EAS Journal of Radiology and Imaging Technology
Abbreviated Key Title: EAS J Radiol Imaging Technol
ISSN: 2663-1008 (Print) & ISSN: 2663-7340 (Online)
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-5 | Issue-1 | Jan-Feb-2023 | DOI: 10.36349/easjrit.2023.v05i01.004

Case Report

An Unusual Case of Arachnoid Cyst

Dr. Aravind S[1*], Dr. Monika R[1]

[1]Junior Resident, Sree Balaji Medical College and Hospital, 7 Works Road, Chromepet Chennai, Tamilnadu, India

Article History
Received: 17.09.2022
Accepted: 29.10.2022
Published: 23.01.2023

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: Arachnoid cysts are benign, congenital, space-occupying lesions that are filled with CSF (Cerebrospinal fluid). We report an unusual case of a multi-compartmental arachnoid cyst of 25 years old male who complained of gradually increasing headache. Computed tomography and magnetic resonance imaging revealed a large arachnoid cyst involving the left middle and anterior cranial fossae with sub-falcine extension into the right anterior cranial fossa.

Keywords: Arachnoid cyst, Computed tomography, Magnetic resonance imaging.

INTRODUCTION

Arachnoid cysts are benign cysts that occur in the cerebrospinal axis in relation to the arachnoid membrane and that do not communicate with the ventricular system. They usually contain clear, colourless fluid that is most likely normal cerebrospinal fluid; rarely, they contain xanthochromic fluid. Most are developmental anomalies. A small number of arachnoid cysts are acquired, such as those occurring in association with neoplasms or those resulting from adhesions occurring in association with leptomeningitis, hemorrhage, or surgery. They constitute approximately 1% of intracranial masses; 50-60% occurs in the middle cranial fossa. Cysts in the middle cranial fossa are found more frequently in males than in females; they occur predominantly on the left side. Most arise as developmental anomalies. A small number of arachnoid cysts are associated with neoplasms. CT imaging is often sufficient to make the diagnosis, but when additional information is needed, MRI is the imaging modality of choice to evaluate anatomic location, size, and structures involved. MRI can also help refine the differential diagnosis.

CASE REPORT

A 26-year-old male presented to the Emergency Department complaining of a gradually worsening headache and recent history of trauma. On non-contrast Computed Tomography examination of the head performed in an outside hospital, the patient was diagnosed with an intracranial neoplasm and was referred to our institution for further assessment. Magnetic Resonance Imaging of the brain showed a large, extraaxial, well-defined multicompartmental lesion involving the left middle and anterior cranial fossae with sub-falcine extension into the right anterior cranial fossa. The lesion follows CSF signal intensity on all sequences, demonstrating T1 hypointensity (Figure 1a) and T2 hyperintensity (Figure 1b), suppression of signal on Fluid Attenuated Inversion Recovery (FLAIR) (Figure 1c) sequences and facilitation of diffusion on DWI sequences (Figure 1d). It displaces the overlying brain parenchyma superiolaterally and results in effacement of the frontal horn of the left lateral ventricle with no hydrocephalous (Figures 1b and 2). It does not communicate with the ventricular system. It results in mild mass effect on the circle of Willis, the left middle cerebral artery and bilateral anterior cerebral arteries as well as on the pituitary stalk. The Computed Tomography demonstrates characteristic bony Scalloping and remodeling of the inner table of the adjacent calvarium, indicating the slow growth of the lesion. The left frontal sinus is much larger than the right frontal sinus, which is also unusual (Figure 3).

***Corresponding Author:** Dr. Aravind S
Junior Resident, Sree Balaji Medical College and Hospital, 7 Works Road, Chromepet Chennai, Tamilnadu, India

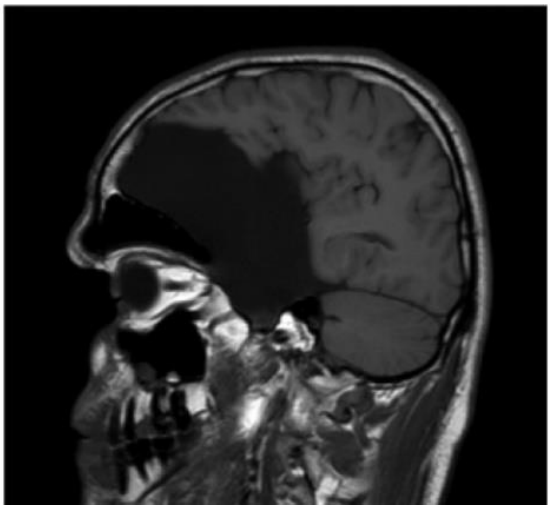

Fig.1 a

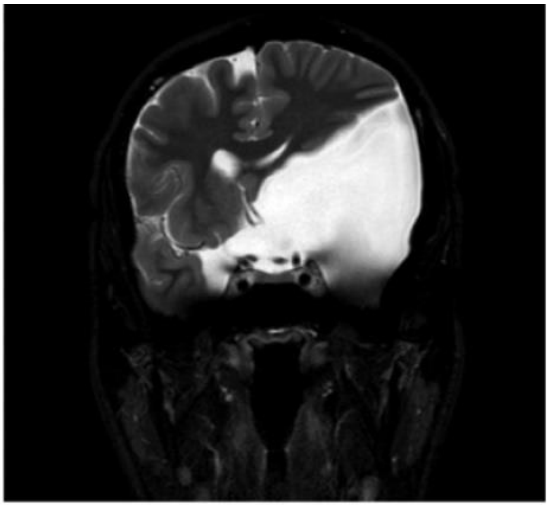

Fig.1 b

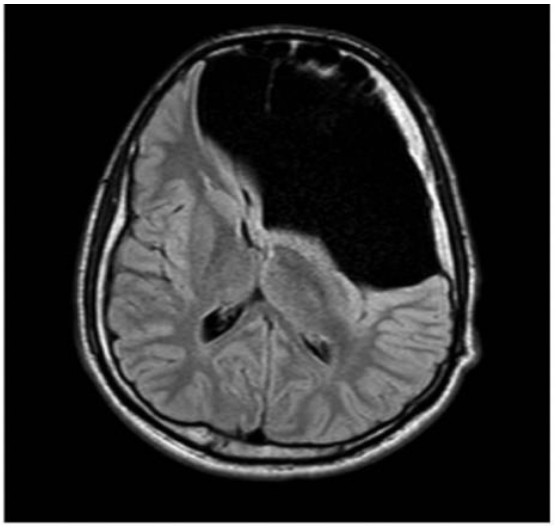

Fig. 1c

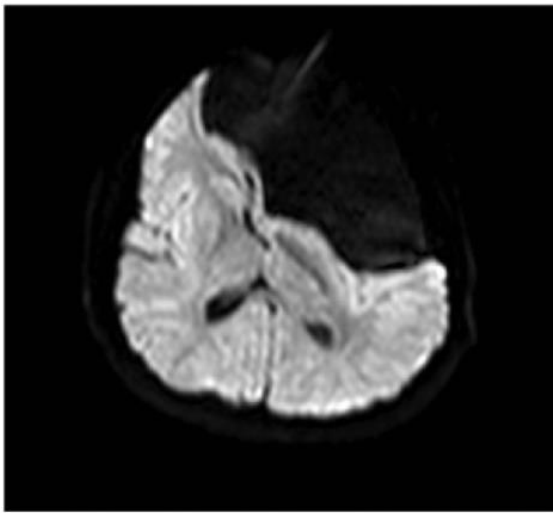

Fig. 1d

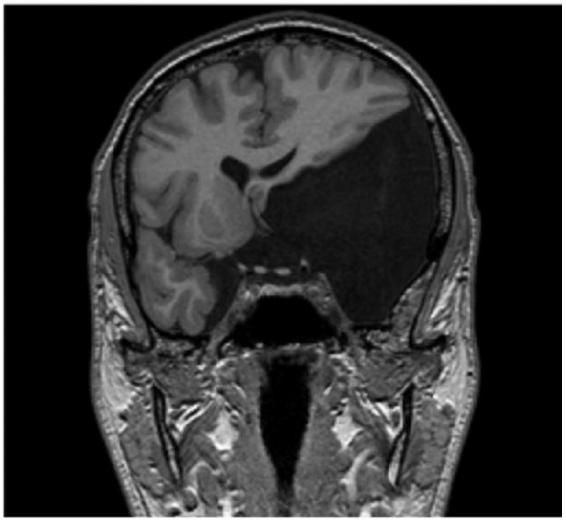

Fig. 2

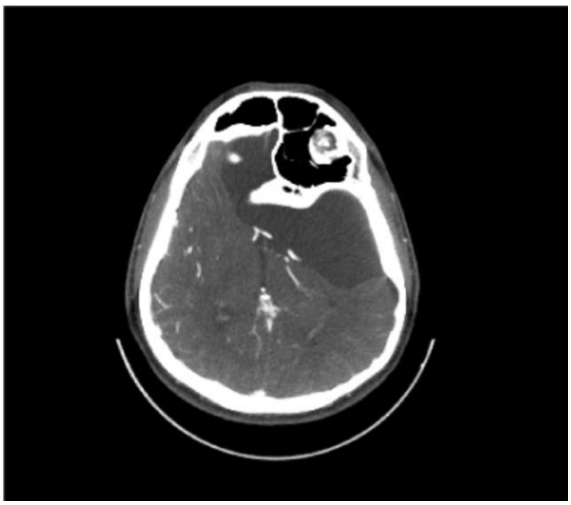

Fig. 3

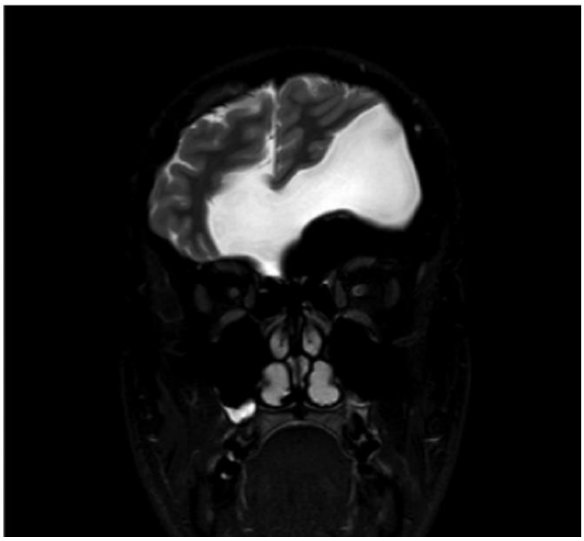

Fig. 4

DISCUSSION

Arachnoid cysts are relatively common benign asymptomatic intracranial extra-axial lesions. They are thought to arise due to the congenital splitting of the arachnoid layer with accumulation of CSF within this potential space. Their wall is comprised of flattened arachnoid cells forming a thin translucent membrane. The cyst is devoid of any solid component or epithelial lining. Most common locations include interhemispheric fissure, cerebral convexity, posterior fossa, cisterna magna, cerebellopontine angle, quadrigeminal cistern, spinal canal, ventricles and suprasellar cistern. Arachnoid cysts are well circumscribed, with an imperceptible thin wall, displacing adjacent structures, and following CSF signals on all pulse sequences. They appear hypodense on plain CT scan. On MRI they appear hypointense on T1W and hyperintense on T2W with FLAIR suppression. They do not show restriction on DWI and ADC mapping which helps to differentiate them from their close differential of epidermoid cyst. They do not enhance after gadolinium administration. They can also cause remodelling effect on the adjacent bone resulting in scalloping. Phase contrast imaging can also be employed not only to determine if the cyst communicates with the subarachnoid space, but also to identify the location of this communication. MR cisternography: high resolution sequences such as CISS & FIESTA help to delineate cyst wall and adjacent anatomic structures.

CONCLUSION

Arachnoid cysts are most commonly an incidental discovery on neuroimaging and have for the most part, a benign natural history. They comprise 1% of intracranial masses and are more common in males. Increasingly, arachnoid cysts are being discovered at earlier ages due to more widespread use of antenatal and cross-sectional imaging. For the few that cause symptoms, their clinical presentation will depend on their location and the adjacent structures onto which they cause mass effect on. They also may present with hemorrhage or rupture. Treatment is generally reserved for symptomatic cysts with a range of neurosurgical techniques available.

Compliance with Ethical Standards

FUNDING

There is no funding.

CONFLICT OF INTEREST

Author declares that they have no conflict of interest.

ETHICAL APPROVAL (ANIMALS)

This article does not contain any studies with animals performed by any of the author(s).

ETHICAL APPROVAL

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

INFORMED CONSENT

Informed consent was obtained from individual participant included in the study.

AUTHORS' CONTRIBUTIONS

1. DR. ARAVIND S (AS)
2. DR. MONIKA R (MR)

Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work –

Drafting the work or revising it critically for important intellectual content

Final approval of the version to be published -

Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved –

REFERENCES

- Akyuz, M., Goksu, E., Aralasmak, A., & Tuncer, R. (2010). Retroclival arachnoid cyst presenting with haemorrhage: a brief report of a special case. *Acta Neurochir (Wien)*, 152, 161-162.
- Burger, P. C., Scheithauer, B. W., & Vogel, F. S. (2002). Intracranial meninges. In: Surgical pathology of the brain and its coverings. 4th ed. Philadelphia, Pa: Churchill Livingstone.
- McLendon, R. E., & Tien, R. D. (1998). Tumors and tumor-like lesions of maldevelopmental origin. In: Russell and Rubinstein's pathology of tumors of the nervous system. 6th Ed. New York, NY: *Oxford University Press*, 327-352.

- Osborn, A. G. (1994). Miscellaneous tumors, cysts, and metastases. In: Diagnostic neuroradiology. St Louis, Mo: *Mosby*, 631-649.
- Osborn, A. G. (2004). Arachnoid cyst. In: Diagnostic imaging: brain. Salt Lake City, Utah: *Amirsys*, I, 7-4.
- Osborn, A. G., & Preece, M. T. (2006). Intracranial cysts: radiologic-pathologic correlation and imaging approach. *Radiology*, 239, 650-64.
- Pretorius, P. M., & McAuley, D. J. (2005). Something old, something new? *Br J Radiol*, 78, 1063-1064.

Cite This Article: Aravind S & Monika R (2023). An Unusual Case of Arachnoid Cyst. *EAS J Radiol Imaging Technol, 5*(1), 23-26.