Teaching Video NeurolImages: Wall Enhancement With Slow Blood Flow and Thrombosis Prior to Basilar Aneurysm Rupture

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Figure Axial High-Resolution MRI (HR-MRI) and Streamline of 4D-flow MRI

Precontrast (A) and postcontrast (B) HR-MRI revealed thrombosis (triangle) and aneurysmal wall enhancement (star). PD-VISTA (C) and streamline (D) demonstrated slow flow in aneurysm (arrowheads) and flow direction (white arrows), from basilar artery (1) to the aneurysm, right superior cerebellar artery (2), right (3) and left (4) posterior cerebral artery.

A 31-year-old man presented with basilar aneurysm noted on high-resolution MRI (HR-MRI), which showed thrombosis and aneurysmal wall enhancement (figure, A and B). 4D-flow MRI revealed a vortex near the aneurysm ostium and slow flow in the aneurysm, which may suggest low rupture risk (video and figure, C and D). However, the aneurysm ruptured after 1 month of conservative treatment. Hemodynamics are important to aneurysm formation and rupture.¹ In the aneurysm prerule state, slow flow and thrombosis may promote inflammation, demonstrated as aneurysmal wall enhancement, and expedite aneurysm rupture.² HR-MRI and

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4D-flow MRI could be combined to identify dangerous aneurysms that mandate prompt intervention.

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Disclosure

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Appendix Authors

Name	Location	Contribution
Fei Peng, MS	Capital Medical University, Beijing	Study concept and design
Miaoqi Zhang, BE	Tsinghua University, Beijing	Acquisition and interpretation of data
Hao Niu, MS	Capital Medical University, Beijing	Acquisition and interpretation of data

Appendix (continued)

Name	Location	Contribution
Xin Feng, MS	Peking Union Medical College, Beijing	Analysis and interpretation of data
Xin Tong, MS	Capital Medical University, Beijing	Analysis and interpretation of data
Baorui Zhang, MD	Capital Medical University, Beijing	Analysis and interpretation of data
Fei Yuan, MD	Capital Medical University, Beijing	Analysis and interpretation of data
Chun Yuan, PhD	University of Washington, Washington	Technical guidance and study supervision
Rui Li, PhD	Tsinghua University, Beijing	Critical revision of manuscript for intellectual content, study supervision
Aihua Liu, MD	Capital Medical University, Beijing	Critical revision of manuscript for intellectual content, study supervision

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