

Complete Recanalization of Right Middle Cerebral Artery after Intravenous Thrombolytic Therapy

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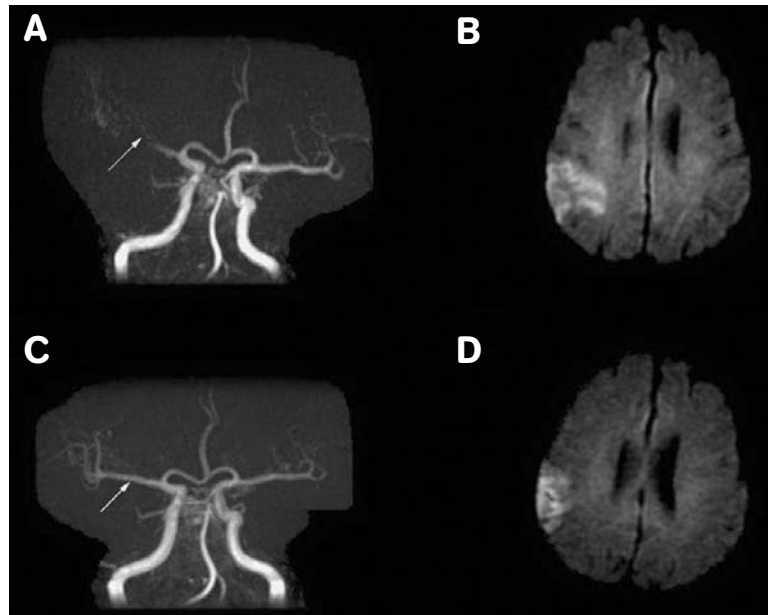


Figure. Proximal occlusion (A) and then complete recanalization (C) of the right middle cerebral artery (arrows) after intravenous administration of tissue plasminogen activator. Diffusion-weighted images showing hyperintensities in the right fronto-parietal region before (B) and after (D) thrombolytic therapy.

A 67-year-old right-handed man presented to our emergency department with sudden onset of left-sided weakness. He arrived within 30 minutes after the onset. The blood pressure was 153/89 mmHg. On examination, he was alert and oriented. His eyes deviated to the right side. He also developed dysarthria and left central facial weakness. There was no neglect, aphasia or limb ataxia. In addition, he suffered from left hemiplegia and hypoesthesia. Pathologic reflexes were absent. The platelet count was $217,000/\text{mm}^3$, aPTT 30.5 seconds, PT

10.8 seconds with International Normalized Ratio of 0.87. Electrocardiogram revealed atrial fibrillation.

MR angiography demonstrated a proximal occlusion of the right middle cerebral artery (Fig. A). Diffusion-weighted MR imaging revealed hyperintensity over the right frontal and parietal regions (Fig. B). The score of National Institute of Health Stroke Scale (NIHSS) was 13, while, all inclusion and exclusion criteria for intravenous tissue plasminogen activator (rt-PA) were attained. His weight was 61.9kg, and thus 50mg of rt-PA

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was given at 3 hours of onset.

His muscle power improved from grade 1 to 4 in Medical Research Council (MRC) grading scale, 4 hours after thrombolytic therapy. NIHSS score were 8 at 2 hours and 2 at 26 hours after rt-PA infusion. One week later, he could walk well with only mild clumsiness over his left hand. His modified Rankin scale score was 1. The follow-up MRI showed a patent right middle cerebral artery on MR angiography (Fig. C) and a focal hyperintensity over right fronto-parietal region on the diffusion-weighted image (Fig. D).

Intravenous rt-PA for patients of acute ischemic stroke within 3 hours had been shown to provide a better prognosis at 3 months⁽¹⁾. MR angiography is useful to assess vessel status and easy to interpret even in the hyperacute situation⁽²⁾. According to the Thrombolysis In Myocardial Infarction (TIMI) grading system, MR angiography helps further differentiating recanalization status⁽³⁾. Therefore, a comprehensive imaging workup will not only help to understand the stroke status, but also optimize decision making in thrombolytic therapy.

Our patient's left-side muscle strength was regained

in a few hours after rt-PA use, whereas NIHSS score significantly improved from 13 to 8 and then 2 at the end of the first day. The second MR angiography performed one week later showed a complete recanalization of the right middle cerebral artery in TIMI grading system. Intravenous rt-PA is likely to be responsible for this complete recanalizing effect. Herein we demonstrated a correlated clinical outcome to the image changes in this patient.

References:

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