

## Case Report

# Ruptured anterior spinal artery aneurysm from a herniated cervical disc. A case report and review of the literature

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## Abstract

**Background:** Subarachnoid hemorrhage (SAH) caused by a ruptured cervical anterior spinal artery aneurysm is extremely rare and in the setting of cervical spondylosis. This case presentation reviews the diagnosis, management, and treatment of such aneurysms.

**Case Presentation:** An 88-year-old female presented with the worst headache of her life without focal deficits. She was found to have diffuse SAH in the basal cisterns extending inferiorly down the spinal canal. Review of the neurodiagnostic images revealed an anterior spinal artery aneurysm in the setting of cervical spondylosis.

**Conclusions:** Clinicians should be suspicious of cervical spondylosis as a rare etiology for an SAH when cerebral angiograms prove negative for intracranial aneurysms.

**Key Words:** Aneurysm, cervical, spine, subarachnoid hemorrhage, trauma

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## BACKGROUND

Spontaneous subarachnoid hemorrhages (SAH) caused by spinal artery aneurysms are exceedingly rare. Vincent in 1981 first reported the angiographic finding of an anterior spinal artery rupture.<sup>[7,10]</sup> They are more prevalent in conjunction with other pathology; aortic coarctation, arteriovenous malformations, connective tissue disorders, and vasculitis.<sup>[4]</sup> Here, the authors present a ruptured cervical anterior spinal artery aneurysm attributed to compression from a cervical disc herniation with spondylosis.

## CASE DESCRIPTION

An 88-year-old female with a history of anemia and hypertension presented to the emergency room with the acute onset of the worst headache of her life after walking into a supermarket. On neurological examination, she had no focal deficits; her only complaint was a severe global headache and neck pain. A computed tomography (CT)

scan of the head and cervical spine revealed diffuse acute SAH within the basal cisterns that extended inferiorly down to through the cervical-medullary junction, attended by mild acute hydrocephalus [Figures 1 and 2]. Preliminary imaging with a CT angiogram of the head and neck were unremarkable for vascular pathology. She subsequently underwent formal angiography, which revealed an incidental bilobed, left cavernous carotid aneurysm measuring 3 by 5 mm. As the authors could not attribute the diffuse SAH to this cerebral aneurysm, they ordered a magnetic resonance (MR) imaging scan of the brain and cervical spine [Figures 3 and 4]. The

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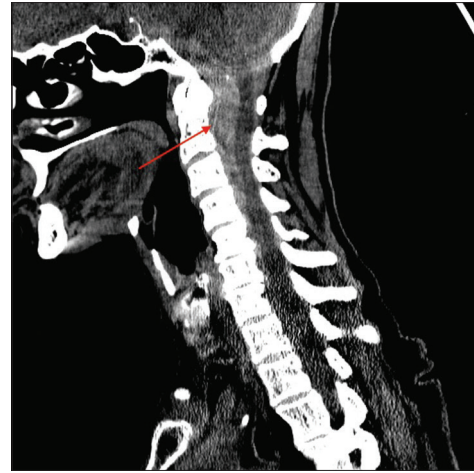
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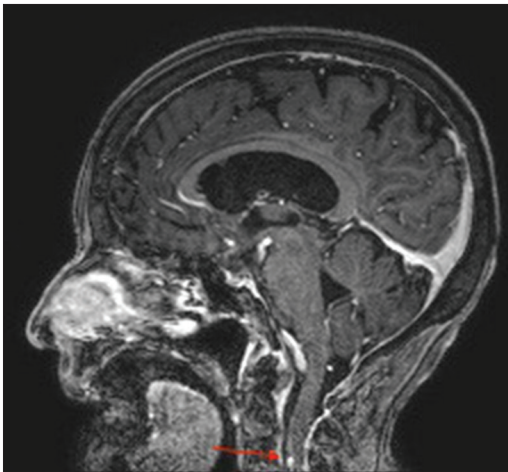
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**Figure 1: Computed tomography head showing diffuse subarachnoid hemorrhage and hydrocephalus**



**Figure 2: Sagittal computed tomography of the cervical medullary junction and spine showing subarachnoid hemorrhage extending inferiorly**



**Figure 3: Sagittal magnetic resonance imaging of the brain with contrast showing a hyperintensity revealing the anterior spinal artery aneurysm (arrow)**



**Figure 4: Sagittal T2 magnetic resonance imaging showing the C3/4 herniated disc corresponding to the location of the anterior spinal artery aneurysm**

cranial MR showed no other abnormalities, but the cervical MR revealed degenerative cervical disease at the C5–C6 level including a large disc osteophyte complex contributing to flattening of the ventral cord. At the C5–C6 level of maximal cord compression, there was a small pseudoaneurysm arising from the anterior spinal artery [Figures 5 and 6]. The patient remained in the neurosurgery Intensive Care Unit until postbleed day 9. She was then transferred to the floor and subsequently discharged to a subacute rehabilitation facility. She was seen in clinic 3 months later, remaining neurologically intact. After completing a course of rehabilitation, she is now living at home 4 months later with assistance.

## CONCLUSION

### Frequency and etiology of spinal aneurysms

Less than 1% of SAHs result from ruptured spinal aneurysms.<sup>[2,6,8]</sup> Patients average 51.6 years of age, and

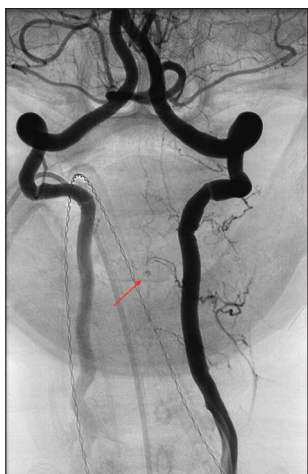
typically present with pain and radiculopathy.<sup>[4,5,8]</sup> Spinal SAH from atraumatic aneurysms may be accompanied by arteriovenous malformations (7.7–8%).<sup>[6–8]</sup> As in intracranial aneurysms, etiologies/risk factors for aneurysmal spinal SAH include; Ehlers–Danlos, Marfan syndrome, autoimmune conditions, vasculitis coarctation of the aorta, atherosclerosis, and pregnancy.<sup>[6,7]</sup>

### Location of spinal aneurysms

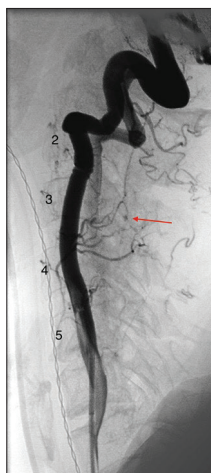
Although the majority of spinal aneurysms are located in the thoracic spine, in this case, it was found at the C5–C6 level.<sup>[8]</sup> Notably, the atraumatic presentation in conjunction with degenerative cervical spondylosis is extremely unusual.<sup>[3]</sup>

### Treatment of spinal aneurysms

The treatment of spinal aneurysms poses significant technical challenges with attendant severe



**Figure 5: Anteroposterior angiogram showing the anterior spinal artery aneurysm (arrow)**



**Figure 6: Lateral angiogram showing the anterior spinal artery aneurysm (arrow)**

complications.<sup>[2]</sup> As most spinal aneurysms are fusiform in morphology, super selective endovascular access with microcatheters may prove, especially difficult as the small caliber of these vessels makes them susceptible to vasospasm, thrombosis, and even dissection.<sup>[5]</sup>

### Conservative treatment of spinal aneurysms

There is insufficient data on the historical outcomes of spinal artery aneurysms treated without any intervention (e.g., rebleed rates).<sup>[9]</sup> Some authors have described conservative management for critically located spinal artery pseudoaneurysms.<sup>[1-4]</sup> This has been shown to be especially prudent for managing mycotic lesions.<sup>[5,8]</sup> Here, the choice, particularly in view of the patient's advanced age, was conservative management.

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### Conflicts of interest

There are no conflicts of interest.

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