Vascular Imaging Misdiagnosis in Patients with Symptomatic Carotid Web

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INTRODUCTION
• Carotid Web (CaW) is a less well known and less common form of Fibromuscular Dysplasia.
• CaW is a proliferation of intimal tissue found at the posterior wall of the Internal Carotid Artery bulb.
• On vascular imaging, CaW commonly appears as a shelf-like projection or with linear boundaries shaping the filling defect.
• It has been associated with significant thrombo-embolic potential in the young.
• However, it remains often overlooked or misdiagnosed as a dissection or an atherosclerotic plaque on vascular imaging.
• We aim to retrospectively evaluate the rates of misdiagnosis of CaW for different vascular imaging modalities.

METHODS
• We performed retrospective analysis of a database of patients identified with CaW from 2014 to 2019 in a comprehensive stroke center (CSC).
• Vascular imaging radiological reports were reviewed for the diagnosis of CaW (through radiology reports of referring hospitals and compared to the repeat studies performed at the CSC).
• Symptomatic CaW was defined as an ipsilateral web characterized by consensus Computerized Tomography Angiography read, with a negative stroke work-up per best practice for embolic stroke of undetermined source (ESUS).
• Cases with more than one potential stroke etiology were excluded.

RESULTS
• CSC CTA reports recognized CaW significantly more than OSH CTA with p < .0001.

Figure 1: 46 year old male with L MCA stroke; (a) DSA (b) Time of flight MRA with contrasted-enhanced MRA (inset).

Figure 2: 51 year old female with L MCA stroke; CDUS showing left proximal ICA (CaW at white arrow).

Figure 3: CTA with classic shelf-like filling defect (blue arrow) at carotid bulb.

Table 1 Legend: CSC- Comprehensive Stroke center, OSH- Outside Hospital, CTA- Computerized Tomography Angiography, DSA- Digital Subtraction Angiography, MRA- Magnetic Resonance Angiography, CDUS- Carotid Duplex Ultrasound.

CONCLUSIONS
• CaW diagnosis was found to be systematically missed in radiological reports from referring facilities (with lower levels of stroke certification).
• Lowest rates of misdiagnosis were observed on digital subtraction angiography and computerized tomography angiography.