Temporal lobe cavernous malformation

Cavernomas of the temporal lobe occur in 10-20% of patients with intracranial cavernous malformations.

Classification

Cavernomas were allocated into three groups based on the temporal lobe site: medial, anterolateral, and posterolateral.

Clinical features

They frequently cause epileptic seizures, some of which tend to become refractory to medical therapy. Surgical removal of safely achievable symptomatic lesions has been frequently consistent with good long-term outcome.

Treatment

Cavernomas presenting with seizures refractory to medical treatment may require surgical excision for seizure control. If superficial, they can be surgically accessible but can pose additional risks when located in or near eloquent cortex. In this 3D operative video we illustrate the technique for the resection of a left temporal cavernoma located near eloquent cortex for speech with awake surgery and cortical mapping to avoid a speech deficit postoperatively.Informed consent was obtained for this procedure. Navigation is used to localize the cavernoma following which a large craniotomy is performed exposing the temporal lobe, frontal lobe, and sylvian vein. Bipolar stimulation is used to localize speech with the patient awake until speech arrest occurs. The cavernoma is situated immediately inferior to the sulcus over which speech arrest occurs. The sulcus immediately above the cavernoma is opened and adjacent arteries are carefully preserved. The glial plane around the cavernoma is used to dissect the cavernoma from the surrounding cortex. Care is taken to remove the haemosiderin as this can act as a precipitant for ongoing seizures.In this case the patient had no neurological deficits following surgery and was seizure free [1)].

Case series

Of 360 consecutive patients with cerebral cavernomas, 53 (15%) had a single cavernoma in the temporal lobe. Forty-nine patients were treated surgically and were included in the study. All data were analyzed retrospectively. The cavernomas were allocated into three groups based on the temporal lobe site: medial, anterolateral, and posterolateral. To collect follow-up data, all available patients were interviewed by phone. Seizure outcome was assessed using the Engel Epilepsy Surgery Outcome Scale and general outcome using the Glasgow Outcome Scale (GOS).

Patients' median age at presentation was 37 (range, 7-64) years, with a female/male ratio of 2.5:1.

Epileptic seizures occurred in 40 patients (82%). Median duration of seizures preoperatively was 3 (range, 0.1-23) years. In addition, four patients (10%) had memory disorder. Three patients without history of seizures (6%) complained of headache and two (4%) had memory problems. Three patients (6%) had an incidental cavernoma. Hemorrhage occurred in nine patients (18%) preoperatively. Median postoperative follow-up time was 6 (range, 0.2-26) years. Favorable seizure outcome (Engel class I and II) was registered in 35 patients (90%). Ten patients (25%) who had only a single seizure before surgery were seizure free during postoperative follow-up. Good general outcome (GOS, 4.5) was detected in 46 patients (96%). Two patients (4%) developed a new mild memory deficit after surgery, and in two patients existing memory deficits worsened.

Microsurgical removal of temporal lobe cavernomas is a safe and effective method to improve seizure outcome in patients with medically intractable epilepsy and to prevent deterioration caused by hemorrhage [2)].

1)
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2)
Kivelev J, Niemelä M, Blomstedt G, Roivainen R, Lehecka M, Hernesniemi J. Microsurgical treatment of temporal lobe cavernomas. Acta Neurochir (Wien). 2011 Feb;153(2):261-70. doi: 10.1007/s00701-010-0812-5. Review. PubMed PMID: 20872256.