

Unusual Positional Compression of the Internal Carotid Artery Causes Carotid Thrombosis and Cerebral Ischemia

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This article reports an unusual case of positional compression of internal carotid artery resulting in carotid thrombosis and stroke in a 37-year-old man. A patient was operated urgently for a free-floating thrombotic mass in the internal carotid artery. Open thrombectomy was performed in acute phase of stroke for prevention of the recapitulative cerebral thromboembolism. Hemiplegia completely disappeared within 7 months.

The literature pertaining to the carotid arteries is ancient enough. This article reports an unusual case of positional compression of internal carotid artery (ICA) resulting in carotid thrombosis.

CASE REPORT

A 37-year-old man presenting with left hemiplegia was emergently admitted to the hospital. Duplex scanning and computed tomography (CT) revealed right ICA thrombosis, with a free-floating thrombotic mass (25 mm) in the region of the carotid bifurcation (Fig. 1). Cerebral CT revealed ischemic stroke. Atherosclerotic ICA disease or any other cardiac disorders and thrombocytosis were not observed. Hemiplegia developed while the patient was sleeping. According to the patient's survey, it was clear that as he woke up, his hand was under the right side of the neck. The aforementioned pose corresponds to Figure 2. Thus, the right carotid artery suffered from manual compression during the sleep.

Intervention was performed under general anesthesia. Common, internal, and external carotid arteries were clamped, and an arteriotomy was created in the common carotid artery and extended into the ICA. The thrombotic mass was removed from the sectioned artery. The intervention was performed without intraluminal shunting. Retrograde blood flow was good (55 mm Hg). The arteriotomy was closed with primary closure. The contour of the vessel was intact. Carotid clamping time lasted for 15 minutes.

Postoperatively, pharmacological support was instituted according to hemodynamic situation. Low-molecular-weight heparin therapy was started on postoperative day 1, with minimal dose for prevention of hemorrhagic transformation of the ischemic stroke. The postoperative period was uncomplicated. After 4 days, the patient was transferred to the neurology department. Hemiplegia disappeared totally within 7 months. After 6 months, cerebral CT revealed reduction of the ischemic zone. The duplex showed good permeability of the ICA. Carotid steal syndrome was not observed.

DISCUSSION

Thrombus within the carotid artery usually occurs in vessels with severe atherosclerotic disease and may embolize to cause transient ischemic attacks and cerebral infarctions. The causes of free-floating clots in ICA are atheromatous stenosis, ulcerated plaque, and carotid dissection.¹ The risk factors for carotid artery thrombus formation in the absence of atherosclerosis are not well characterized.² In a small number of cases, carotid artery thrombi have been detected in patients without identifiable

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Fig. 1. Computed tomographic angiography revealed the free-floating thrombotic mass in the right internal carotid artery.

carotid disease. The causes for thrombus formation in these patients are unclear and probably multifactorial. Hypercoagulable states from cancer or oral contraceptives^{3,4} were presented in some cases. Thrombi have also been detected in patients using stimulant drugs such as cocaine.^{4,5}

Eagle syndrome refers to a clinical syndrome caused by the abnormal elongation of the styloid process, with calcification of the stylohyoid ligament.^{6,7} Stylo-carotid compression, typically involving the ICA, results in various symptomatic presentations. Symptoms range from pain or sensation of a foreign body in the throat to stroke and possibly even sudden death.^{8,9}

Pozzati et al. described the case of positional transient ischemic attacks related to extrinsic compression of ICA by a taut fibrous band between the sternocleidomastoid muscle and the carotid sheath.¹⁰

Our article reports an unusual case of positional compression of ICA resulting in carotid thrombosis and stroke. All the other aforementioned factors of thrombosis were excluded. We could not find a similar case in the literature. This case supports



Fig. 2. The pose that caused compression of carotid artery corresponds to the picture "Queen Isabo" (by Pablo Picasso, 1909).

usage of an urgent open surgical intervention for prevention of recapitulative cerebral thromboembolism in acute phase of the ischemic stroke with a good postoperative result.

External compression could be a cause of ICA occlusion, but further investigations to exclude other causes must be performed.

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