

Ischemic Stroke in Young Female Adults Caused by Carotid Webs: A Case Series from Rashid Hospital, Dubai

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INTRODUCTION

Carotid webs are rare vascular anomalies linked to increased ischemic stroke risk, particularly in young individuals without traditional risk factors [1]. These fibroelastic projections at the carotid bifurcation disrupt blood flow, promoting thrombosis and embolic events. As a subtype of fibromuscular dysplasia, they often mimic common stroke causes, complicating cryptogenic stroke management [2]. Untreated, they lead to a 20% stroke recurrence rate within two years [3]. Typically located at the internal carotid bulb, carotid webs are best diagnosed via digital subtraction angiography (DSA), with supplementary insights from duplex and transcranial Doppler [4,5]. Underdiagnosis is common due to limitations of CT and MRA [6]. Limited research, particularly on sex differences and oral contraceptive use (linked to a 4.5% recurrence rate), emphasizes the need for further study [7]. This case series emphasizes the importance of recognizing carotid webs in young women with unexplained ischemic strokes, advocating for comprehensive evaluations to enable timely diagnosis and treatment.

AIM

To analyze the presentation, diagnosis, and outcomes of young female patients with ischemic strokes caused by carotid webs

METHODS

This retrospective case series includes three young female patients admitted to Rashid Hospital between August and September 2024, all presenting with acute ischemic strokes. Each patient underwent comprehensive stroke evaluation, including CT brain scans, CT angiography, carotid ultrasound, and subsequent treatment with carotid endarterectomy.

RESULTS

Three cases of carotid webs causing ischemic strokes highlight their diverse presentations and diagnostic challenges, especially in young women without typical risk factors.

Case 1 is of a 30-year-old Nigerian female who presented with sudden onset slurred speech, right-sided weakness, and headache. She had a history of an ocular injury but no significant family or surgical history. On examination, she had global aphasia, right homonymous hemianopia, right-sided motor weakness, and reduced sensation. Lab results showed anemia, elevated inflammatory markers, and abnormal coagulation. CT brain revealed an acute infarct in the left MCA territory, and CT angiography identified a carotid web at the left internal carotid artery. The patient received tPA, followed by mechanical thrombectomy and thrombolysis. Further CT brain and angiography confirmed a distal common carotid web.



Figure 1: CT angiography (Coronal view)
Red arrow showing irregular hypodensity at the left internal carotid artery origin, suggestive of a web or plaque.

On August 19, 2024, she underwent resection of the carotid web with synthetic patch plasty, with no postoperative neurological deficits. A follow-up ultrasound showed patent carotid arteries, and she was discharged with aspirin therapy, scheduled for follow-up in three months.



Figure 2: Resected carotid web
The specimen shows the resected carotid web

Case 2 is of a 39-year-old Filipino female with no comorbidities presented on August 23, 2024, with dizziness and left-sided weakness upon waking. She denied loss of consciousness or headaches but had right-sided neck pain for a few days prior. Examination revealed gaze deviation, slurred speech, left-sided hemianopia, and motor weakness.

CT brain and angiography showed hypodensities in the right frontal and temporal regions, occlusion in the M3 segment of the right MCA, and a focal filling defect at the right carotid bulb, suggesting thrombus formation. Labs revealed elevated glucose, protein S deficiency, and normal lipid and coagulation profiles. A carotid ultrasound identified a soft plaque at the right carotid bulb.

The patient underwent a right carotid endarterectomy with synthetic patch plasty on September 2, 2024. Postoperatively, she recovered without complications, and follow-up ultrasound showed a patent carotid artery. She was discharged in stable condition.

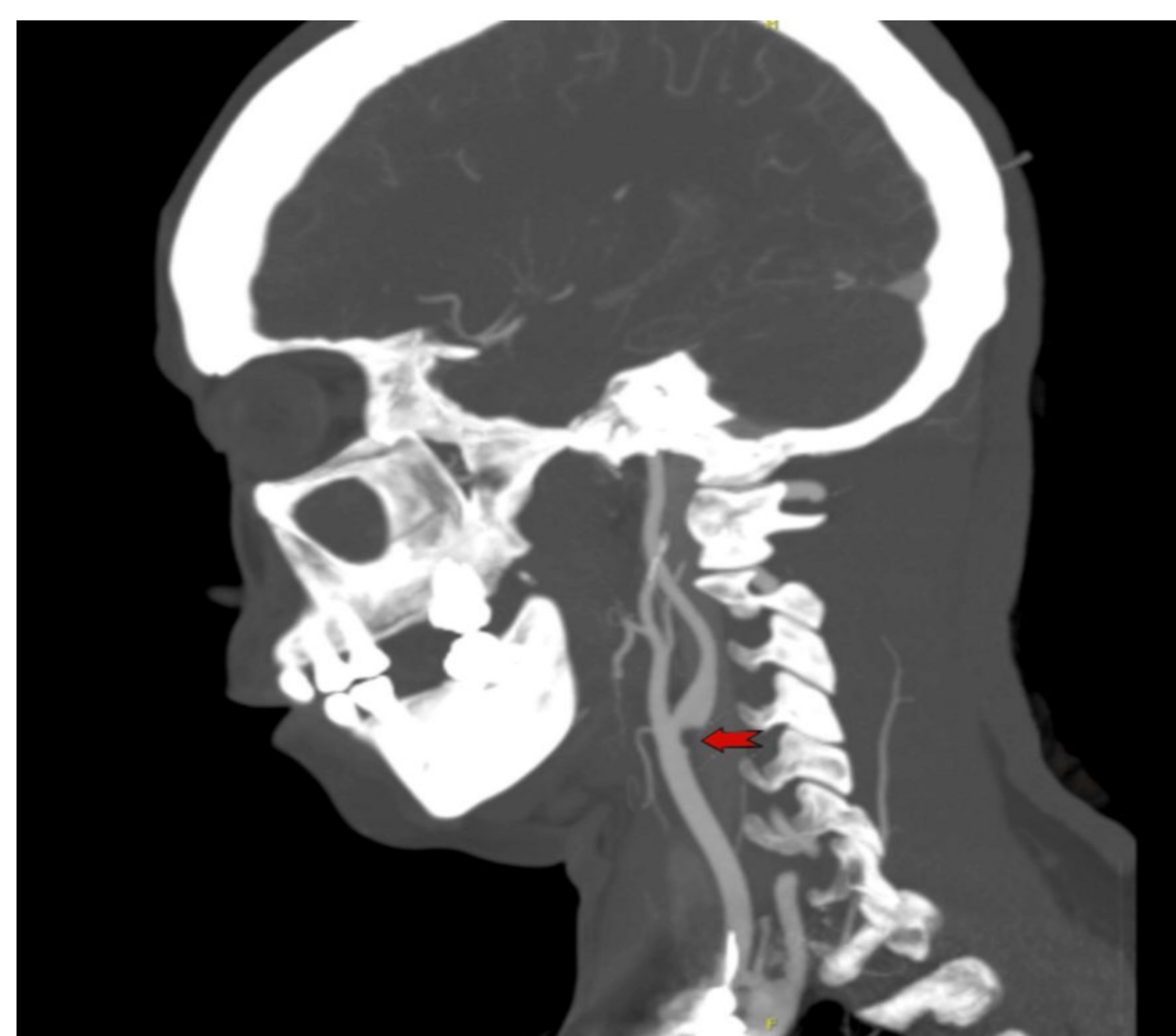


Figure 3: CT angiography (Sagittal view)
It revealed hypodensities in the right frontal and temporal regions and occlusion of the superior and inferior branches of the M3 segment of the right middle cerebral artery, and a focal filling defect at the carotid bulb/origin of the right internal carotid artery as shown by the red arrow, likely due to thrombus formation from dissection.

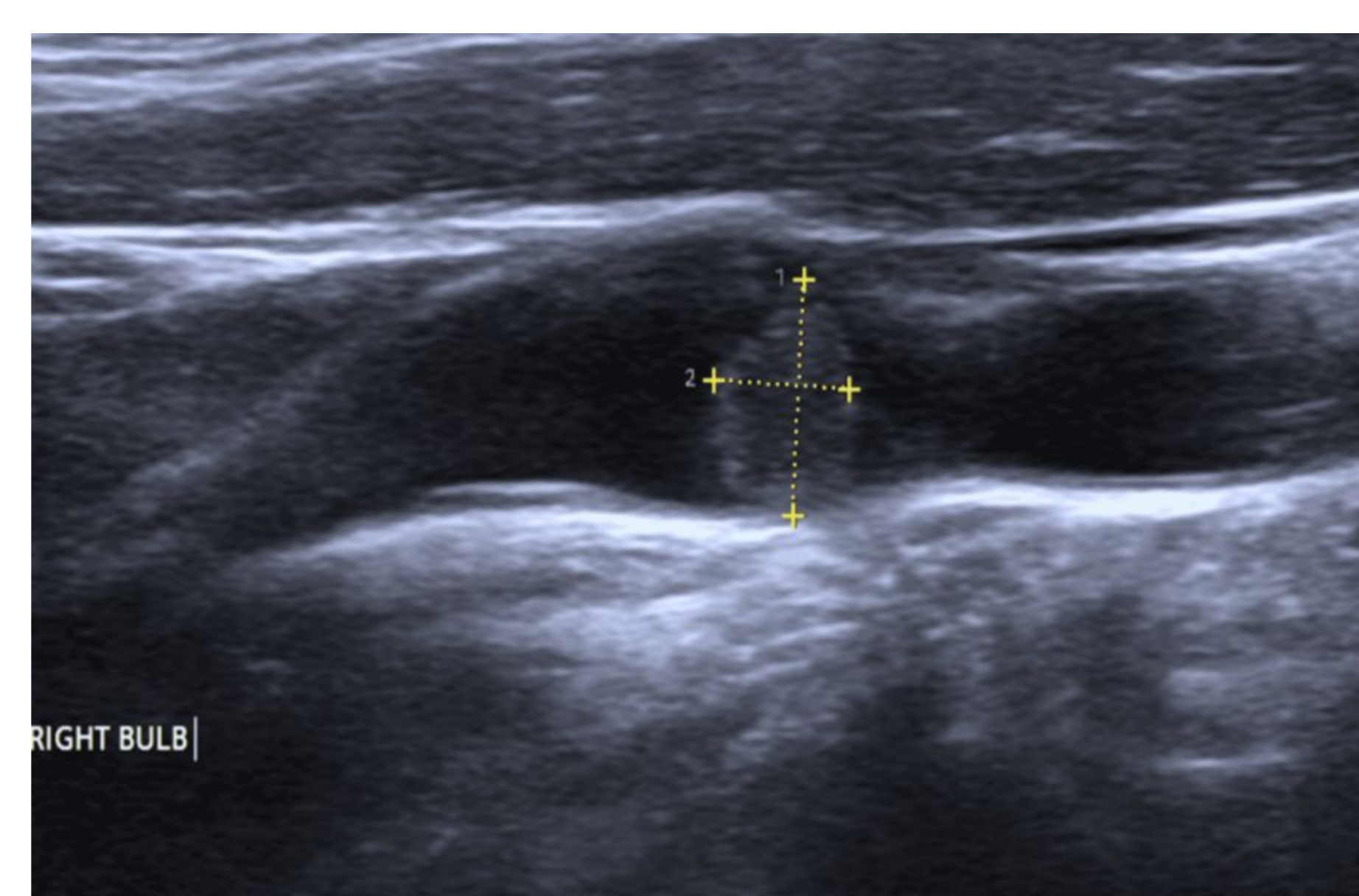


Figure 4: Carotid artery ultrasound
Showing a soft plaque measuring 6.4 mm x 4.3 mm in the right carotid bulb.

Case 3 is of a 35-year-old African female presented on August 30, 2024, with sudden-onset left-sided weakness. She had no significant medical history, risk factors, or family history of stroke. Examination revealed left hemiplegia, hemineglect, facial asymmetry, and left visual field cut.

CT brain showed ischemic stroke in the right basal ganglia and frontal regions. CT angiography revealed occlusion at the right M1-M2 junction and 45% occlusion at the right internal carotid artery. Mechanical thrombectomy successfully restored blood flow, but follow-up imaging revealed hemorrhagic transformation with a mild midline shift.

Investigations showed prediabetes, anemia, elevated CRP, and low protein S levels. A carotid ultrasound identified 50% stenosis due to a soft plaque. Despite initial management with dual antiplatelets and statins, recurrent thrombus prompted a right carotid endarterectomy with synthetic patch plasty on September 9, 2024.

Postoperatively, she remained neurologically intact, with ultrasound confirming a patent carotid artery. She was discharged on September 11, 2024, with follow-up scheduled in one month.



Figure 5: CT angiography (Axial view)
Revealed acute occlusion at the right M1-M2 junction, with a soft thrombus at the origin of the right internal carotid artery causing 45% occlusion (red arrow).

CONCLUSIONS

Carotid webs are a significant but often overlooked cause of ischemic strokes in young adults, especially women. The presented cases underline the need for increased awareness and early diagnosis using advanced imaging techniques. Timely surgical intervention, such as carotid endarterectomy, is crucial to reduce recurrent stroke risk. **As the recognition of carotid webs grows, enhancing understanding of their pathophysiology will improve stroke prevention strategies and care for young patients with cryptogenic strokes**

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