Letter to the Editor

Flow void artifact mimicking aneurysm in the anterior communicating artery region on T1- and T2-weighted images

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Submitted Jan 21, 2015. Accepted for publication Apr 10, 2015.
doi: 10.3978/j.issn.2223-4292.2015.04.05
View this article at: http://dx.doi.org/10.3978/j.issn.2223-4292.2015.04.05

We observed an unusual magnetic resonance imaging (MRI) artifact on T1- and T2-weighted sequences resembling an aneurysm in the region of anterior communicating artery (ACoA) in a child patient. A 6-year-old patient with neurofibromatosis underwent brain MRI for a follow-up investigation. Imaging was performed at 1.5 T scanner (Philips Gyroscan Intera, Best, Netherlands). The protocol consisted of axial and coronal T2-weighted turbo spin echo images [repetition time (TR) =4,616 ms, echo time (TE) =100 ms, slice thickness =5 mm, spacing between slices =1 mm, field of view (FOV) =260 mm × 182 mm, acquisition matrix: 228×150, echo train length =15], and 3D T1-weighted turbo field echo [TR =8.27 ms, TE =3.83 ms, flip angle =8°, FOV =256 mm × 192 mm, acquisition matrix: 116×93, Sensitivity Encoding (SENSE) acceleration factor (out-of-plane) =3]. Signal void near ACoA resembling an aneurysm was observed on axial and coronal T2-weighted and T1-weighted images (*Figure 1A-C*). The signal void was initially interpreted as an aneurysm based on its appearance on three sequences. Time-of-flight (TOF) angiography was requested and performed on a different scanner (1.5 T, Magnetom Aera, Siemens, Erlangen, Germany) together with conventional MRI. The second MRI showed no evidence of aneurysm (*Figure 1D-F*) indicating the findings in the first acquisition to be an artifact. What is interesting about this artifact is its appearance on three sequences (T2 axial, T2 coronal, and 3D T1) contrary to the acknowledged radiological rule that artifacts usually appear in one sequence. In practice, if a radiologist suspects an unseemly signal to be an artifact on an axial image, he/she checks with coronal/sagittal images and other sequences to confirm his interpretation. Since the signal void appeared on both turbo spin echo (T2-weighted) and turbo field echo (T1-weighted) sequences, it was independent of magnetic resonance (MR) sequence. We came to the conclusion that it is a flow-void artifact in the region of ACoA where flow dynamics is complex (1). ACoA bridges two anterior cerebral arteries, separates the junction between A1 and A2 segments, and gives rise to a number of small branches. Due to its complex anatomy, flow direction changes at ACoA. This may cause disorderly and turbulent flow and formation of eddy currents. Turbulent flow causes dephasing of proton signal, resulting in signal loss artifacts on conventional MRI, mimicking aneurysms. False aneurysms in the ACoA due to flow effects were reported to occur on TOF MR angiograms (2,3). When evaluating such lesions on conventional MRI, the possibility of being a flow artifact should be kept in mind and the techniques such as TOF angiography should be exploited prior to invasive techniques such as catheter

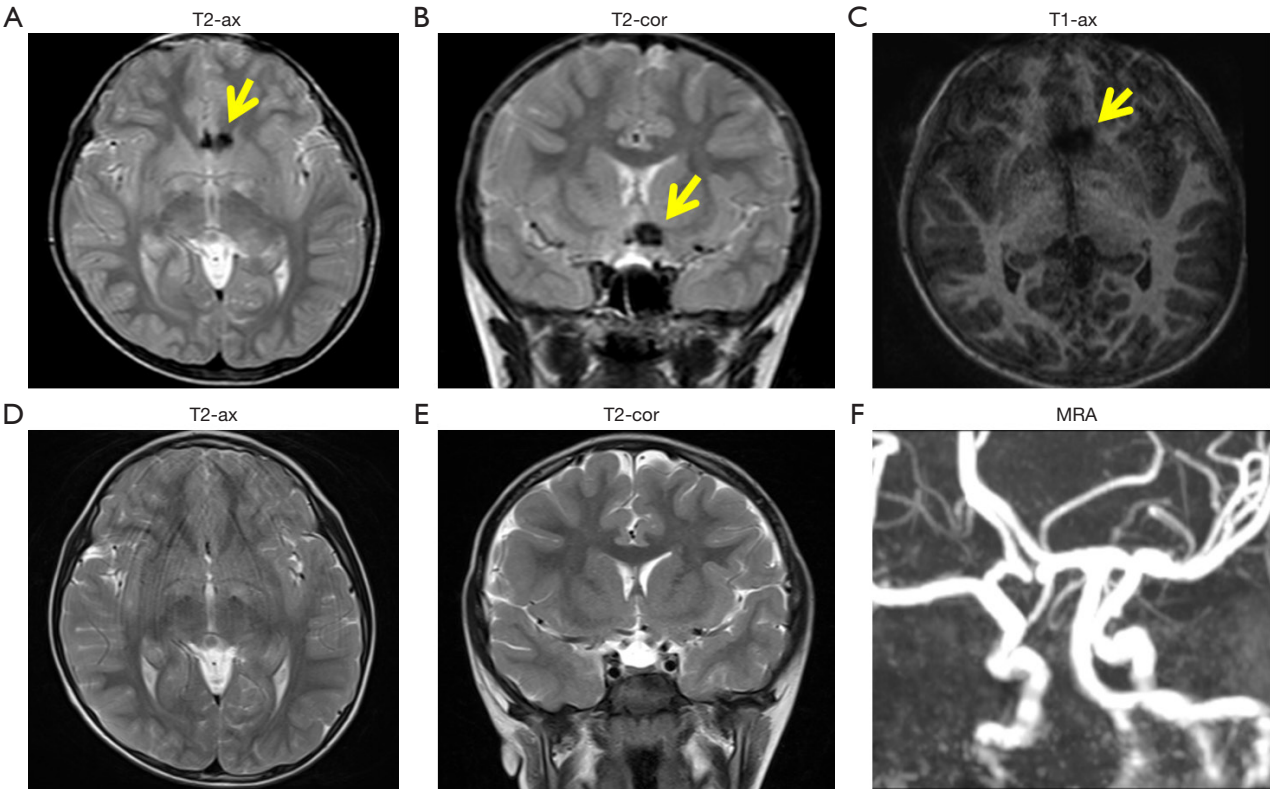

Figure 1 Aneurysm-mimicking artifact at ACoA region on axial and coronal conventional MRI is shown (yellow arrows, A-C). Second MRI and TOF angiography shows no evidence of aneurysm (D-F). ACoA, anterior communicating artery; MRI, magnetic resonance imaging; TOF, time-of-flight; ax, axial; cor, coronal; MRA, magnetic resonance angiography.

angiography (2).

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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Cite this article as: Gumus K, Dogan MS, Senol S, Doganay S. Flow void artifact mimicking aneurysm in the anterior communicating artery region on T1- and T2-weighted images. Quant Imaging Med Surg 2015;5(4):633-634. doi: 10.3978/j.issn.2223-4292.2015.04.05