

## Congenital Subclavian Steal Associated with Atresia of a Left Innominate Artery

A 22-year-old woman presented with a history of multiple spells of dizziness, difficulty speaking and occasional loss of consciousness lasting for up to one hour. The patient had been initially diagnosed with epilepsy and treated with Levatiracetam without success. The physical finding of decreased left carotid and radial pulses raised suspicion for Takayasu arteriitis and the patient was referred to our center for further evaluation including cerebral angiography. Angiography was performed via two 5-French sheaths placed in the right femoral and left radial arteries. The patient was found to have only two great vessels originating from the aortic arch, while the left carotid and subclavian arteries shared a common origin and did not communicate with the arch. There was prominent subclavian steal through the vertebrobasilar junction and through hypertrophied spinal arteries. The right internal carotid artery supplied the left hemisphere through the anterior communicating artery and also provided flow to the posterior cerebral arteries. No vascular lesions were identified to support the diagnosis of vasculitis. Atresia of a left innominate artery is an extremely rare aortic arch variant<sup>1,2</sup> which, as in this case can lead to symptomatic subclavian steal. Surgical options are being discussed with the patient<sup>1</sup>.

**Keywords:** Subclavian steal, innominate artery, subclavian artery, atresia

*Journal of Vascular and Interventional Neurology* 2009; 2(2):180-181:

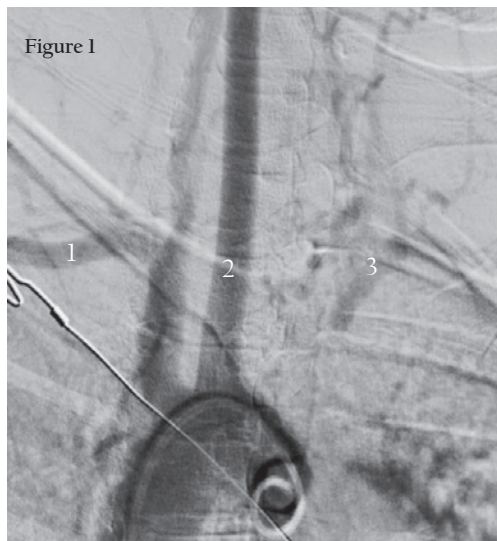


Figure 1. Aortic arch injection. Only the right subclavian (1) and internal carotid (2) arteries originate from the arch. The left subclavian (3) can be seen reconstituting from other arteries.

Figure 2. Left subclavian artery injection via radial artery access. The left internal carotid (1) and subclavian (2) arteries share a common origin. There is no connection to the aortic arch.

Figure 3. Right vertebral artery injection, distal and proximal projections shown together. The right vertebral artery (1) fills the basilar artery (2) and the left vertebral (3) artery in a retrograde fashion. Engorged spinal branches (4) are diverting flow from the right to the left vertebral artery. The left subclavian (5) and common carotid (6) arteries fill from the "steal" flow.

Alexandros L Georgiadis, MD

Address correspondence to:  
Alexandros L Georgiadis, MD, Zeenat Qureshi  
Stroke Research Center, Department of Neurology,  
University of Minnesota, 420 Delaware St SE,  
Minneapolis, MN 55455



From the Zeenat Qureshi Stroke Research Center, University of Minnesota, Minneapolis, MN

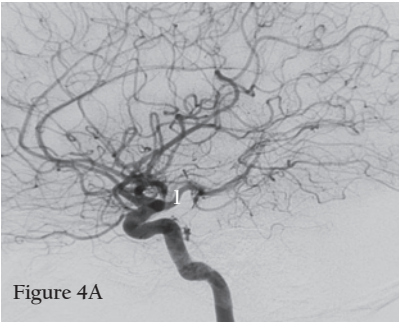


Figure 4A

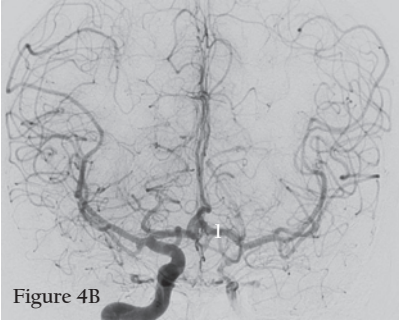


Figure 4B

Figure 4, A and B.  
Right internal carotid artery injections, antero-posterior (A) and lateral (B) projections. The right internal carotid artery fills the posterior cerebral arteries via the posterior communicating artery (4A, 1). The left middle cerebral artery fills via the retrograde left anterior communicating artery (4B, 1).

## References

1. Singh B, Satyapal KS, Moodley J, Rajaruthnam P. Right aortic arch with isolated left brachiocephalic artery. *Cin Anat* 2001;14(1):47-51
2. Kurata H, Satoh S, Kohno M, Kajiwaru H, Mashimo Y, Satoh H. Brachiocephalic arterial aplasia of the right aortic arch with subclavian steal syndrome. *Nippon Kyobu Geka Gakkai Zasshi* 1989;37(1):171-174