Paradoxical vasoconstrictive effect in the contralateral hemisphere after carotid stenting

Figure Perfusion CT before and after carotid stenting

(A) Prior to carotid revascularization, the mean transit time (MTT) and cerebral blood volume values were elevated in the left hemisphere. (B) Immediately poststenting, MTT was prolonged in the right hemisphere. (C) Three days later, these findings normalized, indicating the resolution of paradoxical vasoconstrictive phenomenon in the contralateral hemisphere.

A 31-year-old woman developed aphasia and right hemiparesis from left internal carotid artery dissection, with near occlusion. Her examination results worsened despite anticoagulation; CT angiography showed the left hemisphere received blood entirely through the carotid. Perfusion CT showed prolonged mean transit time (MTT) and elevated cerebral blood volume in the ipsilateral hemisphere (figure, A) consistent with hypoperfusion and compensatory vasodilation.¹ Immediately after carotid stenting, the contralateral hemisphere showed prolonged MTT (figure, B). Transcranial Doppler ultrasound showed higher pulsatility index² in the contralateral than the ipsilateral middle cerebral artery (2.4 vs 1.3). These findings suggest that carotid revascularization may have a paradoxical vasoconstrictive effect in the contralateral hemisphere.

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