Reversibility of Brainstem Damage After a Mechanical Thrombectomy

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Diffusion-weighted imaging (DWI) has revealed the reversal of often sizeable damage due to brainstem lesions in patients treated within 4.5 hours, and this reversibility of damage was strongly associated with early neurological improvement. In posterior circulation stroke, the reversibility of damage due to a DWI-detected lesion is poorly documented after intravenous thrombolysis or intra-arterial therapy. We report a case of vertebrobasilar stroke mechanically recanalized 4.5 hours after symptom onset that revealed substantial reversal of early ischemic damage to the brainstem on DWI scans.

A 51-year-old man suddenly went into coma after experiencing bilateral flaccidity in the lower extremities. A noncontrast computed tomographic scan showed that there were no signs of cerebral ischemia. Magnetic resonance imaging of the brain was performed 3 hours after onset, and DWI scans showed right lateral pontine infarction (Figure, A) and central pontine infarction (Figure, B) secondary to acute basilar artery occlusion (Figure, C). A mechanical thrombectomy using a Solitaire Flow Restoration (FR) stent (Covidien) was performed while the patient was under general anesthesia, and complete recanalization was obtained 4.5 hours after stroke onset (Figure, D). The patient was extubated 12 hours later, and recovery was complete on day 1. Magnetic resonance imaging on day 4 revealed total reversibility of the damage to the right lateral portion of the pons due to the lesion (Figure, E) and significant reduction in the volume of the central portion of the pons (Figure, G). These findings were also observed in fluid-attenuated inversion recovery sequences (Figure, F-H).

Discussion

Acute basilar artery occlusion is a devastating disease, and mechanical thrombectomy devices such as Solitaire FR have increasingly been used for patients with acute ischemic stroke with proximal occlusion. In this type of situation, an initial DWI sequence detects brain ischemia, which is usually considered to be nonreversible damage due to a lesion. However, a DWI-detected reversibility in posterior circulation has key clinical implications because the initial volume of infarction seems to be a potent prognostic variable after thrombolysis. Early detection of lesions on DWI scans may prevent the use of a more...
interventional approach. This case illustrates that the use of a stent-retriever device such as the Solitaire FR can achieve quick and complete recanalization of a basilar artery occlusion. This approach might even achieve a substantial permanent reversal of damage due to lesions and might result in successful tissue salvage, as shown in this case, even when recanalization was obtained 4.5 hours after symptom onset. Some patients with initial unfavorable DWI-detected lesion scoring could benefit from recanalization with mechanical thrombectomy devices.7

ARTICLE INFORMATION

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REFERENCES