# Foramen of Monro cavernous malformation

Supratentorial cavernomas are most frequently found in the cerebral cortex, and although ventricular cavernomas do occur, they are rarely located in the foramen of Monro<sup>1)</sup>.

Till 2008 only 11 cases of intraventricular cavernous malformation to occur at the foramen of Monro have been reported in the literature <sup>2)</sup>.

The commonest cause for symptoms is hydrocephalus either due to mass effect, especially in the foramen of Monro lesions, or due to obstruction to CSF due to hemorrhage in the intraventricular lesions. In our case, headache and vomiting resulted from increased intracranial pressure due to obstructive hydrocephalus induced by cavernoma located at the foramen of Monro.

## Treatment

Foramen of Monro cavernomas are extremely dangerous, requiring aggressive management when identified  $^{3)}$ .

## Case reports

### 2015

A 64-year-old woman who was evaluated after being found unresponsive. Imaging revealed a foramen of Monro cavernoma resulting in hydrocephalus <sup>4)</sup>.

#### 2013

Bhatia et al., present a case of cavernous hemangioma located at foramen of Monro, with its radiopathological confirmation <sup>5)</sup>.

#### 2012

A case of intraventricular cavernous hemangioma at foramen of Monro which was resected through microsurgery <sup>6)</sup>.

#### 2009

A case of intraventricular cavernoma in the region of the foramen of Monro with the aim of illustrating the difficulties involved in the diagnosis of this rare lesion  $^{7)}$ .

#### 2008

A 56 years old patient was admitted with progressive and intractable headache of 10 days of evolution. He was known to suffer familial multiple cavernomatosis. Magnetic resonance imaging (MRI), revealed obstructive hydrocephalus due to a cavernoma located in the area of the left foramen of Monro. Under neuronavigation guidance, complete endoscopic resection of the cavernoma was performed and normal ventricular size achieved. The patient experienced transient recent memory loss that resolved within a month after surgery. In the literature attempted endoscopic resection is reported to be abandoned due to bleeding and ineffectiveness of piecemeal endoscopic resection. In this case, the multiplicity of the lesions made it advisable to resect the lesion endoscopic resection was uneventful with easy control of bleeding with irrigation, suction, and bipolar coagulation despite dense vascular appearance of the lesion. During the procedure, precise visualization of the vascular structures around the foramen of Monro allowed complete resection with satisfactory control of the instruments. To the best of the authors' knowledge, this is the first published cavernoma of foramen of Monro successfully resected using an endoscopic approach <sup>8)</sup>.

#### 2006

Longatti et al., report on a patient who presented with an intraventricular mass located at the level of the foramen of Monro. The clinical presentation and neuroimaging appearance of the mass led to an initial diagnosis of colloid cyst. A neuroendoscopic approach offered a direct view of the ventricular lesion, which was found to be a cavernous angioma partially occluding the foramen of Monro. The lesion was then removed using microsurgery. In this report the authors highlight possible pitfalls in the diagnosis of some lesions of the third ventricle, and the possible advantages of using a combined endoscopic and microsurgical technique when approaching such lesions <sup>9)</sup>.

A 47-year-old woman presented with unilateral ventricular enlargement detected by magnetic resonance imaging during a medical checkup. Neuroendoscopic exploration identified a multilocular lesion in which dark red fluid formed a niveau near the right side of the foramen of Monro. The diagnosis was intraventricular cavernous angioma. Restricted flow of cerebrospinal fluid at the foramen of Monro was observed. Xanthochromia, which seemed to be due to previous bleeding, was observed at the fornix. When the neuroendoscope touched the angioma, the wall collapsed and bled. Endoscopic removal of the angioma was abandoned, and craniotomy and resection of the angioma were performed. No new neurological anomalies were observed after surgery. Preoperative diagnosis of intraventricular cavernous angioma is difficult based on neuroimaging. Neuroendoscopy is effective for diagnosis and the decision-making process regarding treatment <sup>10</sup>.

A 51-year-old woman was admitted with obstructive hydrocephalus-related symptoms. The computed tomography (CT) and magnetic resonance imaging (MRI) revealed a partly calcified lesion with slight contrast enhancement located in the area of the right foramen of Monro. The lesion was completely removed by surgical resection with a transfrontal transventricular approach. The resected mass was histologically diagnosed as cavernous hemangioma. The patient's symptoms resolved immediately

after operation. Cavernous hemangioma at the foramen of Monro in the present case had common MRI features as previously reported. Although MRI can provide initial diagnosis for such unusually localized tumor, it should be confirmed histopathologically <sup>11</sup>.

#### 2002

Intraventricular cavernoma in the region of the foramen of monro<sup>12)</sup>.

A case of a cavernous haemangioma that appeared as an intraventricular mass at the foramen of Monro. Despite the unusual location the diagnosis was established by MRI because of the typical appearance. The differential diagnosis included primary and secondary neoplasms at the foramen of Monro<sup>13</sup>.

#### 1) 3) 4)

5)

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