

Spectrum of Radiological Finding in Extraaxial and Intracranial Epidermoid Cyst

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Abstract: *In the spectrum of radiological finding in extraaxial and intracranial epidermoid cyst, three cases of epidermoid cyst will be discussed here from the different locations. The first case is involving the quadrigeminal cistern, in the second case cerebellopontine cistern is involved which is the most commonest location whereas in the third case the left upper eyelid is involved.*

Keywords: Epidermoid Cyst, MRI

1. Introduction

Epidermoid cyst is a benign lesion of rare occurrence that is the remnant of ectodermal elements during neural tube closure (1). The incidence rate of intracranial epidermoid cyst is 1.8-2% of all the brain tumors. They can arise in the intradural as well as the extradural compartment. The most common intradural location is the cerebellopontine angle, parasellar cistern, fourth ventricle, pineal gland, middle cranial fossa, interhemispheric, and spinal (rare). Extradural accounts for 10% within the skull (2,3,4). Clinical features of epidermoid cyst include headache (most common), cranial nerve deficit, seizures, cerebellar symptoms, and mutism (arising from the quadrigeminal cistern). These lesions usually have a slow growth and the most common presentation is 20-30 years of age (3,4). MRI with DWI is the imaging modality of choice for diagnosis of epidermoid cyst.

2. Case Presentation

CASE 1 – 40 Year old man presented with complaints of severe headache since 3 months, vertigo and ataxia since 15 days, and one episode of fall due to giddiness 7 days ago. There was no history of seizures, decreased vision. On physical examination, the vitals were stable. On investigations, Hemogram, liver function test, and kidney function test were under normal limits.



Image 1



Image 2

Image 1 and 2 – MRI Brain Axial and Sagittal T2W1 -well defined lobulated heterogeneously hyperintense lesion on T2W1 in the supra cerebellar cistern -quadrigeminal cistern measuring approximately 3.7x3.1x2.9 cms in size causing mass effect in the form of compression of aqueduct with subsequent supratentorial hydrocephalus in form of dilatation of bilateral lateral ventricles and third ventricle

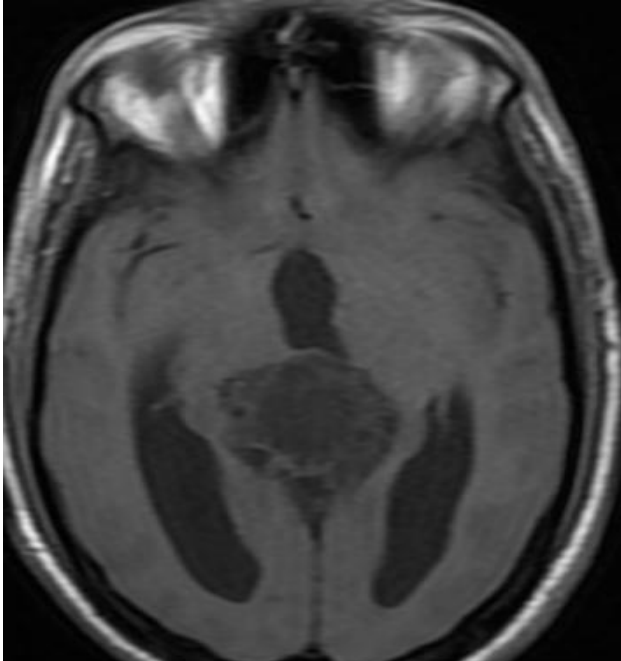


Image 3

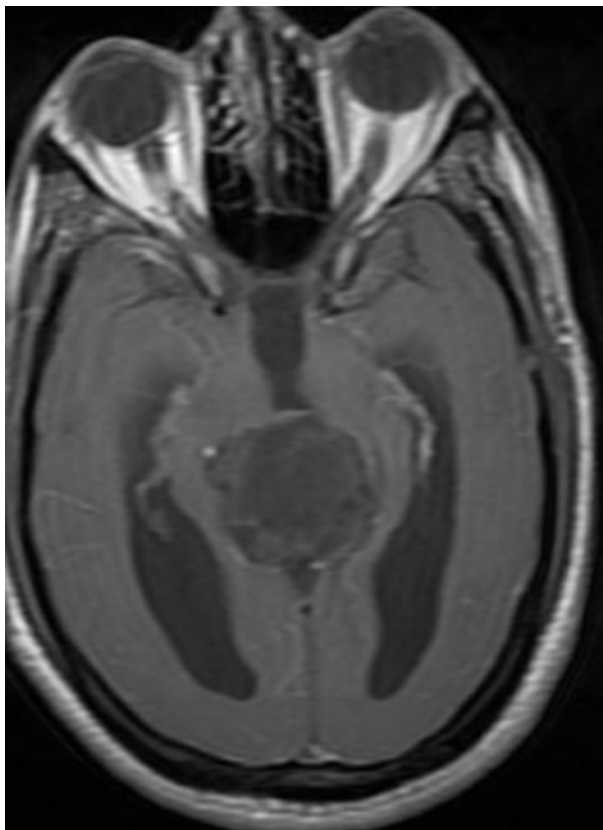


Image 4

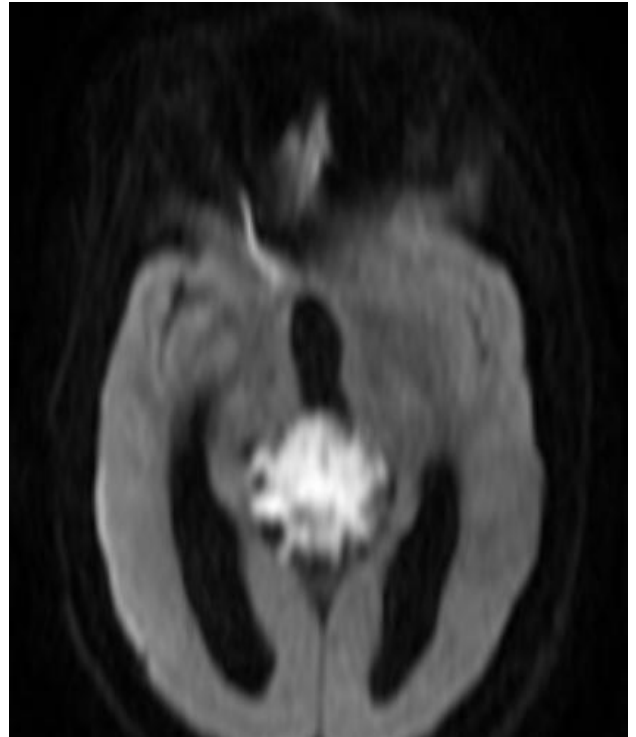


Image 5

Image 3,4 and 5 – MRI Brain Axial T1WI , T1WITH CONTRAST and DWI – well defined lobulated lesion in the supracerebellar cistern – quadrigeminal cistern appearing hypointense on T1WI with poorly and peripheral enhancing on post contrast study and showing restriction diffusion on DWI .

CASE2- 25 YEARS female presented with headache ,fever since 8 days and vomiting 2-3 episodes , there was no history of seizures.On physical examination the vital was under normal limits .She was referred to radiology department for MRI Brain



Image 6

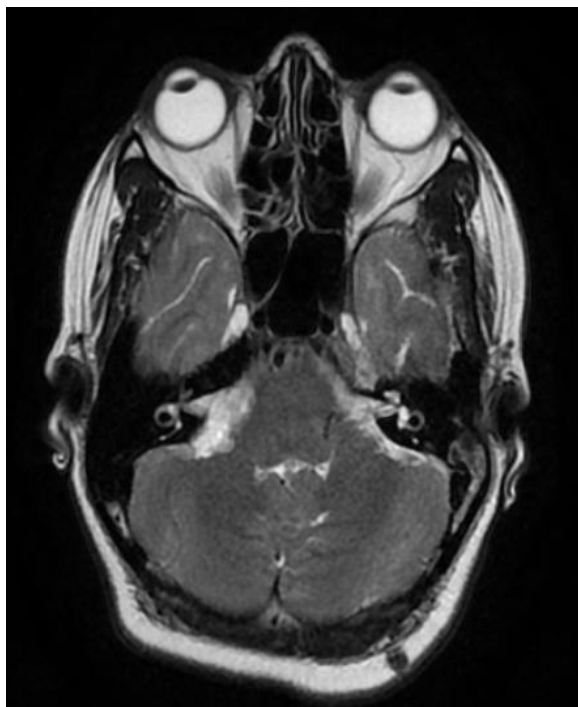


Image 7



Image 9



Image 8

Image 6,7,8 and 9 – MRI Brain Axial T1,T2,T1WITH CONTRAST AND DWI – non enhancing altered signal intensity lesion measuring approximately 2.6x1.5x1.2 cms in the right cerebello-pontine cistern causing its widening appearing mixed signal intensity on T1 , hyperintense on T2 and showing diffusion restriction on DWI . No significant invasion into the internal auditory canal

Case 3

9 years old female presented with swelling over the left upper eyelid since birth gradually increased in size since 1 year . Got prominent on looking upwards and depresses on looking downwards .There is no history of diminution of vision , pain , diplopia , photophobia . She was referred to radiology department for MRI Brain with Orbit to know the posterior extent and attachments.

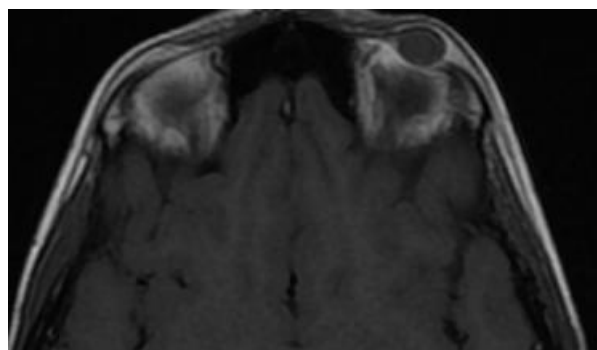


Image 10

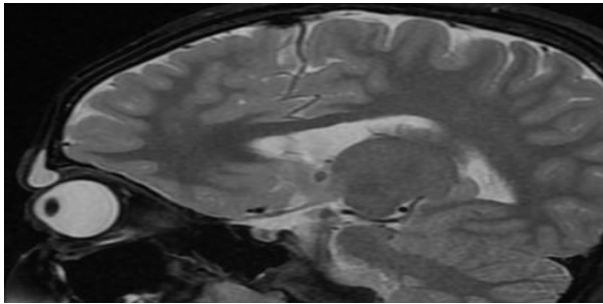


Image 11

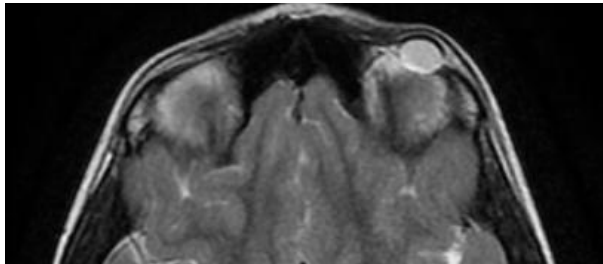


Image 12

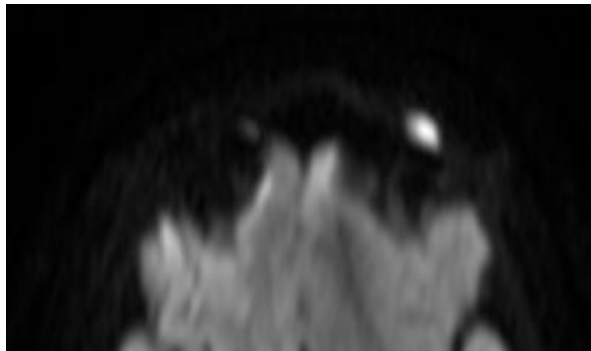


Image 13

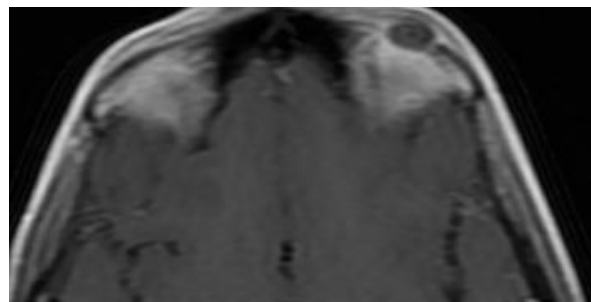


Image 14

Image 10,11,12,13 and 14 – MRI Brain with Orbit Axial T1 WI, Sagittal T2WI, Axial T2WI, DWI AND Axial T1 with contrast well defined peripheral enhancing cystic lesion in the upper eyelid measuring approx. 1.1x1.1x0.7 cms in size, appearing hypointense on T1WI, hyperintense on T2WI showing diffusion restriction on DWI and peripheral enhancement on post contrast study. The lesion is insinuating posteriorly under the frontal bone displacing and bowing the orbital septum and reaching up to the insertion site of superior rectus muscle.

3. Discussion

In this spectrum of MRI Finding for extraaxial and intracranial epidermoid cyst we included three cases from three different location. The first case is involving the

quadrigeminal cistern, in the second case cerebellopontine cistern is involved which is the most commonest location whereas in the third case the left upper eyelid is involved. In all the three cases there is restricted diffusion which is the most important parameter for the diagnosis of the epidermoid cyst.

Epidermoid cyst is a lobulated lesions that insinuates between the structures and encasing the adjacent vessels and nerves. Its content are keratin and cholesterol and desquamated epithelial cyst. Due to which they have high signal compared to CSF on T1WI, isointense to CSF on T2 WI and heterogeneously dirty signal, higher than CSF on FLAIR, peripheral thin enhancement on post contrast study and most important sequence is DWI on which it shows increased signal due to a combination of true restricted diffusion and T2 shine through which is helpful in differentiating from arachnoid cyst as it is devoid of this characteristics (1,2,3,4).

In our first case -40 Year old man presented with complaints of severe headache since 3 months, vertigo and ataxia since 15 days and one episode of fall due to giddiness 7 days ago. There was no history of seizures, decreased vision. On physical examination the vitals were stable. Hemogram, liver function test and kidney function test were normal. On MRI Brain there is a well defined poorly and peripherally enhancing lobulated cystic lesion in the supra cerebellar cistern -quadrigeminal cistern appearing heterogeneously hyperintense on T2WI, hypointense on T1WI and FLAIR showing diffusion restriction on DWI and no blooming signals on GRE causing mass effect in the form of compression of aqueduct with subsequent supratentorial hydrocephalus in form of dilatation of bilateral lateral ventricles and third ventricle. The case was diagnosed as epidermoid cyst in quadrigeminal cistern.

In our second case - 25 Years female presented with headache, fever since 8 days and vomiting 2-3 episodes, there was no history of seizures. On physical examination the vital was under normal limits. She was referred to radiology department for MRI Brain, which showed non enhancing altered signal intensity lesion in the right cerebello-pontine cistern causing its widening appearing mixed signal intensity on T1 and FLAIR, hyperintense on T2 showing diffusion restriction on DWI and no areas of blooming signal on GRE. No significant invasion into the internal auditory canal. The lesion was diagnosed case of epidermoid cyst in right cerebello-pontine cistern.

In the last case - 9 years old female presented with swelling over the left upper eyelid since birth gradually increased in size since 1 year. Got prominent on looking upwards and depresses on looking downwards. There is no history of vision loss, pain, diplopia, photophobia. She was referred to radiology department for MRI Brain with Orbit to know the posterior extent and attachments. On MRI brain with orbit there is a well defined peripheral enhancing cystic lesion in the upper eyelid appearing iso-hypointense on T1WI and FLAIR, hyperintense on T2WI showing diffusion restriction on DWI and thin peripheral enhancement on post contrast study. The lesion is insinuating posteriorly under the frontal bone displacing and bowing the orbital septum and reaching

upto the insertion site of superior rectus muscle .There is scalloping of the underlying frontal bone .The lesion was diagnosed as epidermoid cyst in left upper eyelid .

The incidence rate of intra-orbital epidermoid cyst out of all orbital tumors is 3%-9%. Out of 1% cranial tumors , Intra-diploic (25%) and intradural (75%). Dermoid cyst should be distinguished from epidermoid cysts.As they are cystic choristomas.Dermoid cysts are more prevalent and diagnosed during infancy or early childhood situated superficially or in the anterior orbit, commonly mould bone, and rarely causes bone lysis (dumbbell-dermoids). On the other hand ,epidermoid cyst has a deeper extension in the orbit and they arise in the diploic spaces .Intra-diploicepidermoidsfrequently located in the skull bones, particularly in the temporal or frontal bone(5). The incidence rate of epidermoid cyst from Quadrigeminal cistern is 15% and from cerebellopontine cistern is 40-50%. Treatment plan for epidermoid cyst is surgery which is indicated for symptomatic patients. Complete resection of the lesion is done as there is high chances of relapse when not resected properly. (6)

4. Conclusion

Epidermoid cyst israre intracranial benign lesion .Accounting for 1.8-2% of all the intracranial tumors . Most commonest location being cerebellopontine cisterns .Out of the three cases reported here ,epidermoid cyst in the upper eyelid was the most rarest of all as the incidence rate is 3-9% of all the epidermoid cyst .DWI being one of the most important sequence for diagnosing epidermoid cyst ,if there is poorly-peripherally enhancing lesion with diffusion restriction seen on DWI then we can diagnose the case as epidermoid cyst.

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