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Case report

Cavernous hemangiomas of the third ventricle: Alternative surgical routes in two cases



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ABSTRACT

Cavernous Hemangiomas (CH) arise from any part of the cerebrum. Intraventricular lesions are rare and pure third ventricular localization is rare for CHs. Cavernomas of the ventricles may present with bleeding or signs associated with hydrocephalus. Radical excision is advocated for optimal management of cavernomas.

In the present study, we present two cavernomas of the third ventricle which were completely excised via interhemispheric transcallosal transforaminal and Sylvian approaches. Radical excision should be the aim of the surgeon since reoperation for residual cavernomas is more commonly associated with complications and poor outcome.

Total excision should be the goal of the treatment due to risk of rebleeding or regrowth.

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1. Introduction

Cavernous Hemangioma (CH) may arise from any part of the cerebral parenchyma as well as spinal cord, cranial and spinal nerve roots [1]. Majority of CHs are intraaxial and they tend to involve deep white matter, basal ganglia, brain stem, and cerebellum [2]. Intraventricular localization is rare for CHs (IVCA) with a 2–10.8% incidence. However, cavernous hemangioma of the third ventricle is extremely rare [3]. IVCHs pose a danger because of the surrounding vital structures [4]. Since they have a capacity to grow and transform into giant malformations secondary to recurrent extralesional and

ventricular hemorrhages, a radical excision is recommended for optimum treatment [3,5,6].

The present study is focused on the complete excision of two third ventricular CHs via interhemispheric transcallosal transforaminal and Sylvian approaches with an accompanying presentation. Alternative surgical routes were also discussed.

2. Case 1

A 40-year-old man presented with loss of consciousness who was using medications for depression and aggressive behavior for 3 months. Marked hydrocephalus with a mass lesion in the third ventricle was prominent on MRI which was performed after

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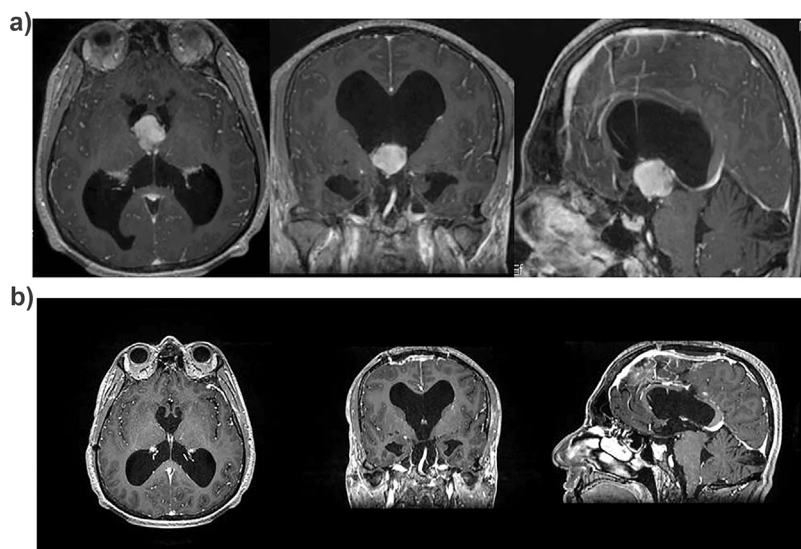


Fig. 1 – (a) Sagittal, axial, and coronary MRI: hyperintense lesion in the third ventricle. (b) Sagittal, axial, and coronary MRI: the mass was totally evacuated.

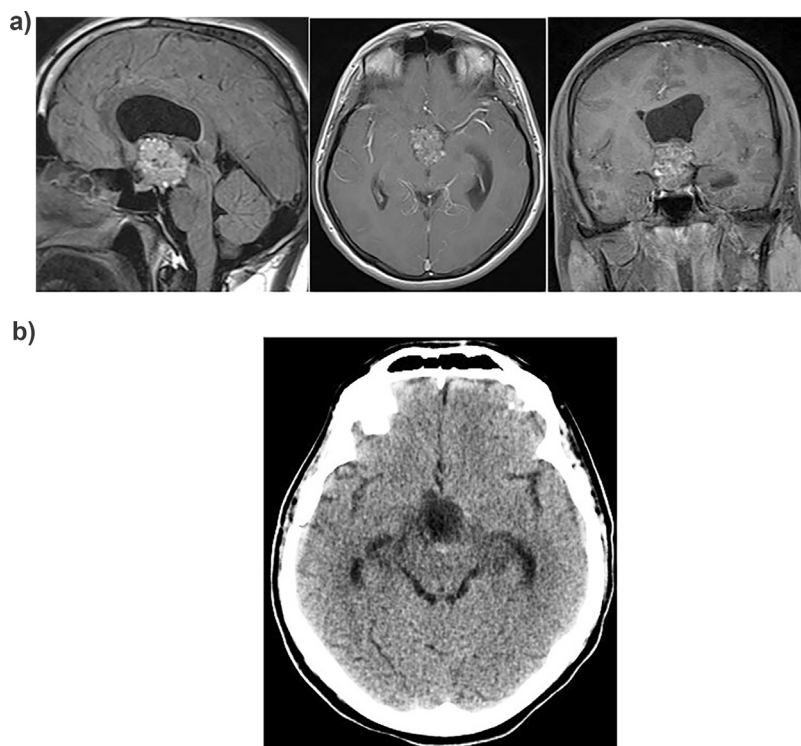


Fig. 2 – (a) Sagittal, axial, and coronary MRI: suprasellar lesion within the third ventricle. (b) CT demonstrated complete excision of the lesion.

a short period of loss of consciousness. Neurological and physical examination was normal except bilateral papilledema. MRI revealed a multilobulated nodular mass lesion (26 mm) with marked contrast enhancement. The lesion was localized exactly within the third ventricle and hypointense on T1, T2 and FLAIR sequences. The lesion was demonstrated to have marked diffuse enhancement on axial, coronal and sagittal images (Fig. 1a).

Interhemispheric transcalsal approach was preferred at semifowler position for surgery. A rectangular craniotomy

crossing the midline which extended both anterior and posterior to the coronary suture was utilized. Dura was folded over midline after incision. Lateral ventricle was entered on the right side and the mass was completely excised through enlarged foramen of Monro (Transforaminal route). Postoperative images did not show any residual mass (Fig. 1b). The patient was discharged without any deficit on neurological examination. Histopathological specimens confirmed the diagnosis of CH.

3. Case 2

26 year old male patient presented with symptoms of recurrent severe headache and clouding of consciousness. Neurological examination was completely normal except bilateral papilloedema. CT demonstrated a suprasellar hyperdense mass lesion within the third ventricle. MRI revealed a multilobulated mass with marked contrast enhancement and dilatation of the left lateral ventricle (Fig. 2a). The lesion was removed with pterional transsylvian and transcortical transforaminal approaches (two successive operations). Postoperative CT demonstrated complete excision of the lesion which was found to be consistent with CH at the postoperative period (Fig. 2b).

4. Discussion

The present study is focused on two rarely encountered third ventricular CH which were operated through different approaches. An intraventricular location is rare for a CH. Conservative management and close follow up may be reasonable in asymptomatic small supratentorial parenchymal CHs. A literature survey showed 29 cases of CH localized at the third ventricle [3]. Katayama et al. reported that CHs of the third ventricle may grow to become giant malformations due to a lower resistance against their growth as a result of the absence of any surrounding brain tissue and recurrent intralesional hemorrhage. Intralesional hemorrhage was observed on both two cases at the operation. In addition extralesional hemorrhage may be encountered though it is seldom. Surgical approach is strictly recommended for the treatment of intraventricular CHs [3,5,6].

Absence of neural structures within the lesion and poor vascular supply usually provides a relatively uncomplicated excision of IVCHs. Nevertheless, surgical risk is increased due to complex anatomy of the surgical corridor and neighborhood deep venous structures. CHs of this region were usually closely adhered to the septal vein, choroid plexus, and thalamostriate vein. Residual lesions after surgery were associated with regrowth, increased risk of reoperation and extralesional hemorrhage so a complete excision is advocated at the initial approach [1,4].

Lesions localized at the anterior part of the third ventricle might be removed via transcortical-transventricular, interhemispheric transcallosal transforaminal, interhemispheric transcallosal interforaminal, interhemispheric transcallosal subchoroidal transvellum interpositum, subfrontal trans-lamina terminalis approach, pterional or combined approaches [1,7]. Dissection of a tumor from the third ventricle may cause signs of hemiparesis, memory loss, endocrine disturbances, visual loss, or diencephalic injury [8]. Transcallosal approach is usually the best option for the resection of the third ventricular tumors. This approach visualizes the cavity of the third ventricle from superior and allows the access to the third ventricle through different corridors [9]. CH of the anterior section of the third ventricle was completely resected via an interhemispheric transcallosal transforaminal approach without any neurological deficit (Patient 1). A combined approach might be necessary in selected cases

with infiltrative pattern or relatively large size. In the present study case 2 was operated with a combined pterional and transcortical transforaminal approach. A unilaterally dilated lateral ventricle allowed the surgeon to perform a transcortical route.

5. Conclusion

For lesions localized within the third ventricle, complete excision of the lesion with microsurgical dissection is critical for restoration of CSF circulation regardless of the histopathology of the lesion (colloid cyst, central neurocytoma, glial tumor etc.). If the lesion was recognized as a cavernous hemangioma before or during the operation, every effort should be performed to achieve a total excision due to the risk of rebleeding or regrowth. IVCHs localized within the third ventricle, the interhemispheric transcallosal transforaminal route is a safe approach for complete excision particularly associated with dilated lateral ventricle, as shown (Case 1).

Conflict of interest

None declared.

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