

## Subclavian artery dissection

James Bret Winblad, MD; Timothy Grolie, MD; and Kamran Ali, MD

Subclavian artery dissection is rarely reported in the medical literature. We describe the case of a 54-year-old male who presented with multifocal ischemic stroke and was found to have a subclavian artery dissection. We provide an overview of the current literature discussing previously reported cases, clinical features, and treatment.

### Introduction

Subclavian artery dissection (SAD) is usually associated with catheterization, an anomalous aortic arch, or trauma. Without concomitant pathology or major trauma, SAD is rare and to our knowledge has only been described three times in the US medical literature.

### Case report

We describe a case of a 54-year-old male who presented to an outside facility with acute onset of nausea, vomiting, and dizziness. The right-handed patient reported playing wii tennis with his son and experiencing an acute onset of symptoms and left-arm paresthesias. On physical examination, he was found to be neurologically intact. CT and MRI from an outside facility demonstrated acute infarctions in the left cerebellar hemisphere and the right occipital lobe. Vertebrobasilar disease was suspected, and CT angiography of the neck was performed at an outside facility. This revealed no flow-related enhancement within the left vertebral artery; a left vertebral artery dissection was suspected.

The next morning, the patient was transferred to our facility for further workup. CT of the head was repeated and showed acute infarctions of the left cerebellar hemisphere and the right occipital lobe, with no hemorrhagic transformation (Fig. 1). After further review of the CT and

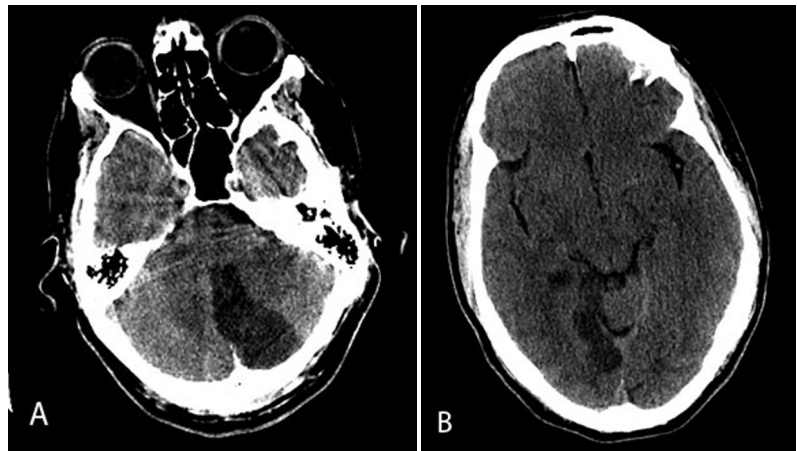


Figure 1. 54-year-old male with subclavian artery dissection. CT of the head. Hypodensity in the left PICA distribution (A) and the right occipital lobe (B) that is secondary to acute infarction.

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The authors are all at the University of Kansas School of Medicine-Wichita, Wichita KS, where Dr. Winblad is a radiology resident and Drs. Grolie and Ali are Clinical Assistant Professors. Contact Dr. Winblad at [bretwinblad@gmail.com](mailto:bretwinblad@gmail.com).

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angiography of the neck performed at the outside facility, a dissection of the subclavian artery was suspected (Fig. 2). Four-vessel cerebral arteriography confirmed a dissection of the left subclavian artery at the mid portion, involving the origin of the vertebral artery (Fig. 3). The patient was started on heparin and treated symptomatically for nausea. Permissive hypertension was allowed, and physical therapy was initiated. The patient was bridged to Coumadin and made an expedient recovery. He was discharged home and followed up at 3 months with his neurologist, at which time he was completely asymptomatic.

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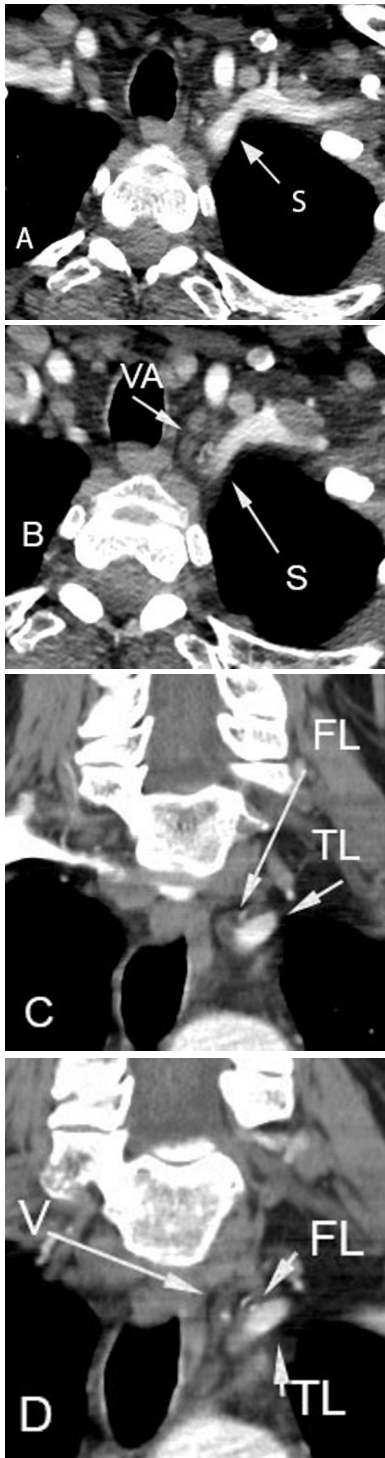


Figure 2. CT angiography. A and B are sequential axial slices that demonstrate a dissection of the subclavian artery (S) at the mid portion, which involves the origin of the vertebral artery (V). C and D are sequential coronal slices; note the normal enhancement of the true lumen (TL), and nonfilling of the false lumen (FL). On B, note the curvilinear hyperdensity in the anterior aspect of the subclavian artery, representing contrast undermining the intimal flap.

## Discussion

SAD has been described as occurring primarily during catheterization (1), with coexisting anomalies of the aortic arch (2, 3), or with traumatic injury. A spontaneous or minimally traumatic SAD is a rare event and has only recently been described (4-6). The precise pathogenesis of any arterial dissection is unclear; however, it has been associated with hypertension, trauma, vasculopathy, migraine, drug abuse, or minimal trauma associated with sports.

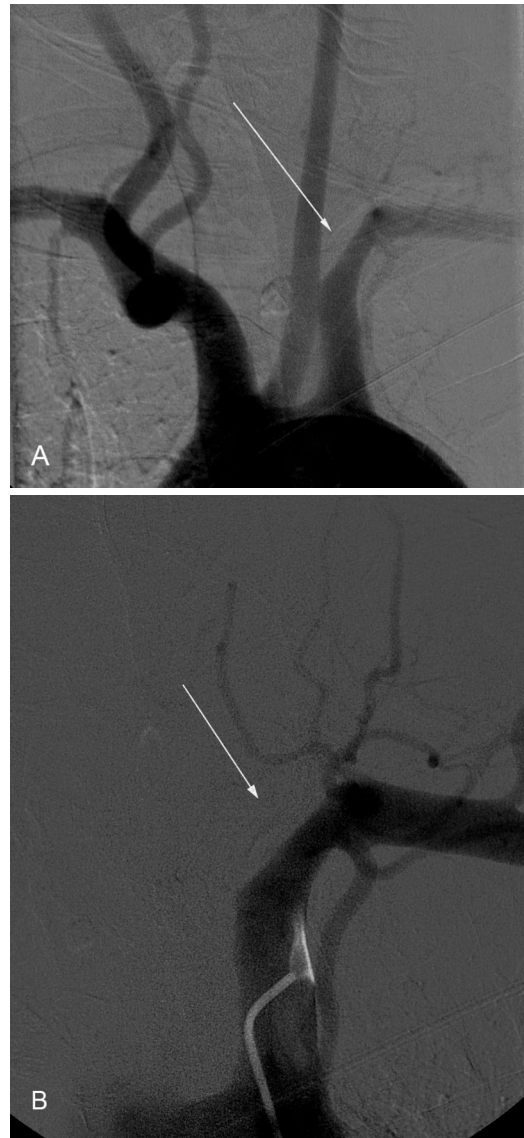


Figure 3. 54-year-old male with subclavian artery dissection. Digital subtraction angiography. A: Arch aortogram demonstrating a region of linear partial filling (arrow) within the mid subclavian artery, compatible with dissection. The left vertebral artery is not seen. B: Dedicated left subclavian arteriogram again shows the dissection (arrow) of the mid subclavian artery, which is confined to the mid portion, and involves the origin of the left vertebral artery.

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Our literature review (which was limited to journals from the USA) revealed a total of 3 cases of spontaneous or minimally traumatic SAD. In a case described by Garewall et al. a 54-year-old man with uncontrolled hypertension presented with vertigo and intrascapular pain after being at a grocery store (4). He was found to have multifocal infarctions involving the bilateral cerebellar hemispheres as well as the fourth and fifth cervical segments of the spinal cord. After diagnosis of spontaneous left SAD, the patient's symptoms resolved after brief anticoagulation with heparin and aspirin therapy.

In a case described by Scheffler et al. a 58-year-old female presented with left-upper-extremity ischemic symptoms after playing golf and was found to have a dissection of the proximal left subclavian artery. This patient had no neurological deficits or stroke symptoms; however, she did have left-hand paresthesias (5). A good outcome was achieved with fibrinolysis, anticoagulation, and a slow return to activity.

In a case described by Ananthakrishnan, et al. a 62-year-old female nonsmoker spontaneously developed left-arm pain, mild dizziness, and absent distal left-sided pulses (6). On angiography, a dissection to the proximal subclavian artery and vertebral artery root was detected. Because of ischemic symptoms, endovascular treatment was performed with a noncovered balloon expandable stent, with good angiographic and clinical result.

The clinical presentation of SAD has included dizziness, vertigo, back pain, thoracic pain, and left-arm paresthesias, followed by any neurological symptoms. In any case of suspected vertebral artery dissection without a clear cause, it has been proposed that it may be worthwhile to obtain imaging of the subclavian artery (4, 7). As with any suspected dissection, all patients should undergo conventional angiography so that the diagnosis may be confirmed, abnormal flow patterns can be elucidated, and possible endovascular treatment can be performed if indicated (7).

The prognosis of SADs is favorable, as there have been good outcomes with conservative treatment and anticoagulation (7). Possible complications of SAD include intramural hemorrhage, false aneurysm, thrombosis, or emboli to the head and neck or left upper extremity. If ischemia results from subclavian artery dissection, good outcomes have occurred with endovascular treatment (6, 7).

Although a distinctly rare entity, SAD should be remembered in the differential when the diagnoses of multi-infarct stroke, cerebellar stroke, and vertebral dissection are being considered.

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