

**Case Report**

Carotid Artery Occlusion: Is it a Surgical or Medical Emergency?

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Abstract

Carotid artery occlusion, unlike occlusion of the peripheral arterial system, is an occlusive disease where open surgical revascularization is often not an option in management. Emergency physicians and internists would benefit with a quick review of current evidence, thereby, reducing time spent between referral, management of such a case and stay in the emergency room or ward, thus making health care cost effective as well.

Keywords: Carotid; Internal; Lysis; Management; Occlusion

Introduction

Carotid artery stenosis and occlusion, on radiological imaging is a condition for which a vascular surgery opinion is often sought, to consider revascularization and prevent future neurological events. Emergency revascularization in a non-occlusive lesion is reported to improve clinical outcome in selected patients [1]. Acute and chronic occlusion of the extra-cranial carotid artery is managed mainly medically unlike an acute occurrence with the arterial system in the coronaries, peripheral or the mesenteric territory [2]. Time is of essence; patients need to be assessed by the neurology and radiology team and Best Medical Therapy (BMT) and Endovascular Thrombectomy/Lysis (EVT) instituted. We look at current literature and propose a pathway for such patients to be managed effectively.

Case Report

A 74-year-old lady with multiple comorbidities, including hypertension, diabetes mellitus, dyslipidaemia and prior history of stroke with right-sided weakness, presented to the emergency department with a complaint of recurrent episodes of slurred speech over the past 24 hours, each resolving spontaneously. With the impression of transient ischemic attack, the emergency department had initiated the stroke protocol and, as the plain CT was normal, a CT Angiography (CTA) of the brain and neck was performed. The CTA revealed long segment complete occlusion of the right Internal Carotid Artery (ICA) from its origin, as well as cortical watershed infarcts. The vascular surgery team was consulted for the occluded ICA. As evidence is not in favour of intervention in an occluded carotid artery [2] the patients management was taken over by the neurology and internal medicine teams. She was eventually discharged, after complete stroke workup which

included and MRI (Figure 1), on Best Medical Therapy (BMT), including antiplatelet and lipid-lowering medication.



Figure 1: MRI showing complete occlusion of the right internal carotid and left vertebral arteries.

Discussion

Carotid artery occlusion is subdivided into thrombotic occlusion or non-thrombotic occlusion. The latter is largely due to dissection or arteritis with BMT as the mainstay of treatment [3,4]. Emergent revascularisation via surgical or EVT may be the standard of care in cases of acute coronary, peripheral and mesenteric occlusion [5,6], while management of complete occlusion of carotid artery does not warrant surgical intervention, in most cases [2]. The role EVT, if they present early, with a National Institutes of Health Stroke Scale (NIHSS) 6 or higher, is advised by recent guidelines, with a controversial role in cases of lower NIHSS scores [7]. Furthermore, the presence of watershed infarcts in such patients with carotid artery occlusion may predict worsened neurological progression of their disease on admission [8]. This is hypothesised to be caused by hypoperfusion along with micro-emboli [9]. Permissive hypertension, with exception of patients undergoing thrombolysis, may hence be indicated [10].

Carotid artery stenosis is a separate entity where either open surgical intervention through Carotid Endarterectomy (CEA) or endovascular intervention, such as Carotid Artery Stenting (CAS) may be needed [1,2]. Nevertheless, these patients also require BMT, and a neurological assessment prior to intervention for prognosticating the procedure.

A Cochrane systematic review along with multi-society guidelines [1,2] state that there is little or no benefit in revascularization of total or near total occlusion of extracranial carotid and vertebral artery disease. The 2017 European Society

of Vascular Surgery (ESVS) state that the 5-year stroke risk in patients treated with CEA and BMT and patients treated with BMT alone is similar: 22.4% and 22.3% respectively [2].

Conclusion

Current available evidence and guidelines recommend BMT for patients with carotid or vertebral artery near total or total occlusion. The exception to this being those that present within six hours of onset of symptoms, where EVT maybe considered. There is a role for permissive hypertension for these patients to prevent watershed infarcts. It is prudent for emergency physicians and internists to be aware of current guidelines, refer appropriately and reduce emergency room waiting time. Benefit of intervention by vascular surgeons or interventional radiologists should be decided by the neurology/stroke team.

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