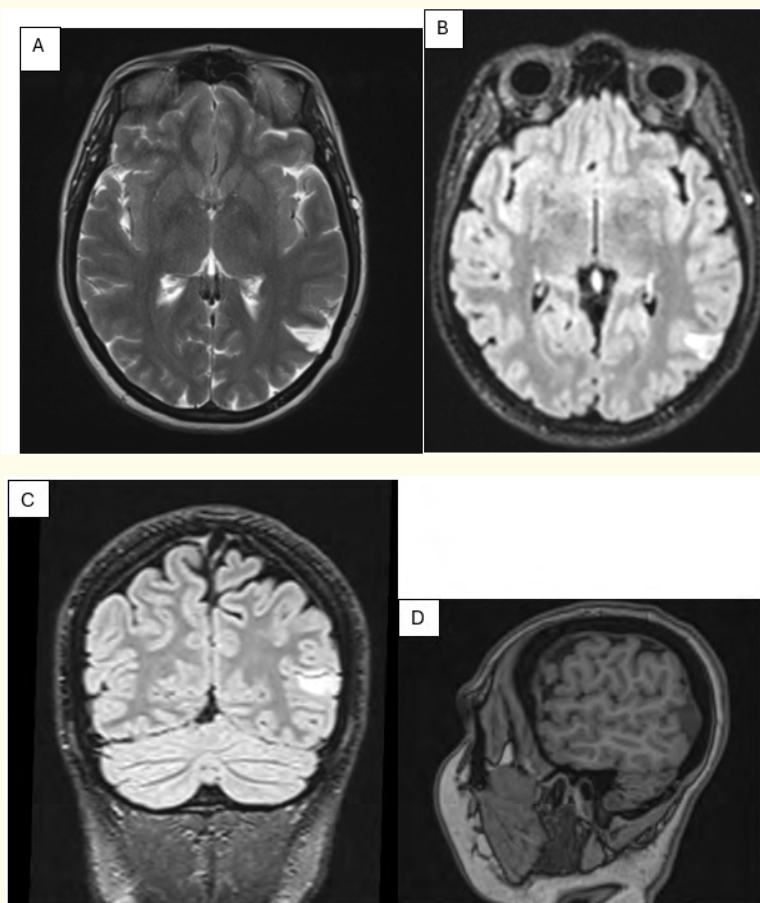
Routine laboratory results were unremarkable. MRI of the brain revealed a well-circumscribed cystic lesion in the left parietal lobe.

MRI findings

- **Axial T2-weighted sequence:** Hyperintense, sharply marginated cystic lesion without surrounding edema.
- **Axial and coronal FLAIR sequences:** Partial suppression of the cyst signal, indicating proteinaceous content.
- **T1-weighted images (axial and sagittal):** Hypointense lesion with thin, regular wall.
- **SWI sequence:** Absence of hemorrhage or calcification.
- **Post-contrast T1:** No enhancement of the cyst wall.

There was mild compression of adjacent cortical sulci, with no midline shift.

Surgical excision was performed via parietal craniotomy. The cyst contained thick, yellowish fluid. Histopathology revealed a wall lined by columnar epithelium, confirming a neurenteric cyst.



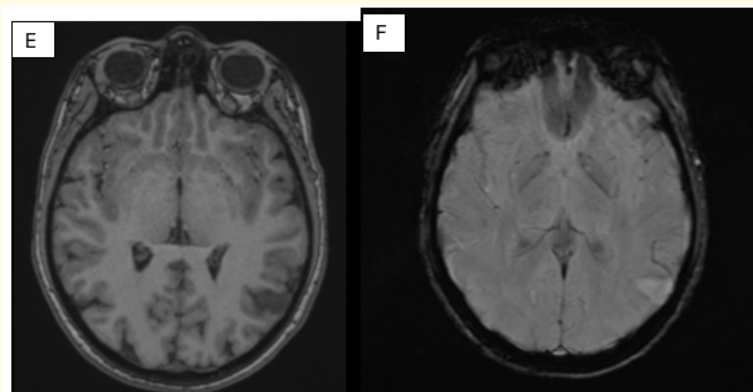


Figure A-F: A: Axial T2-weighted MRI showing a well-circumscribed hyperintense cystic lesion in the left parietal lobe. B: Axial FLAIR MRI demonstrating partial suppression of the lesion signal. C: Coronal FLAIR MRI showing smooth cyst margins and absence of perilesional edema. D: Sagittal T1-weighted MRI revealing a hypointense cystic lesion with mild cortical compression. E: Axial T1-weighted MRI after gadolinium injection showing no enhancement. F: Axial SWI sequence excluding calcifications or hemorrhage.

Discussion

Intracranial neurenteric cysts originate from endodermal inclusion during the third to fourth week of gestation [5]. Supratentorial locations, such as the parietal or frontal lobes, account for less than 5% of reported cases [6].

Imaging features

MRI typically shows a well-defined cyst with signal intensity varying according to protein content. Most lesions appear T1 hypointense and T2 hyperintense, with no contrast enhancement and partial FLAIR suppression [7].

Diffusion-weighted imaging (DWI) helps differentiate neurenteric cysts from epidermoid cysts, which restrict diffusion [8].

Differential diagnosis

Main differentials include:

- Arachnoid cysts (complete CSF suppression on FLAIR)
- Epidermoid cysts (restricted diffusion)
- Cystic neoplasms (enhancing mural nodule or thick wall) [9].

Treatment and prognosis

Complete microsurgical excision is the preferred treatment, often curative [10].

Recurrence may occur after partial removal due to residual epithelium. Regular MRI follow-up is advised for early detection of regrowth.

Conclusion

Parietal neurenteric cysts are extremely rare congenital lesions in adults. MRI plays a central role in diagnosis by demonstrating characteristic signal patterns and excluding mimics.

Awareness of this entity allows accurate preoperative diagnosis and successful surgical management with excellent prognosis.

Learning Points

- Neurenteric cysts may exceptionally occur in supratentorial regions such as the parietal lobe.
- MRI features include T1 hypointensity, T2 hyperintensity, and partial FLAIR suppression without enhancement.
- Surgical excision is curative; recurrence is rare after complete removal.

Conflict of Interest

None declared.

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