Rhode Island STROKE SYMPOSIUM

Cervical Artery Dissection

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THE WARREN ALPERT Medical School
BROWN UNIVERSITY

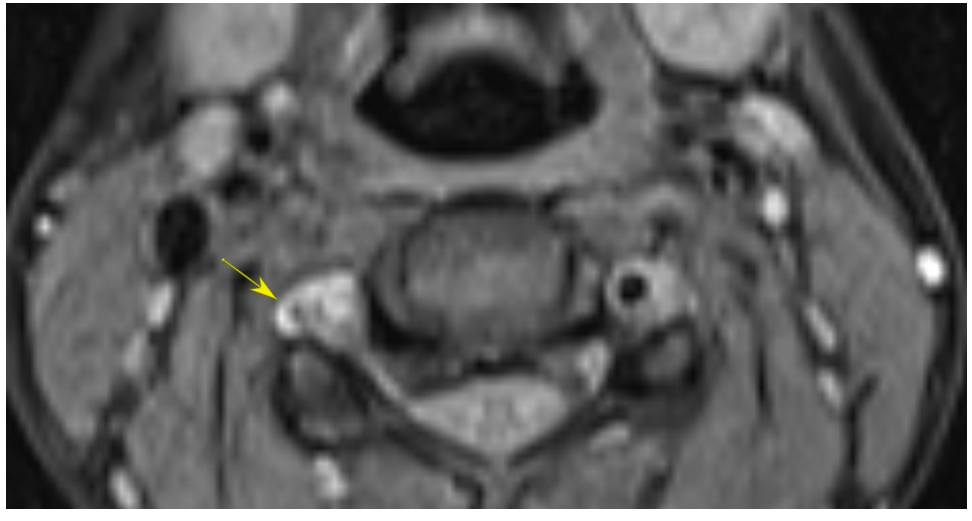
DISCLOSURE

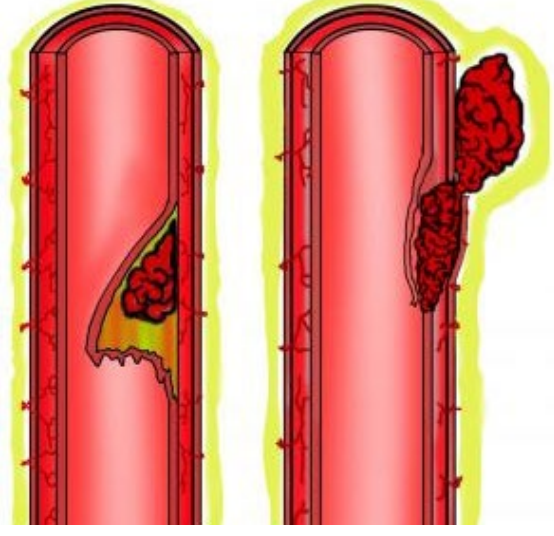
- I have no relevant financial relationships to disclose.
- My talk will not include any off-label discussion

AHA SCIENTIFIC STATEMENT

Treatment and Outcomes of Cervical Artery Dissection in Adults: A Scientific Statement From the American Heart Association

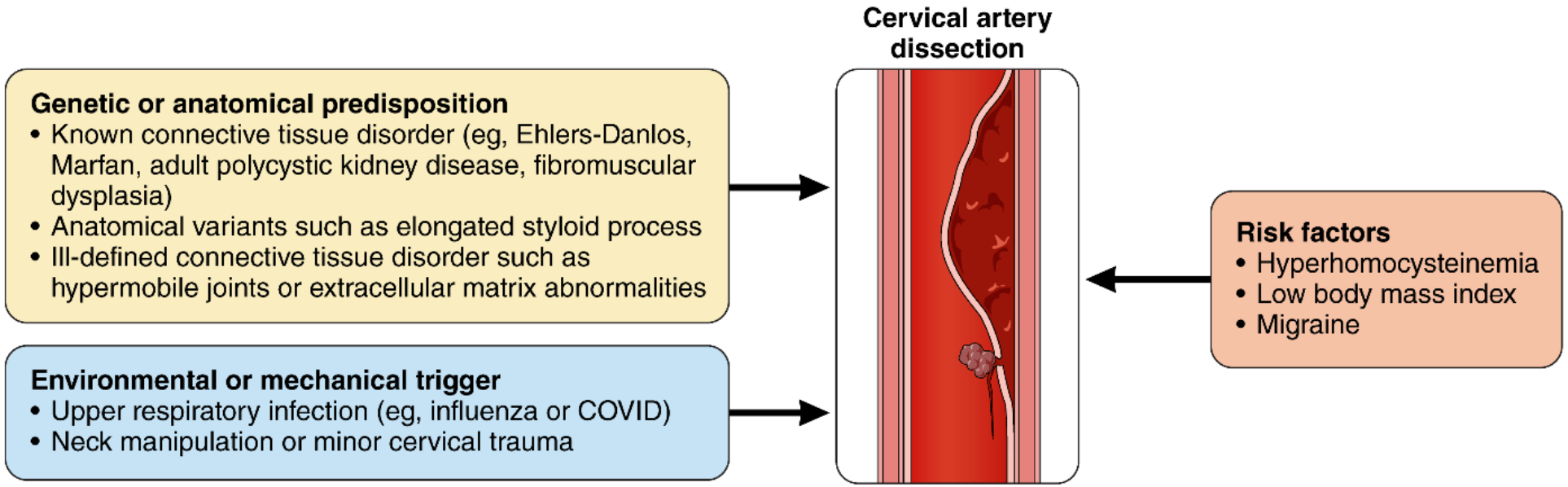
Shadi Yaghi, MD, Chair; Stefan Engelter, MD, Vice Chair; Victor J. Del Brutto, MD, MS; Thalia S. Field, MD, MHSc; Ashutosh Jadhav, MD; Kimberly Kicielinski, MD; Tracy E. Madsen, MD, PhD; Eva A. Mistry, MBBS, MSCI; Setareh Salehi Omran, MD; Aditya Pandey, MD; Eytan Raz, MD, PhD; on behalf of the American Heart Association Stroke Council; Council on Cardiovascular and Stroke Nursing; Council on Clinical Cardiology; and Council on Peripheral Vascular Disease





Epidemiology

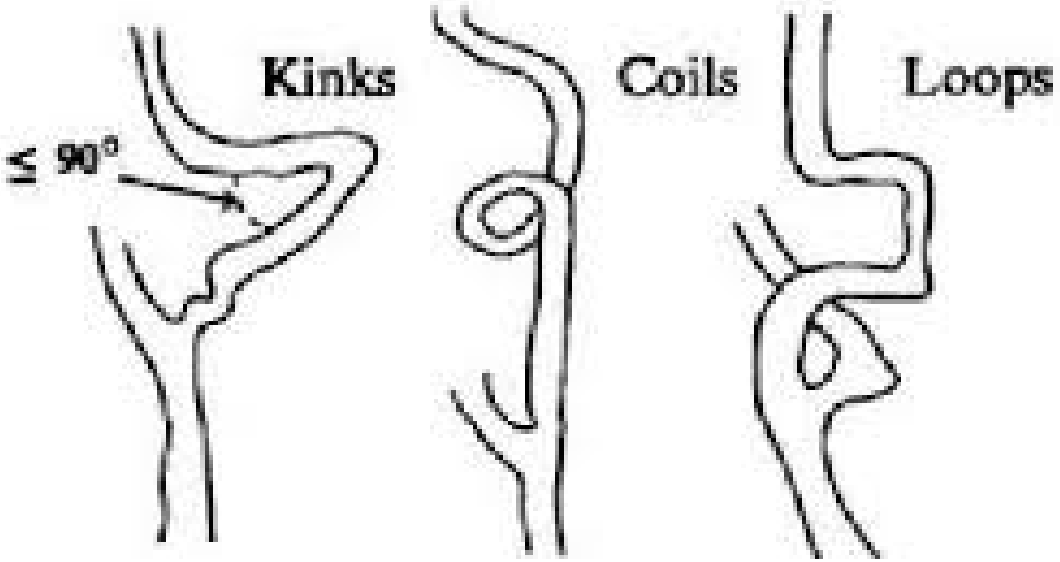
- Cervical artery dissection accounts for ~2% of ischemic strokes
- It accounts for ~25% of ischemic strokes in adults 18-44 years
- Slightly more common in men



Yaghi, S., Engelter, S., Del Brutto, V. J., Field, T. S., Jadhav, A. P., Kicielinski, K., Madsen, T. E., Mistry, E. A., Salehi Omran, S., Pandey, A., & Raz, E. (2024). Treatment and outcomes of cervical artery dissection in adults: A scientific statement from the American Heart Association. Stroke, 55(3). https://doi.org/10.1161/STR.0000000000000457

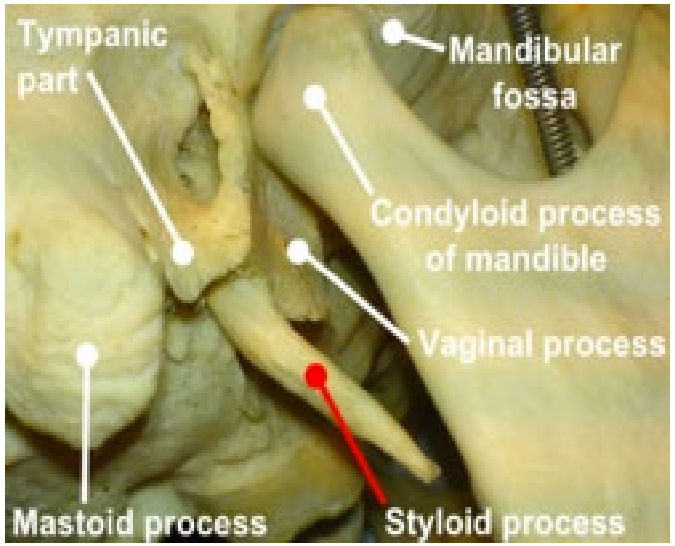
Anatomical risk factors

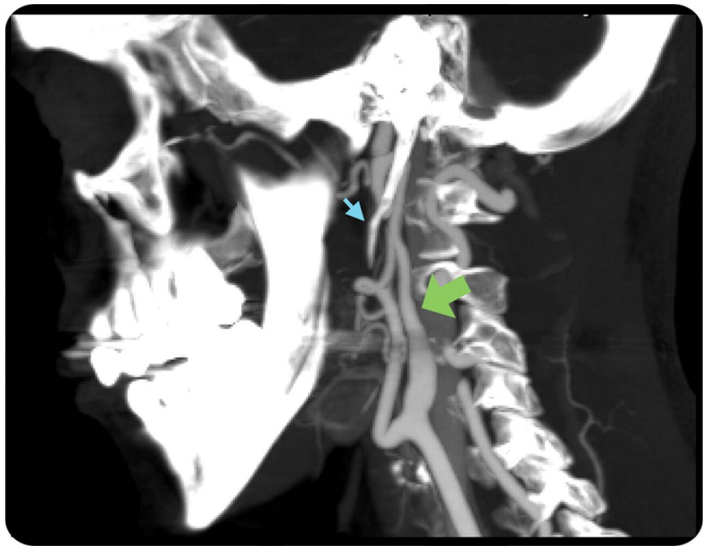
Arterial redundancies



Barbour et al, Stroke 1994

Increased styloid process length





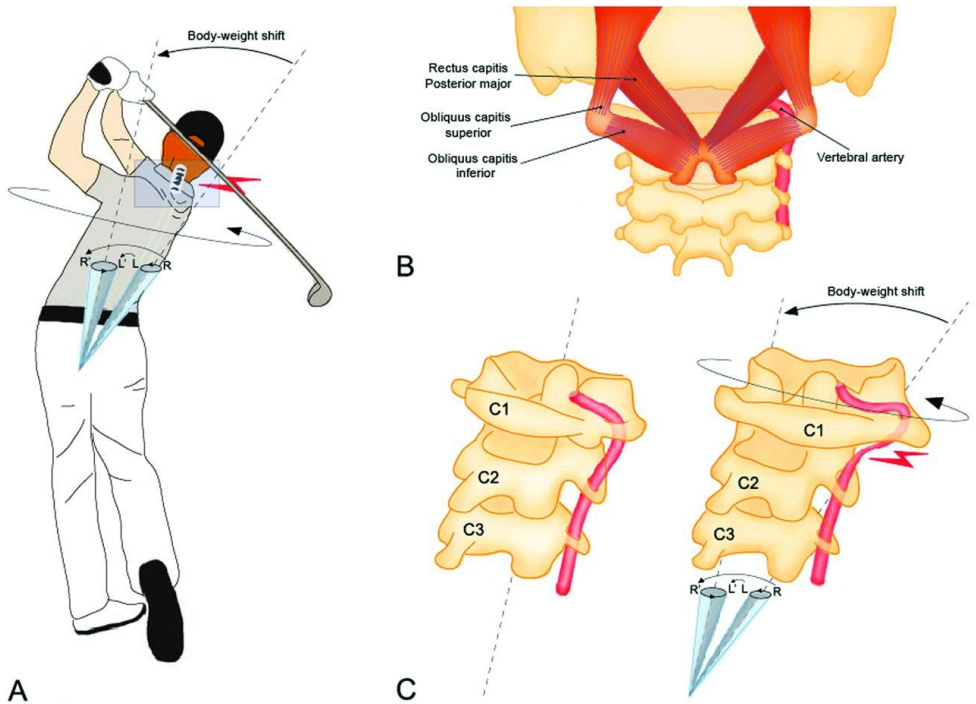
Razer JM et al, Neurology 2011

Triggers

FDA Warns of Stroke, Dissection Risk With MS Drug Alemtuzumab

Megan Brooks

November 29, 2018



Diagnosis

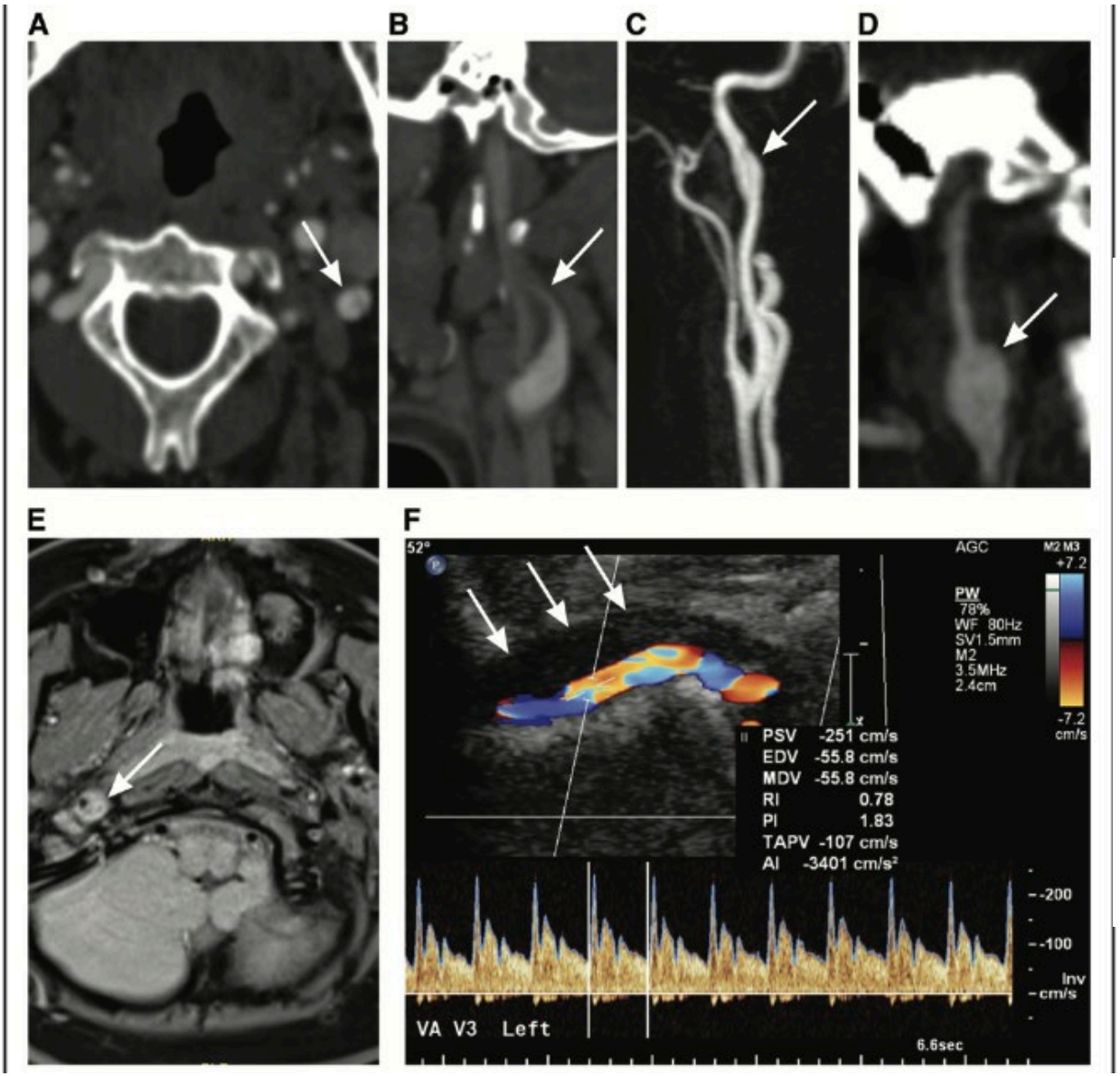
- **<u>Suspected clinically with at least one of the following:</u>**

- New or different headache or neck pain
- history of minor cervical trauma
- Horner’s syndrome

Clinical diagnosis	It is reasonable to perform urgent cervical vascular imaging with CTA or MRI with MRA in patients with headache or neck pain associated with symptoms of ischemia or a partial Horner syndrome and considered in those with new or worsening headache or neck pain, especially when there is a history of minor cervical trauma or other risk factors for cervical artery dissection.

Imaging

Imaging tools for diagnosis	In patients with suspected cervical artery dissection, an MRA or CTA is a reasonable test to consider. In patients with negative CTA and continued clinical concern for cervical artery dissection, MRA with fat-suppressed images may be considered, given the high sensitivity to visualize a mural hematoma. DSA should be avoided as a first-line diagnostic tool but may be considered in patients with clinical concern and negative MRA and CTA. Ultrasound might be useful for follow-up assessments of arterial remodeling.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52°
AGC
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PW
78%
WF 80Hz
SV1.5mm
M2
3.5MHz
2.4cm
-7.2
cm/s
PSV -251 cm/s
EDV -55.8 cm/s
MDV -55.8 cm/s
RI 0.78
PI 1.83
TAPV -107 cm/s
AI -3401 cm/s²
-200
-100
Inv
cm/s
VA V3 Left
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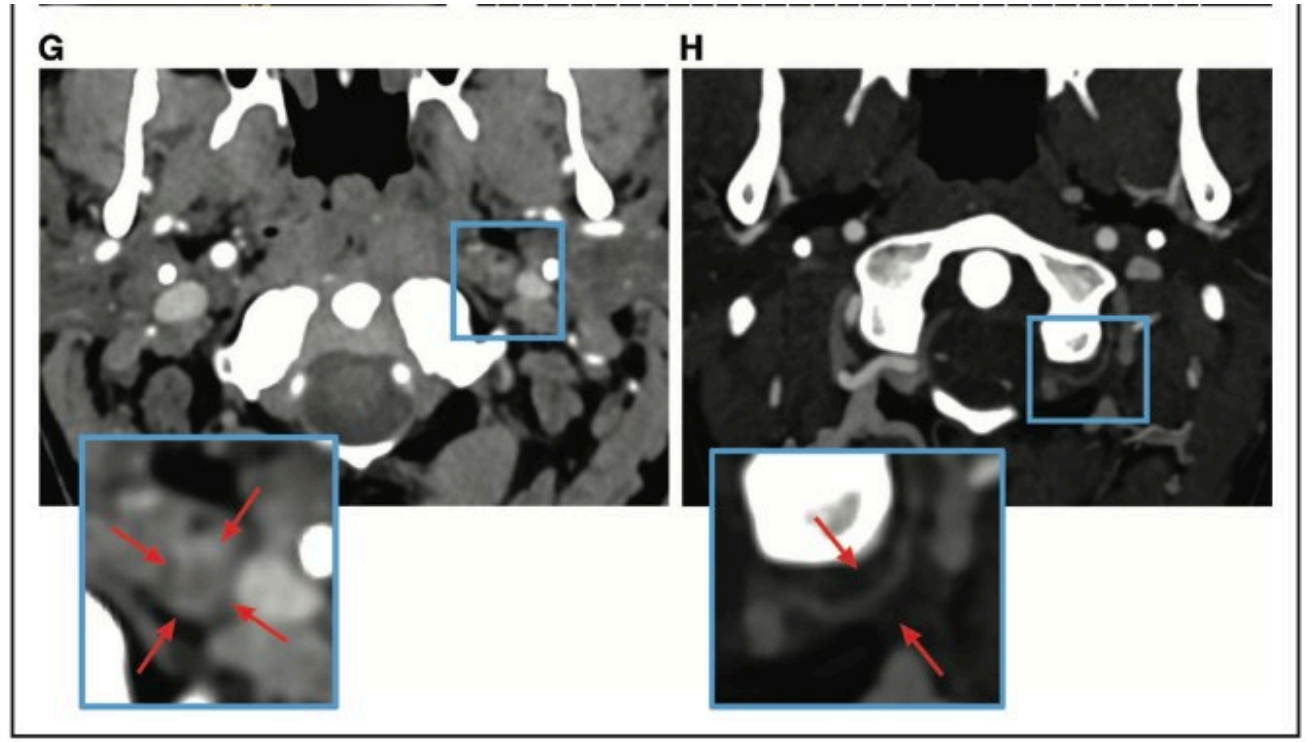
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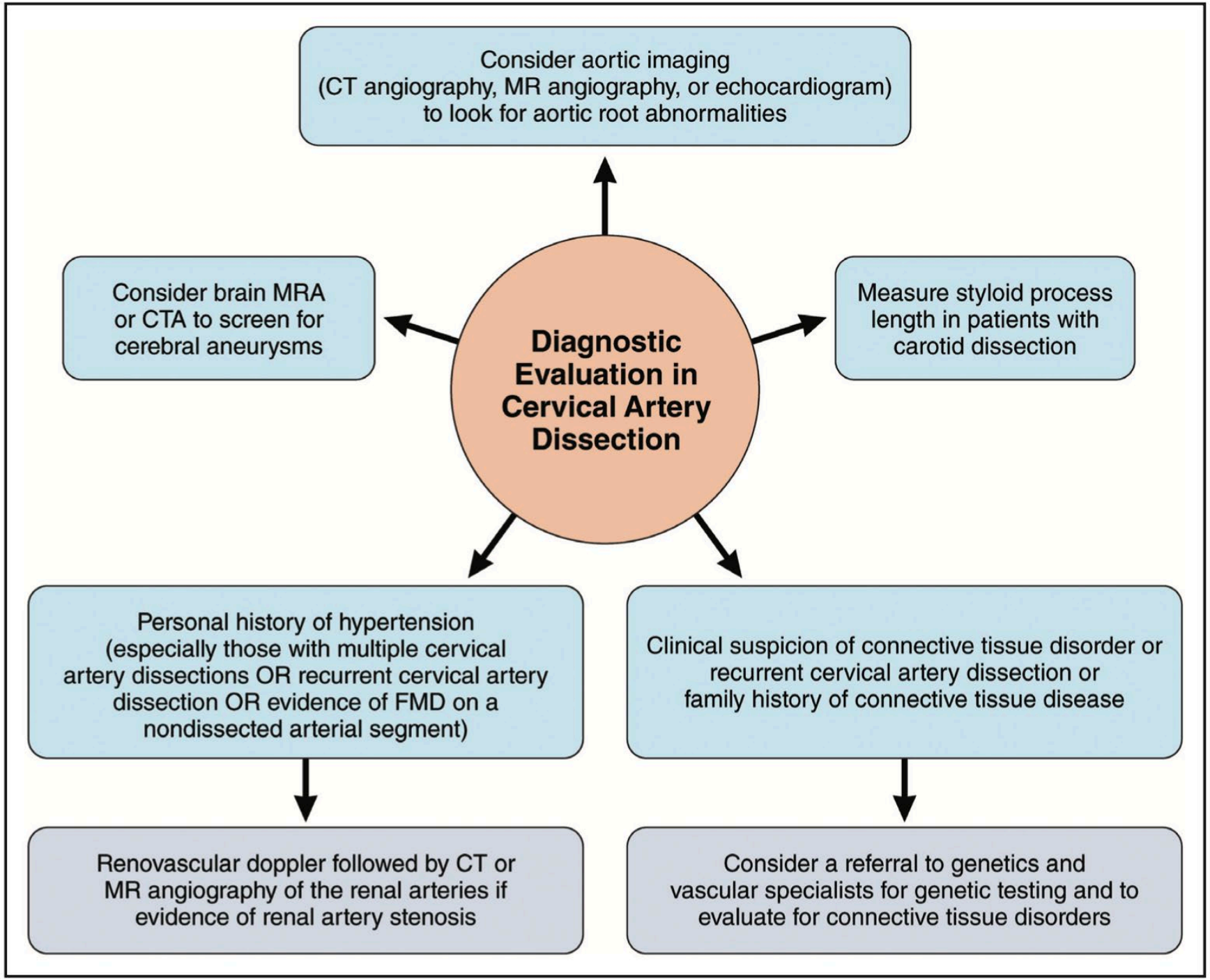
Diagnostic Evaluation



Timing and Predictors of Stroke

Timing: majority of strokes occur in the first month from first dissection symptoms.

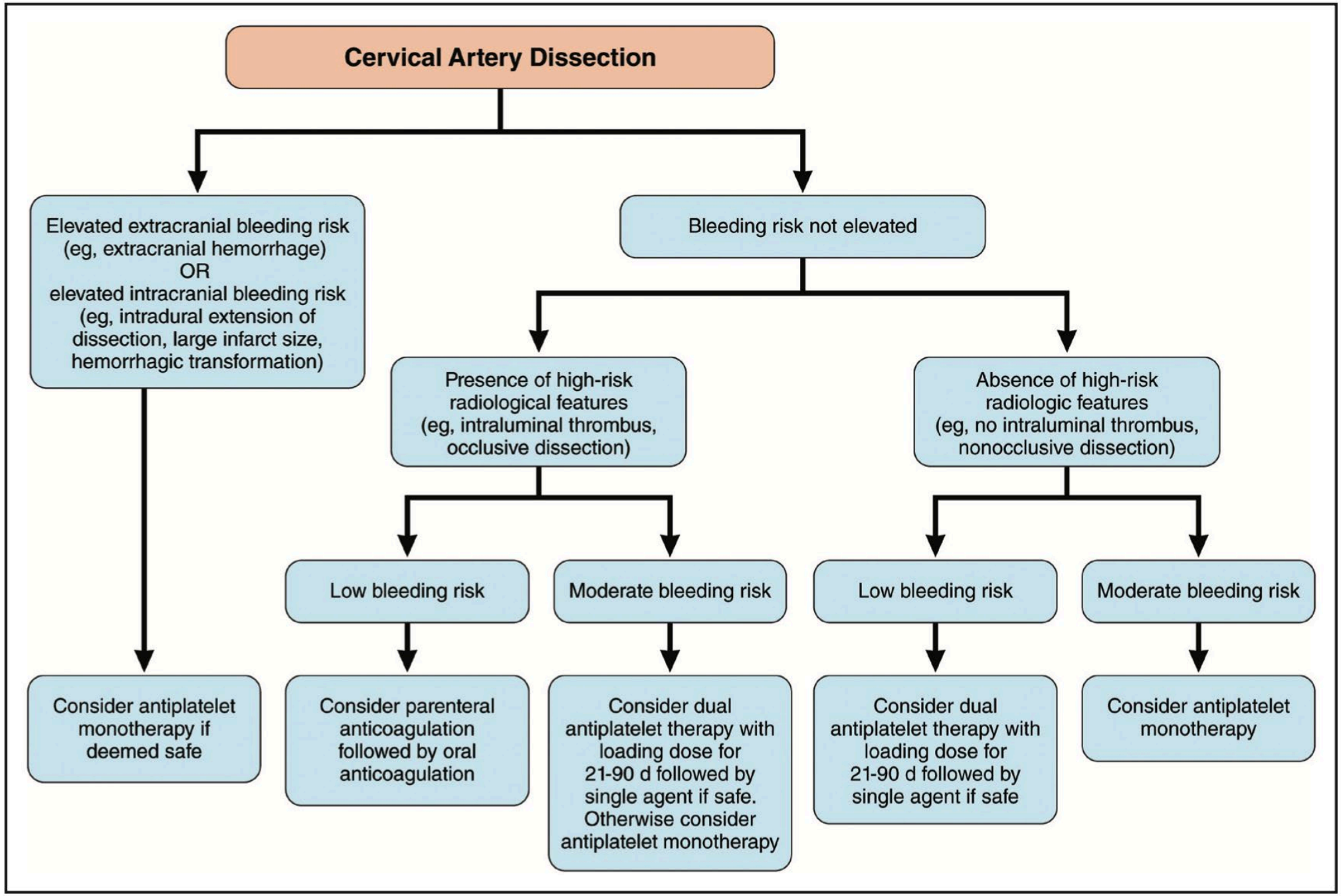
Predictors of stroke include high grade stenosis or occlusion, and intraluminal thrombus

Timing and predictors of ischemic stroke	The early ischemic stroke risk supports the timely recognition, diagnosis, and initiation of optimal antithrombotic treatment for cervical artery dissection. Clinicians can use demographics, clinical characteristics, and imaging findings to predict which patients are at higher risk of developing an ischemic stroke after cervical artery dissection.

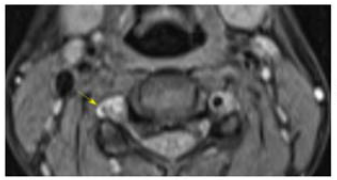
Acute Therapy

IVT	In the absence of data suggesting safety concerns and given the proven efficacy of IVT in otherwise eligible patients with acute ischemic stroke, it is reasonable to consider IVT for patients with acute ischemic stroke with cervical artery dissection if they meet other standard criteria, as recommended by current guidelines. For patients with intracranial extension of the dissection, the risks and benefits of IVT are not well established.
Mechanical thrombectomy	It is reasonable to perform mechanical thrombectomy in otherwise eligible patients with a large-vessel occlusion in the setting of cervical artery dissection.

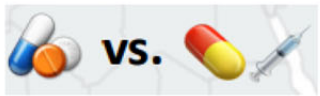
Secondary Prevention



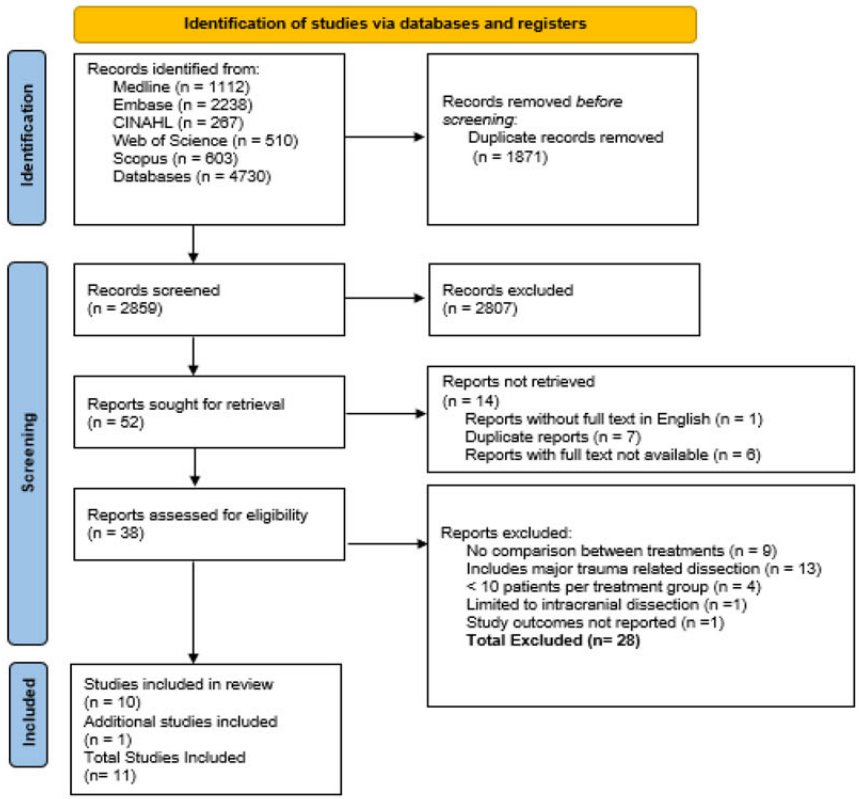
Anticoagulation versus Antiplatelets in Spontaneous Cervical Artery Dissection: A systematic review and Meta-Analysis



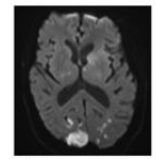
Antiplatelets



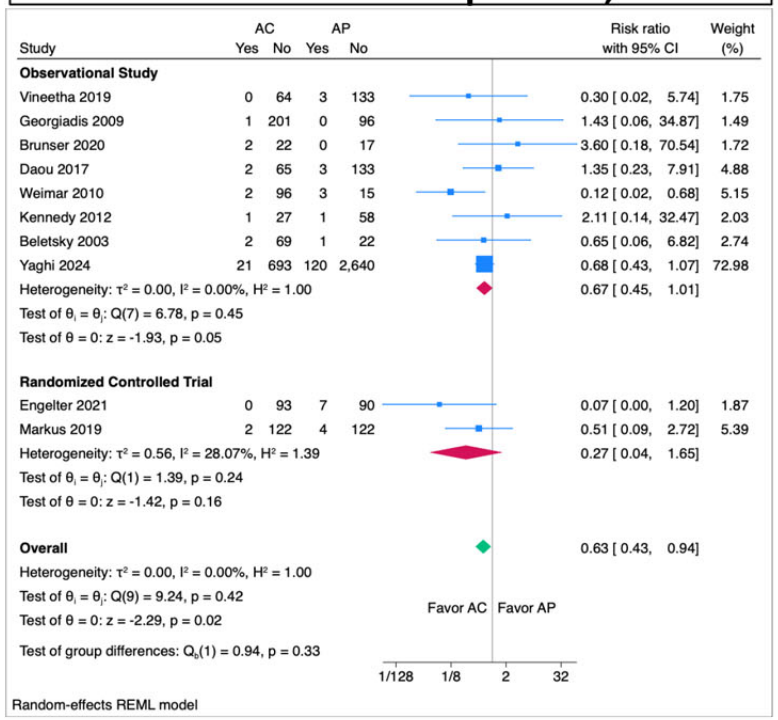
Anticoagulation

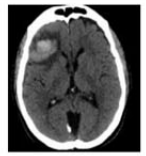


11 studies (2 randomized trials and 9 observational studies)
Anticoagulation vs. Antiplatelets

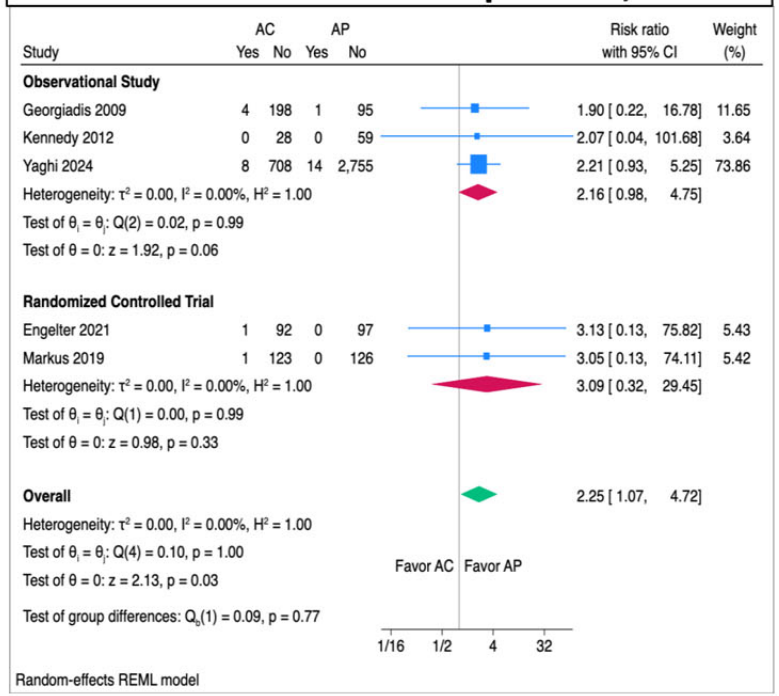


Lower risk of ischemic stroke
RR 0.63 95% CI 0.43-0.94 p = 0.02, I^2 = 0%





Higher risk of major bleeding
RR 2.25 95% CI 1.07-4.72 p = 0.03, I^2 = 0%



Findings argue for an individualized therapeutic approach incorporating the net clinical benefit of ischemic stroke reduction & bleeding risks

2024 Yaghi S, Shu L, Fletcher L, Fayad F.H., Shah A, Herning A, et al. ***Stroke***

Original Investigation

May 13, 2024

Antithrombotic Treatment for Cervical Artery Dissection

A Systematic Review and Individual Patient Data Meta-Analysis

Josefin E. Kaufmann, MMed[1,2]; Eric L. Harshfield, PhD[3]; Henrik Gensicke, MD[1,2]; et al

≫ Author Affiliations

JAMA Neurol. 2024;81(6):630-637. doi:10.1001/jamaneurol.2024.1141

Main Outcomes and Measures The primary outcome was a composite of (1) ischemic stroke, (2) death, or (3) major bleeding (extracranial or intracranial) at 90 days of follow-up. The components of the composite outcome were also secondary outcomes. Subgroup analyses based on baseline characteristics with a putative association with the outcome were performed. Logistic regression was performed using the maximum penalized likelihood method including interaction in the subgroup analyses.

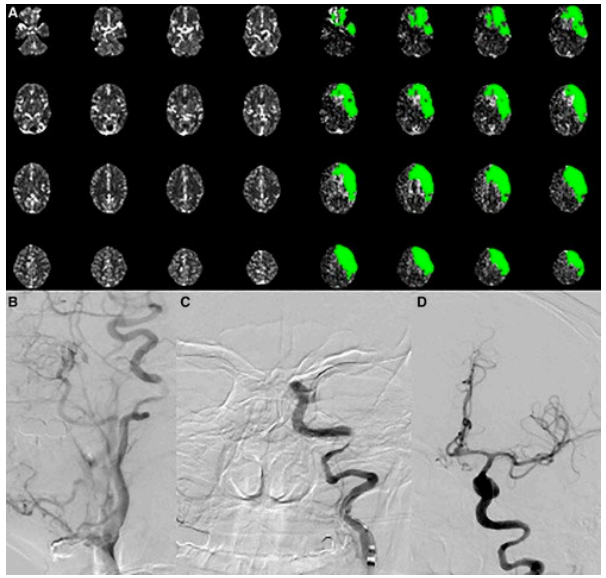
Results Two randomized clinical trials, Cervical Artery Dissection in Stroke Study and Cervical Artery Dissection in Stroke Study and the Biomarkers and Antithrombotic Treatment in Cervical Artery Dissection, were identified, of which all participants were eligible. A total of 444 patients were included in the intention-to-treat population and 370 patients were included in the per-protocol population. Baseline characteristics were balanced. There were fewer primary end points in those randomized to anticoagulation vs antiplatelet therapy (3 of 218 [1.4%] vs 10 of 226 [4.4%]; odds ratio [OR], 0.33 [95% CI, 0.08-1.05]; $P = .06$), but the finding was not statistically significant. In comparison with aspirin, anticoagulation was associated with fewer strokes (1 of 218 [0.5%] vs 10 of 226 [4.0%]; OR, 0.14 [95% CI, 0.02-0.61]; $P = .01$) and more bleeding events (2 vs 0).

Conclusions and Relevance This individual patient data meta-analysis of 2 currently available randomized clinical trial data found no significant difference between anticoagulants and antiplatelets in preventing early recurrent events.

Stenting

Subacute stenting

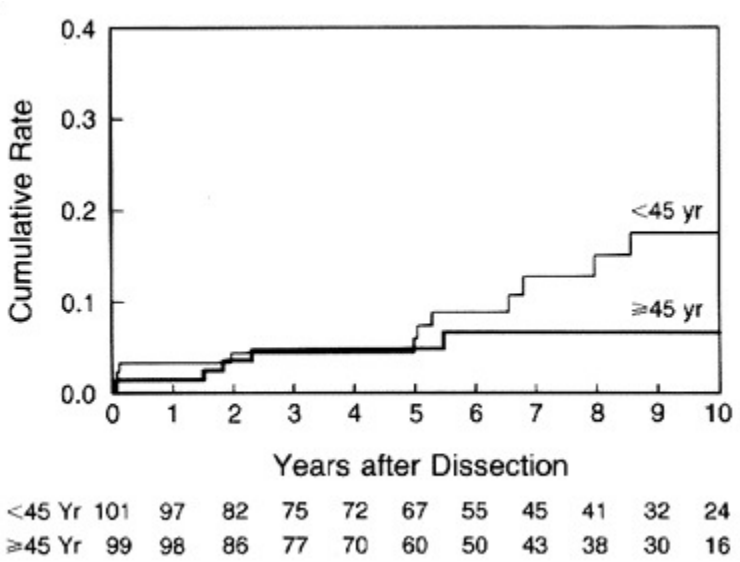
Patients with cervical artery dissection with significant stenosis causing distal hemodynamic compromise AND recurrent ischemic stroke despite optimal medical treatment AND who can withstand surgery may be considered for stenting as a measure for secondary stroke prevention.

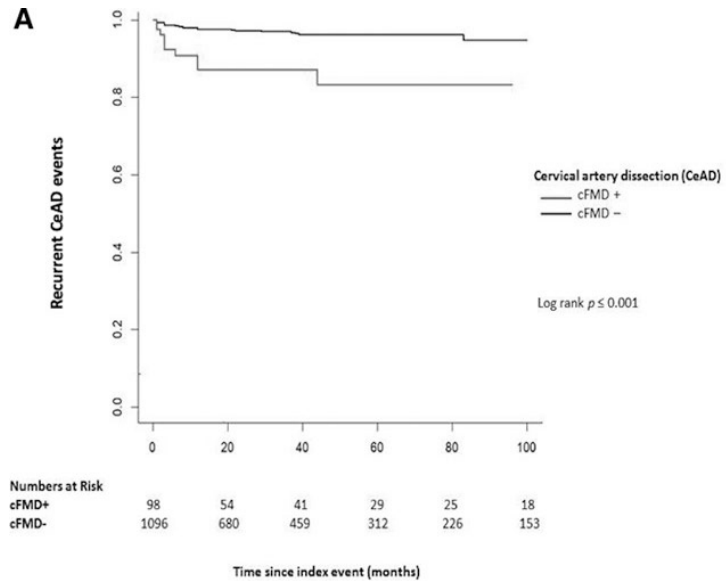


Brown et al, Stroke 2020

Risk and Prevention of Recurrent Dissection

Risk and predictors of recurrent dissection	The risk of recurrent cervical artery dissection is 1%–2% per y but is particularly increased in the first few months after the initial cervical artery dissection. Younger age and fibromuscular dysplasia are risk factors for dissection recurrence.
Precautions to reduce the risk of dissection recurrence	Because the risk of recurrent or worsening dissection is highest in the first few months after the initial dissection, it is reasonable that all patients with cervical artery dissection avoid activities that increase the risk of cervical injury for 1–6 mo from diagnosis and until healing of the index dissection. Furthermore, although there are no proven precautions to reduce the long-term risk of recurrent dissection, it is reasonable for health care clinicians to suggest that patients with cervical artery dissection who are at high risk for recurrent cervical dissection (eg, known connective disorder, recurrent dissection) avoid such activities lifelong.





Radiological Outcomes

Radiological recanalization of the dissection	Recanalization of cervical artery dissections occurs mostly in the first 12 mo after diagnosis. Cervical artery–dissecting aneurysms infrequently increase in size, become symptomatic, and require treatment. Recanalization and development or resolution of cervical artery–dissecting aneurysms do not seem to be affected by antithrombotic treatment regimens.

Thank you for your attention