Third ventricle cavernous malformation

Third ventricle cavernous malformation is a type of intraventricular cavernous malformation.

In a review of 29 cases, the mean age of the patients was 40 years with a slight female preponderance (female/male, 17/12) [1].

Types

Four subgroups were identified in terms of the site of origin and could be characterized by different clinical manifestations: visual field defects and endocrine function deficits in patients with malformations in the suprachiasmatic region (six cases); symptoms caused by hydrocephalus in those with malformations in the foramen of Monro region (five cases); and deficits of short-term memory in those with malformations in the lateral wall (two cases) or of the floor of the third ventricle (one case) [2].

Clinical features

The majority of the patients complained of a mass effect with signs of intracranial hypertension; only one case was asymptomatic [3].

Diagnosis

They should be considered in the differential diagnosis of third ventricle tumors. Ventriculoscopy is very useful in establishing the diagnosis [4].

Differential diagnosis

Differential diagnosis includes: histiocytosis, craniopharyngioma, hypothalamic glioma, tuber cinereum hamartoma and metastasis. Cavernoma should be considered when a solid suprasellar mass has hemorrhage (mimicking cystic- adamantinomatous craniopharingioma).

Treatment

Third ventricle cavernous malformation treatment.

Outcome

In a review, gross total resection was achieved in 81% of the cases. Around 80% of the patients were asymptomatic or improved from the initial symptoms. Mortality rate was 6.9% and the most common complication was hydrocephalus.

As demonstrated in the review of the previous reports, the outcome is favorable after surgical excision for CH of the third ventricle. Hence, surgical excision appears to be the treatment of choice for CH located in the third ventricle, which tends to grow rapidly resulting in a mass effect [5].

Case series

In order to determine adequate therapeutic approaches for cavernous malformations of the third ventricle, Katayama et al., reviewed a series of five such malformations managed at their institution and nine others reported in the literature. Four subgroups were identified in terms of the site of origin and could be characterized by different clinical manifestations: visual field defects and endocrine function deficits in patients with malformations in the suprachiasmatic region (six cases); symptoms caused by hydrocephalus in those with malformations in the foramen of Monro region (five cases); and deficits of short-term memory in those with malformations in the lateral wall (two cases) or of the floor of the third ventricle (one case). Unlike cavernous malformations at other locations, malformations of the third ventricle frequently demonstrated rapid growth (43%) and mass effects (71%). The surgical or autopsy findings suggested that the growth was attributable to repeated intralesional hemorrhages. Extralesional hemorrhage was also not uncommon, occurring in 29% of patients. Such tendencies require the adoption of a more aggressive approach to this particular group of cavernous malformations as compared to those in other locations. The risks of regrowth and extralesional hemorrhage appear to be reduced only by complete excision. The surgical approaches adopted should be aimed at providing the best access to the site where the malformation has arisen. The translamina terminalis approach for cavernous malformations in the suprachiasmatic region, the transventricular or transcallosal interfornicial approaches for those in the foramen of Monro region and the transvelum interpositum approach for those in the lateral wall or the floor of the third ventricle appear to be appropriate. In order to select the adequate surgical approach, precise diagnosis of the site of origin is crucial. In addition to neuroimaging techniques, the patient's initial symptoms provide valuable information [6].

Case reports

2015

A case of third ventricular cavernous malformation arising from the ventricle floor in a 24-year-old woman who presented with short-term memory loss and disorientation. Computed tomography revealed a suprasellar mass with calcification in the posterior chiasmatic region. T2-weighted magnetic resonance imaging revealed a mass with heterogeneous intensity and without hydrocephalus. The mass was slightly enhanced subsequent to gadolinium infusion. Using a basal interhemispheric translamina terminalis approach and a neuroendoscope, we confirmed that the tumor was located at the floor of the third ventricle and removed it. Histopathological examination confirmed the diagnosis of cavernous malformation. The postoperative course was uneventful, but the patient's short-term memory loss persisted. Despite its rarity, cavernous malformation should be suspected when a tumor is detected in the vicinity of the third ventricle floor. It is treatable through surgical resection [7].

2014

A 64-year-old female was admitted to our emergency room with a sudden decreased level of consciousness. Brain imaging studies demonstrated a multi-lobulated hemorrhagic mass in the third ventricle. The lesion was removed via the transcallosal-interforniceal approach and pathologically diagnosed as CH. Postoperatively, the patient had a transient neurological deficit due to hypothalamic injury and recovered to the normal status at 2 months after the operation [8].

2013

Third ventricle cavernoma associated with multiple intracerebral cavernomas [9].

Prabhuraj et al. report two cases of third ventricular cavernomas.

The first patient was a 54-year-old man, who presented with acute headache and vomiting. He was unconscious on arrival in casualty. CT scan showed third ventricular hemorrhage.

He underwent external ventricular drainage, followed by ventriculo-peritoneal (VP) shunt later. An MRI done at 10 days after ictus showed a mixed density lesion with hemorrhagic component occupying the third ventricle with broad base on the floor.

He underwent tranacallosal-interhemispheric approach and total excision of the lesion. The tumor was arising from the floor of the third ventricle. Histopathology was cavernoma. After surgery the patient developed diabetes insipidus, which was managed with desmopressin.

The second patient was a 6-year-old girl who presented with headache and vomiting for 2 months. CT scan showed a calcified in third ventricle with hydrocephalus. MRI showed a heterogeneous lesion occupying the entire third ventricle.

There was no evidence of recent hemorrhage. She underwent VP shunt followed by subfrontal approach, and only partial excision of the lesion as the lesion was densely adherent to the floor of the third ventricle. Histopathology was cavernoma. After surgery she developed transient hyponatremia, which was managed medically.

Third ventricular cavernomas can present with signs and symptoms of any third ventricular tumors, however they usually present with symptoms of hydrocephalus.[2] Presentation as intraventriuclar hemorrhage is uncommon, and only three cases have been reported.[2] Our first patient presented with hemorrhage, and second with hydrocephalus. They can arise from the suprachiasmatic region, foramen of Monroe, lateral wall or floor of third ventricle.[3] Both of our patients had cavernomas arising from floor of third ventricle. The imaging appearance is that of typical cavernomas. The close differential diagnosis in the absence of hemorrhage is third ventricular craniopharyngioma.

The natural history of intraventricular cavernoma is not known. There is a risk of hemorrhage and acute hydrocephalus if the lesion is not excised completely. However, there is risk of hypothalamic damage in case of complete resection of lesion arising from floor of third ventricle, as it happened in our first case. It may be worthwhile doing only a VP shunt for hydrocephalus if the lesion is arising from the floor of the third ventricle [10].

2006

A eight-year old boy with a rare third ventricular cavernous angioma that hemorrhaged presenting with symptoms of acute hydrocephalus. Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) showed a heterogenous ill-defined, solid and cystic intraventricular mass in the third ventricle which was mildly enhanced with contrast and there was associated hydrocephalus. The mass was removed with success and follow up after two years revealed no neurological abnormalities [11)].

2005

A patient who had intermittent headaches as the initial symptom [12)].

2003

A 62-year-old woman had had an unsteady gait and weakness of both legs for six months. Magnetic resonance imaging (MRI) revealed multiple intracranial tumours in the third ventricle, hypothalamus, and left thalamus. The third ventricle tumour was found to be a cavernoma by intra-operative endoscopic examination and then was excised via a transcortical, transventricular approach. Pathology revealed a cavernoma. The other two tumours were assumed to be cavernomas because of their MRI features. Three days after surgery, the patient developed right hemiparesis and disturbance of consciousness. Computed tomography revealed a left thalamic haemorrhage. After conservative treatment, her conscious level gradually recovered and she could walk with support seven months after surgery [13)].

2002

A case of third ventricle cavernous angioma associated with venous angioma is reported. By a transventricular approach, the cavernoma was totally removed with successful preservation of the venous malformation. After review of the literature, the clinical characteristics and the surgical approach to third ventricle cavernous angioma are discussed; the importance of preservation of associated venous angioma is also underlined [14)].

1999

A 42-year-old man had a cavernoma in the third ventricle, which was responsible for his short-term memory loss. This cavernoma had been revealed by computed tomography that was performed after intracerebral hemorrhage related to another cavernoma in the right parietal lobe occurred.

Surgical removal via a right transcortical transventricular approach in the third case was partial. [15)].

1995

Four cases of cavernous malformations of the third ventricle. Patients presented with symptoms of hydrocephalus, memory loss, and signs of hypothalamic dysfunction. Magnetic resonance imaging and computed tomography provided characteristic images of the three lesions preoperatively. All patients underwent direct surgical excision of the malformations. Two patients had a transcallosal, transventricular approach, the third underwent a transcortical, transventricular approach, and the fourth had an infratentorial supracerebellar approach. Postoperatively, the patient with hypothalamic dysfunction has not improved and underwent ventriculoperitoneal shunting. The second patient did well initially; however, 8 days postoperatively, she became comatose and later died. The presumed cause of her deterioration was a hypothalamic venous infarction. The third and fourth patients have returned to their normal neurological baseline. The presenting signs and symptoms, magnetic resonance imaging and computed tomography findings, and treatment options for this rare lesion are discussed and illustrated [16].

1990

Cavernous angioma arising in the third ventricle is an extremely rare disease. Ogawa et al., reviewed five cases previously reported, as well as they own two cases, and discuss the clinical characteristics of and surgical approach to cavernous angioma at this site. The bifrontal craniotomy and interhemispheric translamina terminalis approach minimize the damage to the brain and allow for an approach to the third ventricle in a wide operative field with minimal compression of the brain itself. They have found this approach to be suitable for surgery on angiomas of the anterior half of the third ventricle [17].

1984

A case of cavernous angioma at the lateral wall of the third ventricle which was totally removed with interhemispheric trans-lamina terminalis approach is reported. A 40-year-old male had a slowly progressive onset of partial diabetes insipidus and headache with no neurological deficit . CT scan revealed a high density area at anterior third ventricle. The tumor was diagnosed ectopic pinealoma because of CT findings and clinical symptoms. Irradiation and chemotherapy (RAFP therapy) was performed to this lesion. After two months, his clinical symptoms disappeared. CT scan showed decrease of the density of the region at this point. He was discharged with no symptom. After a half year, he suddenly complained of right homonymous hemianopsia with headache. CT scan showed that the high density area became larger to left posterior than that of half year before. Left carotid angiogram showed no mass lesion and no abnormal vessel. Operation was performed with interhemispheric trans-lamina terminalis approach using bifrontal craniotomy. Operative findings revealed that the tumor situated at the lateral wall of the third ventricle, had rough surface with reddish colour, and old and fresh blood clots inside the tumor. The tumor was carefully dissected without brain damage and was totally removed. The histological findings was compatible with cavernous angioma. Post-operative CT scan showed no high density area. He was discharged with no neurological deficit without right homonymous hemianopsia. Cavernous angioma of anterior third ventricle is very rare [18].

[1], [3], [5], [8]
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