Case Report

Spontaneous resolution of an isolated cervical anterior spinal artery aneurysm after subarachnoid hemorrhage

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Abstract

Background: Isolated cervical anterior spinal artery aneurysms are extremely rare. Subarachnoid hemorrhage (SAH) secondary to such lesions have been described only in six cases to the best of our knowledge.

Case Description: We describe an unusual clinical picture of SAH due to rupture of anterior spinal artery aneurysm in a patient with previous normal angiogram. Due to the location of the aneurysm and clinical status of the patient, conservative management was proposed, and she was discharged to further follow-up. Monthly routine angiograms revealed resolution of the aneurysm 90 days after bleeding, which was highly suggestive of vascular dissection.

Conclusion: We highlight the need to consider these aneurysms in the differential diagnosis of SAH, especially when occurring in the posterior fossa and when angiography findings are inconclusive.

Key Words: Diagnosis, intracranial aneurysm, treatment

INTRODUCTION

Isolated cervical anterior spinal artery (ASA) aneurysms are extremely rare.[1‑8] To the best of our knowledge, subarachnoid hemorrhage (SAH) secondary to such lesions has been described only in six cases.[6‑8]

We report an unusual clinical picture of SAH due to rupture of ASA aneurysm in a patient with a previously normal angiogram, and highlight the need to consider this entity in the differential diagnosis of SAH of unknown etiology.

CASE REPORT

A 43-year-old female presented at an outside hospital with acute suboccipital headache and vomiting, which rapidly progressed to decreased level of consciousness and coma 12 h after headache onset. She was a regular smoker, but denied any preexisting medical conditions, such as hypertension, drug abuse, or vasculopathy. A complete laboratory profile was within normal limits.

She underwent a computed tomography (CT) scan of the head, which revealed SAH, intraventricular hemorrhage, and hydrocephalus [Figure 1]. At the time, she had a Glasgow Coma Scale (GCS) score of 8. Emergent external ventricular drainage was performed.

The patient remained under sedation and endotracheal intubation for 10 days. Her course was complicated by
development of ventilator-associated pneumonia. After broad-spectrum antibiotic therapy, sedation was withdrawn and she was extubated, maintaining a GCS of 15.

A control angiogram performed 10 days after bleeding revealed no abnormalities. Magnetic resonance imaging (MRI) of the neck revealed a laminar bleed at the right anterior cervicomedullary junction [Figure 1]. As the patient was stable, no additional treatment was planned, and cerebral angiography was repeated after 1 month. At that time, a 2-mm saccular aneurysm was found in the ASA, presumably the cause of SAH [Figure 1]. CT angiography performed at the same time could not display the aneurysm clearly [Figure 2].

Due to the location of the aneurysm and clinical status of the patient, conservative management was proposed, and she was discharged to further follow-up. Monthly routine angiograms revealed resolution of the aneurysm 90 days after bleeding (angiograms at 1- and 2-month follow-up were quite similar), which was highly suggestive of vascular dissection [Figure 3]. On follow-up angiography, the ASA was no longer visible. There was, however, a subtle abnormality in the course and caliber of the ASA at the corresponding segment, reinforcing the hypothesis of dissection.

**DISCUSSION**

Spinal artery aneurysms are rare findings,[1-4] They are usually not associated with arterial branching sites and blood flow, being formed through different mechanisms than those involved in the pathogenesis of cerebral artery aneurysms.[1,2] The main hypothesis points to inflammatory, infectious, and connective tissue diseases.[6-8] Traumatic events leading to arterial dissection and formation of pseudoaneurysms may play a role, although the exact mechanism is not clearly understood. There is also an association with arteriovenous malformations.[1-4]

These aneurysms are found mainly in the upper cervical segment of the ASA and in the upper portion of the artery of Adamkiewicz. Mean age at presentation is approximately 52 years, and there is no evident gender
predominance. Both saccular and fusiform aneurysms occur, with predominance of the fusiform pattern. Approximately 30 cases have been described. Symptoms correspond to the correlating brain and spine topography; headache, neck pain, decreased level of consciousness, and cranial nerve paresis are commonly found.

Radiological investigation is essential, and a complete radiological workup should include CT and brain/cervical MRI to exclude angiomas and vascular malformations. Some advocate a full spinal angiogram and, at the very least, an upper spinal angiogram when blood is seen on cervical MRI. Angiography provides detailed information on aneurysm shape, size, direction, and location.

Although controversy persists, the current experience suggests that surgical or endovascular treatment are the preferred strategies. In surgical cases, suboccipital and far lateral approaches are recommended for aneurysm clipping or trapping. Anterior cervical corpectomy is not encouraged. Endovascular treatment may be appropriate in surgically challenging cases; however, it may also be of low applicability, due to small diameter of root vessels and aneurysmal branches. The risk of arterial occlusion secondary to surgery and endovascular treatment is real, and sometimes prompts conservative treatment.

As a general rule, patients in good clinical status may be candidates for surgical/endovascular treatment, whereas patients in worse condition should avoid interventional procedures. In the latter case, control angiograms are necessary to assess progression.

Our patient had an isolated cervical ASA aneurysm. This is only the seventh report of this finding in the literature [Table 1]. Although our service presented with all necessary structural resources, we chose conservative treatment because of the small size of the aneurysm and even smaller diameter of the root vessel, precluding endovascular treatment. Surgical intervention was not advocated due to limited experience and potential for harmful events, including risk of arterial occlusion and tetraplegia. Besides, there is still no literature consensus for the ideal management of such rare cases. Follow-up revealed a benign course, with spontaneous resolution of the aneurysm.

However, one must remember that following a ruptured aneurysm with serial angiograms does not represent general standard of care. The fact that a favorable outcome was achieved illustrates how unusual and interesting this case was, but does not mean that this is the proper way to manage all similar cases.

Finally, individual evaluation of each case and its particularities is essential for definition of the optimal treatment strategy, as the cases published thus far do not provide enough evidence to support one modality over another. We highlight the need to consider these aneurysms in the differential diagnosis of SAH, especially when occurring in the posterior fossa and when angiography findings are inconclusive.

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