Sudden coma onset following simultaneous bilateral carotid occlusion

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Declarations

All authors have read and approved the submitted manuscript, have no conflicts of interest or financial disclosure.

The manuscript has not been submitted elsewhere nor published elsewhere in whole or in part.

The data are made available upon reasonable request to the corresponding author. There is no figure or video of any recognizable patient in this submission.

The report has been anonymized and updated according to ICMJE Standards on Anonymization with one indirect identifiers corresponding to patient's age ("septuagenarian").

Reporting follows the CARE guideline.

Patient consent for publication was obtained (Informed consent was obtained from the participant included in the study).

I take full responsibility for the data, the analyses and the images; full access to all of the data; and the right to publish any and all data separate and apart from any sponsor.

Introduction:

Acute onset coma can have a cerebro-vascular etiology, being a common clinical feature of patients with ischemic strokes of the posterior circulation when involving both thalami, and/or the basilar perforators. Conversely, in the anterior circulation, internal carotid artery occlusion as only been reported in rare instances to be a cause for coma (1,2). Mechanical thrombectomy (MT) has emerged as a first line strategy for emergent cerebral large vessel occlusion, with a compelling efficacy in reducing handicap and mortality, (3) in the anterior circulation.

Description of the case:

We report the case of a septuagenarian man with a prior history of cardiovascular events (minor stroke, coronary syndrome, atrial fibrillation and hypertension) admitted to the emergency department for the sudden onset of altered vigilance (Glasgow Coma Scale Y3V1M4), with reduced movements in the 4 limbs and right facial paresis. Emergent Brain MRI revealed bilateral internal carotid artery (ICA) occlusion and a recent infarct in the superficial territory of left middle cerebral artery (Figure 1A). No thrombolysis was initiated as there was a doubt whether the patient was taking an anticoagulant treatment, and the patient was immediately rereferred to a comprehensive stroke center for MT.

The initial angiographic runs confirmed the occlusion of the terminal segment of both ICA (Figure 1B,C). MT was successfully achieved using a stent retriever and aspiration catheter (combined technique) in 45 minutes with complete bilateral revascularization (Figure 1D,E,F) corresponding to modified Treatment In Cerebral Ischemia (mTICI) 3. No hemorrhagic transformation occurred, and patient evolved favorably with spectacular motor recovery. He was able to ambulate independently and presented a residual right brachiofacial paresis at discharge, with a National Institutes of Health Stroke Scale (NIHSS) score of 2.

Emergent bilateral anterior cerebral occlusions can be revealed with unilateral symptoms caused by embolic event and can in rare instances lead to sudden onset of coma (4,5). They are associated with severe clinical outcomes in the absence of early recanalization. In the presented case, successful reperfusion was swiftly achieved and translated to a favourable clinical outcome. This case highlights both the need for vascular imaging for the etiological diagnosis of sudden coma, and the potential for recovery after adequate revascularization of multiple simultaneous cerebral arteries occlusions. Acute simultaneous bilateral carotid occlusion should not delay patient management and may not be a good argument to deny MT if parenchymal imaging confirms a favorable imaging profile.

REFERENCES:

1. Jadhav AP, Ducruet AF, Jankowitz BT, Jovin TG. Management of Bilateral Carotid Occlusive Disease. Intervent Neurol. 2015;4(3–4):96–103.

2. AbuRahma A. Bilateral internal carotid artery occlusion: natural history and surgical alternatives. Cardiovascular Surgery. 1998;6(6):579–583.

3. Goyal M, Menon BK, van Zwam WH, et al. Endovascular thrombectomy after large-vessel ischaemic stroke: a meta-analysis of individual patient data from five randomised trials. The Lancet. 2016;387(10029):1723–1731.

4. Pop R, Manisor M, Wolff V, et al. Endovascular Treatment in Two Cases of Bilateral Ischemic Stroke. Cardiovasc Intervent Radiol. 2014;37(3):829–834.

5. Ota K, Matsubara N, Takahashi I, et al. A Case of Acute Simultaneous Bilateral Internal Carotid Artery Occlusion Treated by Thrombectomy. NOUSHINKEI KEKKANNAI TIRYOU. 2018;12(8):386–392.

FIGURE'S TITLE:
Not applicable

FIGURE'S LEGEND:

Before thrombectomy: Brain MR angiography and diffusion weighted imaging (inset) demonstrating no signal in both carotids and restricted diffusion in the left middle cerebral artery territory (A). Digital subtraction angiography (B, C) shows bilateral occlusion of internal carotids (arrowheads).

After mechanical thrombectomy: Antegrade flow is restored in both carotid arteries (E, F). Diffusion weighted image demonstrates limited infarct progression on the left, and no infarct on the right (D).

