The Role of Alternative Imaging for Carotid Disease

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What's Best & When Is It Necessary?

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Disclosures

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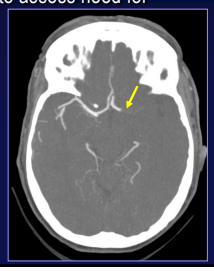
Categories

- Go 1st to alternative imaging
- Might try US 1st, but if negative proceed to alternative imaging
- US is non-diagnostic, need further evaluation
- Most prefer CTA w/ MRA as problem solver
  - CTA: better spatial tissue resolution, faster, more readily available
  - MRA: if iodinated contrast allergy, better look at brain parenchyma, slightly better soft tissue resolution

#1: Acute Stroke

- CTA First!
  - Visualize distal circulation to assess need for emergent thrombectomy
  - Time is of the essence



#1: Acute Stroke

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- Carotid US obtained later
  - To establish baseline for follow up

#2: Suspected ICA Occlusion on US

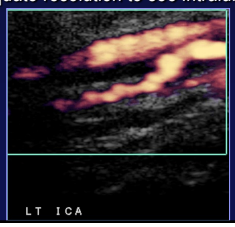
- US (and MRA) may have F+ exams
- CTA
- May need to evaluate the distal circulation to determine optimal management
  - Distal string sign
  - Collateral flow patterns
  - Occlusion above the skull base

#3: Dxs in Mid to Distal ICA or above Skull Base

- Limited visualization on US in most pts, esp on grayscale
  - FMD
  - ICA dissection

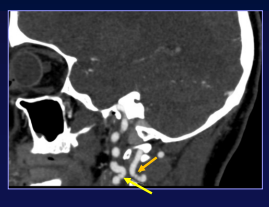
#3: Type 2 FMD

- Stenosis usu in mid to distal ICA
- May see beading on US
  - But, inadequate resolution to see intraluminal webs or stenosis



#3: Type 2 FMD

- Stenosis usu in mid to distal ICA
- CTA

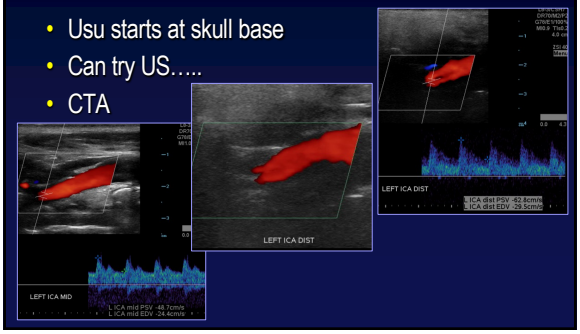


#3: Personal or Family Hx of FMD

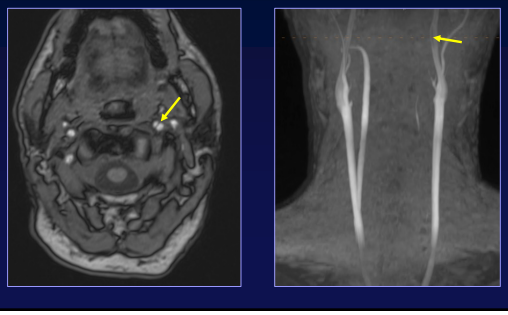
- Need to rule out intracranial aneurysm
- CTA or MRA

#3: ICA or VA Dissection

- Usu starts at skull base
- Can try US…..
- CTA



#3: ICA Dissection



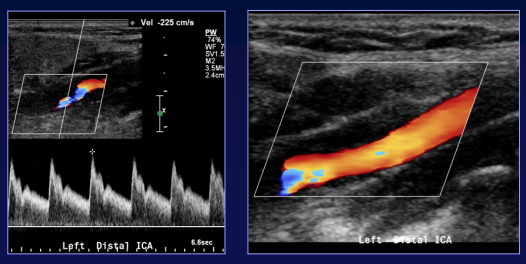
#3: ICA Dissection

- Usu starts at skull base
- Can try US…..
- CTA

#3: ICA or VA Dissection

- Hints on US
  - Attenuated, irregular vessel contour
  - Tapering lumen
  - Smooth, homogeneous wall thickening
  - Proximal high resistance waveform, esp low PSV
  - Distal ICA occlusion in young pt or pt w/o significant proximal plaque

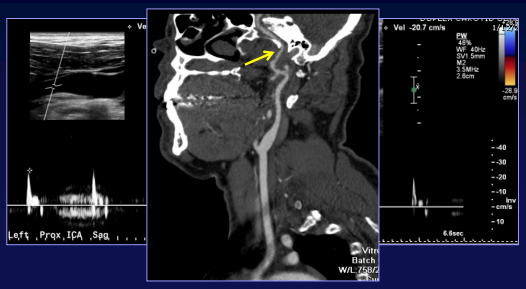
#3: ICA Dissection



#3: ICA Dissection

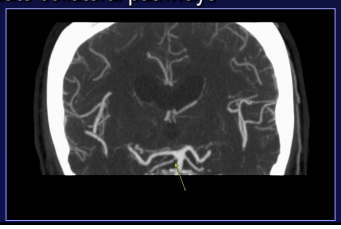
- Can confirm presence of blood in vessel wall w/ MR or CT

#3: ICA Dissection



#4: Dizziness

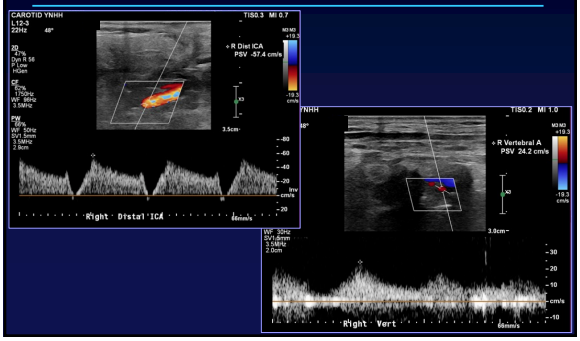
- Start with carotid US, but if negative…
- Need to rule out intracranial stenosis/occlusions and evaluate collateral pathways
- CTA



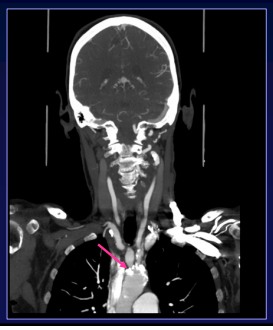
#5: Proximal Disease

- Stenosis, Dissections
- Origin of the IA, CCAs, SCLA
  - Often outside the FOV of the US Tx
  - Waveforms of the cervical CCAs, ICAs, VAs might give you a hint
  - But for direct visualization……
- CTA >> MRA

63 yo w/ Stroke



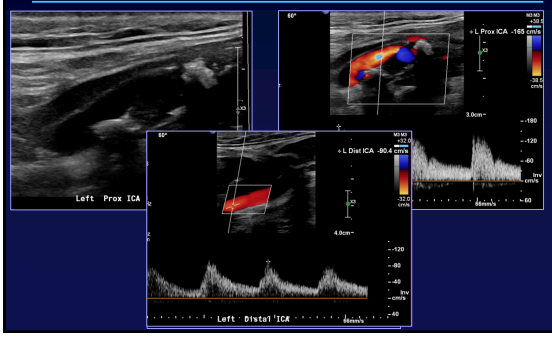
Innominate Stenosis



#6: US Non-Diagnostic

- Discrepancy btwn GS and Doppler criteria
- Discrepancy in Doppler criteria
- Shadowing from plaque, tortuosity, poor visualization → incomplete or poor visualization of residual lumen so can't estimate degree of stenosis
- CTA

#6: US Non-Diagnostic



50-69% Lt ICA Stenosis