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Case Report

Internal carotid artery dissection and pseudoaneurysm formation with resultant ipsilateral hypoglossal nerve palsy

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ABSTRACT

Cranio-cervical artery dissection is a potentially disabling condition caused by an intimal tear allowing blood to enter and dissect the media in the cranial direction which can occur spontaneously or as a result of trauma. When the dissection extends toward the adventitia, it can form a protrusion from the weakened vessel wall called a pseudoaneurysm, which may become a nidus for distal thromboembolism or cause mass effect on adjacent structures. Accurate and prompt diagnosis is critical as timely treatment can significantly reduce the risk of complications such as stroke. Here, we present a case of cervical ICA dissection and pseudoaneurysm formation causing mass effect with resultant compressive ipsilateral hypoglossal nerve palsy.

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Case report

A 56-year-old man with a past medical history of hypertension presented to the neurology clinic with a few days history of dysphagia characterized by a sensation that the left side of his throat “could not bring things down.” There was no other neurologic deficit. The patient’s blood pressure was elevated at 170/90 mm Hg. On physical examination, the tongue was slightly deviated to the left.

Subsequent MRI of the brain before and after the administration of IV gadolinium demonstrated a crescentic area of hyperintensity on unenhanced T1-weighted imaging overlying the cervical portion of the internal carotid artery,

representing the false lumen of a dissection of the internal carotid artery (Fig. 1). This signal abnormality extended from 4 cm above the origin of the internal carotid artery to the level of the skull base. There was associated narrowing of the true vessel lumen. There was also an area of focal outpouching, consistent with a pseudoaneurysm (Figs. 2, 3 and 4), approximately 2 cm from the skull base abutting the expected course of the hypoglossal nerve.

Based on the clinical and radiographic findings, the patient was diagnosed with a dissection of the cervical portion of the internal carotid artery, with pseudoaneurysm formation and compressive neuropathy of the hypoglossal nerve.

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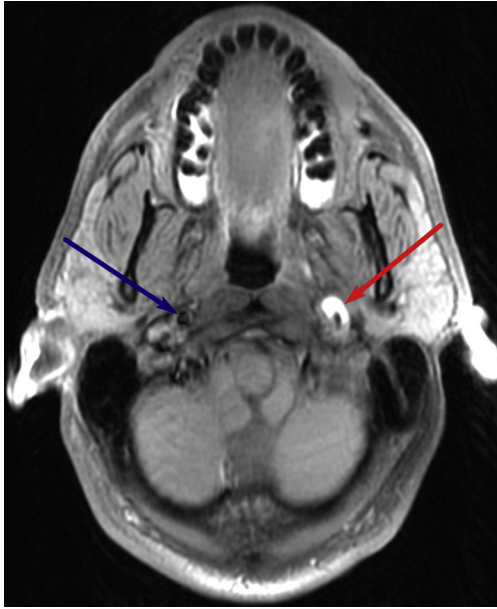


Fig. 1 – Pseudoaneurysm: Axial T1-weighted fat-saturated image through the upper neck demonstrates dissection of the left internal carotid artery cervical segment with narrowing of the flow-related signal void and a crescentic hyperintense rim (red arrow), compatible with hemorrhage in the subintimal space or false lumen. There is focal dilation at this level, likely representing a thrombosed pseudoaneurysm. The normal right ICA is also visualized (blue arrow). ICA, internal carotid artery.

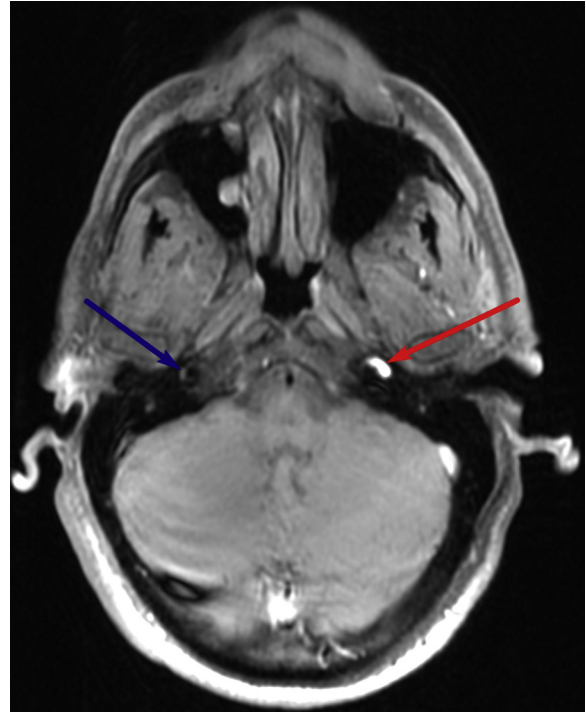


Fig. 3 – Proximal end of dissection: Axial T1-weighted fat-saturated image through the upper neck demonstrates dissection of the left cervical internal carotid artery, with narrowing of the flow-related signal void starting at 4 cm from the ICA origin. Again seen is a crescentic hyperintense rim (red arrow) surrounding the narrowed flow-related signal void of the cervical ICA, likely representing subacute hemorrhage within the false lumen. The normal right ICA is visualized (blue arrow).

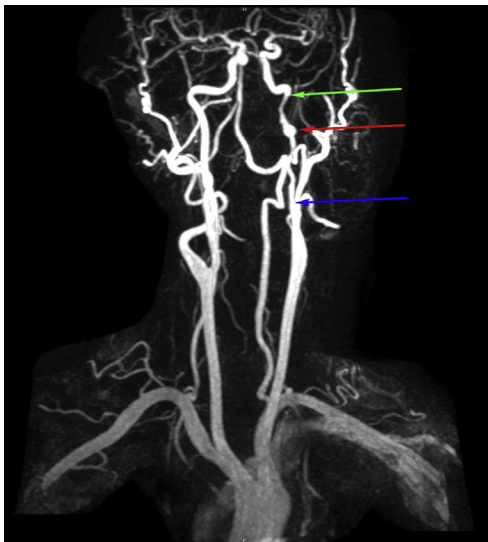


Fig. 2 – Coronal MIP reconstruction of a contrast-enhanced MRA of the carotid arteries demonstrates a segmental area of narrowing of the left cervical ICA, starting 4 cm from its origin (blue arrow), ending at the skull base (green arrow), with a focal area of aneurysmal dilation of the left internal carotid artery (red arrow) 2 cm from the skull base. MIP, maximum intensity projection; MRA, magnetic resonance angiogram.

Discussion

Cranio-cervical artery dissection is a potentially disabling condition, affecting young and middle aged adults [1]. This is a relatively rare condition that is becoming increasingly recognized due to increasing use of neuroimaging techniques [1]. Cranio-cervical artery dissection may be traumatic or spontaneous and may be associated with underlying conditions like fibromuscular dysplasia or connective tissue diseases like Ehlers-Danlos or Marfan syndrome [2]. The presenting symptoms are often nonspecific and include headache, neck pain, or scalp tenderness. The sequelae can be catastrophic and include stroke, hemorrhage, or death [1].

Blood flow to the brain is mainly supplied by the cranio-cervical arteries which have walls composed of 3 layers including the inner intima, the muscular media of variable thickness, and the outer fibrous adventitia [1]. Injury to the arterial wall can result in cranio-cervical arterial dissection. This is a potentially disabling condition which may start as a primary intramural hematoma or as an intimal tear. This most commonly occurs at the extracranial segments of the carotid and vertebral arteries [1]. The dissection usually

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