Cerebral Venous Thrombosis: What’s clot and what’s not?

Megan Strother, M.D.
Superior Sagittal sinus
Inferior Sagittal sinus
Straight sinus
Internal Cerebral veins
Vein of Galen
Normal CTV Anatomy

What's clot?

Patient #1

Non-contrast CT

Patient #1: CTA

Patient #1: CTA

Thickened Sinus
Megan K. Strother, MD: Dural venous sinus thrombosis: what's clot and what's not?

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Distribution of Cerebral Venous Sinus Thrombosis

Recanalization is not related to outcome... venous collaterals probably more predictive of outcome.

At discharge, 60% of patients already showed complete or partial overall recanalization.

510 patients reported with cerebral thrombosis from literature review. Leach JL, Fortuna RB et al. *Radiographics* 2006.
What’s not?

Arachnoid Granulation

What’s not: Arachnoid Granulation

- Imaging characteristics
  - Communicates with subarachnoid space
  - CSF drainage into sinus
  - 96% of arachnoid granulations had vein entering filling defect
  - Round
  - Found in 90% of patients
  - Isointense to CSF on MR

96% of arachnoid granulations had vein entering filling defect


What’s not: Sinus asymmetry

Transverse sinus atresia

Transverse sinus atresia

Transverse sinus hypoplasia

Transverse sinus hypoplasia

Finding clot:

CTV vs. DSA
- CTV Technique
  - 100 mL contrast at 3 mL/sec
  - 40s prescan delay
  - 60s scan
- Results: CTV MPR
  - 95% sensitive for dural venous sinus presence using DSA as gold standard

CTV vs MRV
- “Cerebral CT venography is superior to MR venography in the identification of cerebral veins and dural sinuses and is at least equivalent in the diagnosis of dural sinus thrombosis.”
- 24 patients underwent both CTV and MRV
  - 8 patients with sinus thrombosis


AJR 1997
CTV vs. CTA
- Study
  - 109 consecutive CTA’s retrospectively analyzed for opacification of major dural venous sinuses and veins
- CTA Technique
  - Bolus-tracking set over aortic arch.
  - 100 mL injected at 4 ml/sec
  - Threshold set at 110 HU
  - Scanning starts 4 sec after threshold met
  - Average scan delay following contrast = 23 seconds

Results:
- CTV anatomy adequately displayed with CTA technique
- Major intracranial pathology with increased intracranial pressure vs post-venous opacification

Time-attenuation Curve

CA for CTV

Superior Sagittal sinus = 93%
Inferior Sagittal sinus = 83%
Straight sinus = 92%
Internal Cerebral veins = 94%

CTA for CTV

Basal vein of Rosenthal = 90%
Vein of Galen = 93%
Straight sinus = 92%
Sigmoid sinus = 74% (left)
Transverse sinus = 88% (left) 78% (right) 92% (right)

References:


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References:


