Case Report

Antero-Medial Temporo-Sphenoidal Encephalocele; a Rare Cause of Spontaneous CSF Rhinorrhea in Adults

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ABSTRACT

Antero-medial temporo-sphenoidal encephaloceles are rarest type of basal encephaloceles with bony defects in lateral sphenoid, and are termed as spontaneous when they occur in the absence of predisposing factors . They most commonly present as CSF rhinorrhea, headache or with signs of meningitis. Imaging play an important role in establishing diagnosis and for preoperative evaluation. Surgery through transnasal /transcranial route is the definite management.

Key words: Antero-Medial Temporo-Sphenoidal, Encephalocele, Spontaneous, CSF Rhinorrhea

CASE HISTORY

A 43-year-old, male patient presented with c/o rhinorrhea for the last 2 months. On detailed clinical history, no previous history of trauma, hypertension, headache, or meningitis was found. The leaking fluid was found to be CSF. Clinical evaluation of the patient showed no neurological abnormality.

CT PNS revealed pneumatisation of bilateral infero-lateral recesseses of sphenoid sinus with an osteo-dural defect on right side in middle cranial fossa; with a soft tissue density mass filling the adjacent part of the sphenoid sinus [Figure 1]. Focal thinning of the bone and arachnoid pits on contralateral side [Figure 2].

On MRI, small portion of the anteromedial temporal lobe was seen herniating through the osteo-dural defect into the sphenoid sinus with an air-fluid level. No features s/o leptomeningitis/pachymeningitis or encephalitis were noted (Figure 3). Note was also made of partially empty sella (Figure 4).

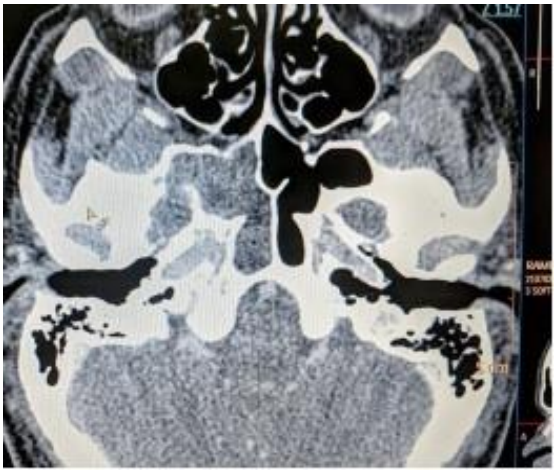

Figure 2: Yellow arrow- Osteodural defect, Yellow arrow head- Pneumatised inferolateral recess of sphenoid, Blue Arrow- Herniated temporal lobe with fluid level in sphenoid sinus

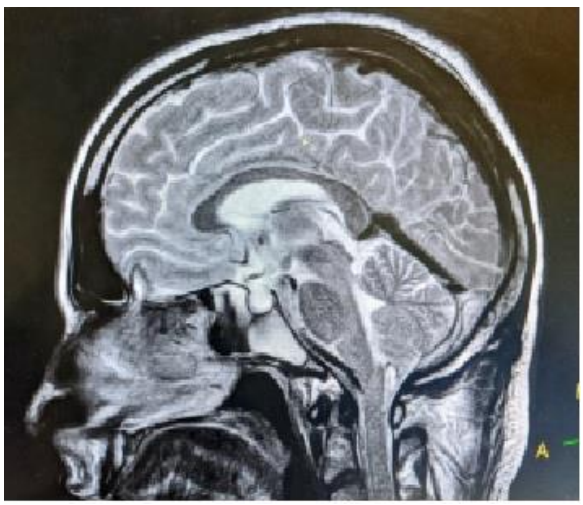

Figure 1: Yellow Arrow- Partially empty sella

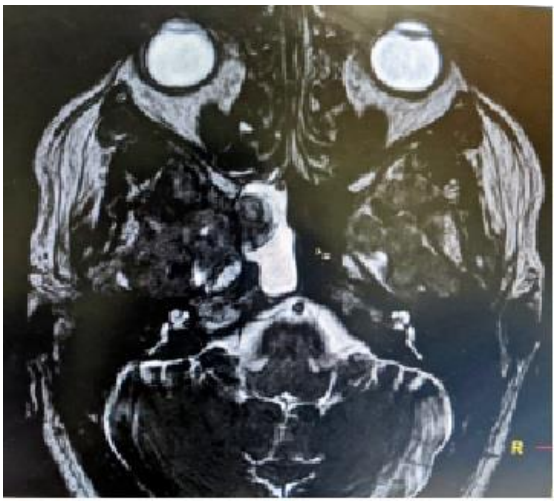

Figure 3: Yellow arrow- Herniated temporal lobe through osteodural defect , Yellow arrow head- Fluid in sphenoid sinus.

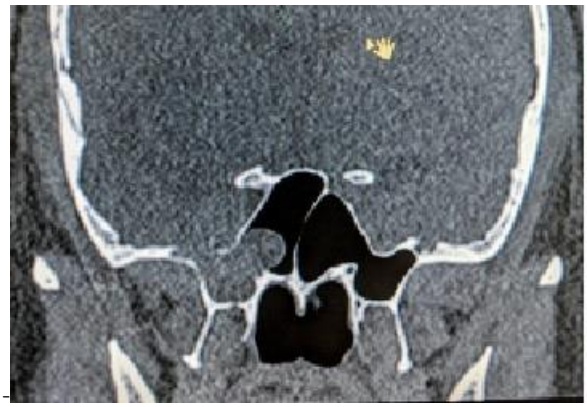

Figure 4: Yellow arrow- Thinned bone on contralateral side, Yellow arrow head- Herniated temporal lobe through osteodural defect, Blue Arrow- Aberrant arachnoid pits, Blue arrow head- Pneumatised inferolateral recess of sphenoid.

On the basis of above imaging findings; diagnosis of antero-medial temporo-sphenoidal basal encephalocele was made. Patient was operated through transnasal route and defect was closed.

DISCUSSION

Encephaloceles are most commonly congenital or related to trauma, surgery, tumors, sphenoid dysplasia or osteoradionecrosis. In absence of aforementioned predisposing factors, encephaloceles are referred to as spontaneous.[1-4]

The least common location of encephalocele is basal, accounting for only 10% cases[5,6] and that too more often seen in anterior cranial fossa. The encephaloceles in middle cranial fossa are divided into five major subtypes.[7-23] Lateral temporal (defect in pterion), anterior temporal (sphenoid dysplasia), Posteroinferior temporal (defect in tegmen tympani), Antero-inferior temporal (defect in anteroinferior floor of the middle cranial fossa) and Antero-medial temporal encephalocele.

The least common type is the anteromedial temporal encephalocele, as shown above. In this subtype, herniation of the anteromedial part of the temporal lobe into the sphenoid sinus occurs through a defect in the lateral wall of the sphenoid sinus. These cases present in adult life with spontaneous CSF rhinorrhea / headache.

The most widely accepted theory is an acquired osteo-dural defect. Arachnoid pits which are related to aberrant arachnoid granulations, in combination with CSF pulsation and its pressure have been postulated to play an important role in creation of these defects. This has been frequently reported previously[11] and is also seen in the present case. Another important etiological factor is pneumatization of the inferolateral recess of the sphenoid sinus.[3,11,13]

The present case is unique as there has only 12 such cases reported so far. It has all the pre-requisite findings such as pneumatisation of bilateral infero-lateral recess of sphenoid, osteo-dural defect, focal thinning of bone, aberrant arachnoid pits and empty sella that supports the theory that long-standing outward CSF pressure plays an important role in the development of these encephaloceles.

Imaging has role in diagnosis, identification of clinically occult defects and the preoperative identification of the site of the CSF leak. CT cisternography may depict the site of the bony defect and the CSF leak. MRI is invaluable for delineation of herniated contents and other complications such as meningitis/encephalitis before planning surgery.[3]

Surgical management is the mainstay of treatment. Transnasal[15,19] route is preferred for small defects and transcranial[10,12, 19-23] route is preferred for larger.

In conclusion, anteromedial temporosphenoidal encephalocele is a rare cause of spontaneous CSF rhinorrhea in adults and imaging with CT/MRI is particularly useful for its confident preoperative diagnosis.

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