



Successful Mechanical Reperfusion of an Acute Bilateral M1-Occlusion Can Result in Favorable Outcome

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Abstract

Bilateral simultaneous occlusion of both Middle Cerebral Arteries (MCA) is a rare cause of acute coma. Most existing reports have unfavorable outcomes. Mechanical thrombectomy, by allowing fast and successful reperfusion of both MCA, might allow to expect favorable outcome. We report and detail a procedure of bilateral M1 occlusion treated with simultaneous thrombectomy allowing successful reperfusion of both sides in 27 min. The patient was discharged after 11 days with a NIHSS of 4 and Modified Rankin Scale (mRS) score of 2.

Introduction

Most case reports of simultaneous bilateral strokes report poor outcome [1]. Acute coma with decerebrate posture [2] but preserved brainstem reflexes is the typical presentation of such cases [3]. In all reports, these patients had a medical history of atrial fibrillation. Despite aggressive treatment with mechanical thrombectomy, patient's outcome remains extremely poor [4].

Nevertheless, quick reperfusion with Mechanical Thrombectomy (MT) seems to offer a chance for a favorable outcome [5].

We report a case of a simultaneous bilateral M1-MCA (middle cerebral artery) occlusion revealed by acute coma successfully treated with MT.

Case Presentation

A 78-year-old female with a medical history of atrial fibrillation presented with acute comatose (CGS 3) but preserved pupillary examination. She was intubated and transferred to the closest hospital for a brain CT-scan which was performed less than 2 h after onset and found a right 4 mm subacute subdural hematoma with no mass effect. Angio-CT demonstrated a bilateral M1-MCA occlusion. Figure 1 shows initial CT with small subdural hematoma (a) and suspect hyperdense MCA (b) and angio-CT (c). Intravenous thrombolysis was not started because of the subdural hematoma, and the patient was transferred to our institution for a mechanical thrombectomy.

The procedure started 220 min after onset and was performed under general anesthesia, by one senior neuro-interventionist and one experienced fellow assistant.

Bilateral 6-Fr femoral puncture was performed and two 6-Fr long Sheath (Neuron™ MAX 088, Penumbra Inc., Alameda, USA) were simultaneously introduced and placed in both internal carotids. One aspiration catheter (ACE68®, Penumbra Inc, Alameda, USA) was placed in left M1-MCA and aspiration was started (we usually wait 2-3minutes before retrieving the aspiration

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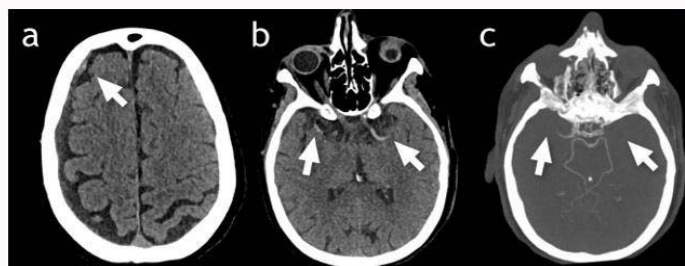


Figure 1: Initial CT and angio-CT scan.

Initial CT with (a) a small subdural hematoma (arrow) and (b) suspect hyperdense MCA (arrows) with confirmed bilateral M1 occlusion on (c) angio-CT (arrows).

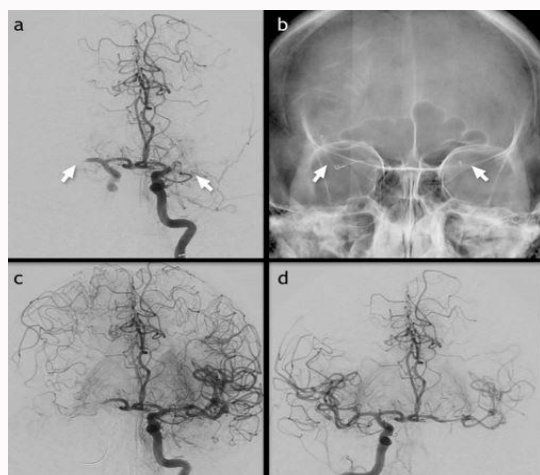


Figure 2: Simultaneous Bilateral Mechanical Thrombectomy.

(a) Initial angiogram with bilateral occlusion (arrows), (b) simultaneous bilateral thrombectomy with stent and aspiration on the right side and aspiration alone on the left side (arrows) and final angiogram on both carotids (c and d).

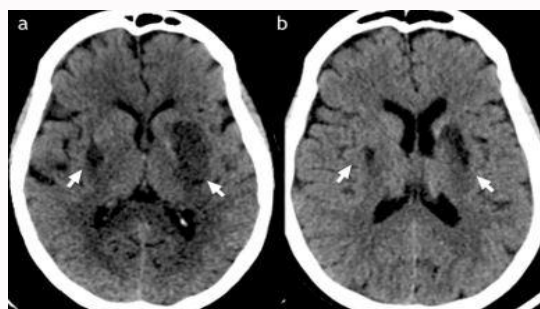


Figure 3: Follow up CT-scans.

(a) Day-2 and (b) 3-month CT-Scan showing bilateral putamina ischemic lesions.

catheter). During this time, a second aspiration catheter (ACE68[®]) was placed in right M1-MCA with a Trevo Provue[®] 4 mm × 20 mm stent retriever (Stryker Neurovascular, Kalamazoo, USA) resulting in a combined technique. Successful reperfusion was achieved on both sides after one pass (mTICI2C on left side and mTICI3 on the right side). The whole procedure length from puncture to recanalization was 27 minutes. Time from onset to recanalization was 247 min. Figure 2 shows initial angiogram (a), simultaneous bilateral thrombectomy (b) and final angiogram on both carotids (c and d) the patient was extubated at day-1 and woke up with a mild right brachio-facial deficit (NIHSS 4 at day-2). She was discharge at 11 days and her mRS was 2. Clinical follow up showed an improvement of the neurological deficit but a post-ischemic Parkinson syndrome due to bilateral putamina ischemia that responded to L-Dopa. Figure 3 shows 2-day (a) and 3-month (b) follow-up CT-scan.

Discussion

Our case report shows the possibility to achieve a favorable outcome in case of bilateral M1-MCA occlusion treated with thrombectomy.

The medical history of atrial fibrillation and the acute setting of comatous presentation might help to distinguish these patients from acute unilateral stroke in patient with pre-existing contralateral carotid severe stenosis or occlusion which is also associated with poor outcome but only require unilateral MT [6].

In their case report [7], Dietrich et al. also experienced a favorable outcome after bilateral M1-MCA occlusion but the second occlusion might have occurred in the presence of the neurologist while the patient was already in hospital and considered for a MT of the first occlusion. Another team recently reported a successful MT of bilateral M1-MCA occlusion in an 84-year-old patient [5] but once again the patient was already in hospital for atrial fibrillation and then presented with acute right palsy and aphasia.

Initial MRI might be more informative on the prognosis of the patient but the initial presentation with comatous leading to intubation makes it more likely that the patient will have a CT-scan. CT-Perfusion can be performed although it is also more likely that a bilateral M1-MCA occlusion would lead to altered perfusion results.

Nevertheless, the acute onset and severity of the symptoms with coma and decerebrate posture might motivate a fast pre-hospital management with direct CT scan allowing short enough time to angiosuite to perform a thrombectomy. The initial severity of the symptoms should not exclude these patients from consideration for a thrombectomy all the more since these patients might have no chance of achieving a favorable outcome without MT.

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