Case Report

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Incidentaloma: cephaleas revealing partial thrombosis of internal carotid artery aneurysm during a 30-week pregnancy of amenorrhea: a case report

Abstract

Abnormal dilatation of the wall of an intracranial artery under the influence of various factors results in what we call a cerebral aneurysm. This creates a pocket where blood accumulates, as it communicates with the vessel via a collar.[1]

When an aneurysm has not yet ruptured, it is usually detected incidentally, but sudden onset of headache should prompt a search for an intracranial vascular cause.[2]

In this work, we report a case of a patient who presented with sudden onset of headache which revealed partial thrombosis of an aneurysm of the internal carotid artery during a pregnancy presumed to be at 30 days' gestation + 5 days in severe preeclampsia.

Keywords: headache, internal carotid artery, aneurysm, cerebral MRI, thrombosis, weeks of amenorrhoea (SA)

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Introduction

Intracranial aneurysms are dilations of the arterial wall, either in the form of a sac implanted via a collar (saccular aneurysm) or in the form of an overall enlargement of the wall (fusiform aneurysm). Cerebral aneurysms may be due to congenital weakness of the vascular tissue, or acquired through various diseases, lifestyle habits or head trauma.

This work reports a case of sudden onset of headache in a pregnant patient aged 30 days + 5 days with severe pre-eclampsia, which led to the fortuitous discovery of partial thrombosis of an aneurysm of the internal carotid artery. In this case report and a brief review of the literature, we describe the epidemiological, pathophysiological, clinical and radiological characteristics of these patients and their therapeutic management, as well as the usefulness of urgent investigation of certain sudden onset headaches.

Case report

A 35-year-old married woman with no previous pathological history presented to the maternity hospital emergency department with severe metrorrhagia during the third trimester of a poorly monitored pregnancy, in the setting of severe pre-eclampsia. Clinical examination revealed a patient not in labour with a tense uterus associated with low-grade metrorrhagia. Obstetric ultrasound showed a progressive singleton pregnancy with fetal biometrics at 30 weeks' amenorrhoea (SA) and five days. The biological work-up was without anomaly. An emergency caesarean section was indicated to save the mother and foetus due to a suspected retro placental haematoma (RPH). Extraction resulted in the birth of a male neonate with a birth weight of 1950g and an Apgar of 8/10. Investigation revealed a PRH detaching the entire placenta. The newborn was admitted to the preterm unit because of respiratory distress (5/10 according to the Silverman score) and the patient was admitted to the intensive care unit for monitoring. She subsequently presented with sudden onset headaches, which prompted a cerebral MRI (Image 1) showing a fully thrombosed saccular aneurysm of the left intra cavernous internal carotid artery. This was followed by a cerebral MRI (Image 2) showing a partially thrombosed aneurysm after injection of gadolinium. The patient was then referred to the neurosurgery department for surgical management.

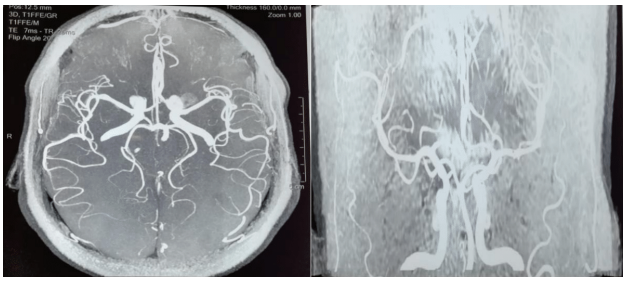

Image 1 Cerebral MRI showing a saccular aneurysm of the left internal carotid artery, which is totally thrombosed.

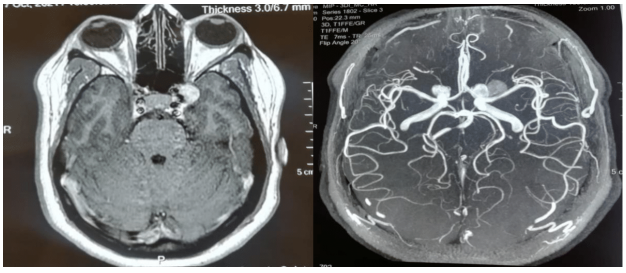

Image 2 Cerebral MRI angiogram showing a saccular aneurysm of the partially thrombosed left internal carotid artery after injection of gadolinium.

Discussion

An arterial aneurysm is defined as a rupture of the parallelism of the edges of the artery, and corresponds to a focal abnormal (>1 mm), permanent and segmental dilatation of the wall of an intracranial cerebral artery.[3,4]

The pathophysiology of spontaneous intracranial aneurysms (SIAs) remains unclear. However, the hypothesis of excessive intrinsic fragility modifying the functional properties of the vascular wall has been suggested,[5] and some form later in life in relation to various diseases, lifestyle habits or cranial trauma. Cerebral aneurysms are then said to be acquired.

According to various studies, 2 to 4% of the population have a cerebral aneurysm. It is most frequently discovered between the ages of 35 and 60, and slightly more frequently in women (3F:2H). It should also be noted that the incidence of aneurysm rupture is very low: around 1/10,000 inhabitants/year.

In general, intra-cavernosal aneurysms are a rare condition that can cause major complications, but are often not complicated by sub-arachnoid haemorrhage. In a small number of cases, the aneurysmal sac erodes the wall of the sphenoid, leading to cataclysmic epistaxis in the event of rupture.[6]

Aneurysms of the extracranial internal carotid artery are also rare. The aetiologies are dominated by atherosclerosis and fibromuscular dysplasia.[7,8]

The typical clinical picture is one of ophthalmology with intense headache. The diagnosis is suspected clinically, and cerebral angiography confirms the diagnosis and guides therapeutic management.[9]

Angioscanner is the preferred technique in cases of haemorrhagic complications. Magnetic resonance angiography is the gold standard for familial forms, particularly elastic tissue diseases. These non-invasive methods have now replaced conventional angiography, which is reserved for the pre-treatment phase.[10]

The sensitivity and specificity of cerebral angioscan for the diagnosis of intracranial aneurysms are 92.8 to 100% and 83 to 100% respectively.[11,12]

MRI offers interesting results,[12] thanks to the importance of the circulating blood signal, and provides very important additional information, both topographical and functional and dynamic.

Some studies have even shown similar results to angioscanner using high-field MRI (3.0 Tesla).[13] This examination is still preferred in population groups at high risk of developing aneurysms, such as patients with a family history of aneurysmal rupture, connective tissue pathologies such as Ehlers-Danlos type IV disease, fibromuscular dysplasia, neurofibromatosis type 1, 1 antitrypsin deficiency, etc.

Among the complications described, the presence of an intra-aneurysmal thrombus causes platelet emboli. This embolic migration explains the cerebral ischaemic complications which sometimes reveal these giant intracranial aneurysms in 3.3% of cases.[14]

The choice between neurosurgical or endovascular treatment must take into account a number of anatomical, clinical and radiological criteria. Ultimately, it is during a consultation with the patient and/or his family that the details of the chosen procedure will be discussed, as well as the inherent risks.[15]

Medical treatment involves hospitalisation, stabilisation of blood pressure, systematic administration of nimodipine, fluid supplementation, diazepam at a dose of 10 cg/24h taken orally as an anti-comyarial agent, regular monitoring of fluid and electrolyte levels and haematocrit levels, and pain management.[16,17]

Anticoagulant treatment is not used prior to surgery.[16]

Patients with severe subarachnoid haemorrhage are hospitalised in intensive care and generally intubated and ventilated.[16,18]

In surgical treatment, clipping is considered to be a standard procedure for treating ruptured aneurysms or preventing the rupture of complex unruptured aneurysms.[19] The most commonly used approach is the Yasargil approach, also known as the pterional or lateral approach.[19]

For the past 20 years, endovascular techniques have been used to treat patients with aneurysms that cannot be treated surgically.[20]

Systemic anticoagulation with unfractionated heparin is recommended to prevent ICA thrombosis or embolism during carotid angioplasty with stenting.[21]

Several cases have been reported of internal carotid artery aneurysms revealed by various manifestations, but no case of internal carotid artery aneurysm complicated by thrombosis has been reported in the literature during pregnancy:

The first case was that of a carotido-ophthalmic aneurysm revealed by sudden monocular blindness. The examination revealed a conscious patient with no deficits and no meningeal signs. A brain scan showed an inter-hemispheric meningeal haemorrhage. MRI angiography revealed a left carotido-ophthalmic saccular aneurysm.[22]

A second case was reported of an intracavernous internal carotid aneurysm complicating sphenoidal sinusitis following dental extraction, and presented clinically with progressive left ophthalmoplegia and left hemicrania-type headache in a febrile setting.[23]

Conclusion

The management of intracranial arterial aneurysms is multidisciplinary and based on two components: a symptomatic component and an aetiological component. The latter involves clipping the aneurysm and endovascular treatment.

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Conflicts of interest

There is no competing interests between the authors.

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