Successful mechanical thrombectomy in stroke with thrombolysis-associated intracerebral hemorrhage—a case report

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Background: Intravenous thrombolysis and mechanical thrombectomy are the standard of care for patients with acute ischemic stroke with large vessel occlusion. Intracerebral hemorrhage is a main complication of intravenous thrombolysis, however, no data are available on the efficacy and safety of mechanical thrombectomy in patients with thrombolysis-associated intracerebral hemorrhage. This constellation is expected to become more frequent as increasing numbers of patients are treated under the drip-and-ship paradigm. *Case report:* A 75-year-old male patient was admitted to an emergency department with acute onset dysarthria and left side hemiparesis due to right middle cerebral artery occlusion. Intravenous thrombolysis was initiated and the patient transferred to our center for mechanical thrombectomy. Upon arrival, cerebral imaging showed persistent right middle cerebral artery occlusion and new onset left frontal, temporal, and parietal intracerebral hemorrhage. Thrombectomy was performed and perfusion completely re-established with excellent neurological outcome. Follow-up imaging revealed probable cerebral amyloid angiopathy. *Conclusion:* Mechanical thrombectomy may be safe and effective in ischemic stroke with large vessel occlusion and thrombolysis-associatied intracerebral hemorrhage.

Key Words: Stroke—Infarction—large vessel occlusion—thrombectomy—rtPA—thrombolytic therapy—intracerebral hemorrhage—cerebral hemorrhage.

Case Presentation

A 75-year-old-male patient was admitted to an emergency department for acute onset of dysarthria and left brachiofacial hemiparesis (National Institute of Health Stroke Scale score, 7). Emergency computed tomography (CT) imaging showed no infarct demarcation or intracerebral hemorrhage (ICH), and contrast-enhanced CT angiography revealed occlusion of the M1 segment of the right middle cerebral artery (MCA). After exclusion of contraindications, intravenous thrombolysis with 70 mg of recombinant tissue plasminogen activator was initiated. The patient was transferred to our center for mechanical thrombectomy (MT). While repeat CT imaging upon arrival showed no infarct demarcation, asymptomatic ICH of left parietal, temporal and frontal lobe measuring 18 × 10 mm, 5 × 4 mm, and 7 × 5 mm, respectively, was diagnosed (Fig 1). Persistent occlusion of the right MCA and neurological deficit (National Institute of Health Stroke Scale score, 7) still indicated necessity for MT, and the patient was transferred to the angiography suite. The procedure was performed under general anesthesia. A 8-F sheath was placed in the right common femoral artery. A 5-F Sofia catheter was placed in the right internal carotid artery, and MT was performed with a Solitaire stent retriever (Medtronic, Ireland). MCA perfusion was completely reestablished (thrombolysis in cerebral infarction scale grading of 3). Further work-up revealed intermittent atrial fibrillation, arterial hypertension, and

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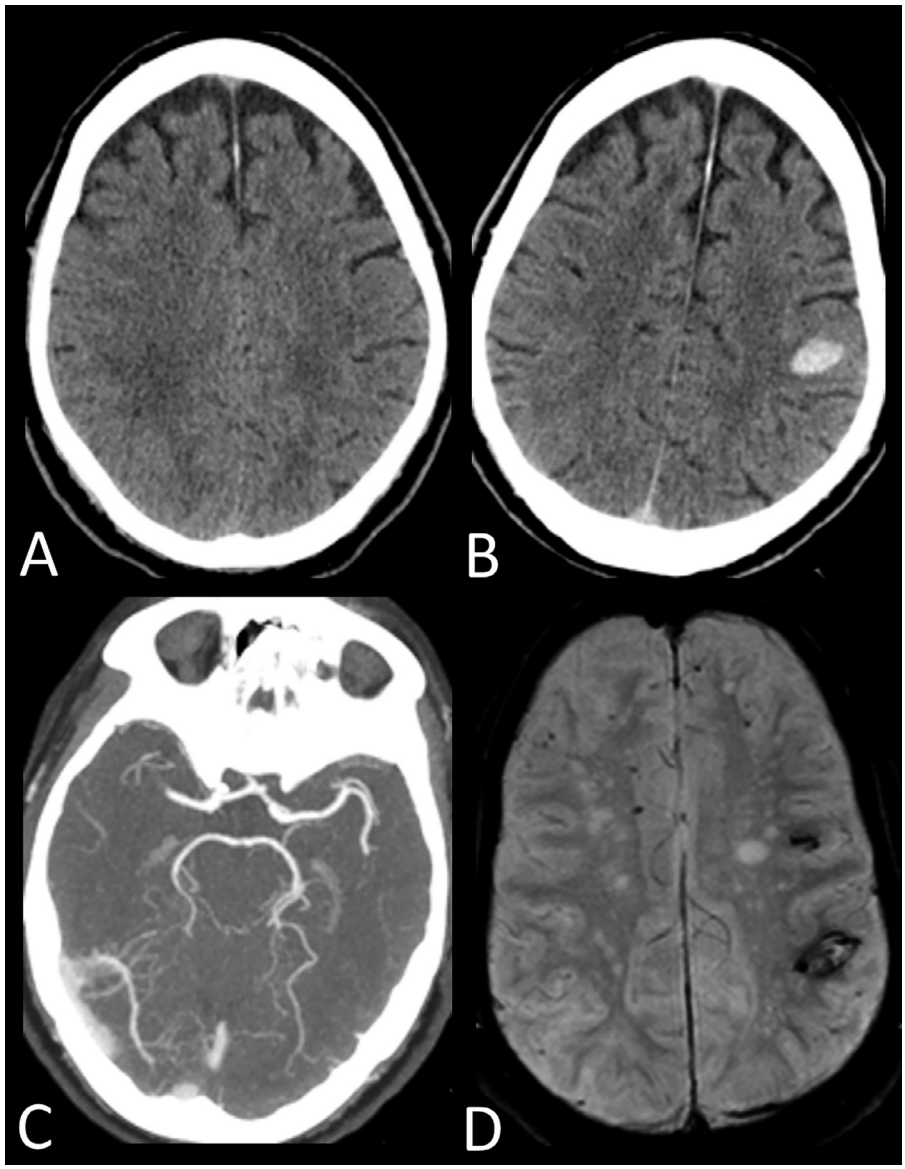

Figure 1. *(A) Initial CT scan of the patient with acute onset left side hemiparesis. (B) Repeat CT scan after intravenous thrombolysis and transfer to our center; 1 of 3 left hemispheric intracerebral hemorrhages is shown. (C) Contrast-enhanced CT angiogram shows persistent occlusion of right middle cerebral artery, M1 segment, and thrombectomy was performed. (D) MRI 5 weeks later with T2*-weighted gradient echo sequence reveals microbleeds and residual hemorrhage.*

hypercholesterinaemia. The patient was released from our hospital without any neurological deficits (modified Rankin Scale score, 0). Follow-up magnetic resonance imaging revealed cortical microbleeds consistent with probable cerebral amyloid angiopathy defined by the modified Boston criteria (Fig 1).[1]

Discussion

Recent randomized clinical trials and current guidelines suggest that stroke patients with anterior circulation occlusion should be treated with intravenous thrombolysis and MT.[2,3] Most hospitals do not have on-site MT facilities and patients need to be transferred secondarily after thrombolysis, known as the drip-and-ship paradigm.[4] Upon arrival, repeat imaging is often performed to detect infarct progression or ICH before MT. ICH is a main complication of thrombolysis and occurs in 10.6%, both inside and outside the territory of the occluded artery.[5-7] Increasing incidence of patients treated under the drip-and-ship paradigm will inevitably lead to an increasing number of ICH detected after secondary referral for MT. However, ICH was an exclusion criterion in randomized MT trials and no data are available on the efficacy and safety of MT in patients with ICH.[3] Our case provides the first report of successful MT in a patient with acute ischemic stroke with IV thrombolysis-associated ICH in a different vascular territory. However, despite this encouraging case report, further studies are needed to evaluate safety and efficacy of MT in patients with stroke and thrombolysis-associated ICH.

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