

CASE REPORT



Intracranial Epidermoid Cyst: A Rare Case Series of 3 Patients

K S Sannidhi¹, S N Madhusudan², A M Amrutha^{3*}

1 Senior Resident, Department of Radio diagnosis, Basaveshwara Medical College and hospital, Chitradurga, Karnataka, India

2 Senior Resident, Department of Dermatology and Veneral Diseases, Basaveshwara Medical College and hospital, Chitradurga, Karnataka, India

3 Assistant Professor. Department of Community Medicine, Basaveshwara Medical College and hospital, Chitradurga, Karnataka, India



OPEN ACCESS

Received: 11.01.2022

Accepted: 22.01.2022

Published: 04.02.2022

Citation: Sannidhi KS, Madhusudan SN, Amrutha AM. (2021). Intracranial Epidermoid Cyst: A Rare Case Series of 3 Patients. International Journal of Preclinical & Clinical Research. 2(4): 99-102. <https://doi.org/10.51131/IJPCCR/v2i4.5>

* **Corresponding author.**

amrutha.angadi89@gmail.com

Funding: None

Competing Interests: None

Copyright: © 2021 Sannidhi et al. This is an open access article distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Published By Basaveshwara Medical College & Hospital, Chitradurga, Karnataka

ISSN

Print: XXXX-XXXX

Electronic: 2583-0104

Abstract

Of the intracranial epidermoids, temporal pole, interhemispheric region and prepontine, premedullary and inter-peduncular cisterns epidermoid are rare and only few cases have been reported. This is a case series study of 3 patients with temporal pole, interhemispheric region and in prepontine, premedullary and inter-peduncular cisterns epidermoids surgically treated in our institution. The age at the time of presentation varied between 40 and 65 years and 2 were males and one female. The presenting feature was headache, giddiness and visual disturbances. On computerized tomography scan the lesions showed dense calcification. On magnetic resonance imaging, the lesions were located in the temporal pole, interhemispheric region and in prepontine, premedullary and inter-peduncular cisterns with heterogenous signal intensities. All 3 patients underwent surgical resection.

Keywords: Temporal pole epidermoid cyst; Interhemispheric epidermoid cyst; Prepontine epidermoid cyst; Intracranial Epidermoid Cyst

Introduction

Epidermoids are benign, slow-growing congenital lesions and are most commonly located in the cerebellopontine angle, followed by the suprasellar cisterns, other locations include Sylvian fissure, brainstem, intraventricular, pineal regions, intradiploic space of skull, and spinal cord⁽¹⁾. They are relatively uncommon, representing between 0.2% and 1.0% of all intracranial tumors, and are often located in the cornu Ammonis (CA), paravituitary region, diploë, rhomboid fossa and spinal cord^(2,3). They

result from inclusion of ectodermal elements during neural tube closure, and typically present in middle age due to mass effect on adjacent structures. Various symptoms may be present, including complex partial seizures and epileptic laughter⁽⁴⁻⁶⁾, for which different surgical approaches have been adopted. Their content, derived from desquamated epithelial cells, mimics cerebrospinal fluid on CT and MRI, heterogenous on FLAIR, which demonstrates restricted diffusion on Diffusion weighted imaging.

Management is surgical and prognosis is good. Intracranial epidermoid cysts are divided into four categories describing their anatomic origin and frequent primary location: retro-sellar-cerebellopontine angle, parasellar-sylvian fissure, suprasellar-chiasmatic and basilar-posterior fossa. However, only three cases of prepontine dermoid cysts and 19 cases of interhemispheric epidermoids have been reported to date⁽⁷⁻¹¹⁾. We describe 3 unusual cases of epidermoid cyst arising in the temporal pole, interhemispheric region and in prepontine, premedullary and inter-peduncular cisterns: development and radiological findings are discussed.

Case descriptions

Case 1

A 40-years-old male came to the Department of Radiodiagnosis with history of headache for 1 years. There was no history of trauma. This case was evaluated with CT brain, which showed a temporal lobe cystic mass with dense calcification. Followed by which MRI was done for further characterization, which revealed an extra-axial, lobulated cystic mass, T1 hypointense, T2 hyperintense and FLAIR heterogenous signal intensity, measuring $48 \times 30 \times 36$ mm, in the left temporal region with scalloping of the underlying parenchyma. There was no pressure erosion of adjacent bone. This mass is hyperintense on diffusion and no definite post contrast enhancement.

Cytology revealed benign cyst lined by keratinized stratified squamous epithelium (Figure 1).

Case 2

64 years-old-male with history of giddiness and occasional visual disturbance was evaluated in neurology OPD, no definite neurological deficits seen on examination.

CT brain was advised which revealed ill-defined cystic masses with dense calcification in the cisternal spaces. MRI was performed for further evaluation which showed T1 hypointense, T2 hyperintense, FLAIR heterogeneous signal intensity masses in the prepontine, pre-medullary and interpeduncular cisterns encasing all cranial nerves. The borders of the masses were better delineated with diffusion weighted sequence. These lobulated masses were hyperintense on DWI imaging and no definite post contrast enhancement. Cranial nerves didn't show any signal change or enhancement.

Near complete Surgical resection was done.

Histopathology confirmed epidermoid cyst (Figure 2).

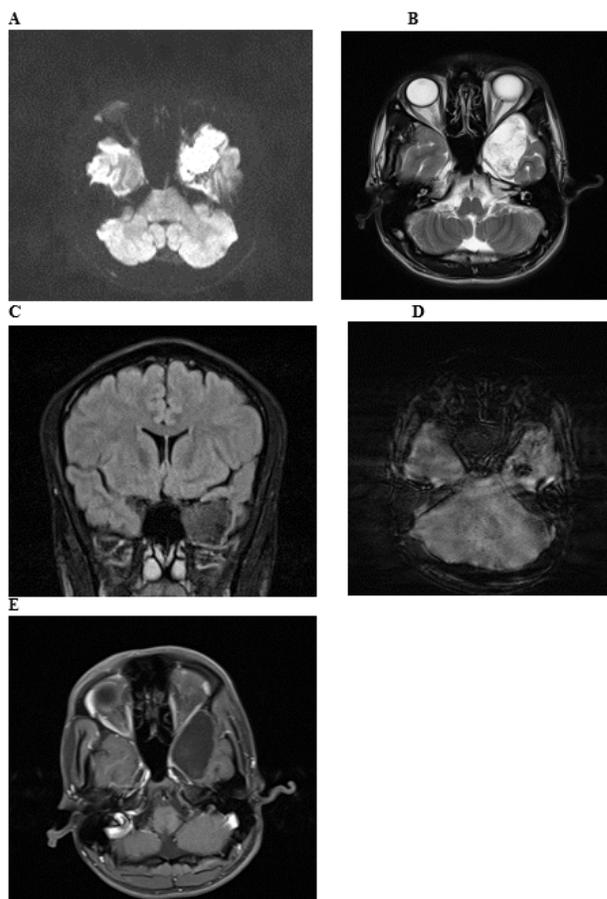


Fig 1. A: Axial DWI image showing lobulated hyperintense mass in the left temporal region. B: Axial T2 image shows hyperintense mass with few subtle hypointensities in the left temporal region with broad base towards the greater wing of sphenoid wing and scalloping of adjacent temporal lobe. C: Coronal FLAIR image delineates the mass better and shows heterogeneous signal intensity higher than CSF. D: Axial SWI showed multiple foci of blooming seen within the mass. E: Axial T1 post contrast image shows no definite enhancement.

Case 3

A 53-years-old female came with the history of occasional headache and presented to Neurology OPD. On imaging there was a left parafalcine region cystic mass approximately measuring $6.1 \times 3.5 \times 5$ cm (ap x tr x cc) with mass effect on the adjacent brain parenchyma. On MRI there is a cystic intensity mass in the interhemispheric region predominantly on to left with coarse calcification. It is hyperintense on diffusion with no definite post contrast enhancement. Surgical excision confirmed it to be epidermoid cyst (Figure 3).

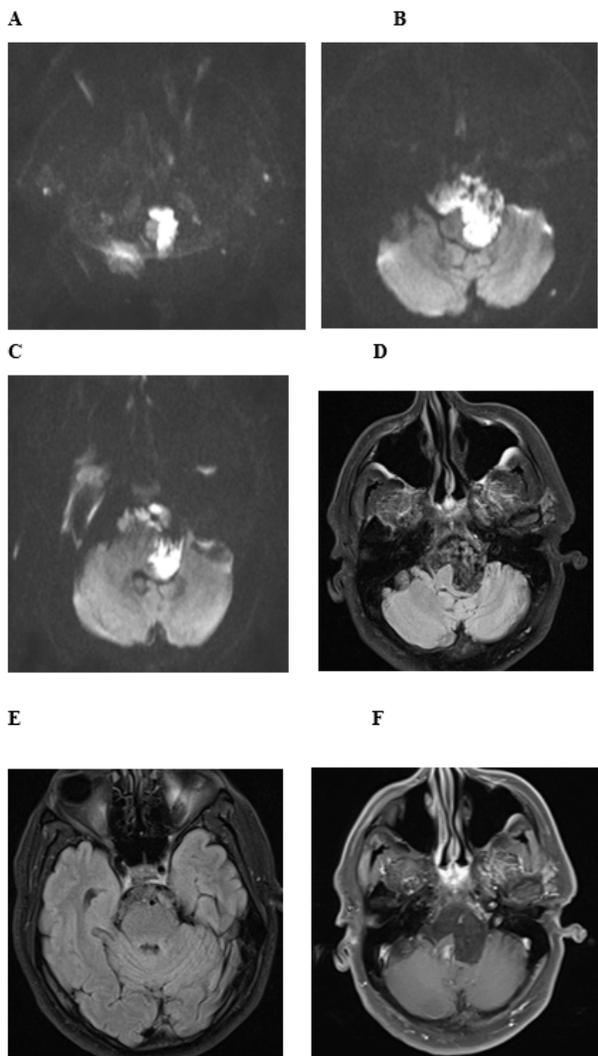


Fig 2. A, B, C & D: Axial DWI sequence in caudal to cranial direction shows lobulated hyperintense continuous masses in the cisternal spaces (prepontine, premedullary, interpeduncular) and the cranial sections show that mass in the left cerebellopontine angle with mass effect on the left cerebellar peduncles. E & F: Axial FLAIR images shows mass demonstrating heterogenous/ dirty signal intensity

Discussion

An epidermoid tumor is a congenital lesion that arises from inclusion of ectodermal epithelial elements. Grossly, epidermoid tumors are typically well-defined lesions with an irregular nodular outer surface and a shiny “mother of pearl” appearance.

Epidermoids are mostly cerebellopontine angle in location followed by the suprasellar cistern, the other sites being the Sylvian fissure, brainstem, pineal region, petrous apex, intra-fourth ventricular⁽¹²⁻¹⁶⁾. Interhemispheric location is rare,

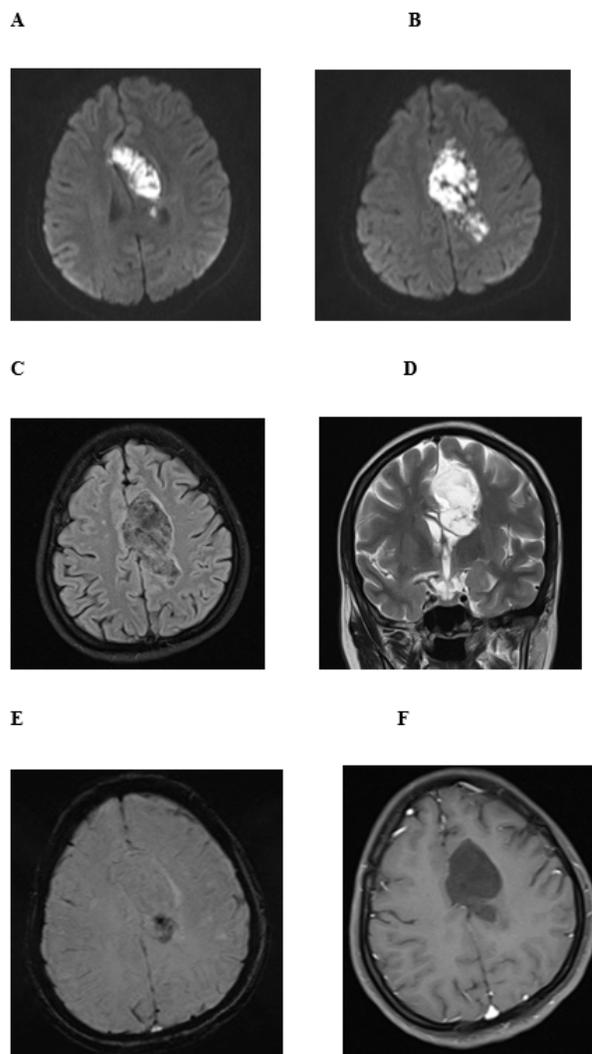


Fig 3. A & B: Axial DWI images shows heterogeneous hyperintense signals in the left parafalcine region. C: Axial FLAIR image shows a heterogeneous mass in the midline with subtle hyperintensity of the adjacent brain parenchyma (s/o edema). D: Coronal T2 image shows an extraaxial cystic intensity mass exerting significant mass effect on the body of corpus callosum, body of left lateral ventricle and parafalcine frontal lobar parenchyma. E: Axial SWI imaging shows areas of blooming (s/o calcification). F: Axial T1 post contrast image shows no contrast enhancement.

and only few cases have been reported^(10,11). As these lesions are slow growing and "soft," they tend to mould according to the surrounding structures and seep through the cisternal spaces, encasing rather than displacing the nerves and vessels. These lesions become symptomatic due to either the pressure effects on the surrounding neural elements or irritation of the nerves or cortex, presenting with ataxia, nystagmus, hemiparesis, hydrocephalus, neuralgia or seizures. Rupture of these cysts spontaneously or spillage of contents during surgery can cause aseptic chemical meningitis^(14–17).

Epidermoid cysts in the middle fossa are rare and may involve the temporal lobe and lateral ventricle. Affected patients often suffer from seizures, but the pathomechanisms underlying the epileptogenic lesions have remained unclear. Here we report the radiological features in a 40-years-old male with temporal epidermoid cyst.

References

- 1) Akdemir G, Dağlıoğlu E, Ergüngör MF. Dermoid lesion of the cavernous sinus: case report and review of the literature. *Neurosurgical Review*. 2004;27(4):294–298. Available from: <https://dx.doi.org/10.1007/s10143-004-0330-0>.
- 2) Fuller GN, Ribalta T. Russell and Rubinstein's Pathology of Tumors of the Nervous System. 7th ed. RE M, MK R, DD B, editors;London: Arnold. 2006.
- 3) Netsky MG. Epidermoid tumors. *Surgical Neurology*. 1988;29(6):477–483. Available from: [https://dx.doi.org/10.1016/0090-3019\(88\)90144-9](https://dx.doi.org/10.1016/0090-3019(88)90144-9).
- 4) Taniguchi M, Takemoto O, Hirano S. A case of epileptic laughter associated with temporal epidermoid cyst: surgical treatment with subdural grid electrode study. *No Shinkei Geka*. 1994;22:147–150.
- 5) Tanriover N, Kacira T, Ulu MO, Gazioglu N, Oz B, Uzan M. Epidermoid tumour within the collateral sulcus: A rare location and atypical presentation. *Journal of Clinical Neuroscience*. 2008;15(8):950–954. Available from: <https://dx.doi.org/10.1016/j.jocn.2006.06.024>.
- 6) Trivelto FP, Giannetti AV. Endoscope-controlled microneurosurgery to treat middle fossa epidermoid cysts: technical case report. *Neurosurgery*. 2008;62:105–107.
- 7) Prabhu K, Daniel RT, Mani S, Chacko AG. Dermoid tumor with diastematobulbia. *Surgical Neurology*. 2009;72(6):717–721. Available from: <https://dx.doi.org/10.1016/j.surneu.2009.03.036>.
- 8) Tanabe N, Tomita T, Nagai S, Kuwayama N, Noguchi K, Kuroda S. Dermoid cyst in Meckel's cave presenting with oculomotor nerve palsy and trigeminal neuralgia: a case report. *No Shinkei Geka*. 2016;44(10):863–867.
- 9) Titlic M, Jukic I, Kolic K, Rogosic V, Josipovic-Jelic Z. An acute headache and hydrocephalus caused by the dermoid cyst. *Bratisl Lek Listy (Tlacen Vyd)*. 2008;109(12):580–581.
- 10) Praveen KS, Devi BI. Calcified epidermoid cyst of the anterior interhemispheric fissure. *British Journal of Neurosurgery*. 2009;23(1):90–91. Available from: <https://dx.doi.org/10.1080/02688690802109812>.
- 11) Matsuno A, Takanashi S, Iwamuro H, Tanaka H, Nakaguchi H, Nagashima T. Epidermoid tumor arising in the anterior interhemispheric fissure. *Journal of Clinical Neuroscience*. 2006;13(2):262–264. Available from: <https://dx.doi.org/10.1016/j.jocn.2005.02.021>.
- 12) Lantos PL, Louis DN, Rosenblum MK, Kleihues P. Greenfield's Neuropathology. 2002.
- 13) McLendon RE. Epidermoid and Dermoid tumors: Pathology. Wilkins RH, Rengachary SS, editors;New York: McGrawHill. Neurosurgery. 1996.
- 14) Samii M, Tatagiba M, Piquer J, Carvalho GA. Surgical treatment of epidermoid cysts of the cerebellopontine angle. *Journal of Neurosurgery*. 1996;84(1):14–19. Available from: <https://dx.doi.org/10.3171/jns.1996.84.1.0014>.
- 15) Desai KI, Nadkarni TD, Fattepurkar SC, Goel AH. Pineal epidermoid cysts: a study of 24 cases. *Surgical Neurology*. 2006;65(2):124–129. Available from: <https://dx.doi.org/10.1016/j.surneu.2005.05.031>.
- 16) Conley FK. Epidermoid and dermoid tumors: clinical features and surgical management. Wilkins RH, Rengachary SS, editors;New York: McGraw-Hill. 1996.
- 17) Yarasgil MG, Abernathy CD, Sarioglu AC. Microsurgical treatment of intracranial dermoid and epidermoids tumors. *Neurosurgery*. 1989;24:561–568.