

Case 5

Utilizing the SOMATOM Emotion 16-slice configuration for a Neuro DSA CTA Evaluation of a Suspected PICA Aneurysm

By Adam J. Davis, MD, Hartsdale Imaging, Hartsdale, New York, USA

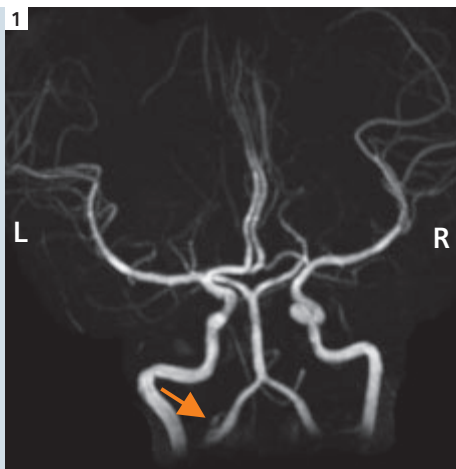
HISTORY

The patient, a 13-year-old female presented in our Imaging Center with acute onset persistent left hemicranial and left supraorbital headache. Neurologic examination was unremarkable. A non-gadolinium 3D TOF MRA of the brain was performed to evaluate for the possibility of a vascular abnormality. The exam was suspicious for a left posterior inferior cerebellar artery (PICA) sacular aneurysm. CTA of the brain was requested for a further evaluation.

DIAGNOSIS AND COMMENTS

A left posterior inferior cerebellar artery loop was diagnosed and no aneurysm demonstrated. MRA is an excellent screening technique for the presence of intracranial aneurysms, although the inherent resolution and presence of flow artifacts may make the technique insufficient for smaller and more tortuous intracranial vessels. The MRA imaging is suspicious, but not definitive, for a proximal left PICA aneurysm. An elongated 2.9 mm posterior projecting outpouching could not be clearly delineated from the parent vessel. The Neuro DSA CTA of the brain clearly defined the anatomy of the vessel, demonstrating a tight, posteriorly oriented C-shaped loop,

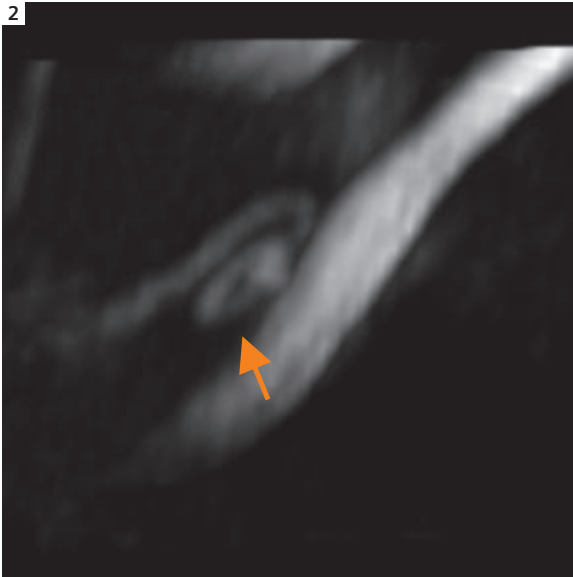
corresponding to the area of suspicion on the MRA. The fully automated CT DSA application easily allowed VRT visualization of the origin of the PICA from the lateral aspect of the vertebral artery, normally obscured by the adjacent occipital bone. Of interest, differing algorithms provide a different visualization of the anatomy. The use of a higher kernel algorithm for the pre- and post-masks allows for a more definitive evaluation of the luminal contour, although the image quality may be less pleasing to the eye. It should be remembered that the luminal diameter of this PICA measures approximately 0.6 mm; emphasizing the excellent inherent resolution of Neuro DSA CTA performed with the SOMATOM® Emotion 16-slice configuration.



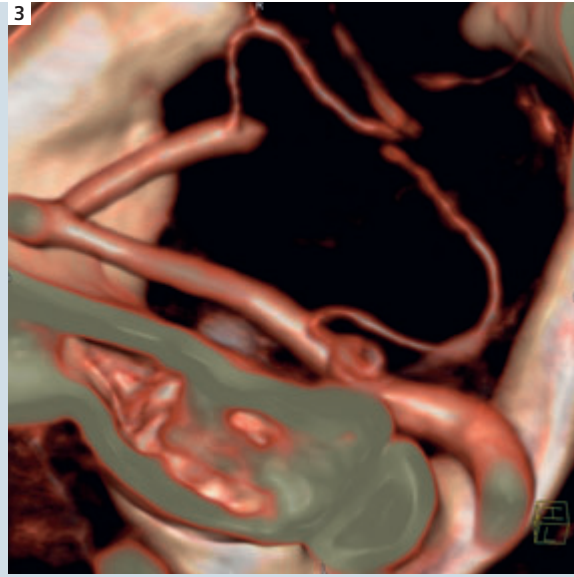
1 PA view of the non-gadolinium 3D TOF MRA demonstrates the abnormality at the origin of the left PICA (arrow).

EXAMINATION PROTOCOL

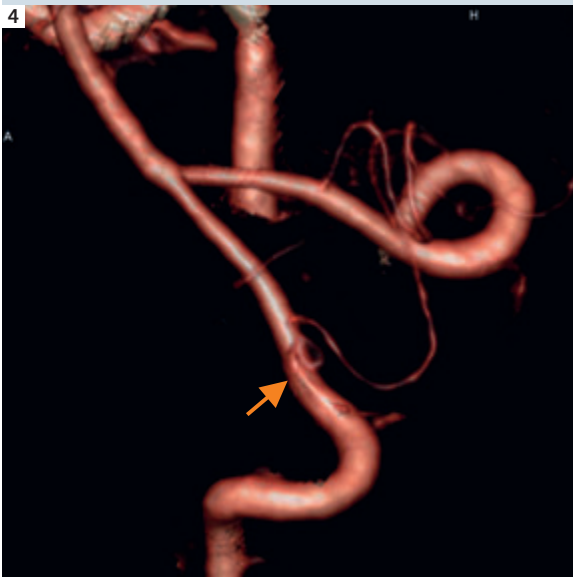
Scanner	SOMATOM Emotion 16-slice configuration		
Scan area	Head	Slice collimation	0.6 mm
Scan length	138 mm	Slice width	0.75 mm
Scan time	10 s	Pitch	0.9
Scan direction	Caudo Cranial	Reconstruction increment	0.5mm
kV	120 kV	Kernel	H20 / H70
Effective mAs	176 mAs	Postprocessing	
Rotation time	0.6 s	syngo Neuro DSA	



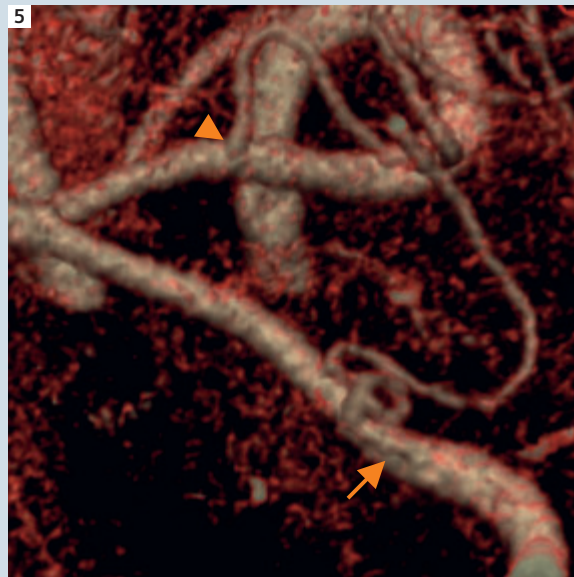
2 A more magnified MRA image utilizing clip planes isolates the left PICA. The best view orientation gives a hint as to the true nature of the finding, although the vessel course and origin are not clearly defined on the MRA, and the outpouching cannot be entirely eliminated in any view. The study remains non-diagnostic.



3 CTA utilizing a closely applied clip plane from the left side eliminates much of the obscuring occipital calvarium, and allows improved visualization of the lateral aspect of the vessel. While still somewhat obscured, this view demonstrates the origin of the PICA and a tight posterior C-shaped loop, not an aneurysm (H20 S Kernel setting).



4 Neuro DSA CTA provides a rapid and easy to acquire visualization of the lateral aspect of the left PICA. A clip plane in the orientation of the view was the only additional post processing required once the VRT was created. The vessel loop is clearly defined, and the possibility of a saccular aneurysm is definitively excluded (arrow).



5 Neuro DSA CTA utilizing a higher kernel algorithm (H70s) provides substantially better visualization of the origin of the left PICA. A well defined proximal segment is now seen prior to the tight posterior C-shaped loop (arrow). The contralateral right PICA is also clearly defined (arrowhead).