Anterior spinal artery supplying posterior circulation

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CT showed diffuse intraventricular hemorrhage in a 68-year-old man involved in a motor vehicle accident. MR angiography showed superiorly directed flow in the anterior spinal artery (ASA) supplying the basilar artery and posterior circulation (figure 1). MR angiography demonstrates flow only in the cephalad direction because inferiorly directed flow has been selectively saturated out. Conventional angiography confirmed the flow reversal (figure 2).

Under normal conditions, blood in the ASA flows inferiorly. An artery to the cervical cord often arises from the vertebral artery (VA).^{1,2} In this case, a C4 segmental artery supplies the ASA, which fills retrograde (cephalad direction) to the vertebrobasilar junction providing collateral supply to the posterior circulation. The demand created by VA occlusions and lack of collateral circulation through the posterior communicating arteries caused the flow reversal in the ASA.

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Figure 1. MRA (two-dimensional time of flight) shows cephalad flow in the anterior spinal artery (arrowheads) supplying basilar artery and none in right vertebral artery (VA). Flow only in the proximal left VA suggests distal stenosis or occlusion (arrows).

Figure 2. (A) Early and (B) later phase angiograms show short-segment occlusion (arrow) of left distal vertebral artery, and superior flow in anterior spinal artery (arrowheads) supplying the posterior circulation.

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