Medical Versus Endovascular Management of Cervical Dissection
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Disclosures
No industry connections

Outline
- Definition of Dissection
- Frequency
- Source
- Diagnosis
  - Clinical Presentation
  - Imaging
- Natural History
- Medical Treatment
- Endovascular Treatment
- Compassion
Definition

- Tear in intima, mural hematoma subintimally travelling up the artery
- Vessel lumen narrows
- May be source for emboli distally
- If intracranial, may lead to subarachnoid hemorrhage
- About 3% of cases

Frequency

- In Olmstead, MN (Mayo), 1.72 persons per 100,000 internal carotid artery
- 0.97 per 100,000 vertebral artery
- Prior study 2.4/100,000
- Dijon, France 2.9/100,000
- Underestimate?
Source of Dissection

- Trauma (in about half)
  - Up to 1% of blunt trauma patients, 2-3% if significant injury
- May be minor or less common trauma
- Coughing
- Sneezing
- Twisting phone or shoulder
- Chiropractic manipulations
- Wii video game
- Hangin
- SCUBA

Dissection by Camel Bite

Image from Huffington Post

Source of Dissection

- Connective tissue disorders
  - Marfan
  - Ehler Danlos
Clinical Presentation

STROKE

- Often within one week of initial symptoms
- Half within hours
- 2.5% of all strokes, 5-22% if <45 years old
- May appear as a sudden drop in vision or diplopia
- Embolism
- May show emboli on TCD
- Local hemodynamic flow compromise

Clinical Presentation, cont.

- Face/head pain on same side
- Horner syndrome
- XII nerve

Radiologic Imaging

- Carotid ultrasound
- MRA
- CTA
- Cerebral angiogram
Natural History

- Most heal
- Often within 3-4 months
- Recurrent stroke <1% per year

Recurrent stroke <1% per year (Engelter, Stroke. 2007; 38: 2605-2611)

Healing rate

Treatment Options
Treatment Options

Medical Treatment

- Anti-platelets
- Anti-coagulants
- No treatment

Which of the Medical Options is Best?

Cochrane review 2010
- No randomized trials as of that time
- 1285 patients
- No significant difference in anti-embolic vs anti-coagulants
- Death
- Recurrent stroke
- Trend toward less death and disability in anti-coagulated patients
- More symptomatic intracranial hemorrhages in anti-coagulant group (0.05%)
Another Non-randomized Result

- CADISS (Cervical Artery Dissection in Stroke Study) [Kennedy, Neurology 2012;79:686–689]
  - Non-randomized trial
  - 1.8% antithrombotic, 3.9% anticoagulant
  - Antithrombotics: 4.0% anticoagulant, 15% antithrombotic
  - 6.0% antithrombotic, 1.0% anticoagulant
  - Antiplatelet and anticoagulant clinically equivalent

Single Randomized Trial

CADISS – Cervical Artery Dissection in Stroke Study

CADISS randomized

- UK/Australia
- Presenting 10% stroke/TIA, 10% pain, stroke, etc.
- 250 patients, studied 3 months, randomized within week
- Antiplatelet v. anticoagulant per treating doctor
CADISS results

- Stroke or death 2% antiplatelet
- Stroke or death 1% anticoagulant
- 1 patient with serious bleed in anticoagulant arm (none in other)
- Nearly 20% of dissections not confirmed by central reader

Complaints about CADISS

- Randomized after a week
- First week when vessel shows most emboli
- Anticoagulation reduces emboli on TCD
- May be missing opportunity for early anticoagulation to reduce emboli

Medical Treatment

Thrombolytics
**Thrombolyis for Dissection**

- Dissected patients, 16 patients with thrombolysis vs 27 without thrombolysis.
- Thrombolytic patients had more severe CVA. NIHSS 15 vs 7.
- 47% (thrombolysis) vs 44% (no thrombolysis) good outcome, not significant.
- No hemorrhage.
- Thought safe but not necessarily effective.


**Thrombolyis**

- 180 patients, 2/3 treated with IV thrombolysis, 1/3 intraarterial thrombolysis.
- Median NIHSS 16.
- 60% women.
- Intracranial hemorrhage 3%.
- Mortality 8%.
- Excellent outcome 41%.
- No major change compared to similar patients in SITS-ISTR registry.

**Treatment Options**

Endovascular
Endovascular Treatment
- Acute stroke treatment
- Elective opening of dissection

Endovascular treatment - Acute Stroke
- Acute intervention seems to be safe
- As is IV-TPA
- Neither well studied other than case reports and small collections

Endovascular treatment of less acute lesions
Endovascular Treatment

- Procedure success 99.1%
- Major cardiovascular periprocedural events 4%
- Restenosis/significant intimal hyperplasia 3.3%
- Recurrent transient ischemic event in same territory, 2.1%

Another Meta-analysis

- 2012 paper
- 51 vessels
- Good recanalization rate
- Complications 11%, all periprocedural
- TIA, 4%
- No death nor stroke

Medical vs. Endovascular

- No Data
- No Trials reported
Patients likely to decline with medical treatment?

- 60 patients in 3 hospitals over 7 years
- 11 (18%) declined during admission despite antithrombotic or anticoagulant
- Additional 8 (12%) had TIA/CVA/death within year
- Total 28% with additional event within a year
- Main risks for decompensation
  - Female
  - Bilateral vertebral involvement
  - Intracranial arterial involvement


Summary

- Dissection is relatively uncommon
- Important etiology of stroke in <45 y/o
- Medical treatment
  - Antithrombotics might be best choice
  - Perhaps role for anticoagulation the first week, not proven
- Endovascular treatment
  - Seems relatively safe
  - Not proven better than medical treatment