

Vessel Wall Imaging of a Carotid Web

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A carotid web is an intimal variant of fibromuscular dysplasia and rare cause of ischemic stroke.¹ Blood stasis in the web's cul-de-sac may result in thrombus formation leading to embolic ischemic strokes. A study found recurrent strokes to occur in approximately 17% of

patients with carotid webs during 2 year follow-up.² The mechanism underlying the formation of carotid web remains unclear. Histology studies have reported the tissue composition of the web to be mostly smooth cell hyperplasia in the intima with or without dissections, myxoid



FIGURE: A 61-year-old man with a history of hypertension and hyperlipidemia presented with left lower facial weakness and transient slurred speech. Initial examination was notable for mild left facial droop. Brain magnetic resonance imaging (MRI) revealed a right insular cortex acute infarct (Fig). Computed tomography angiography (CTA) of the head and neck showed a right M2 middle cerebral artery (MCA) occlusion and a thin linear incomplete membranous intraluminal filling defect with a shelf-like appearance along the posterior wall of the right carotid artery bifurcation (Fig , arrowhead). Imaging findings were suggestive of a carotid web with an ulcerated plaque as a consideration. A vessel wall (VW) MRI 2 weeks after initial presentation again demonstrated a shelf-like protrusion along the posterior wall of the right carotid bifurcation. Precontrast sagittal-oblique VW-MRI showed eccentric wall thickening (Fig , arrowhead) with a thin membranous septum best appreciated on axial views (Fig , inset). There was no intrinsic T1 hyperintense signal associated with the vessel wall abnormality (Fig). On postcontrast sagittal VW-MRI (Fig), the membrane showed peripheral enhancement (Fig , arrowhead and inset) with relative central hypo-enhancement. Absence of intrinsic T1 hyperintense signal on precontrast imaging suggested no vulnerable plaque components, such as intraplaque hemorrhage, and no intramural hematoma to suggest an arterial dissection. There was no surface irregularity with patchy postcontrast enhancement to suggest an ulcerated plaque. The CTA appearance and enhancing septum with relative central hypo-enhancement inferiorly on VW-MRI was most consistent with a carotid web with thromboembolism distally leading to the right M2 occlusion.

View this article online at [wileyonlinelibrary.com](https://onlinelibrary.com/doi/10.1002/ana.26424). DOI: 10.1002/ana.26424

Received Apr 29, 2022, and in revised form May 23, 2022. Accepted for publication May 27, 2022.

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degeneration, and elastic tissue hyperplasia in the web pocket.^{1,3} On vessel wall magnetic resonance imaging (VW-MRI), presence of the peripheral rim of enhancement along the septum may be a result of myxoid degeneration and inflammation within the vessel wall.⁴ Use of VW-MRI may provide more precise characterization of carotid pathology to guide treatment.

Author Contributions

All authors contributed to the conception and design of the study and drafting of the text. L.A.S. and J.W.S. contributed to acquisition and analysis of the data. J.W.S. contributed to preparing the figures.

Potential Conflicts of Interest

On behalf of all authors, the corresponding author states that there are no conflicts of interests.

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