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Case Report

A rare combination of complications of ruptured carotid artery aneurysm: A case report. ☆,☆☆

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ABSTRACT

The giant aneurysm of the subclinoid portion of the internal carotid artery is a relatively rare disease that can present serious complications. We present the case of a 40-year-old guy who was suffering from a headache and had complete ophthalmoplegia in his right eye. A brain scan shows a right temporal subdural hematoma, associated with subarachnoid hemorrhage, and total Sylvian subacute ischemic stroke. CT angiography and MRI showed a ruptured and partially thrombosed aneurysm of the subclinoid portion of the right internal carotid artery complicated by subarachnoid hemorrhage, a right subdural temporal hematoma, and total Sylvian ischemic stroke. Our purpose is to recognize the possibility of an aneurysmal rupture when evaluating an acute subdural hematoma, alone or in combination with Ischemic stroke.

Introduction

The rupture of an aneurysm is a serious pathology whose complications constitute the major element of the vital and functional prognosis, and integrate the therapeutic management in a multidisciplinary strategy.

Our objective is to present the case of a ruptured aneurysm of the intracranial internal carotid artery complicated simultaneously by ophthalmoplegia, Sylvian ischemic stroke, and subdural hematoma.

Case report

A 40-year-old male patient with no previous medical history presented to the emergency room with a headache and complete ophthalmoplegia of the right eye.

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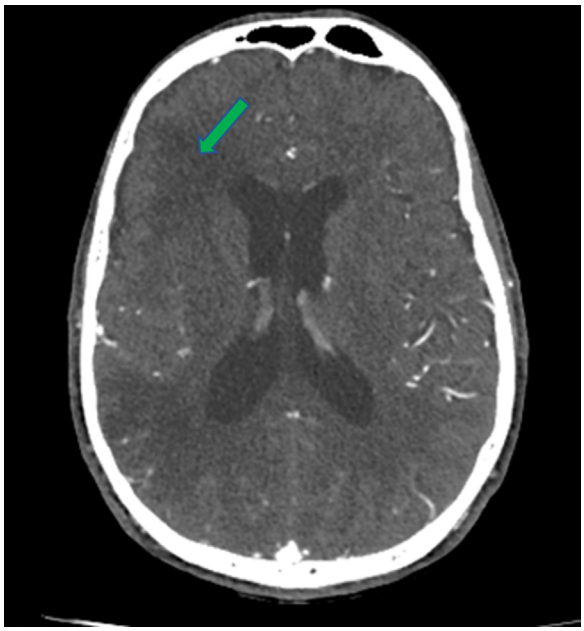

Fig. 1 – Axial section of a brain CT scan in the parenchymal window, after injection of contrast medium, showing hypodense cortico-subcortical areas in the right frontal and temporo-occipital region, about a right total Sylvian ischemic stroke (Green arrow) (Color version of figure is available online)

On a brain scan, we found a right temporal subdural hematoma, associated with subarachnoid hemorrhage, as well as a total Sylvian subacute ischemic stroke (Fig. 1).

On CT angiography, we found a ruptured and partially thrombosed aneurysm of the subclinoid portion of the right internal carotid artery (Fig. 2).

On MRI we found a ruptured aneurysm of the subclinoid portion of the right internal carotid artery, thrombosed (Fig. 3), complicated by subarachnoid hemorrhage, a right subdural temporal hematoma, and total Sylvian ischemic stroke (Fig. 4).

The patient was treated surgically with a clip, with the evacuation of his hematoma. He progressed well under treatment.

Discussion

An aneurysm is the most common intracerebral vascular malformation, occurring in 1%-5% of the population [1].

The giant intracranial carotid aneurysm is a relatively rare condition (5% of all intracranial aneurysms [2]) and can present with formidable complications [3].

It measures more than 25 mm in diameter. The clinical manifestations of these giant aneurysms depend on their anatomical location. Like all other aneurysms, they are sub-

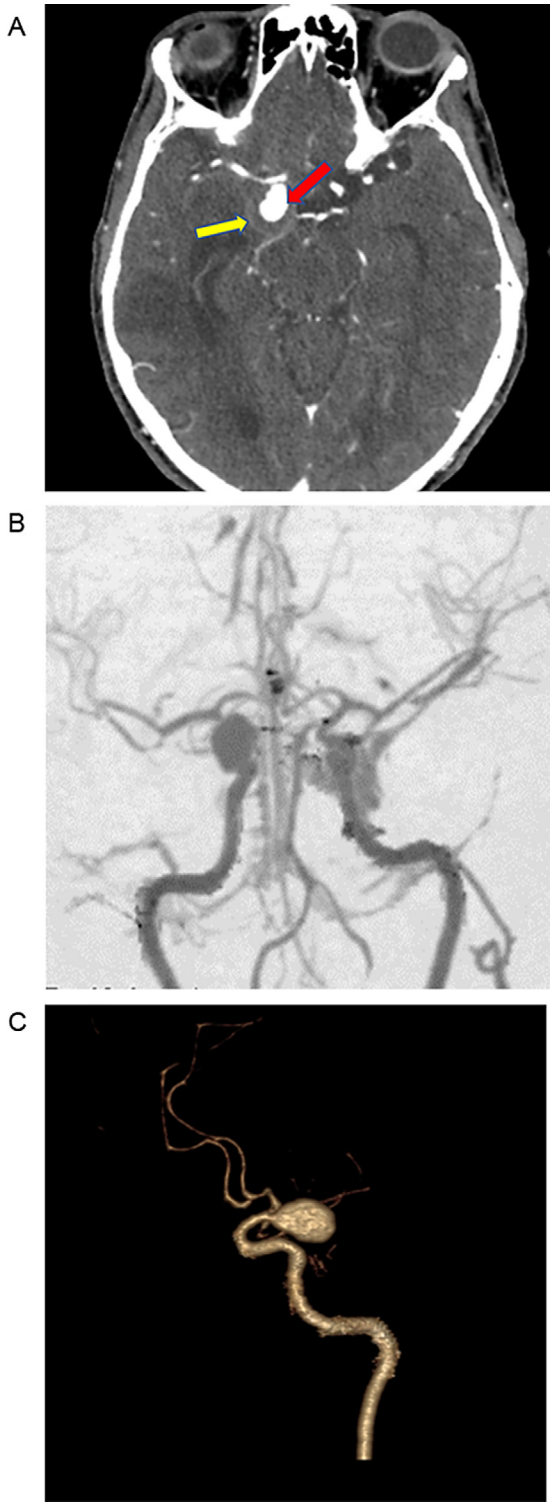

Fig. 2 – Axial section of cerebral CT scan in the parenchymal window after injection of contrast medium (A), and in multiplanar reconstructions (B and C), showing a saccular dilatation of the supra-clinoid portion of the right internal carotid artery (red arrow), with a hypodense peripheral collar (yellow arrow), related to a ruptured and partially thrombosed aneurysm of the internal carotid artery (Color version of figure is available online)

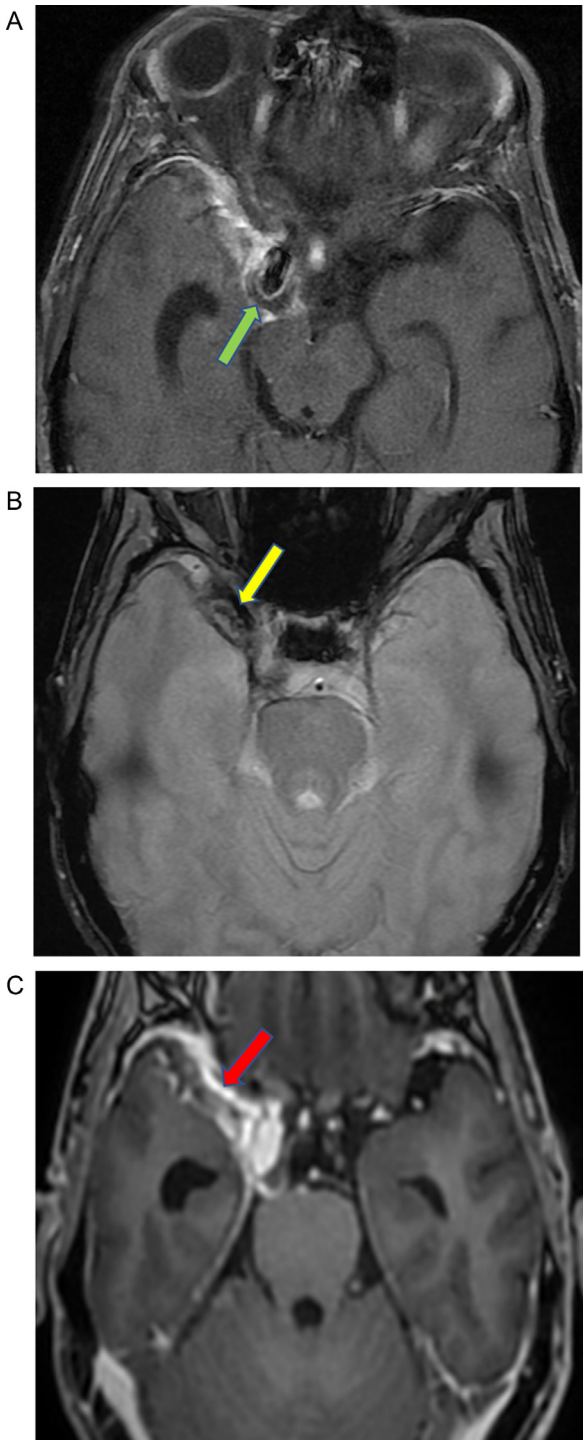

Fig. 3 – Brain MRI in axial water T1 IDEAL, EG and 3D T1 sequences after injection of Gadolinium (A, B, and C): oval formation above the supra-clinoid portion of the right internal carotid artery and opposite the posterior communicating artery, well limited with discrete lobulated contours, in signal void surrounded by a halo in hypo signal water T1 IDEAL (Green arrow), with a right temporal subdural hematoma lamina (Yellow arrow) encompassing the homolateral Sylvian artery (Red arrow) (Color version of figure is available online)

ject to volume evolution with a risk of hemorrhagic rupture (40% of cases [4]) or risk of pseudo-tumor compression of the cranial nerves or the surrounding cerebral parenchyma (50% of cases).

The majority of intracranial arterial aneurysms in adults are discovered in the event of a hemorrhagic rupture. This hemorrhage may be strictly localized to the arachnoid cisterns (subarachnoid hemorrhage representing 5 to 10 cases per 100,000 inhabitants per year [5]), or may also involve an intracerebral hemorrhagic effusion (cerebro-meningeal hemorrhage) [2,5].

Acute subdural hematoma is a rare manifestation of aneurysm rupture (0.5%-10% of cases). The combination of acute subdural hematoma with subarachnoid hemorrhage in the context of aneurysmal rupture is even rarer and has a poor prognosis [6].

Blood in the arachnoid cisterns in contact with the intracranial vessels plays a key role in the occurrence of an early neurological complication such as acute hydrocephalus, or a delayed one such as cerebral ischemia [2].

The presence of an intra-aneurysmal thrombus is the cause of platelet emboli. Embolic migration also explains the cerebral ischemic complications which sometimes reveal these giant intracranial aneurysms (5% of cases) [2,7].

This cerebral ischemia affects with a clear predilection the cerebral cortex in the territory of the middle and anterior cerebral arteries [5].

The clinical pseudotumor manifestations depend on the location of the aneurysm on the arterial tree. Giant carotid-ophthalmic or anterior communicating artery aneurysms are responsible for Opto-chiasmatic compression and are mainly revealed by oculomotor paralysis [3,8].

CT scans easily detect blood in the basal arachnoid cisterns or the brain parenchyma. CT angiography is currently used as the first line of investigation for intracranial aneurysms [4]. Confirmation of the aneurysm is obtained by cerebral angiography [2].

It is often difficult to diagnose an intracranial aneurysm in the distal internal carotid artery by conventional magnetic resonance imaging [9].

The angiographic volume of the aneurysm is always smaller than that noted on the CT or MR image due to intra-aneurysmal thrombus [2].

The general principle of treatment of an intracranial aneurysm is to ensure its exclusion from the arterial circulation while respecting the patency of the supporting vessel and its branches, by the surgical placement of a metal clip on the neck of the aneurysm, or by endovascular occlusion with coils [1,2].

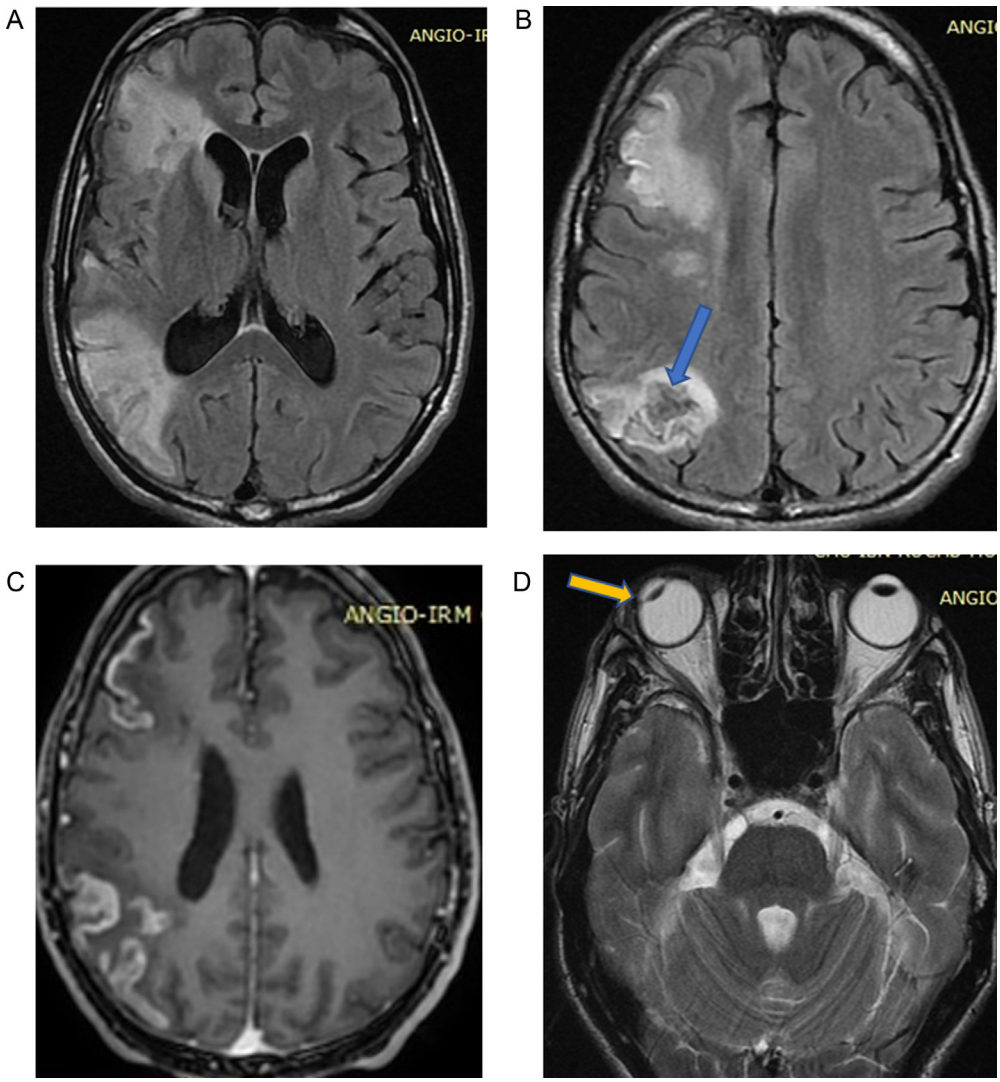

Fig. 4 – Brain MRI in Flair, T2*, 3D T1 after injection of Gadolinium and T2 axial sequences (A, B, C, and D): Right frontal and temporo-occipital folds, in Flair hyper signal, with areas of signal void in T2* (blue arrow), associated with a contrast of the right hemispheric cortical ribbon after injection of Gadolinium. There is also exstrophy of the right eye (orange arrow) (Color version of figure is available online)

Conclusion

Due to the ongoing risk of rebleeding, it is important for physicians to recognize the possibility of an aneurysmal rupture when assessing an acute subdural hematoma, either alone or associated with an ischemic stroke, to prompt timely treatment.

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