

Carotid Web: A Case Report and Literature Review

Hasnae Moslih, Najlae Lrhorfi, Kenza Horache, Nabil Moatassim Billah and Ittimade Nassar
Radiology Department, Ibn Sina University Hospital, Mohammed V University, Rabat, Morocco.

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ABSTRACT

A carotid web (CW), an atypical fibromuscular dysplasia, is rare and may cause ischemic stroke. It is challenging to recognize a carotid web promptly and treat it accordingly. We report a case of young man who has no history of stroke, and initially consulted for vertigo and cervical pulsatility sensation.

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Introduction

A carotid web is defined as a thin, linear, membrane that extends from the posterior aspect of the internal carotid artery bulb into the lumen, located just beyond the carotid bifurcation. Histologically, it is thought to be a rare variant of fibromuscular dysplasia, thus it is also referred to as 'intimal variant' fibromuscular dysplasia [1,2].

Carotid web is rare and may cause ischemic stroke. It is challenging to recognize a CW promptly and treat it accordingly [3].

Case report

We report a case of patient 45 years, with no medical history, who consulted for vertigo and cervical pulsatility sensation.

The patient underwent Doppler ultrasound that showed a linear membrane inside the carotid bulb: an isoechoic-to-hyperechoic focal eccentric area inside the carotid bulb, consistent with carotid web (Figure 1,2), and neck CT angiography showed a thin intraluminal filling defect along the wall of the right carotid bulb, which is a classic imaging feature of carotid web (Figure 3,4).

Likely for this patient, he never had an ischemic stroke and the right diagnosis was assessed precociously.

Discussion

A carotid web is a shelf-like projection within the lumen of the carotid bulb on vascular imaging. Recent literature suggests that carotid webs are likely due to an intimal variant of fibromuscular dysplasia, a rare condition of the artery wall [5,6].

Carotid webs pose a serious risk of ipsilesional ischemic stroke, probably due to thrombus development associated with blood flow disruptions around the web. Due to the small size of carotid webs (~1 mm in thickness), current diagnosis relies on CT angiography (CTA) [5,6].

The diagnosis of carotid webs may be challenging, and it depends on imaging detection. CT angiography as a non-invasive imaging methodology has the advantages of rapid, high-resolution imaging and multiplane reconstruction [1,7]. An operational definition is a thin intraluminal filling defect along the posterior wall of the carotid bulb in oblique sagittal

reformats and, most important, a septum evident on axial section CTA [8].

CW may be detected by carotid sonography, but sensitivity is limited by their size and non-flow-limiting nature.

CTA is useful to differentiate carotid web from other diseases, and MRI provides visual evidence of the carotid web morphology and location.

MRI has the advantage over computed tomography of imparting no radiation and is therefore considered as a complementary approach for analyzing the composition of the vessel and identifying long-term clinical outcomes in the follow-up of carotid webs [9].

Carotid Web is a possible nidus for cerebral thromboembolism. Physicians should consider CaW as a cause of stroke in younger patients with anterior circulation ischemic strokes of an otherwise undetermined cause [7].

Given high risk of recurrent ischemic stroke, appropriate management of carotid webs is important. Management options include pharmacological therapy, such as use of antiplatelet agents, or surgical therapy, such as carotid stenting or endarterectomy [2]. Although evidence is limited to a few case series, one study found that rates of ischemic stroke were lower in patients given surgical therapy when compared to a group given only pharmacological therapy [2,10].

Conclusion

The Carotid Artery Web, or Carotid Web, is rare and, therefore, frequently misdiagnosed condition. Clinicians and radiologist should recognize that carotid web is a potential cause of ischemic stroke in patients with no other determined stroke mechanism. CT angiography is a reliable imaging method to detect it. This will allow to make the diagnosis correctly and to choose the appropriate treatment.

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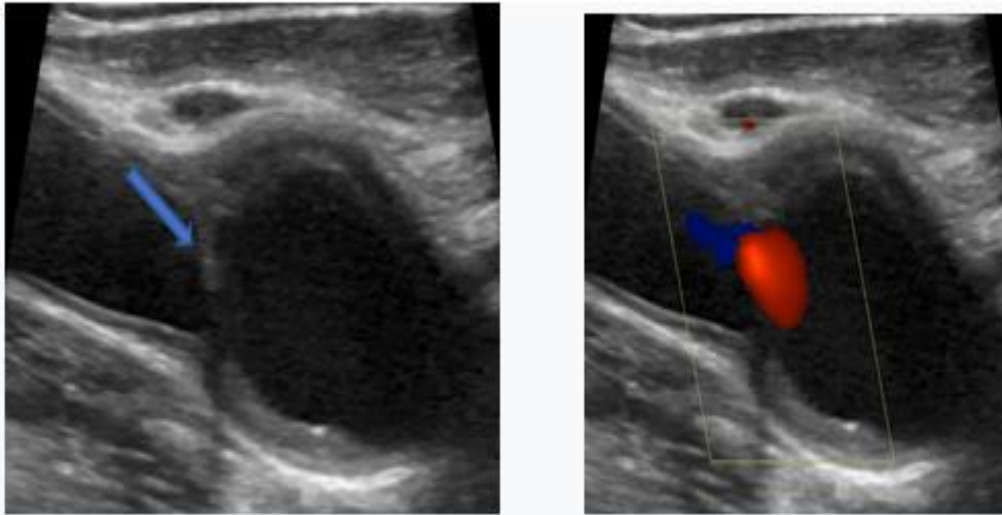


Figure 1,2 . Doppler ultrasound that showing a linear membrane inside the carotid bulb (blue arrow): the hyperchoic focal eccentric area inside the lumen of right carotid bulb.

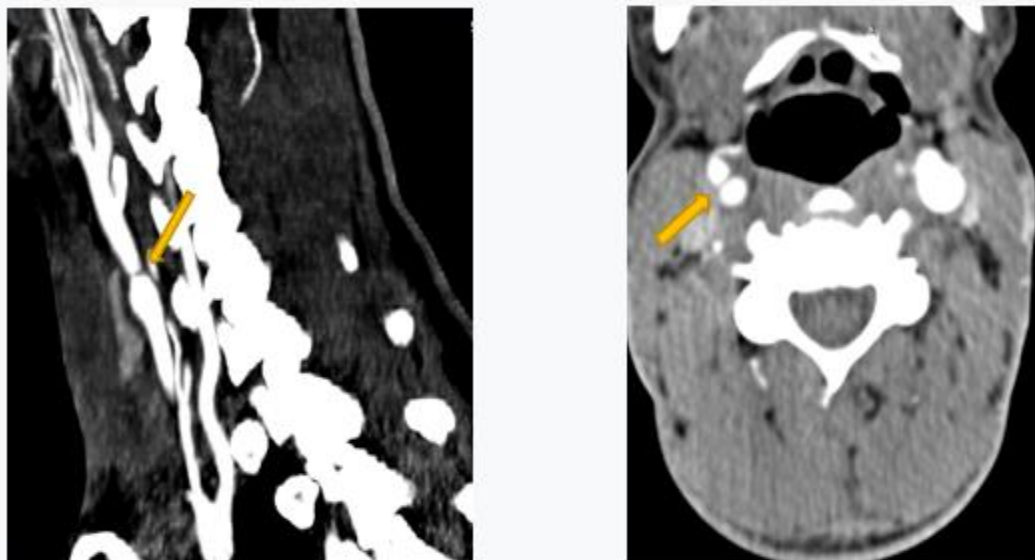


Figure 3, 4. Neck CT angiography: sagittal reformat (3) and axial reformat (4): showing a thin intraluminal filling defect along the wall of the right carotid bulb.