Teaching *NeuroImages*: Intracranial vertebral dissection in a 15-year-old boy with sickle cell disease

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A 15-year-old boy with sickle cell disease became unresponsive after sudden-onset headache. There was no antecedent trauma. A head CT scan demonstrated subarachnoid hemorrhage at the medulla

(figure). Magnetic resonance angiography of the head and neck identified the patient's known bilateral internal carotid artery stenosis (a moyamoya-like arteriopathy associated with stroke in sickle cell disease)

Figure Imaging

(A) Head CT at time of presentation. The black arrow indicates a hyperdense signal surrounding dark spinal cord (white arrow) in subarachnoid space, concerning for subarachnoid hemorrhage. (B) Magnetic resonance angiogram (MRA) of the head and neck 2 years prior to presentation. Arrows indicate bilateral internal carotid stenosis. (C) MRA of the head and neck during hospitalization identifies tapered appearance of the V4 segment of the right vertebral artery (arrow), consistent with dissection. Other segments of the vertebral artery are also labeled: V2 (pars transversaria) and V3 (atlas loop). (D) Digital subtraction angiogram of a right vertebral injection with arrow indicating the luminal narrowing corresponding to the region of dissection.

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and a new right vertebral artery dissection, which was confirmed on conventional angiography (figure). Prior MRI performed as part of routine cerebral monitoring did not reveal any preexisting abnormality of the vertebral artery.

The V4 segment of the vertebral artery has the lowest risk of dissection compared to other segments. However, due to its intracranial location, dissection at V4 can cause subarachnoid hemorrhage and mimic aneurysmal rupture.¹

AUTHOR CONTRIBUTIONS

Dr. Siegler: conception of the idea of the manuscript, drafting of the original manuscript, preparation of images, and critical revisions to the manuscript for important intellectual content. Dr. Banwell: drafting of the manuscript and critical revisions to the manuscript

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