

RADY 401 Case Presentation: Dural Venous Sinus Thrombosis (DVST) Workup

Jamison Kline MS4 | August 4th, 2023

Focused patient history and workup

PHx: 32 y.o. M with unremarkable PMHx presenting to ED with progressive frontal headache and nausea c/b panic attack with SOB and RUE paresthesia in route to hospital.

ED Physical Exam: “VSS, A&O x 3, PERRL. EOMI. No nystagmus. Visual fields full. CN II-XII intact. Speech is fluent and clear. No facial droop. 5/5 strength and sensation in all extremities. Normal muscle tone. No pronator drift. Normal FTN. Normal heel to shin. Moves all extremities spontaneously. No hemi-extinction. No aphasia.”

Workup and Tx:

- CMP, CBC, lipase, aPTT, PT-INR
- Largely unremarkable (signs of dehydration from emesis)
- Zofran and IVFs

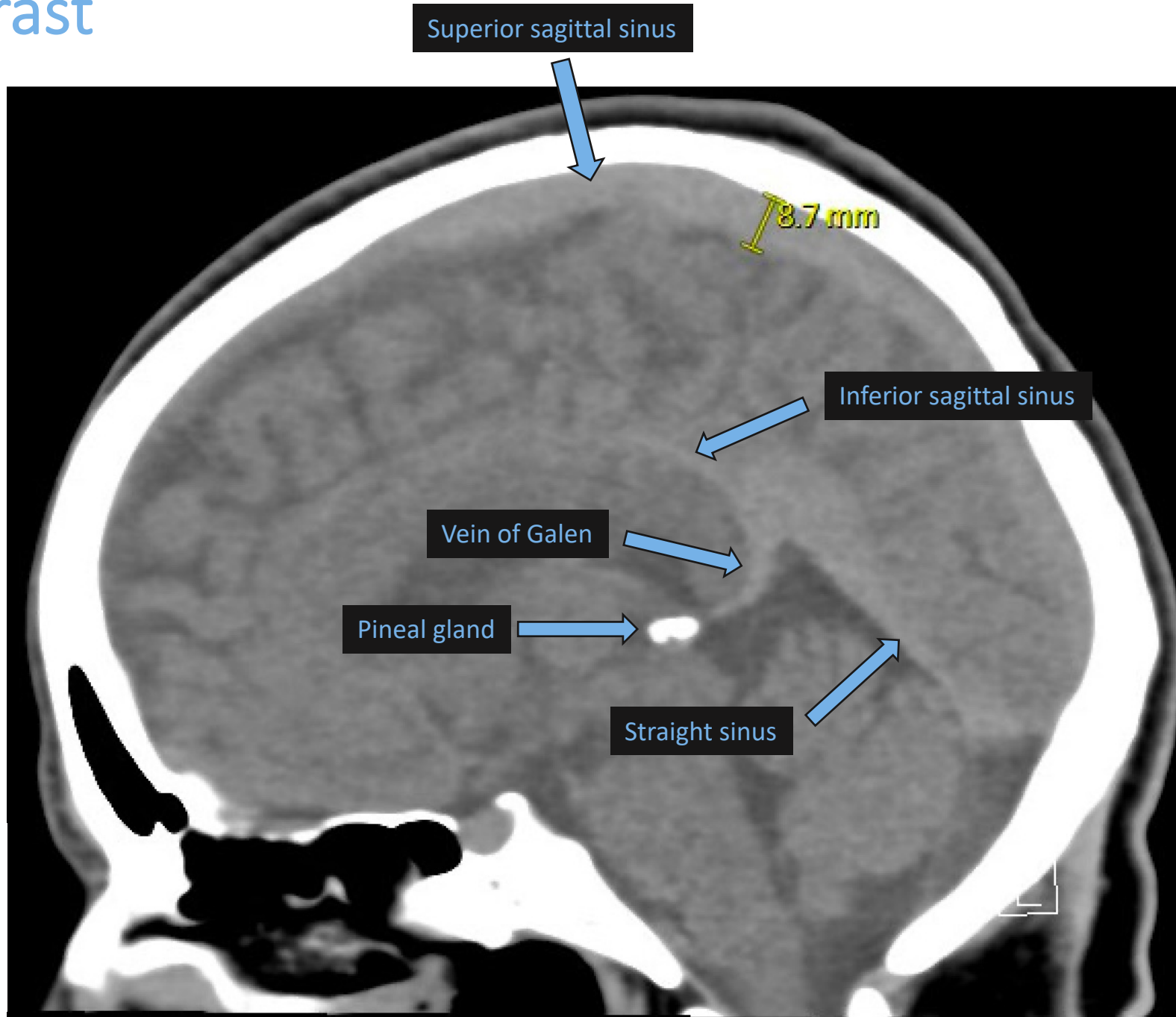
Differential:

- Subarachnoid hemorrhage
- Arteriovenous malformation
- Migraine
- Tension headache

List of imaging studies

- Non-contrast Head CT
- Head CT Venogram

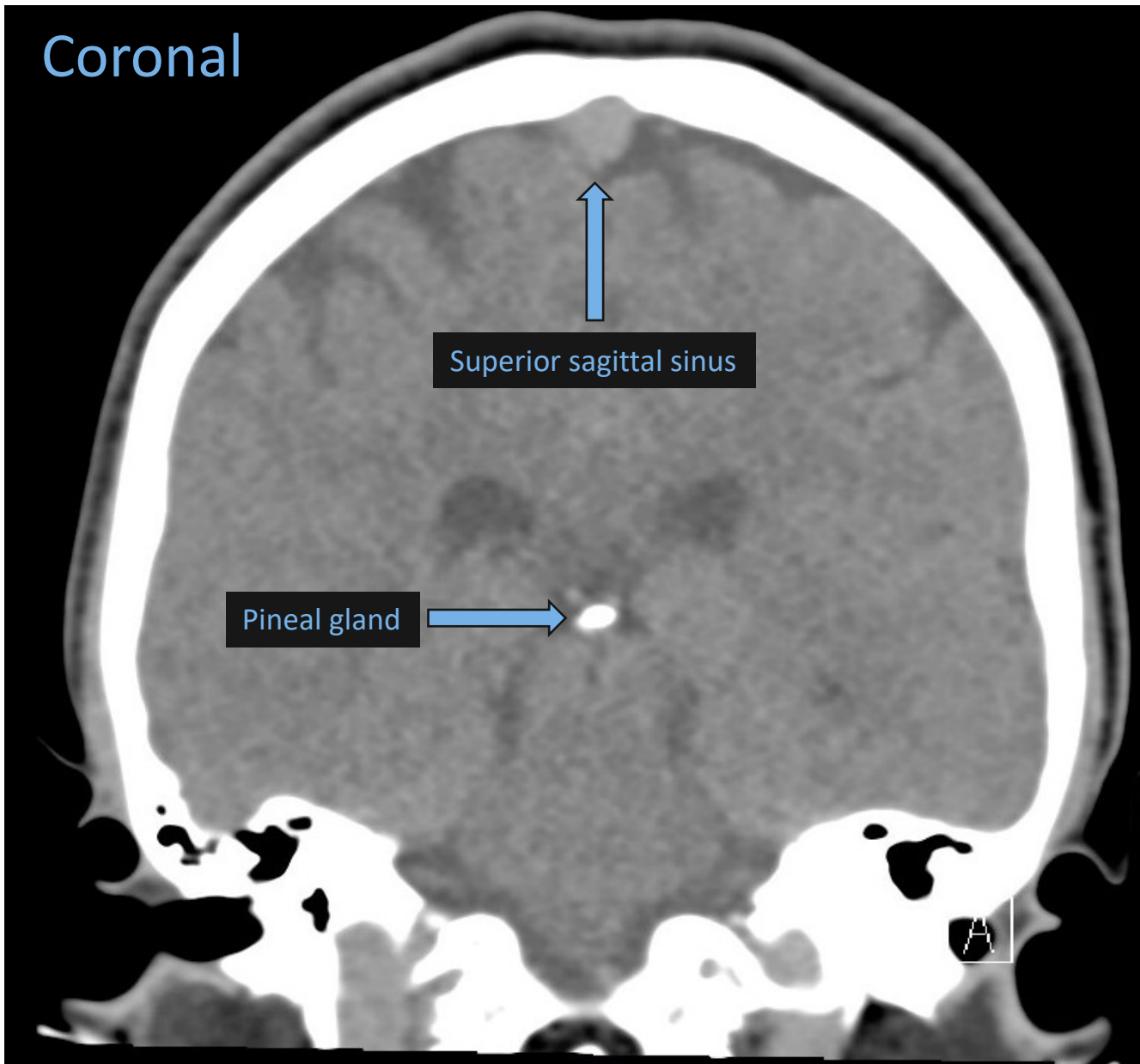
Non-Contrast Head CT



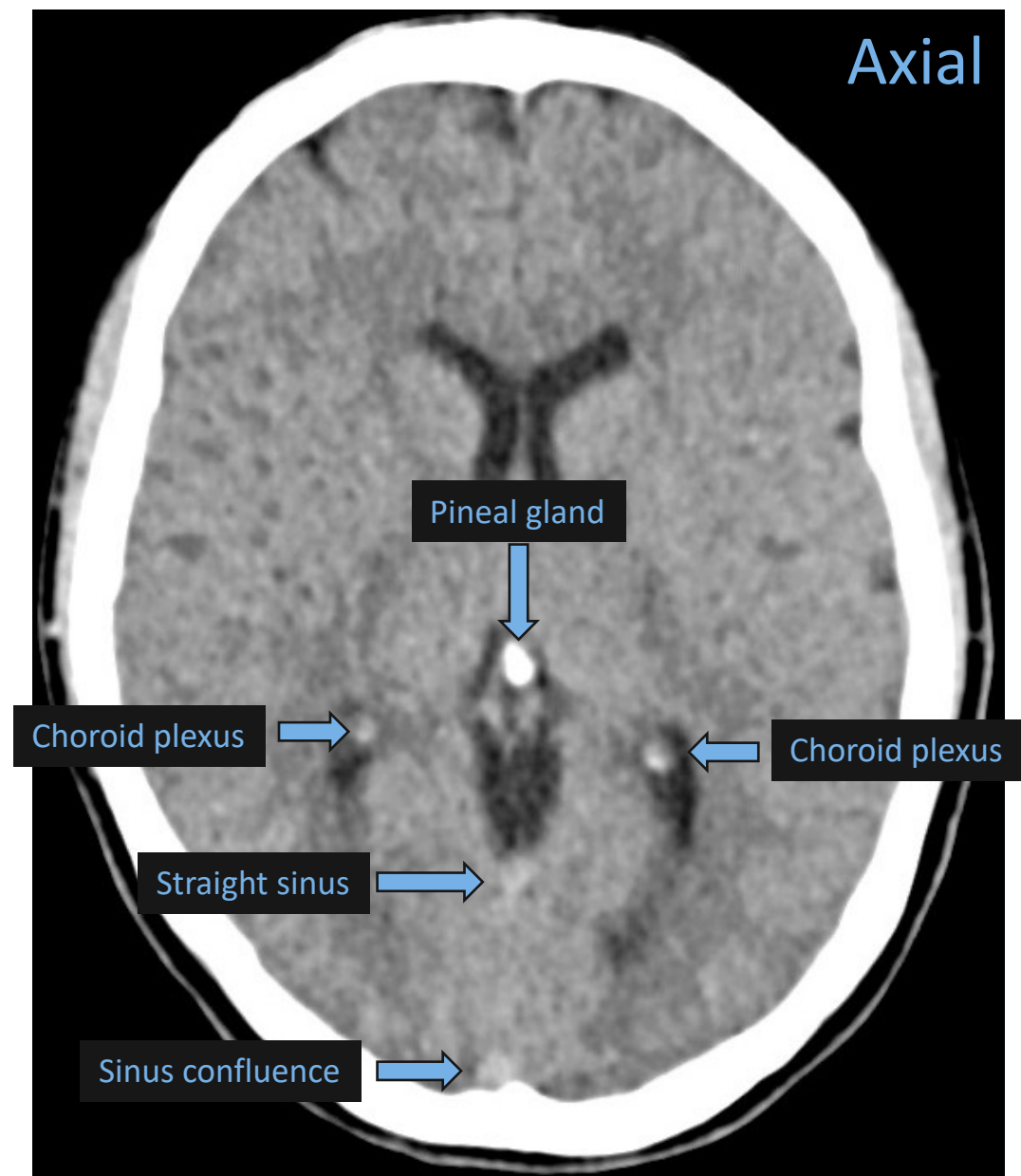
Sagittal Plane

Series 6
Image 29

Coronal



Axial

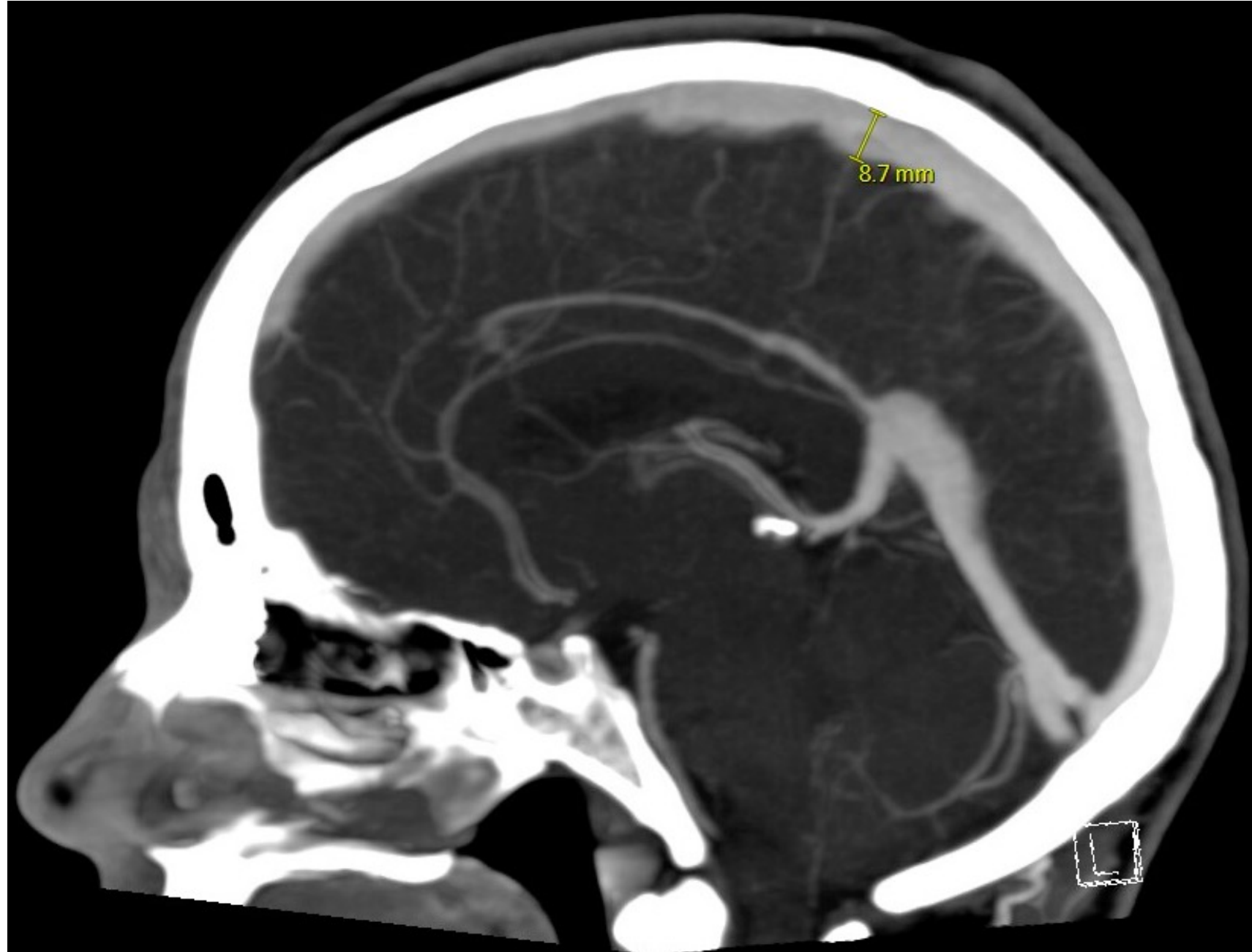


Non-Contrast Head CT

Head CT Venogram with IV contrast

Sagittal Plane

Series 7
Image 28



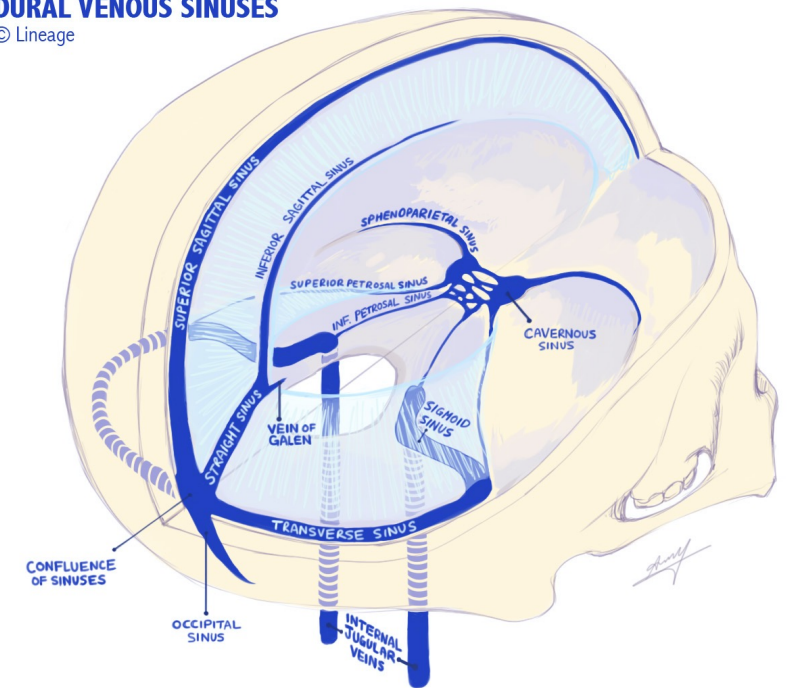
Patient treatment and outcome

- Head CTV findings negative for suspected DVST on non-contrast head CT
- ED diagnosis: Headache/Migraine
- Discontinued heparin and treated with migraine cocktail
- Discharged

Non-contrast head CT findings

- Hyperdense signal involving the SSS (8.7 mm [N=4-10 mm]¹), inferior sagittal sinus, vein of Galen, and straight sinus with possible dense clot sign at sinus confluence posteriorly²
- Pineal gland and choroid plexus calcifications
 - Age-related neurodegenerative finding^{3,4}
- Suspected dural venous sinus thrombosis (DVST)
 - Neurology consulted
 - Started heparin
 - Further characterization via Head CT Venogram

DURAL VENOUS SINUSES
© Lineage



Non-contrast CT: Exam appropriateness

- ACR Appropriateness Criteria – Variant 1: Sudden onset severe headache that reaches maximal severity within one hour. Initial imaging.⁵
 - Non-contrast head CT is gold standard for initial assessment⁴ in setting of acute headache with suspected subarachnoid hemorrhage
- Sensitivity: 41 - 73%⁶
- Specificity: 97 - 100%⁶
- Cost: \$1,200
- Radiation: 2.1 mSv

Variant 1: Sudden onset severe headache that reaches maximal severity within one hour. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CT head without IV contrast	Usually Appropriate	⦿⦿⦿
CTA head with IV contrast	May Be Appropriate	⦿⦿⦿
Arteriography cervicocerebral	Usually Not Appropriate	⦿⦿⦿
MRA head with IV contrast	Usually Not Appropriate	○
MRA head without and with IV contrast	Usually Not Appropriate	○
MRA head without IV contrast	Usually Not Appropriate	○
MRI head with IV contrast	Usually Not Appropriate	○
MRI head without and with IV contrast	Usually Not Appropriate	○
MRI head without IV contrast	Usually Not Appropriate	○
MRV head with IV contrast	Usually Not Appropriate	○
MRV head without and with IV contrast	Usually Not Appropriate	○
MRV head without IV contrast	Usually Not Appropriate	○
CT head with IV contrast	Usually Not Appropriate	⦿⦿⦿
CT head without and with IV contrast	Usually Not Appropriate	⦿⦿⦿
CTV head with IV contrast	Usually Not Appropriate	⦿⦿⦿

Head CTV findings

- Unremarkable Head CT Venogram
- No filling defects or evidence of dural sinus thrombosis
- No evidence of hemorrhage, infarction, or mass

Head CTV: Exam appropriateness

- ACR Appropriateness Criteria – Variant 6: Suspected dural venous sinus thrombosis
- Appropriate for further characterization⁷
- CTV sensitivity and specificity: 100%⁸
- Cost: \$1,200
- Radiation: 3.2 mSv

Variant 6: **Suspected dural venous sinus thrombosis.**

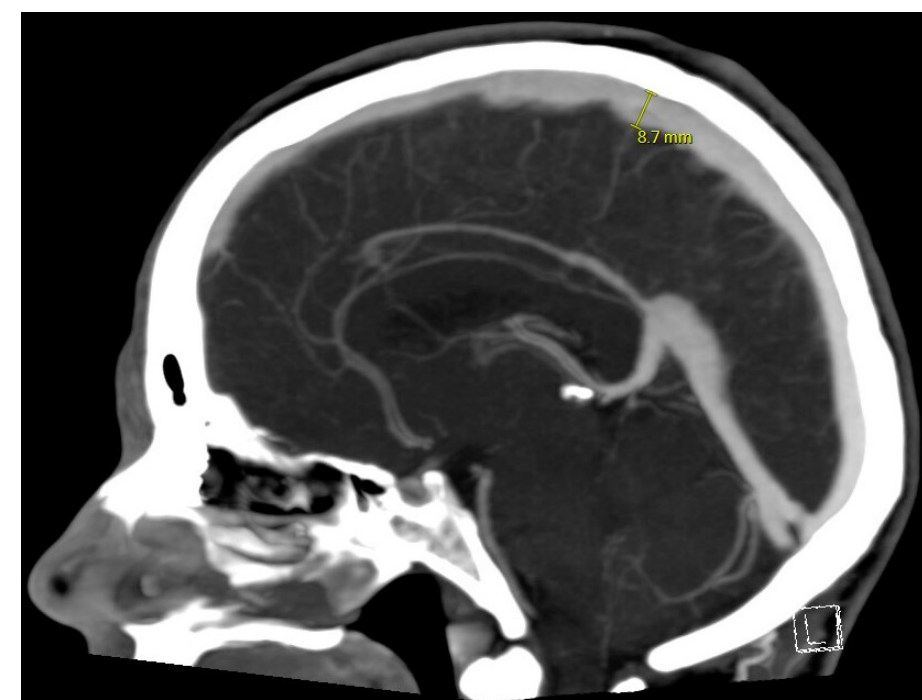
Radiologic Procedure	Rating	Comments	RRL*
MR venography head without and with IV contrast	9	Parenchymal imaging and vascular brain imaging with CT or MR should be considered. With contrast is preferred over MRV without contrast.	○
MR venography head without IV contrast	8	Parenchymal imaging and vascular brain imaging with CT or MR should be considered. Can be useful in the patient with a contraindication to contrast.	○
CT venography head with IV contrast	8	CTV can be obtained while the patient is still on the CT scan table after NCCT and can be obtained rapidly in the emergent setting. Postcontrast image timing can be optimized for evaluation of the intracranial venous structures.	☢☢☢

Case Comparison

Our Patient

⇐ NCCT

CTV ⇒

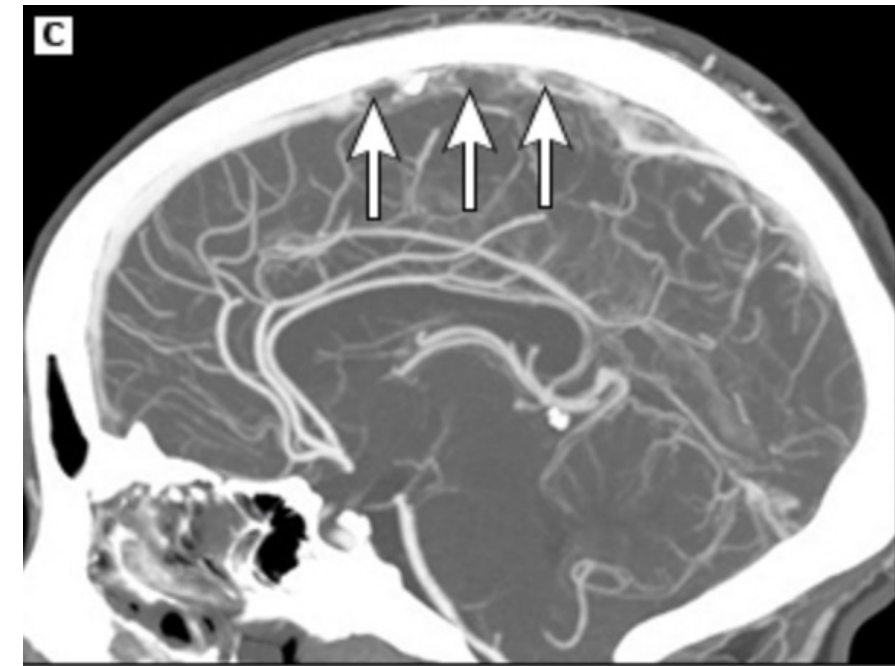
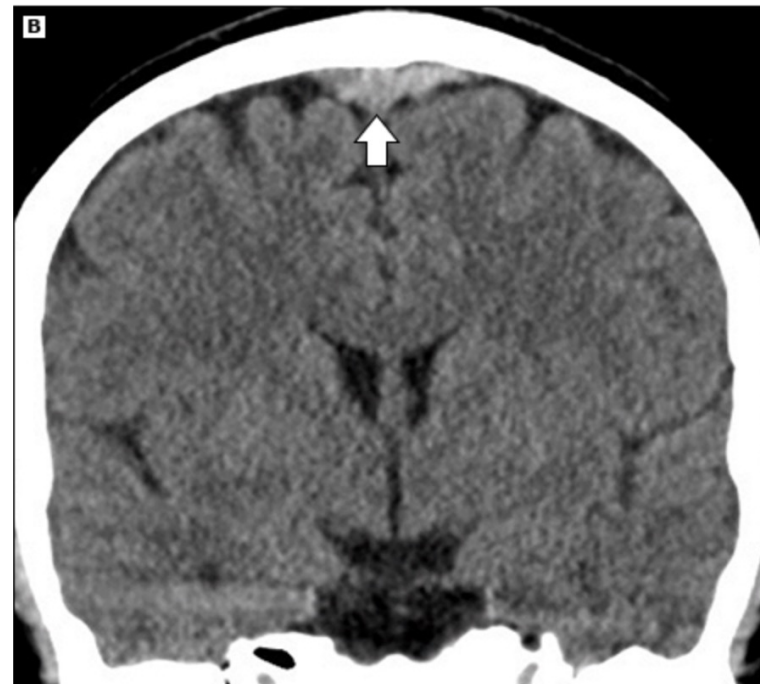
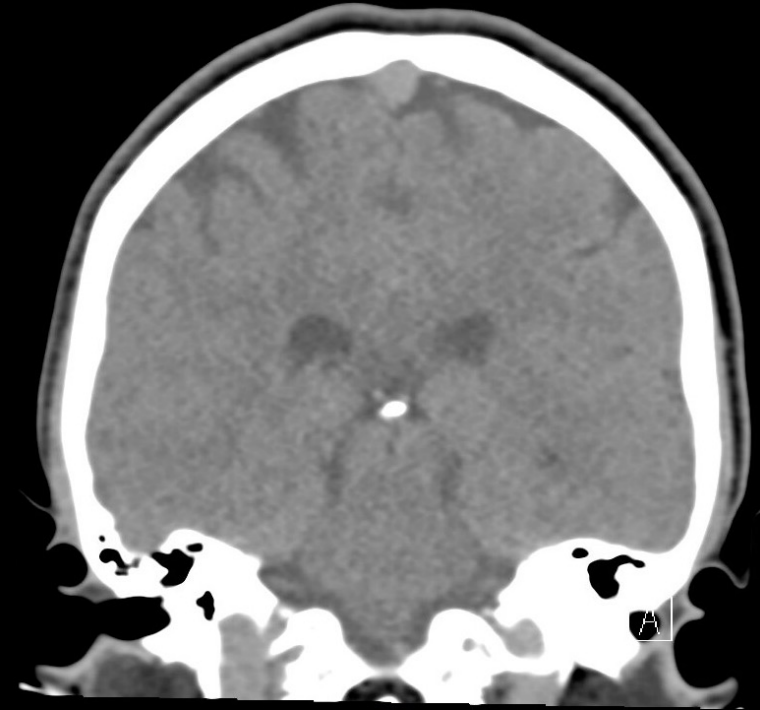


Vs.

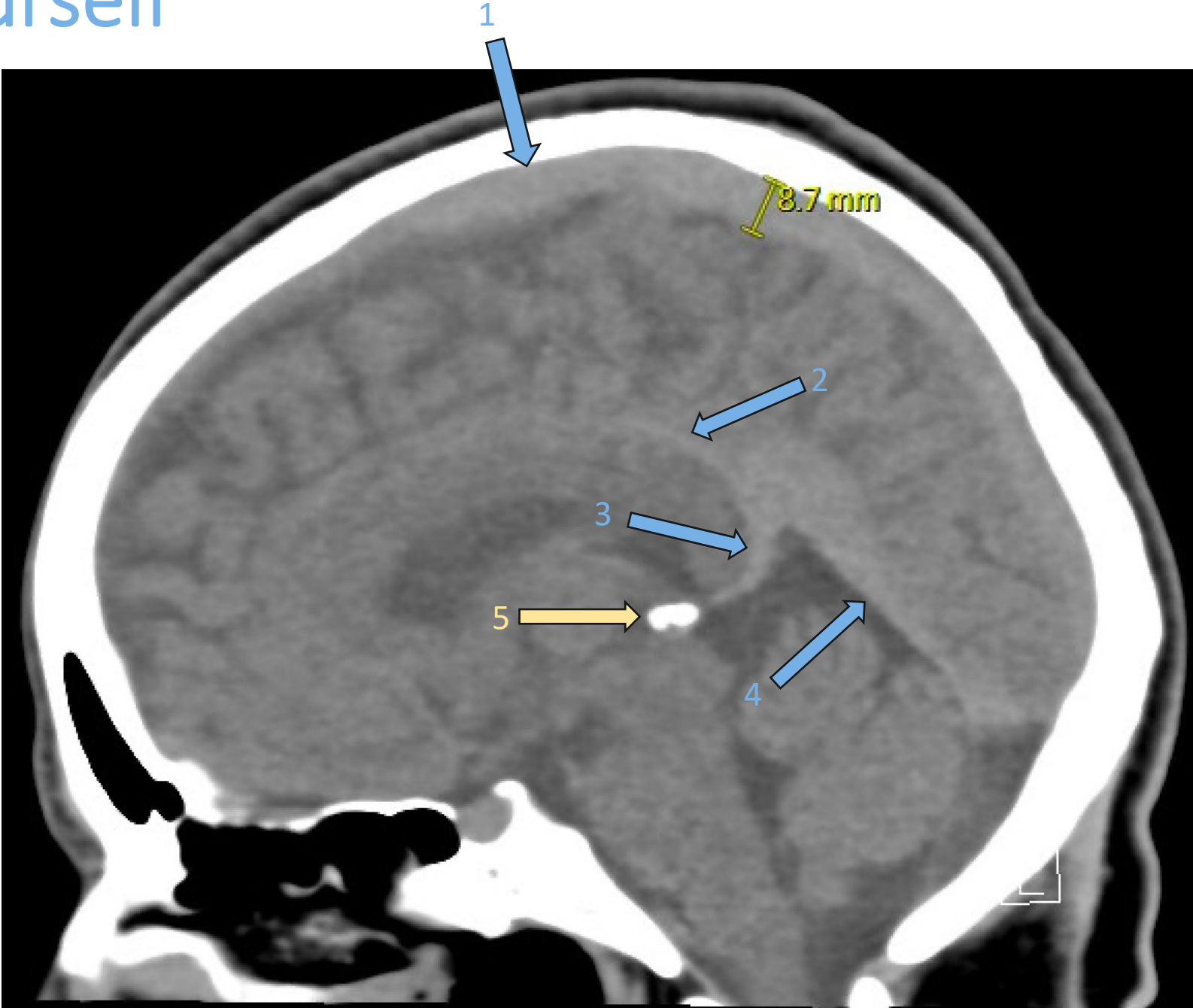
DVST (+) Case⁹

⇐ NCTT
(Dense triangle sign)

CTV ⇒
(filling defect)



Test Yourself



UNC Top Three

1. Non-contrast head CT is the preferred initial imaging for acute headache with maximal onset within first hour. Useful for ruling out subarachnoid hemorrhage.
2. Head CT Venogram is very sensitive and specific for diagnosis of suspected DVST, especially following a NCCT.
3. Choroid plexus and pineal gland calcifications are common incidental findings and age-related neurodegenerative manifestations.

References

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