“True Fetal Posterior Cerebral Artery”: Rare Variant Mimics AVM on MRI

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CASE REPORT

A 28-year-old woman with no significant medical history developed a transient headache and underwent cerebral imaging by using MR imaging with MRA.

Unusual flow voids adjacent to medial right temporal lobe structures raised concerns about a vascular malformation (Fig 1)

FIG 1. (A), An axial T1 with contrast and (B) axial SWI sequences show a tangle of vessels with associated SWI artifacts.

Therefore, the patient was referred for diagnostic cerebral angiography to further elucidate the finding (Fig 2).

FIG 2. Diagnostic angiogram

A, Right ICA arteriogram shows a PCOM (black arrowhead) and tortuous hyperplastic AChA (white arrows), which extend posteriorly to the temporoparietooccipital lobes.

B, Left vertebral artery arteriogram shows a right PCA (black arrows) and a right PCOM feeding the right PCA (black arrowhead).

Arteriography of the right internal carotid artery demonstrated two dorsal branch vessels proximal to the carotid terminus which were consistent with duplications of the right PCA. One branch arose at the expected location of the right AChA, consistent with the rare variant pattern of a “true” fetal right PCA.

Arteriography of the left vertebral arteriography demonstrated a hypoplastic origin of a duplicated right PCA (Fig 2).
(Fig 2).

No arteriovenous shunt was identified to suggest the presence of pial arteriovenous malformation or dural arteriovenous fistula. No saccular cerebral artery aneurysms were noted.

No intervention was required.

FIG 3. Illustrative representation of the “true fetal PCA” anatomy. Image used with permission from Mesa Schumacher.

LEARNING POINTS AND TAKE-HOME MESSAGES

- True fetal PCAs are extremely rare anatomic variants.
- The true fetal PCA variant is believed to be the result of a persistent anastomotic channel from the ICA-AChA and hypoplasia of the segment of the PCoA-PCA just proximal to the persistent anastomosis.
- True fetal PCAs can increase the extent and severity of anterior circulation strokes by allowing additional infarction in the PCA territory. Clinicians can more aggressively address risk factors for cerebral embolism, such as ICA stenosis and/or atrial fibrillation, in this subset of patients.
- True fetal PCA variant supplies posterior cerebral structures and should not be embolized when confirmed angiographically.
- There is a reported increased risk of aneurysm with a true fetal PCA. Should a procedure be necessary, a thorough understanding of the angiographic findings and caution of vessel injury is necessary for management.