Carotid Web and Fibromuscular Dysplasia: A Rare Cause of Recurrent TIAs In a Young Female

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Introduction

Fibromuscular Dysplasia (FMD): A non-atherosclerotic, non-inflammatory arteriopathy of small- and medium-sized arteries.

- **Epidemiology:** ~90% female; typically young to middle-aged.
- **Common sites:** Renal (60–75%), carotid (25–30%), vertebral (10–20%), **intracranial arteries (5–10%)**.
- **Intracranial involvement:** Usually affects the **middle cerebral artery (MCA)** in <5% of FMD cases; may cause stenosis, dissection, or aneurysm.
- **Systemic nature:** 48–54% show multi-territory lesions; 64% of cervical FMD cases have renal involvement.

Carotid Web – A Variant of FMD

- Represents an **atypical intimal form** of FMD (vs. the common medial type).
- **Pathology:** Intimal fibrosis and smooth muscle hyperplasia → shelf-like projection into the carotid bulb.
- **Demographics:** Predominantly **young females(<50 yrs)** with cryptogenic embolic infarcts(10-20%).

Case Presentation

- **38-year-old female** with transient right upper limb numbness and slurred speech 3 months prior.
- No weakness, ataxia, seizures, or bladder/bowel involvement.
- No conventional vascular risk factors (HTN, DM, dyslipidemia).

Imaging findings:

- MRI (DWI) – Normal.
- CT Angiogram/DSA – Aberrant right subclavian artery, right carotid web (>50% luminal narrowing), right MCA M1 stenosis, and absent right A1 segment.
- Vasculitis panel – Negative; no concentric vessel wall enhancement.

Differential Diagnosis

1.Vasculitis:

1. Initially suspected due to multifocal stenosis.
2. Ruled out (negative autoimmune panel, no concentric enhancement).

2.Fibromuscular Dysplasia (FMD):

1. Favoured due to typical angiographic findings (web-like intimal shelf, smooth tapering, beading).
2. Presence of both carotid and MCA lesions supports systemic vascular disease.

3.Atherosclerotic disease: Unlikely—young age, no risk factors, smooth arterial contour.

4.Arterial dissection: No intimal flap or mural hematoma.

5.Moyamoya disease: Absent basal collaterals; isolated MCA and carotid involvement.

Management

•**Medical:** Dual antiplatelet therapy.

•**Lifestyle:** Avoid neck manipulation or trauma; control vascular risk factors.

•**Intervention:** Endovascular/surgical management only for recurrent ischemia or critical stenosis.

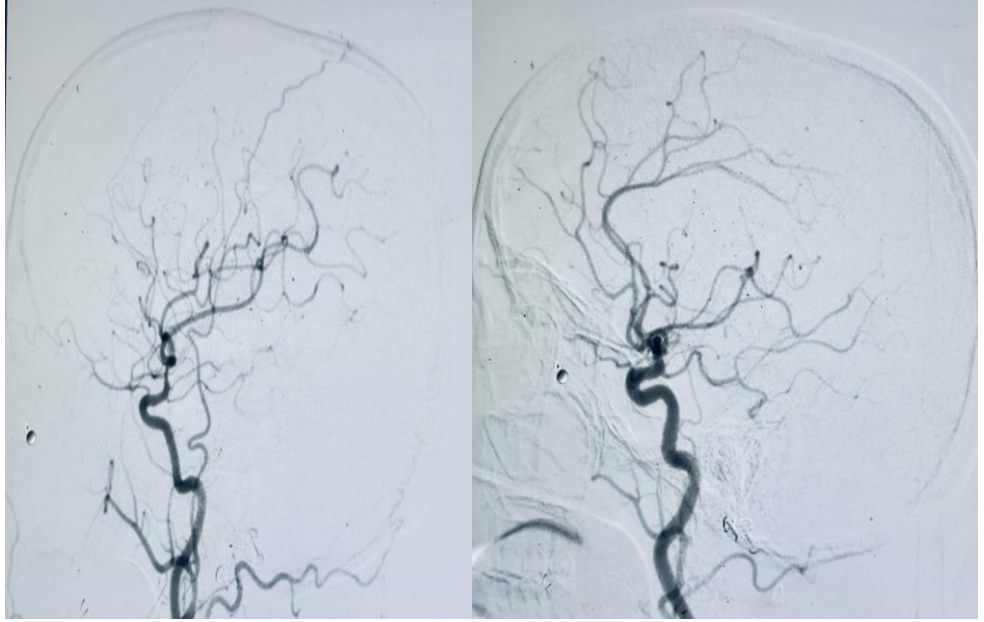
•**Monitoring:** Regular imaging and neurological assessment.

Follow-up

•Periodic **CTA/MRA/DSA** for vascular surveillance.

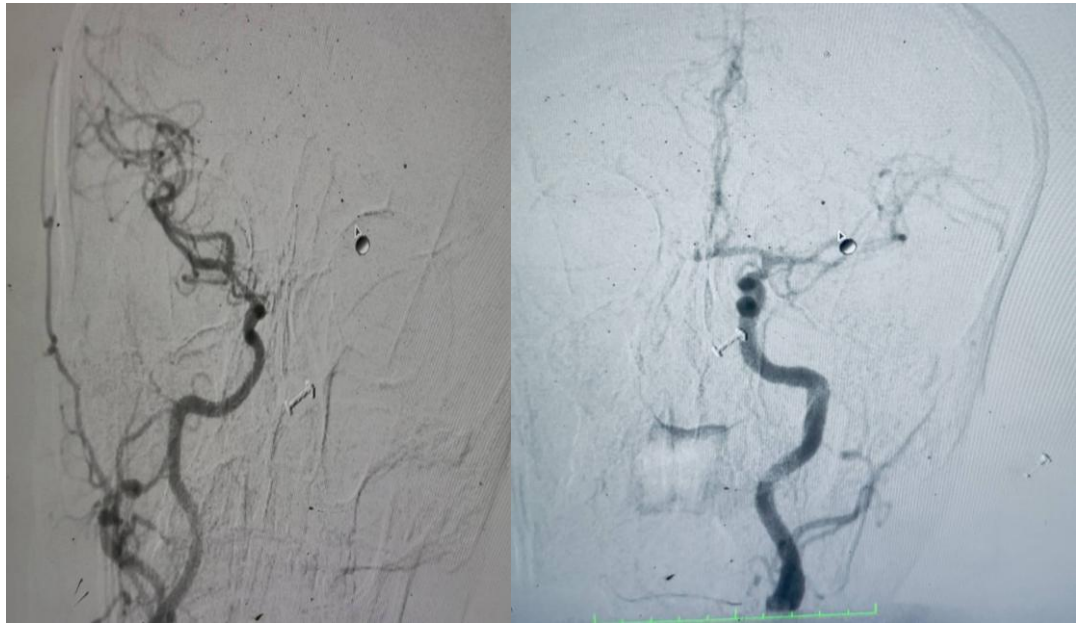
•Clinical monitoring for recurrent TIA/stroke.

•Continue **dual antiplatelet therapy** long-term unless contraindicated.



R/L ICA INJECTION(LATERAL)

CAROTID WEB



R/L ICA INJECTION(AP VIEW)

ABERRANT SUBCLAVIAN

Discussion

- **Carotid web:** Intimal FMD variant; causes flow turbulence and embolic stroke.
- **Intracranial FMD (MCA):** Rare (<5%); leads to stenosis, dissection, or aneurysm formation.
- **Combined pathology (carotid web + MCA FMD):** Enhances both embolic and hemodynamic stroke mechanisms.
- **Aberrant right subclavian artery (arteria lusoria):** Incidental vascular anomaly; may coexist with other vessel abnormalities.
- **Clinical importance:** High recurrence rate despite antiplatelet therapy → underscores need for early recognition.

Conclusion

- **FMD** is a systemic, non-inflammatory arteriopathy presenting as cryptogenic stroke in young women.
- **Carotid web** is an important, under-recognized cause of embolic stroke.
- **Intracranial involvement (5–10%)**, especially MCA stenosis, further raises ischemic risk.
- **Prompt identification, appropriate antiplatelet therapy, and close follow-up** are vital to reduce recurrence.
- **Multimodality angiography** remains the cornerstone for diagnosis and longitudinal monitoring