

Ataxic Hemiparesis

The Benefit of Acute Multiparametric Magnetic Resonance Imaging

A 76-YEAR-OLD HYPERTENSIVE man was admitted with an acute left ataxic hemiparesis. Neurological examination found a left-sided hemiparesis and cerebellar ataxia without proprioceptive impairment (admission National Institute of Health Stroke Scale score=4). Diffusion-weighted imaging disclosed a lacunar ischemic lesion within the right ventroposterolateral thalamic nucleus and an equivocal signal within the right cerebral peduncle. No significant cerebellar or temporo-occipital involvement was observed. Basilar and right posterior cerebral artery occlusions were found on magnetic resonance angiography. Perfusion-weighted imaging was performed with gradient-echo echoplanar imaging using the bolus passage-of-contrast method. The time-to-peak map, generated from the concentration time curve, confirmed an extensive perfusion delay in posterior fossa and right posterior cerebral artery territory, with a nearly complete diffusion-weighted imaging–perfusion-weighted imaging mismatch (**Figure**). The patient was treated with intravenous tissue plasminogen activator, administered 155 minutes after symptom onset. Outcome was favorable, with only mild left upper limb ataxia. The patient was discharged on day 3 (National Institute of Health Stroke Scale score=1).

COMMENT

The present case of ataxic hemiparesis was likely related to a thalamic lacunar lesion, with damage of the efferent neocerebellum fibers crossing the ventroposterolateral nucleus and of the adjacent corticospinal tract.¹ Although diffusion-weighted imaging revealed possible involvement of the right cerebral peduncle, isolated ataxic hemiparesis related to crus cerebri infarct is exceptional,² and third nerve palsy and other thalamomesencephalic symptoms are usually associated.

Ataxic hemiparesis usually has a benign course and may seldom reveal a basilar occlusion. In patients with lacunar syndromes, neuroimaging is essential to exclude lesions other than lacunar infarctions due to small-vessel disease.³ This patient further illustrates that lesions compatible with a single perforating artery occlusion on structural imaging can be related to a large-artery disease. Magnetic resonance angiography and perfusion-weighted imaging data proved critical to assess the mechanism underlying a seemingly benign lacunar stroke. Keeping in mind the “herald hemiparesis” that Fisher described,⁴ complete vascular imaging is warranted in all patients with lacunar infarcts.

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Author Contributions: All authors had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. *Study concept and design:* Cho and Nighoghossian. *Acquisition of data:* Cho, Hermier, Derex, Trouillas, and Nighoghossian. *Analysis and interpretation of data:* Cho, Hermier, Derex, Trouillas, and Nighoghossian. *Drafting of the manuscript:* Cho and Nighoghossian. *Critical revision of the manuscript for important intellectual content:* Cho, Hermier, Derex, Trouillas, and Nighoghossian. *Study supervision:* Cho, Hermier, Derex, Trouillas, and Nighoghossian.

Financial Disclosure: None reported.

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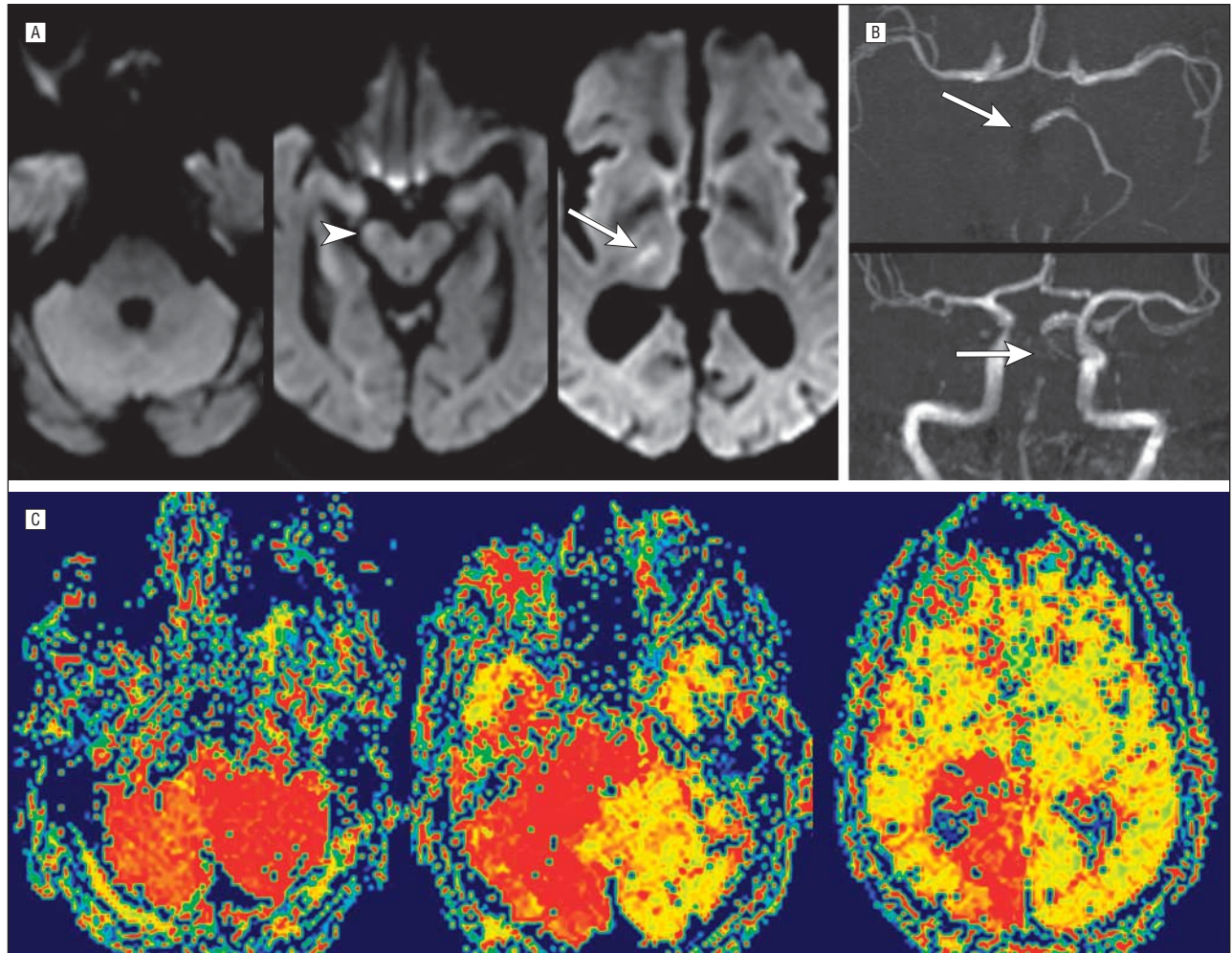


Figure. Magnetic resonance imaging in a 76-year-old hypertensive man with an acute left ataxic hemiparesis. A, Diffusion-weighted imaging disclosed a right thalamic lacunar infarct (arrow) and a subtle hyperintensity within the right cerebral peduncle (arrowhead). B, Three-dimensional time-of-flight magnetic resonance imaging revealed basilar thrombosis and occlusion of the proximal segment of the right posterior cerebral artery. C, A large perfusion delay in the posterior fossa and right posterior cerebral artery was confirmed on the time-to-peak map.