

Intracranial Mirror Aneurysms of the Sylvian Artery: About A Case at the Neurosurgery Clinic of the Fann University Hospital in Dakar

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ABSTRACT

Introduction: Bilateral aneurysms of the sylvian artery are rare with an incidence of approximately 1% of all intracranial aneurysms and difficult surgical management. We report a case of an intracranial mirror aneurysm of the sylvian artery, revealed by subarachnoid hemorrhage.

Observations: A 47-year-old man, with no particular pathological history, seen in the emergency room for an intense ictal headache from the beginning with a one-sided left type of stabbing at first unilateral left then holocranial with brief initial loss of consciousness. The neurological exam was normal. Cerebral computed tomography (CT) coupled with cerebral CT angiography revealed a subarachnoid hemorrhage in the left insular lobe and a mirror aneurysm at the junctions of the M1 and M2 portions of the sylvian arteries, treated by clipping the aneurysm ruptured by the left pterional craniotomy with simple postoperative consequences.

Conclusion: intracranial mirror aneurysms of the sylvian artery are rare. Their surgical management is difficult and can be performed unilaterally or bilaterally in one or two operating times.

Keywords

Aneurysm, Mirror, Sylvian artery, Clipping.

Introduction

The intracranial mirror aneurysms are aneurysms that develop bilaterally and symmetrically on the vessels of the same name [1]. They are a subset of multiple aneurysms that account for 2-12% of all intracranial aneurysms [1]. Bilateral aneurysms of the sylvian artery are rare, their incidence is about 1% of all intracranial aneurysms [2,3].

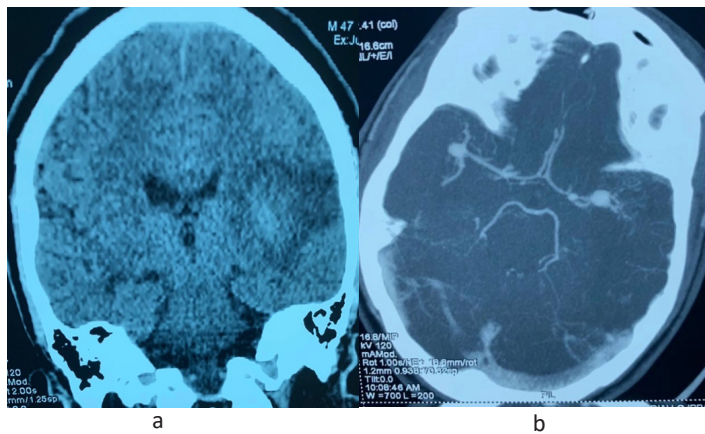
Surgical management of bilateral intracranial aneurysms is difficult, especially for bilateral sylvian artery aneurysms [4]. It can be performed unilaterally or bilaterally in one or two operations depending on the technical facilities and the training of the neurosurgical team [4]. Occlusions are generally performed in stages. The first craniotomy is performed on the side of the aneurysm rupture; the second is scheduled for a later date [5].

We report a case of an intracranial mirror aneurysm of the sylvian artery, revealed by a sub arachnoid hemorrhage (SAH) of the left insula by aneurysm rupture on the left side and treated surgically by clipping.

Observation

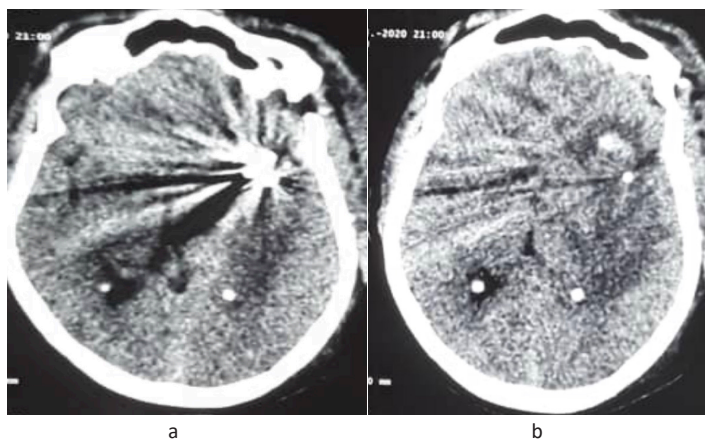
A 47-year-old man with no particular pathological history, who was received in the neurosurgical emergency room from the interior of the country for the appearance, one week before his reception, for an intense ictal headache from the beginning with a one-sided left type of stabbing at first unilateral left then holocranial, with brief initial loss of consciousness. Neurological examination was normal. The cerebral CT scan (CT scan) coupled with cerebral CT angiography revealed an SAH in the left insular lobe classified as Fisher grade III, WFNS (World Federation of Neurosurgical Society) grade I and a mirror aneurysm at the junctions of the M1 and M2 portions of the sylvian arteries (see figure 1). In the

absence of endovascular treatment in our technical platform, the indication for primary clipping of the ruptured aneurysm and delayed clipping of the contralateral aneurysm was placed. The preoperative check-up (blood craze, electrocardiogram, cardiac ultrasound, creatinemia, blood ionogram) was within normal limits. The approach was performed at the 17th day of bleeding by the left pterional route, the occlusion was performed by 3 clips placed in intersection (see figure 2) on the neck of the aneurysm followed by the check of the occlusion and the permeability of the sylvian artery by the Doppler. The postoperative sequelae were simple and the patient was discharged at the 6th day postoperatively with a normal neurological examination. When the contralateral aneurysm was refused at the surgical edge, it was decided to have an annual clinical-radiological surveillance.



Figures 1: Cerebral CT scan without contrast agent injection and cerebral CT angiogram.

- a) Cerebral CT scan coronal section:** SAH of the left insular lobe in resorption phase.
- b) Cerebral CT angiogram axial section:** bilateral mirror aneurysms of the sylvian artery at the endings of the M1 portions.



Figures 2: Postoperative cerebral CT scan without contrast agent injection.

- a) axial section:** radiation artefacts of the clips.
- b) axial section:** postoperative frontal hematoma with fronto-temporal edema.

Discussion

The incidence of intracranial aneurysms is about 2 to 2.3% in the general population. Multiple aneurysms account for 15-30% of all intracranial aneurysms. Mirror aneurysms are a subset of multiple aneurysms that account for 2-12% of all intracranial aneurysms [6,7]. The incidence of bilateral sylvian artery aneurysms is approximately 1% of all intracranial aneurysms [3].

Risk factors for multiple aneurysms include female gender, smoking history, hypertension, post-menopausal hormone therapy, substitution therapy and family history of SAH [8-10].

The surgical management of multiple intracranial aneurysms can be difficult, especially if they are located bilaterally. For bilateral sylvian aneurysms, the different surgical treatment options are as follows: unilateral approach (supraorbital keyhole approach, sub frontal approach, unilateral pterional craniotomy) and one-step bilateral pterional craniotomy or two-step bilateral craniotomy [11,12].

Acute treatment of ruptured aneurysms and delayed treatment of unruptured contralateral aneurysms is proposed as a strategy for the treatment of mirror aneurysms. Attempts at single-stage surgical clipping of multiple aneurysms have generally resulted in poor outcomes due to manipulation of the cerebral arteries and the need for prolonged retraction of the brain [1]. However, aneurysms at the bifurcation of the internal carotid artery or paraclinoid segment, anterior choroidal, posterior communicant and some bilateral sylvian bifurcation aneurysms can be clipped by the single unilateral approach, although it is best left to those with extensive experience in aneurysm surgery [4,11]. The unique unilateral approach has the advantages of a shorter hospital stay, reduced bed costs, investigations and surgical expenses [2].

In mirrored aneurysms, double clipping is even more limited due to the distance between the two lesions. Compared to endovascular embolization, the bilateral surgical approach (requiring a bilateral craniotomy) is more invasive, may take longer and may involve much more blood loss. If it is not technically contraindicated or unavailable, one-step embolization using coils is therefore preferred even over the unilateral one-step surgical approach [13]. In our patient, in the absence of endovascular treatment in our technical platform and according to our surgical practice for intracranial aneurysms, the unilateral pterional approach of the ruptured aneurysm was performed in the acute phase and the delayed contralateral pterional approach was offered to the patient. When the patient explicitly refused a second surgery, a clinical and radiological surveillance was decided.

Conclusion

Intracranial mirror aneurysms of the sylvian artery are rare. Their surgical management is difficult and can be performed unilaterally or bilaterally in one or two operations depending on the technical facilities and the training of the neurosurgical team. Endovascular embolisation is a treatment of choice which is not yet available in most developing countries.

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