

Anterior Communicating Artery Aneurysm Uncommon Hemorrhagic Presentation: Case Report

Aneurisma de Artéria Comunicante Anterior Apresentação Hemorrágica Incomum: Relato de caso

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Abstract

Keywords

- ▶ aneurysm rupture
- ▶ anterior communicating aneurysm
- ▶ intraventricular hemorrhage
- ▶ subarachnoid hemorrhage

Resumo

Palavras-chave

- ▶ aneurisma roto
- ▶ aneurisma de artéria comunicante anterior
- ▶ hemorragia intraventricular
- ▶ hemorragia subaracnóidea

Intracranial aneurysm rupture causes subarachnoid hemorrhage in 80% of the cases, and it may be associated with intracerebral hemorrhage and/or intraventricular hemorrhage (IVH) in 34% and 17% of the patients, respectively. However, on rare occasions, aneurysm rupture may be present causing isolate intracerebral hemorrhage or IVH without subarachnoid hemorrhage.

We describe an unusual case of an anterior communicating aneurysm rupture presented with IVH, without subarachnoid hemorrhage.

Although isolated IVH is rare, aneurysm rupture is a possible condition. Patients presenting with head computed tomography revealing IVH without subarachnoid hemorrhage should be promptly investigated with contrasted image exam to identify and treat possible causes, even in the absence of subarachnoid hemorrhage.

A ruptura do aneurisma intracraniano causa hemorragia subaracnóidea em 80% dos casos, e pode estar associada a hemorragia intracerebral e / ou hemorragia intraventricular em 34% e 17% dos pacientes, respectivamente. No entanto, em raras ocasiões, a ruptura do aneurisma pode estar presente, causando hemorragia intracerebral isolada ou hemorragia intraventricular, sem hemorragia subaracnóidea. Descrevemos um caso incomum de ruptura de aneurisma de comunicação anterior apresentado com HIV, sem hemorragia subaracnóidea. Embora a hemorragia intraventricular isolada seja rara, a ruptura do aneurisma é uma condição possível. Pacientes que apresentam tomografia computadorizada revelando hemorragia intraventricular, sem hemorragia subaracnóidea devem ser prontamente investigados com exame de imagem contrastada para identificar e tratar possíveis causas, mesmo na ausência de hemorragia subaracnóidea.

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Background

Subarachnoid hemorrhage (SAH) is a life-threatening condition and accounts for 5 to 10% of all strokes in the United States.¹ Vascular abnormalities are well documented causes of non-traumatic SAH, with aneurysm rupture being the most common.^{2,3}

Subarachnoid hemorrhage from intracranial aneurysm (IA) rupture is a leading cause of stroke disability and death in young patients, with a high mortality rate (50%) and up to 50% of morbidity in survivors.⁴

Intracranial aneurysm rupture causes SAH in 80% of the patients,⁵ and it may be associated to intracerebral hemorrhage (ICH) and/or intraventricular hemorrhage (IVH) in 34% and 17% of the patients, respectively.^{6,7}

However, on infrequent occasions, aneurysm rupture may be present, causing isolate ICH or IVH without SAH. Thai et al⁷ reported a rate of only 1.6% of patients presenting with isolated ICH and/or IVH, leading a poor prognosis.

We describe an unusual case of an anterior communicating aneurysm rupture presenting with IVH, without t SAH.

Case Presentation

A 70-year-old male with a history of hypertension, type 2 diabetes, dyslipidemia, and previous episode of ischemic stroke presented to the emergency department (ED) of our institution with nausea, fatigue, and mild headache. His medications included Aspirin (Bayer AG, Leverkusen, Germany), atorvastatin, and antihypertensive. The patient denied the use of tobacco, drugs, or family history of a brain aneurysm. After an initial assessment, he presented nausea, vomiting, and drowsiness. On physical examination, his only significant finding was a Glasgow coma scale (GCS) score of 13, without any focal deficits. His blood pressure was 185 × 100 mm Hg and returned to normal (< 140 × 90 mm Hg) after treatment with sodium nitropruside in 7 hours. The remainder of the neurological examination was unremarkable.

A cranial computed tomography (CT) scan was initially performed and revealed a small bleeding in the right occipital horn of the lateral ventricles, early hydrocephalus, and a large ectatic basilar artery measuring 9 mm in diameter (► Fig. 1). No parenchymal or SAH was present. The patient, therefore, underwent to computed tomography angiography (CTA), showing a saccular aneurysm measuring ~ 5.8 × 6.7 × 4.2 mm in diameter arising from the anterior communicating artery (Acom) (► Fig. 2).

Digital subtraction angiography (DSA) findings confirmed the diagnosis of Acom aneurysm (► Fig. 3). Due to the size, morphology, and location of the aneurysm, we opted for treating it with surgical clipping.

Three days after the diagnosis of a brain aneurysm and before treatment, the patient presented deterioration of the level of consciousness and when the GCS got to 8, he was intubated. Twenty-four hours later, the patient underwent surgery. The aneurysm was clipped, and an extraventricular drainage was placed. Four days after the surgery, the patient



Fig. 1 Computed tomography scan without contrast. Axial plane (A), in which a slightly hyperdense lesion is seen in the occipital horn, without subarachnoid hemorrhage.

developed severe pneumonia, and, despite treatment, the patient died 2 weeks later of septic shock.

Discussion

Aneurysm rupture is more commonly seen as SAH in non-contrast CT scan, showing blood filling the subarachnoid cisterns. It can also be associated to subdural hematoma, ICH or IVH. Isolated IVH associated to aneurysm rupture is very

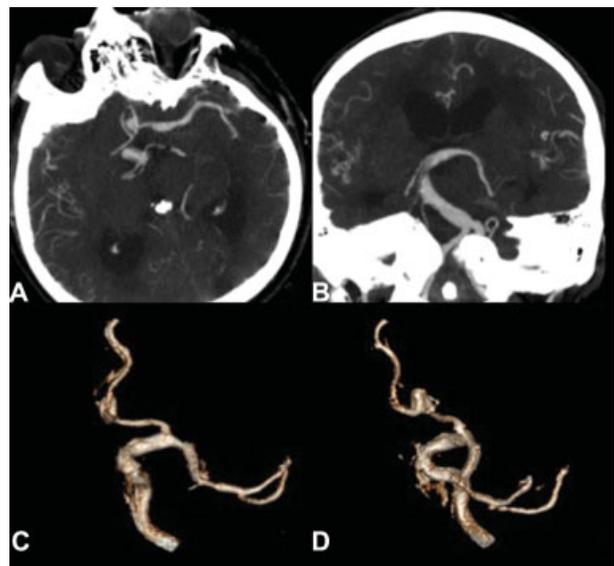


Fig. 2 Intracranial angiotomography. Axial plane (A) shows saccular dilation dependent on the anterior communicating artery with anterior-superior direction. Multiplane reconstruction of maximum intensity showing ectatic basilar trunk (B) and volumetric reconstructions (C and D) showing the anterior communicating aneurysm.

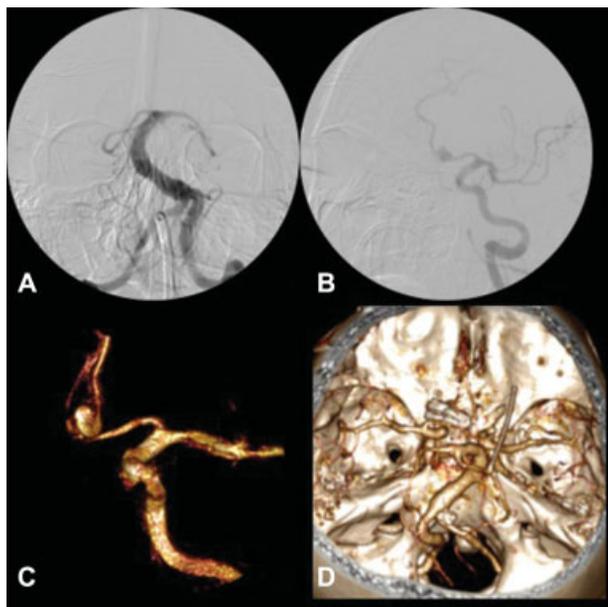


Fig. 3 Digital angiography oblique (A) and coronal (B) prior to surgical treatment. Volumetric reconstruction of digital angiography prior to surgery (C) and volume reconstruction of angiotomography (D) showing aneurysm clipped.

rare, and it is related to high morbidity and mortality, up to 40%.^{8,9} Obstructive or communicating hydrocephalus occurs in 62% of patients, but only a third require extraventricular drainage.⁹ The development of early hydrocephalus is an independent factor to poor prognosis.

Although many cases of isolated subdural hematoma or ICH associated to aneurysmal bleeding have been reported,^{10,11} only few cases of pure IVH have been cited.^{7,12,13} The two most common causes of isolated IVH are aneurysm rupture and arteriovenous malformation, while moyamoya disease and dural arteriovenous fistula are rarer.⁸

The features and location of the aneurysm can predispose to direct hemorrhage into the parenchyma or ventricular system. Considering the location of the Acom aneurysm in this patient and its anterior superior projection, occipital horn hemorrhage could be explained by direct rupture into the lamina terminalis and then into the ventricular system.¹⁴

The diagnosis of IVH without SAH is even more challenging depending on the timing when tests are performed. Computed tomography imaging is positive in over 90% of the cases of SAH on the day the hemorrhage occurs,¹⁵ and the sensitivity of the test subsequently declines with the passing of time, reaching 50% by 5 to 7 days after the onset of symptoms.¹⁶ Delay in performing a CT scan after bleeding might lead to false negative results and increase poor prognosis outcome. Thai et al⁷ reported 6 patients had a sentinel event on average of 6.3 days before admission for head CT imaging. Due to the small amount of blood and an IVH without SAH in our patient, the diagnosis of aneurysm rupture and its treatment were delayed. This might have contributed to the decreased level of consciousness and poor prognosis of the patient.

Flint et al⁸ found that catheter angiogram was performed in 52% of the cases of IVH, with the identification of the bleeding source in 56%. A causative lesion was identified in 44% of the patients, who were treated accordingly. The routine catheter angiography in IVH is warranted to identify potentially treatable causes of hemorrhage. This has direct implications in the management of these patients. Therefore, careful radiological examination is necessary to evaluate cases of isolated ventricle hemorrhage.

Conclusions

This is a case of IVH without SAH caused by rupture of an Acom aneurysm. After extensive neuroimaging investigation, an underlying aneurysm was discovered. Although isolated IVH is rare, aneurysm rupture is a possible condition. Patients presenting with head CT revealing IVH without SAH should be promptly investigated with contrasted image exam to identify and treat possible causes, even in the absence of SAH.

Conflict of Interests

The authors have no conflict of interests to declare.

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