Use of IVUS in the Diagnosis of Carotid Web: A Clinical Case Report and Evaluation of Its Utility in Vascular Pathology

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Objective:

This report evaluates the utility of intravascular ultrasound (IVUS) in diagnosing and managing carotid web, a rare vascular anomaly associated with ischemic stroke in young patients. We highlight how IVUS, through its high-resolution intraluminal imaging, enhances diagnostic accuracy and informs treatment decisions

Methods:

A 46-year-old female with a history of hypertension, smoking (10 cigarettes/day), and migraines presented with two episodes of right-eye amaurosis fugax and severe headache. Initial brain MRI was unremarkable. Doppler ultrasound of the supra-aortic trunks showed intimal thickening in the internal carotid artery (ICA), suggestive of a carotid web. Computed tomography angiography (CTA) revealed a suspected carotid web but lacked detail for a conclusive diagnosis (Figure 1). Given these findings, arteriography and IVUS were performed. Arteriography showed contrast retention at the ICA origin, indicative of a focal dissection. IVUS (Figure 2) provided high-resolution images that clearly depicted the carotid web and detailed the dissection, significantly enhancing the characterization of the lesion. An 8x25 mm Roadsaver stent was implanted based on these findings.

Results:

Doppler ultrasound initially suggested the presence of a carotid web. CTA (Figure 1) further supported this but was not definitive. Arteriography revealed contrast retention and a focal dissection. IVUS (Figure 2) offered superior resolution, clearly visualizing the carotid web and associated dissection. This comprehensive imaging approach enabled precise stent placement and effective treatment

Conclusion:

IVUS proved crucial for the accurate diagnosis of carotid web and associated anomalies. It provided critical details that conventional imaging techniques, including Doppler ultrasound, CTA, and arteriography. This case highlights the importance of IVUS as a complementary tool in managing complex carotid artery pathology, facilitating accurate diagnosis and optimized treatmen

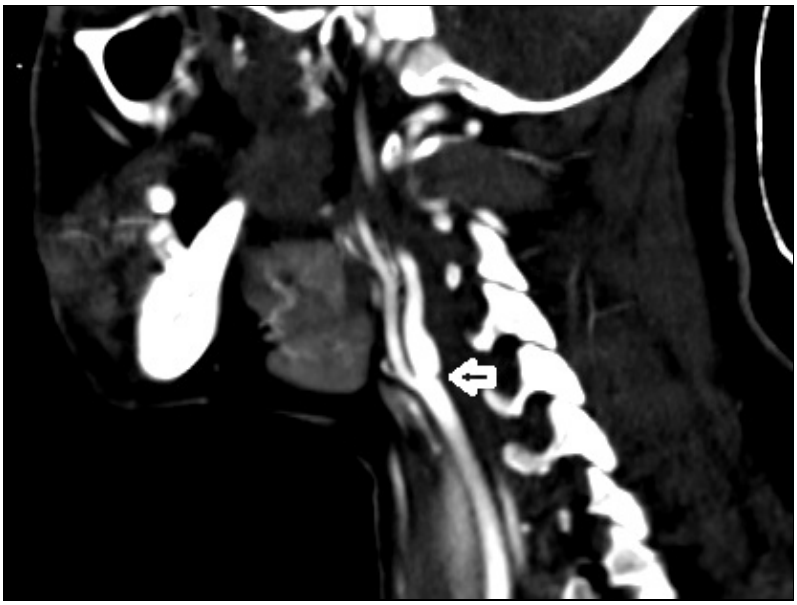

Fig 1 AngioCT showing a suspected carotid web.

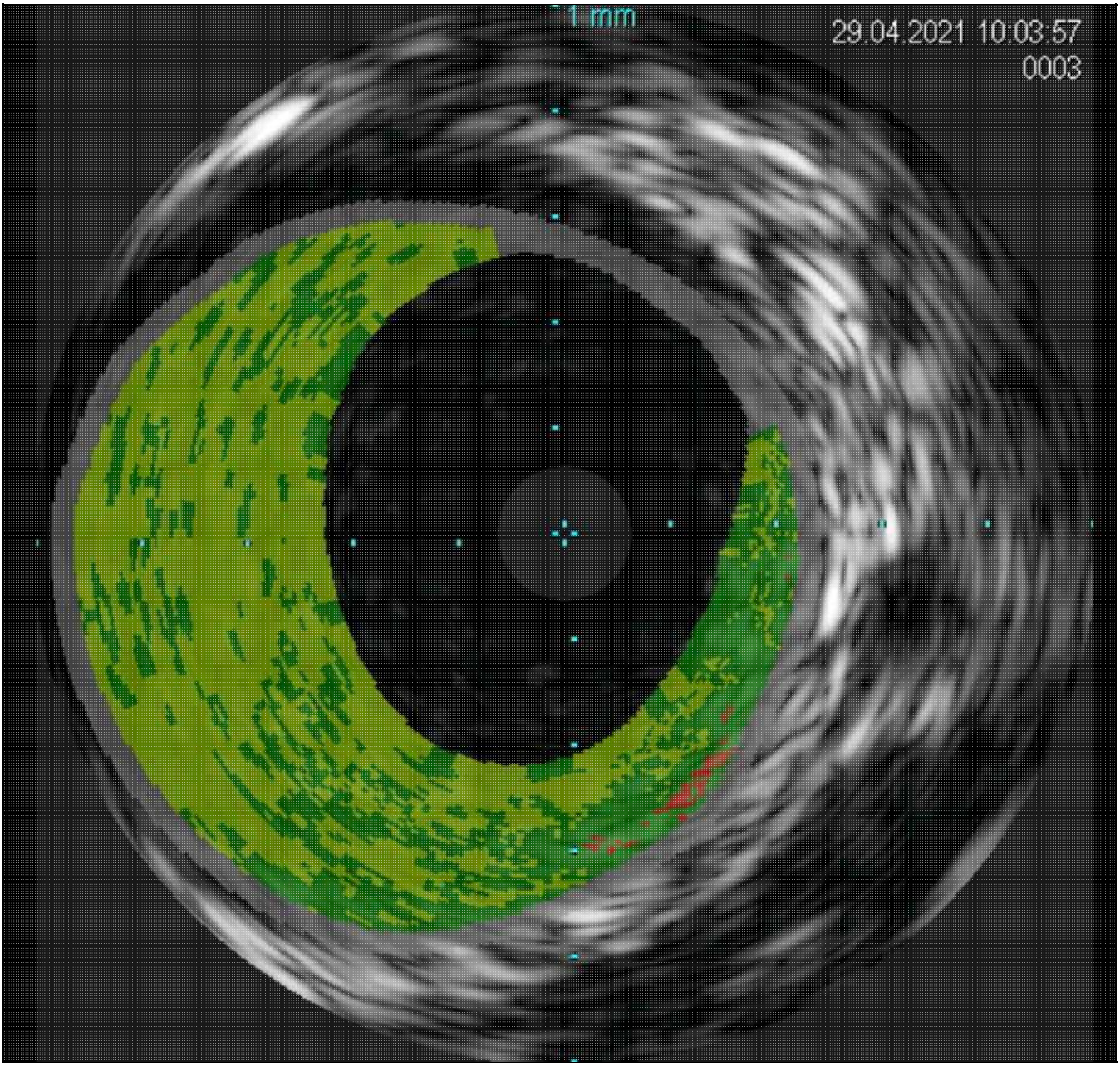

Fig 2 : IVUS image confirming the carotid web