VOLUME - 14, ISSUE - 04, APRIL - 2025 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Medical Science

BILATERAL PERSISTENT PATENT OCCIPITAL SINUS - A RARE CASE REPORT

Dr.Venkatesan Sanjeevi

Dr Chandan Y S

ABSTRACT The occipital sinus may occasionally remain patent, but the incidence is low and observed in less than 10% of cases. A persistent patent occipital sinus (POS) may be associated with other venous sinus abnormality. The Neuroradiologist and Neurosurgeons, must be aware of the possible existence of POS and other associated venous sinus anomaly, as its warrants very crucial modification of surgical planning, selection of appropriate approaches, and, additionally, may also critically limit the extent of surgical exposure of target, and may hinder intended extent of surgical excision of tumour and associated possibility of injury to POS, which may produce catastrophic haemorrhage, brain swelling, and neurosurgical morbidity. We report a 66 years old lady presented with headache diagnosed with fourth ventricular ependymoma with bilateral persistent occipital sinus, underwent sub occipital craniotomy, division of right occipital sinus and excision of the tumour. Patient was discharged without any complications.

KEYWORDS : Persistent Patent Occipital Sinus, sub occipital craniotomy, Hypo plastic transverse sinus, Surgical exposure

INTRODUCTION

An occipital sinus is a venous pathway between the confluence of the sinuses and the vertebral venous plexus or the marginal sinus at the foramen magnum. It usually closes by 2 years of age and is seen incidentally in 8.6% of adults.(1)(2)(3) Usually, persistent patent occipital sinus (POS) is observed in less than 10% of human population. A persistent POS associated with absent/hypo plastic transverse sinus is usually rare and few cases only reported. The neurosurgeons should be aware about the possibility of associated venous sinus anomaly as it can affect surgical planning, selection of appropriate approaches, and may critically limit the surgical exposure of target. As routinely magnetic resonance (MR) venography is not routinely utilized for assessing the anatomy of venous sinus of posterior fossa lesion including cerebellopontine angle and cerebellar neoplasms, but authors advocate MR venography in addition to MR imaging (MRI) study should be made an integral part of neuroimaging study.

Case Report

A 66 years old lady admitted with history of headache and neck pain, MRI brain with neck was done which showed Circumscribed intraventricular lesion is observed in the inferior portion of the fourth ventricle measuring 46 x 20 x 24 mm (CC x AP x W) . The lesion demonstrates intermediate signal on the T1 and T2-weighted images. Multiple areas of blooming are noted within the lesion on the susceptibility weighted images secondary to haemorrhage. Small fluid/fluid level is noted within the lesion secondary to haemorrhage. Post contrast study shows heterogeneous enhancement of the solid component of the lesion. Inferiorly, the lesion extends through the foramen magnum into the upper cervical canal. The inferior margin of the lesion is at the level of upper third of the C2 vertebra and is posterior to the cervical cord suggestive of Ependymoma.

Planned for midline sub occipital craniotomy and excision in prone position. After craniotomy we found that there is a bilateral prominent occipital sinus with right hypo plastic transverse sinus. during intra op we again confirmed with radiologist regarding this abnormal venous anatomy, we divided the right occipital sinus, durotomy made, through which we completed the tumour excision. No intra op and post op complications. Patient was discharged without any deficits.

DISCUSSION

The occipital sinus connects torcular to the marginal sinus. Occipital sinuses are considered as the smallest caliber among the all cerebral dural venous sinuses. Persistence occipital sinus is usually associated with absence or hypo plastic unilateral transverse sinus as well as sigmoid sinuses.(4)(5) It is commonly observed relatively in the neonate, but gradually disappears and may be present in approximately 10% of the normal population. Persistence of POS has important surgical significance in the selection of various surgical approaches for targeting lesions located in the posterior fossa including retro sigmoid approaches.(6)(7)

Occipital sinuses may not be always located in the midline and may show variable course. It usually courses inferiorly from torcula toward the marginal sinus located around foramen magnum and finally, in turn, drains into sub occipital veins, paravertebral venous plexus, or jugular veins. Tada et al reported a paediatric case with a diagnosis of neck swelling associated with intracranial sinus abnormality involving persistent enlarged occipital sinus and relatively much-narrowed caliber of the transverse sinus.(8)

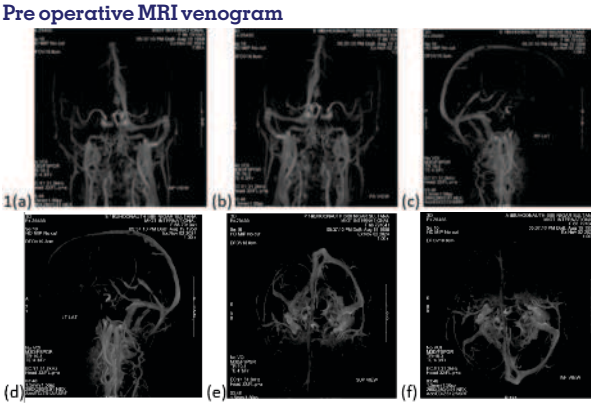
It is imperative that, when planning posterior fossa surgery including retro sigmoid surgical approach, the anatomy of venous sinus should also be considered as part of minimum imaging workup, including MR venography to a void last-minute misadventure, intraoperatively after craniectomy.(9) Further, if POS detected during any radiological study, it needs to be specially taken into account for surgical planning, and associated anomaly must be documented, and neurosurgical team must develop microsurgical technique in neurosurgical armamentarium to deal effectively and successfully without compromising patient safety and without aggravating neurological morbidity.

CONCLUSION

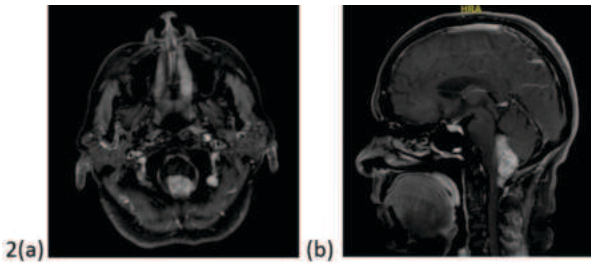
A persistent POS represents uncommon venous anomaly of venous sinus of posterior fossa and further may be associated with other venous sinus abnormality of the posterior cranial fossa.

Neuroradiologist and Neurosurgeons must be aware that POS with absent/hypo plastic transverse and sigmoid sinus may necessitate surgical planning modification, appropriate micro-neurosurgical approaches selection, and additionally may limit the extent of surgical exposure for further emphasis of detailed neuroanatomy. Finally, neuroimaging is justified to avoid intraoperative chaos.

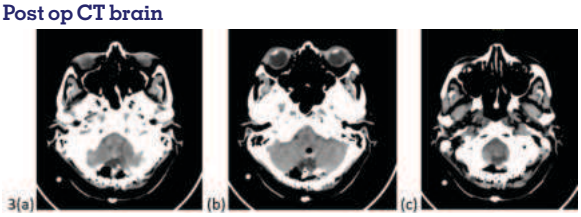
Pre operative MRI venogram



MRI brain T1WI contrast



Post op CT brain



1(a-f) Pre-op MRI venogram showing bilateal persistent occipital sinus

2(a)(b) MRI brain T1WI contrast showing Circumscribed, heterogeneously enhancing lesion with areas of haemorrhage in the inferior portion of the fourth ventricle. Lesion extends caudally through the foramen magnum into the upper cervical canal (C2 level) - Ependymoma

3(a)(b)(c) Post-op CT brain showing Status post sub occipital craniotomy and excision of the 4th ventricular tumour

REFERENCES

1. Mizutani, K.Miwa, T. Akiyama, T. **Fate of the three embryonic dural sinuses in infants: the primitive tentorial sinus, occipital sinus, and falcine sinus.** Neuroradiology. 2018; **60**:325-333
2. Sener,R.N. **Association of persistent falcine sinus with different clinicoradiologic conditions: MR imaging and MR angiography**.Comput Med Imaging Graph.2000;**24**:343-348
3. Kobayashi, K. · Suzuki, M. · Ueda, F. **Anatomical study of the occipital sinus using contrast-enhanced magnetic resonance venography**. Neuroradiology. 2006; **48**:373-379
4. Widjaja E, Griffiths P D. Intracranial MR venography in children: normal anatomy and variations. AJNR Am J Neuroradiol. 2004;25(09):1557–1562.
5. Manjunath K Y. Anomalies of transverse and sigmoid sinuses associated with contracted jugular foramina. Indian J Otolaryngol Head Neck Surg. 2004;56(02):108–114. doi: 10.1007/BF02974309.
6. Satyarthee G D, Jain G. Indication of surgical management of vestibular schwannoma in the older age group: mysteries still unsolved. World Neurosurg. 2017;101:803–804. doi: 10.1016/j.wneu.2016.12.020.
7. Satyarthee G D, Kumar S. Is staged surgery for giant vestibular schwannomas always better in improving outcome: needs socioeconomic consideration. J Neurosci Rural Pract. 2014;5(04):437–439. doi: 10.4103/0976-3147.140018.
8. Tada H, Takanashi J, Barkovich A J, Kohno Y. Intracranial dural venous anomalies in familial cervical cystic hygroma. Pediatr Neurol. 2005;32(01):50–52. doi: 10.1016/j.pediatrneurol.2004.06.017.
9. Salem M, Dolati P, Fusco M R, Ogilvy C S, Thomas A J. Abnormal large central occipital emissary vein: a case report and review of literature. Cureus. 2016;8(05):e603. doi: 10.7759/cureus.603.