

Epidermoid Cyst of the CPA with Suprasellar and IAC Extension: A Case of Mass Effect Without Malignancy

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Abstract

Background: Epidermoid cysts are congenital, benign lesions most commonly located in the cerebellopontine angle (CPA) and parasellar cisterns. They typically show restricted diffusion on MRI without contrast enhancement, a feature that often confirms the diagnosis. However, in some cases, they may exert significant mass effect that mimics low-grade or cystic tumors.

Case Report: We present the case of a 34-year-old man who experienced a first-time generalized seizure. MRI revealed a non-enhancing lesion in the left CPA and suprasellar cistern that showed bright diffusion restriction, consistent with an epidermoid cyst. The lesion displaced nearby brain structures-including the temporal lobe, pons, and posterior cerebral artery-yet did not cause edema or enhancement. A complete imaging work-up, including DWI, T1, T2, fat-suppressed, and susceptibility sequences, confidently excluded neoplastic or dermoid pathology.

Conclusion: Even when epidermoid cysts cause mass effect, their lack of enhancement and absence of edema are distinguishing features that separate them from tumors. Careful use of multi-sequence MRI is essential in evaluating these lesions and can help avoid unnecessary intervention while guiding appropriate surgical planning [1,2,3,6].

Keywords: Epidermoid Cyst; Cerebellopontine Angle; Diffusion-Weighted Imaging; Tumor Mimic; Suprasellar Cistern; Internal Auditory Canal

Introduction

Epidermoid cysts are slow-growing, congenital lesions that result from ectodermal remnants misplaced during neural tube closure. They most often arise in areas like the cerebellopontine angle (CPA) and parasellar cisterns, where they follow cerebrospinal fluid (CSF) pathways and insinuate themselves between neural structures without direct parenchymal invasion [1,3].

Although benign, their appearance and compressive behavior can raise concern for neoplasm, especially when located in deep or eloquent areas. MRI is the imaging modality of choice, but accurate interpretation requires attention to subtle features that distinguish these cysts from more ominous pathologies [1,5].

This case underscores how features like diffusion restriction, non-enhancement, and lack of perilesional edema are critical in identifying epidermoid cysts and avoiding misdiagnosis [2,6].

Case Report

A 34-year-old man presented to the emergency department after a first-time generalized tonic-clonic seizure. The episode resolved spontaneously and was followed by brief postictal confusion and mild epistaxis. He had no prior seizures, trauma, or focal neurologic complaints. Non-contrast CT revealed a well-demarcated hypodense lesion centered in the left suprasellar cistern, extending into the CPA. It produced mass effect on the left medial temporal lobe and lateral pons. There was no evidence of hemorrhage, calcification, or vasogenic edema.

A complementary MRI was performed and showed lobulated mass centered in the left suprasellar cistern extending into the cerebellopontine angle (CPA). The lesion conforms to cisternal spaces and exerts mass effect on adjacent structures, including the left hippocampal region, pons, and presented an extension into the trigeminal nerve root entry zone, this mass showed a high and homogeneous T2 signal (Figure 2), a low T1signal with spontaneous hyperT1 septations (Figure 1) and no enhancement after contrast injection. The lesion showed high restriction in DWI imaging (Figure 3). In terms of its involvement with surrounding structures, the lesion exerted a mass effect on adjacent parenchyma, including the left hippocampal region and the pons, and presented an extension onto and the trigeminal nerve root entry zone (Figure 4). The fat-suppressed sequences showed no signal dropout, effectively excluding a dermoid cyst [3]. There was no blooming artifact on SWI sequences, ruling out calcification or hemorrhage.

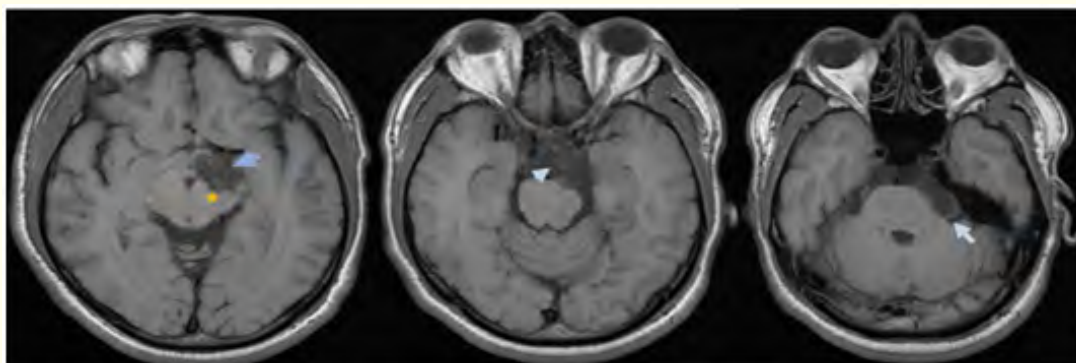


Figure 1: T1 axial images showing a well circumscribed mass the left para-sellar region (arrow) with mass effect on the left temporal incus and also the brainstem (asterisk), this mass is hypo-intense and contains discrete spontaneously hyperintense septations (arrow head).

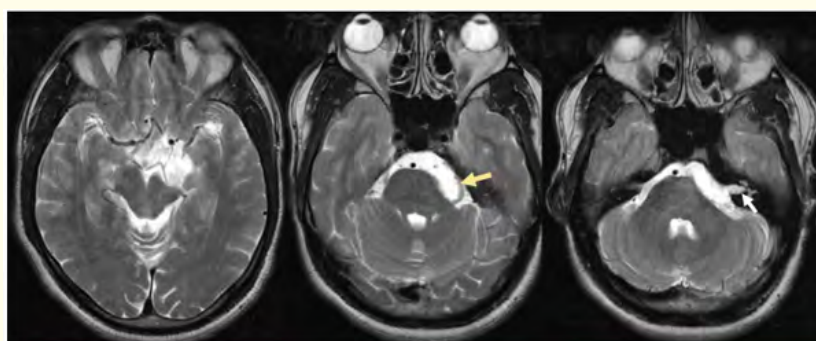


Figure 2: Axial T2 weighted images showing an intense hypersignal of the mass with clear mass effect on the posterior cerebellar artery (red arrow), the left trigeminal nerve (yellow arrow) and the internal auditory canal that appears enlarged (white arrow).

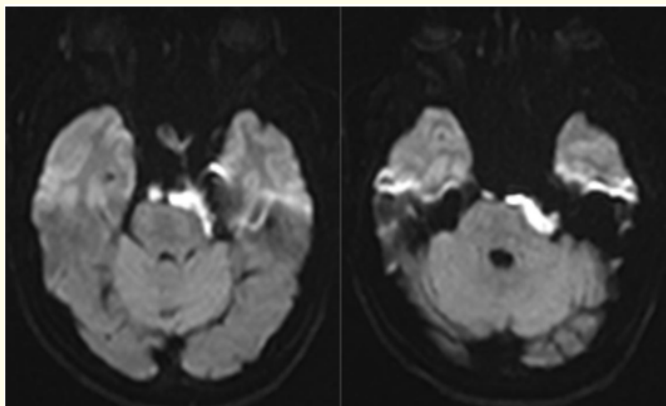


Figure 3: Axial DWI underlining the highly restrictive nature of the mass.

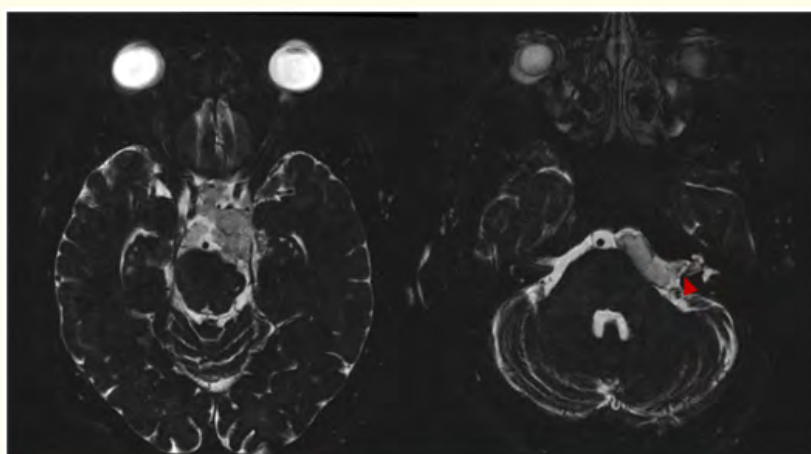


Figure 4: Axial T2-weighted 3D CISS image demonstrating a well-defined hyperintense lesion extending into the left internal auditory canal (IAC) (arrow head), which appears enlarged compared to the contralateral side.

Discussion

Epidermoid cysts tend to grow along CSF pathways and displace brain tissue rather than infiltrate it. Their characteristic diffusion restriction on MRI results from the tightly packed keratin and cholesterol content within the cyst [2]. This feature is essential in distinguishing them from other lesions.

In contrast, even low-grade tumors often show at least some contrast enhancement, associated brain edema, or tissue infiltration [4,5]. The absence of these features in our case helped establish a non-neoplastic diagnosis.

That said, epidermoid cysts don't always follow the textbook appearance. Some may appear hyperintense on T1-weighted imaging or show heterogeneous diffusion restriction [6]. Dermoid cysts can also restrict diffusion, but typically contain fat, which appears bright on T1 and drops out on fat-suppressed sequences—a critical difference [3].

This case also demonstrates how critical structures like the PCA and trigeminal nerve can be displaced by an epidermoid cyst without causing ischemia or inflammation. Identifying this anatomy is vital, especially when considering surgery [2].

Conclusion

This case illustrates the importance of thorough, multi-sequence MRI analysis when evaluating cystic lesions in the CPA or suprasellar regions. Even when mass effect is present, a lesion that restricts diffusion without contrast enhancement or edema is highly suggestive of an epidermoid cyst. Recognizing these imaging hallmarks helps differentiate these benign lesions from tumors or dermoid cysts and ensures accurate diagnosis and optimal surgical planning.

Bibliography

1. Reddy VN, *et al.* "Spectrum of intracranial and spinal epidermoids including unusual locations and imaging findings: A pictorial review". *Journal of Medical Imaging and Radiation Oncology* 67.1 (2023): 65-76.
2. Jia Z, *et al.* "Neuroendoscopic cystectomy through the posterior approach to the sigmoid sinus for intracranial epidermoid cysts: A review of two cases". *Interdisciplinary Neurosurgery* 40 (2025): 102059.
3. Alosaimi A, *et al.* "Unilateral hearing loss as the sole presentation of extensive intracranial epidermoid cyst: a case report". *Cureus* 17.5 (2025): e84721.
4. Vernon V, *et al.* "Surgical management of cerebellopontine angle epidermoid cysts: An institutional experience of 10 years". *British Journal of Neurosurgery* 36.2 (2022): 203-212.
5. Bonneville F, *et al.* "Imaging of cerebellopontine angle lesions: an update". *European Radiology* 17.10 (2007): 2472-2482.
6. Golfinos JG, *et al.* "Nonschwannoma tumors of the cerebellopontine angle". *Otolaryngologic Clinics of North America* 48.3 (2015).

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