Multiple intracranial aneurysms

- Safety and efficacy of the Woven EndoBridge (WEB) device in ruptured intracranial aneurysms: a systematic review and updated meta-analysis
- Metastatic choriocarcinoma after a rupture of neoplastic cerebral aneurysm with dural and brain parenchymal lesions: illustrative case
- 7T MR Angiography for Distinguishing Small Intracranial Aneurysms from Variant Anatomy: Protocols and Impact
- DWI-based deep learning radiomics nomogram for predicting the impaired quality of life in patients with unruptured intracranial aneurysm developing new iatrogenic cerebral infarcts following stent placement: a multicenter cohort study
- Anterior Cerebral Artery and Middle Cerebral Artery Stroke in the Setting of Multiple Fusiform Aneurysms and Vertebrobasilar Dolichoectasia
- Potential correlation between dental caries and intracranial aneurysm: an innovative prognostic marker for intracranial aneurysm development
- Decreased wall shear stress on 4D-flow-MRI is associated with wall instability of unruptured intracranial aneurysm
- Stereotactic radiosurgery versus observation for intracranial low-grade dural arteriovenous fistulas

Multiple intracranial aneurysms (MIAs) are two or more intracranial aneurysms that exist in the cranium.

Epidemiology

Among the patients with intracranial aneurysms, the incidence of multiple aneurysms was 33.5%. Multiple aneurysms were much more common in women, with a female to male ratio of 5:1 for all patients and 11:1 for patients with three or more aneurysms.

It occurs especially in postmenopausal women.

This phenomenon may be related to the loss of estrogen protection. MIA patients are associated with IgE syndrome [1].

MIA accounts for about a third of the patients with subarachnoid hemorrhage [2].

The Beijing Tiantan Hospital reported that MIA cases account for 8.1% (123/1511) of all treated cases of aneurysms in the same period [3].

Pathogenesis

To date, the genesis and pathogenesis of MIA are not clearly elucidated.

Patients with atrial myxoma and cerebral vascular malformations could also be suffering from MIA [4] [5].

MIA coexists with various vascular malformations [6].

Hypertension and bad habits, such as drinking and, smoking, can induce multiple aneurysms. MIA detection has gradually become widespread because of the popularity of cerebral angiography.

Locations

Common locations for multiple aneurysms were the posterior communicating artery (22%), middle cerebral artery (21.5%), anterior communicating artery (12%), and ophthalmic artery (11%). However, locations with the highest probability of rupture were the anterior communicating artery (62%), posterior inferior cerebellar artery (50%), and basilar artery summit (50%). The middle cerebral artery was the least likely site for rupture. In contrast to previous studies, in the series of Neels et al. irregularity of contour was more important than size in identifying the site of rupture. Using a simple algorithm, it was possible to identify the site of aneurysm rupture in 97.5% of cases [7].

MR-VWI may be useful for identifying the rupture site in patients with spontaneous SAH and multiple cerebral aneurysms [8].

Diagnosis of the offending aneurysm

Determination of the offending aneurysm and initially undergoing occlusion are necessary. Different indices have been established by imaging observation to distinguish ruptured aneurysms from unruptured aneurysms. Baumann [9] observed that larger aneurysms and anterior communicating aneurysms often rupture. The size ratio (SR) value of the ruptured aneurysms is significantly larger than unruptured aneurysms. This result is based on the ratio of aneurysms and aneurysmal arteries by Rahman [10].

The increased bottleneck factor and the height–width ratio are considered inherent characteristics of the ruptured aneurysms in the control of ruptured and unruptured aneurysms by Hoh [11].

Aneurysm was also identified according to its [12] morphology and near vascular response

Treatment

Multiple intracranial aneurysm treatment.

Case reports

A case of multiple intracranial aneurysms concurrent with abdominal aortic occlusion (AAO) in a 29-year-old woman was admitted because of abrupt onset of severe headache, vomiting, and dizziness for 26 hours. She complained sudden onset of severe headache, vomiting, and dizziness.

Head computed tomography (CT) angiogram revealed 2 aneurysms of the anterior communicating artery (ACA) and a third aneurysm at the right middle cerebral artery (MCA). A diagnosis of multiple intracranial aneurysms concurrent with abdominal aortic occlusion (AAO) was made.

We clipped the 2 aneurysms at the ACA via a right pterional approach. The transfemoral approach

failed because of an unsuspected AAO. A right carotid artery approach was then employed to embolize the aneurysm at the right MCA with three coils.

Magnetic resonance angiography (MRA) at 7 days after the embolization demonstrated complete disappearance of all the intracranial aneurysms, but AAO was still present. The patient remained asymptomatic during 5-years of follow-up.

The case highlights the importance of a thorough physical examination, and in rare cases, AAO or other abdominal aortic abnormalities should be considered in young nonsmoking females. Successful treatment can be achieved by aneurysm clipping and embolization [13)].

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