A previously healthy 43-year-old man presented with coital thunderclap headache. A brain CT scan revealed a perimesencephalic subarachnoid hemorrhage (PMSAH). Digital subtraction angiography (DSA) showed a severe basilar artery vasospasm without underlying aneurysm (Figure 1). Under nimodipine treatment, the vasospasm resolved gradually. At a 1-month follow-up, a high-resolution (3T) MRI uncovered a primitive left basal vein of Rosenthal (BVR) draining to the lateral mesencephalic veins instead of the Galenic system.

Approximately one-half of nonaneurysmal PMSAH are associated with primitive venous drainage variants (Figure 2). These variants have been linked to hemodynamic perturbations, inducing retrograde flow, abrupt pressure changes and venous rupture, resulting in PMSAH. Patients with BVR harbor a 4-fold increased risk of nonaneurysmal PMSAH compared with aneurysmal SAH.

CONFLICTS OF INTEREST

None declared.
Figure 2 Different Variants of BVR Drainage

Given the frequent unavailability of venous phase DSA, HR-MRI should be considered for the evaluation of primitive BVR and underlying venous anomalies in PMSAH. In patients with typical PMSAH, identification of primitive BVR by HR-MRI provides an underlying etiopathogenetic mechanism that may render a repeat DSA redundant.¹

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Teaching NeuroImage: Primitive Drainage Pattern of Basal Vein of Rosenthal: An Underrecognized Cause of Perimesencephalic Subarachnoid Hemorrhage
Konstantinos Melanis, Maria-Ioanna Stefanou, Ioanna Tsantzali, et al.

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