Carotid Revascularization

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Options for Carotid Disease

Best medical therapy: Carotid Endarterectomy, and Carotid Stenting

Who benefits from best medical therapy?
- Symptomatic patients with angiographic stenosis of less than 50% and asymptomatic patients with stenosis of less than 60% should not undergo intervention and are best treated by BMT.

What is best medical therapy?
- Control of comorbid conditions
  - Hypertension, diabetes, dyslipidemia
- Primary stroke risk reduction with antiplatelet therapy and statins
- Smoking cessation

What surgical options are there for treatment?
- Carotid Endarterectomy (CEA) and Carotid Stenting (CAS)

What factors go into the decision making for type of intervention?
- Anatomic and lesion characteristics
  - Hostile neck
  - Lesions outside cervical carotid artery
  - Vessel tortuosity
  - Lesion characteristics: >15mm, preocclusive/highly calcified, thrombus
- Patient factors: Stenting preferred with severe uncorrectable CAD, congestive heart failure, or chronic obstructive pulmonary disease; stenting higher risk in age >70

Dilemma

- Best medical therapy has improved since the landmark intervention papers- perhaps there is more of a role in medical therapy (asymptomatic patients)
- Carotid stenting allows for intervention in patients with increased risk
Case Presentation

- 77M presented to the emergency department with transient right hand weakness for 6 hours
- Neurology emergently evaluated him and during that time, his hand weakness resolved
- Admitted to the neurology service
- Neurology ordered a CT head (no bleeding or lesions) and a CTA of the head and neck

CT Angiogram

- High grade left proximal ICA lesion (>90%)
- Not circumferential calcium
- Ultrasound confirmed this finding with string sign
- Right side with 50% stenosis

When would you offer this patient an intervention? Symptomatic (TIA) high grade stenosis.

A. A: Emergently
B. B: Next Day
C. C: Within 2 weeks
D. D: Within 6 weeks
E. E: Wait more than 6 weeks

What is the optimal timing of CEA in a symptomatic patient?

In patients with stroke or TIA, intervention should be performed within 2 weeks unless there are contraindications to intervention
- Major contraindications are intracranial hemorrhage and massive stroke
Aorta - Done for Evaluation of 5.5cm AAA

Medical History

EF 20-25%

Stress test - significant coronary artery disease, EF 20%, fixed perfusion defects

Also has a 5.5cm infrarenal AAA

No prior stroke like symptoms

How would you manage this patient?

A. A: Carotid endarterectomy under general anesthesia
B. B: Carotid endarterectomy under local anesthesia
C. C: Transfemoral Carotid Stent
D. D: Transcervical Carotid Stent
E. E: Best medical therapy

Transcervical Carotid Stent

- Surgical exposure of the proximal Common Carotid artery
- Sheath placed in the distal CCA
- Obtained the following angiogram
What sized stent would you use?

A. A: Tapered uncovered stent 10-8mmx40mm
B. B: Tapered uncovered stent 9-7mmx40
C. C: Straight covered stent 8mmx5cm

Post Operative Course

- Postoperatively he did well without complication and was discharged on POD#2
- POD4 at home had tremor in right hand that lasted 15 minutes (unreported)
- POD14 had 2 episodes of right hand tingling and numbness lasting 15 minutes each and resolving-admitted, started on heparin
- Unrevealing CTA of head and neck
- MRI/MRA- No acute intracranial hemorrhage, mass effect, or large vascular territory infarct

Postoperative Course

- POD 15 awoke from sleep with tingling in right hand that resolved after positional change
- Next morning had weakness and discoordination in right hand with right sided perioral numbness

How would you manage this patient?

A. A: Continue therapeutic anticoagulation bridging to coumadin
B. B: Emergent cerebral angiography
C. C: Repeat CT angiogram of the head
D. D: Dual antiplatelet therapy
E. E: Transcranial doppler
Post Vasospasm Course

Treated medically for vasospasm (nimodipine)
- Intraarterial verapamil
- Nimodipine 30q4
- 4 days later switched to verapamil 80q8
- Discharged 7 days after last angiogram (1mo postop) on 180mg verapamil extended release for 21 days
  - Dual antiplatelet therapy ASA 325/clopidogrel 75

No further neurologic deficits or events