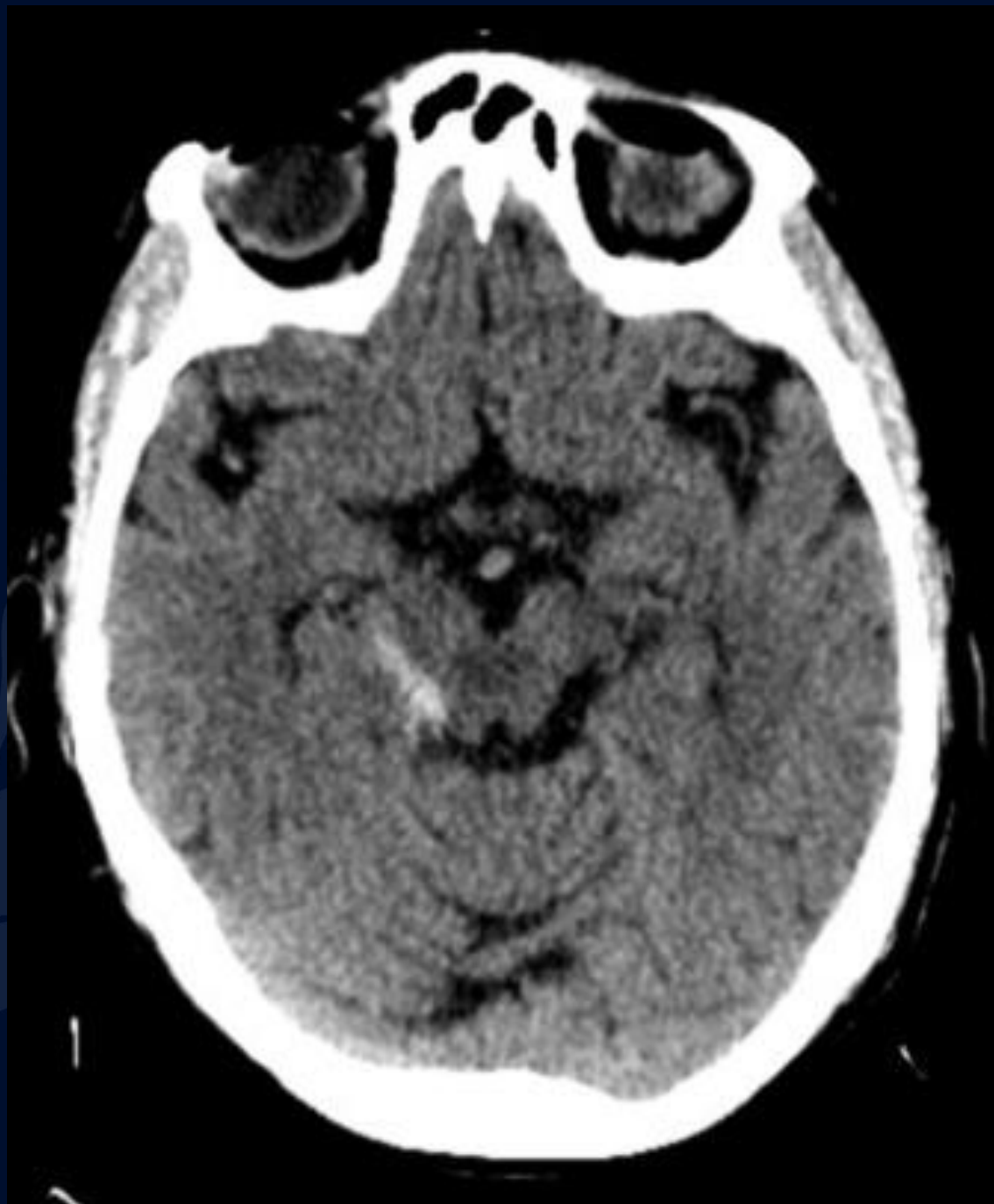


74-year-old female with face/head/wrist pain after mechanical fall

Joseph Ryan, MD, PhD
Michael Baldwin, MD

CT head without intravenous contrast

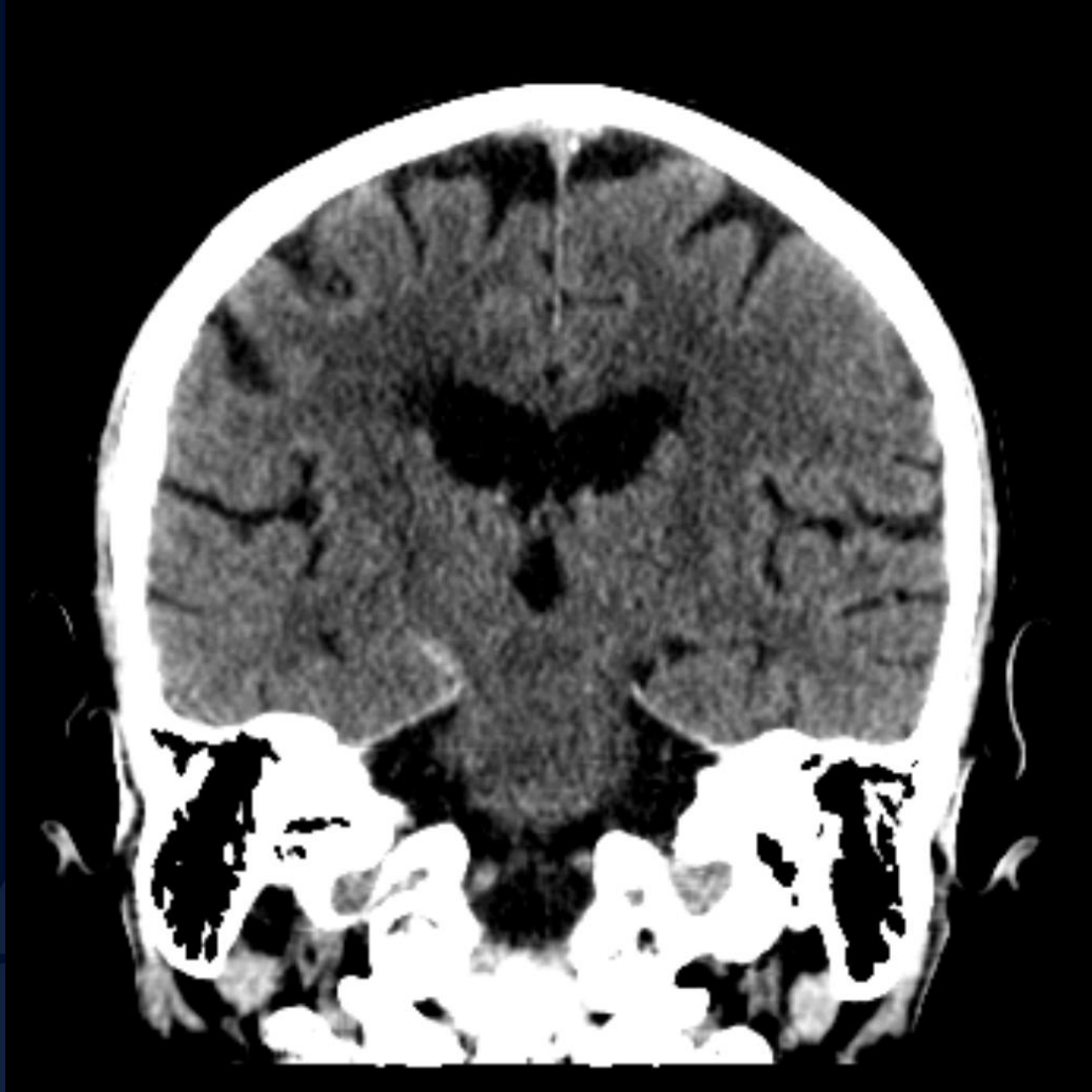


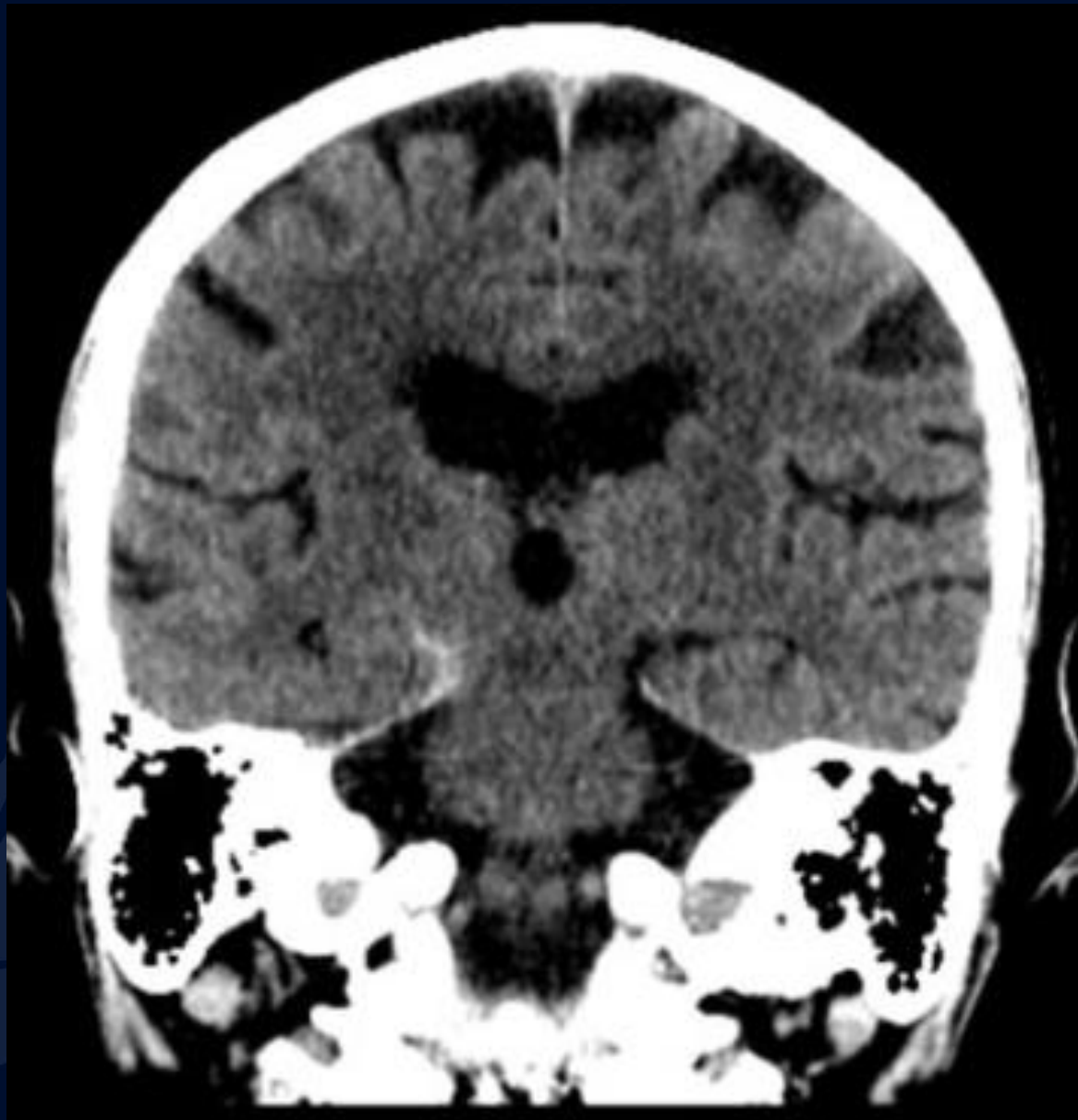


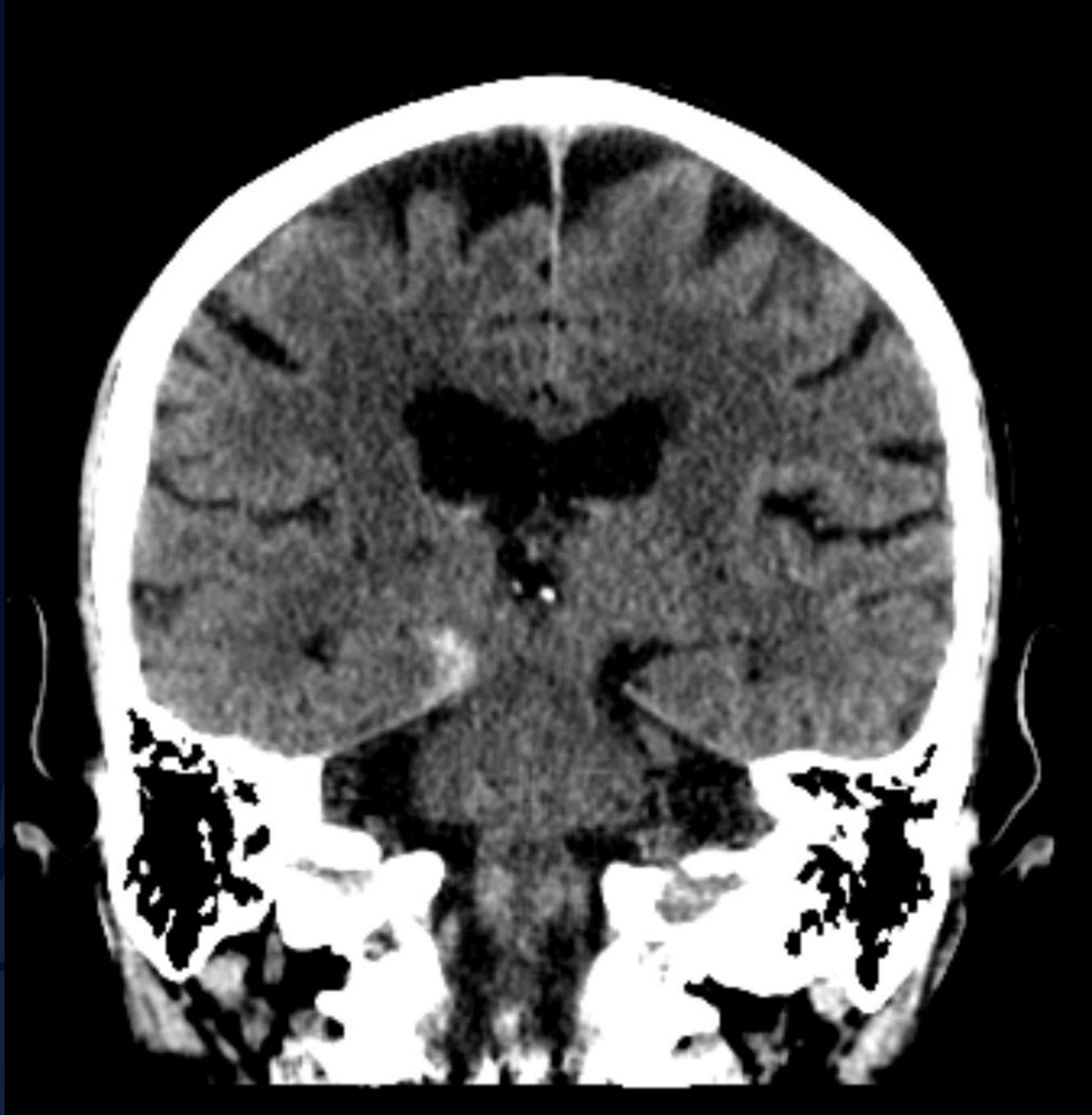
UConn
HEALTH

RADIOLOGY











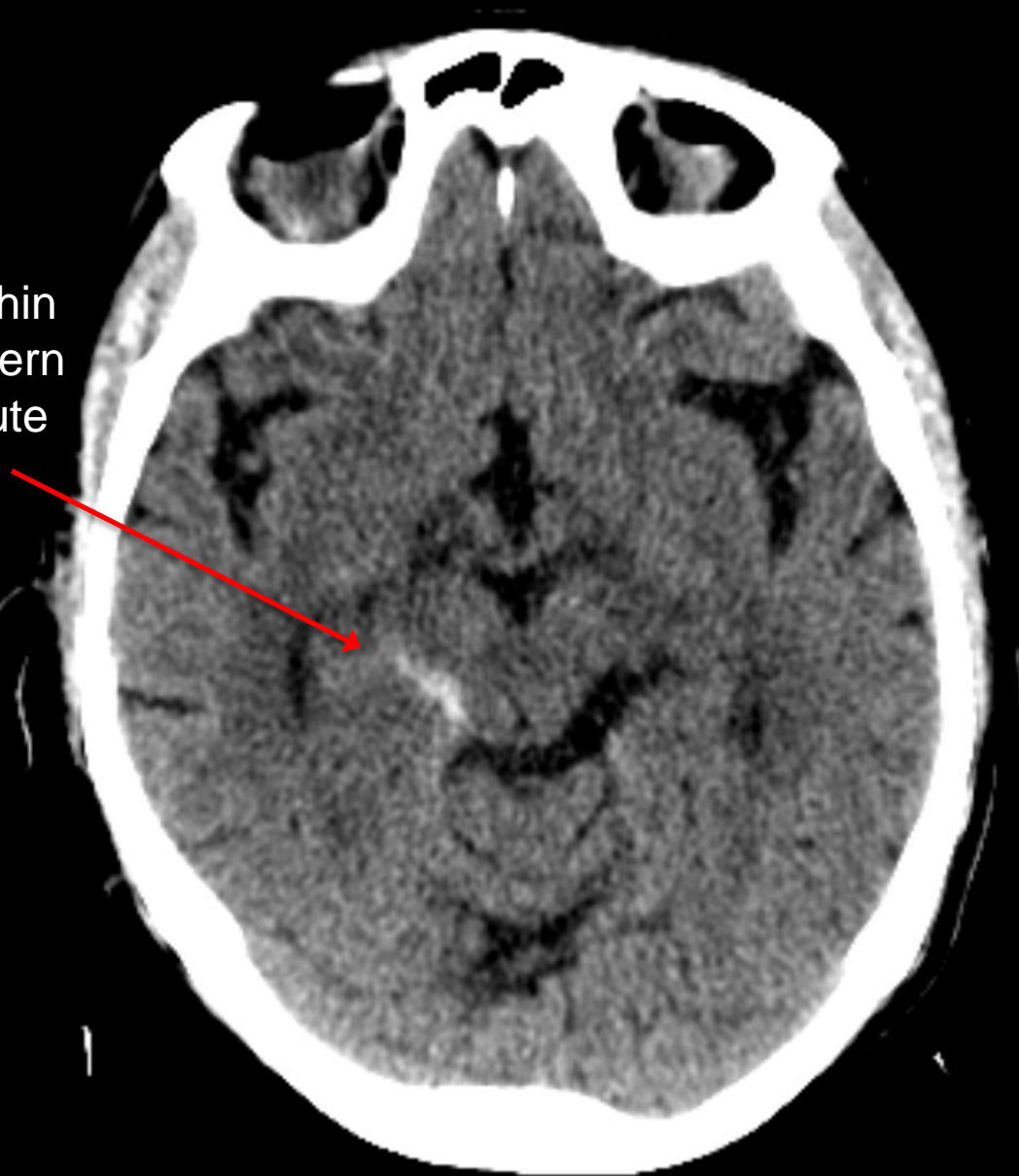
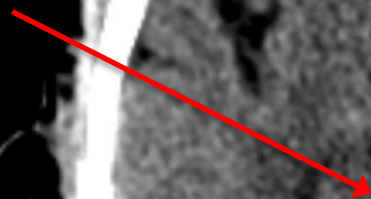


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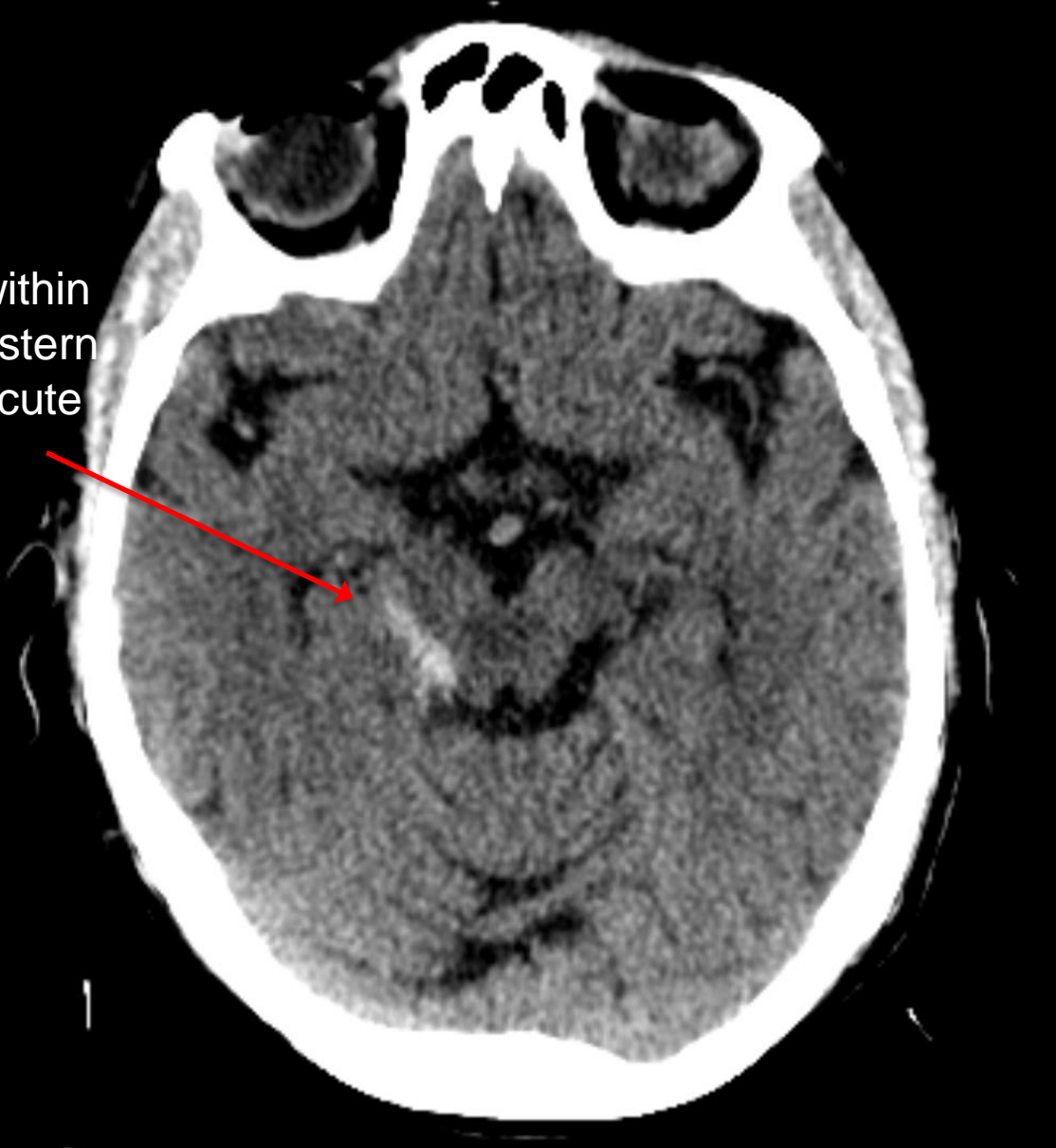
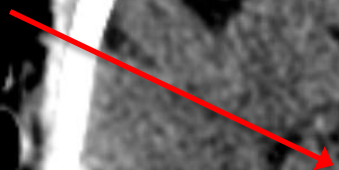
A large, stylized oak leaf graphic in a dark blue color, positioned on the left side of the slide, partially overlapping the title text.

Subarachnoid hemorrhage

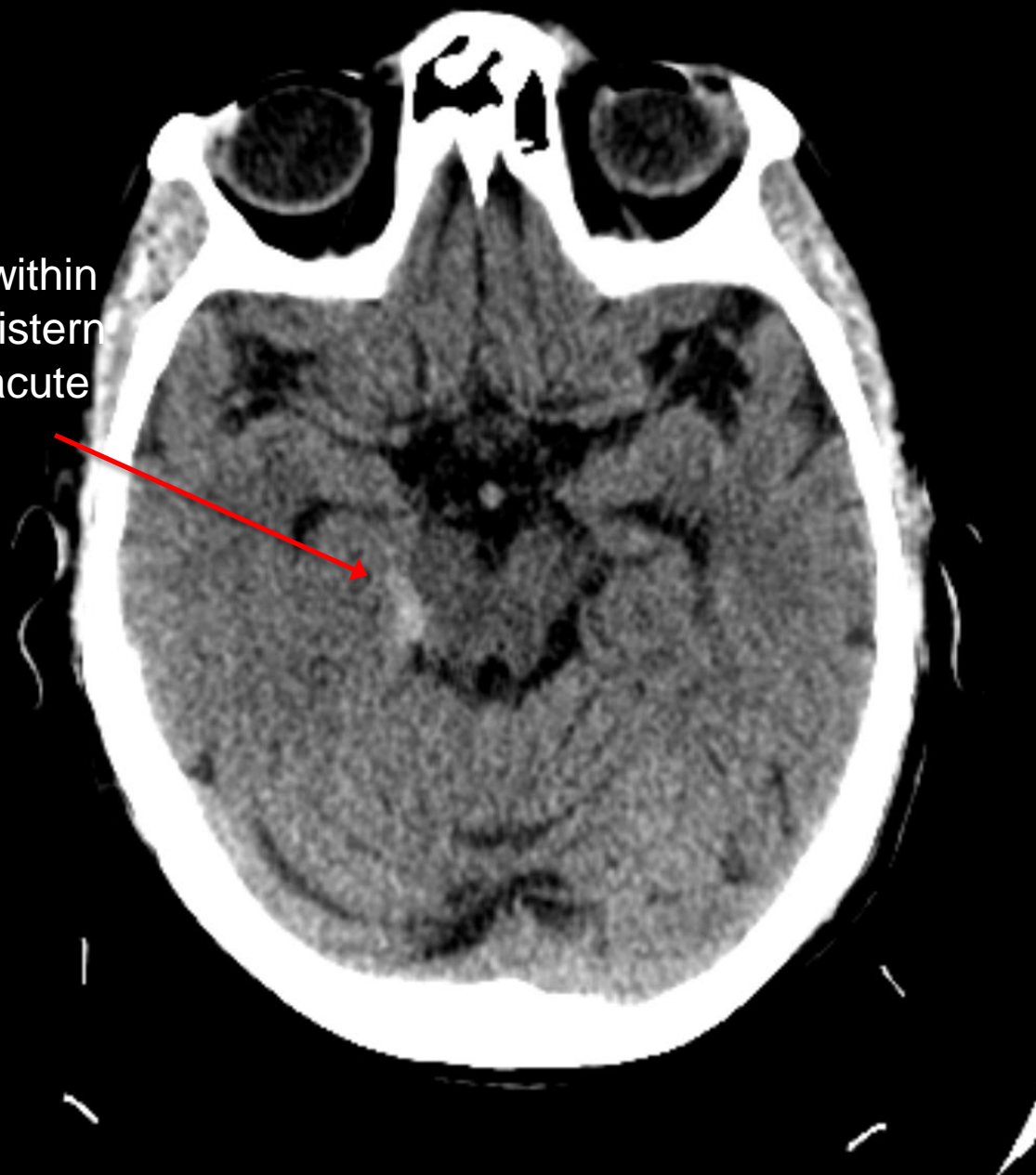
Hyperdensity within
right ambient cistern
representing acute
blood



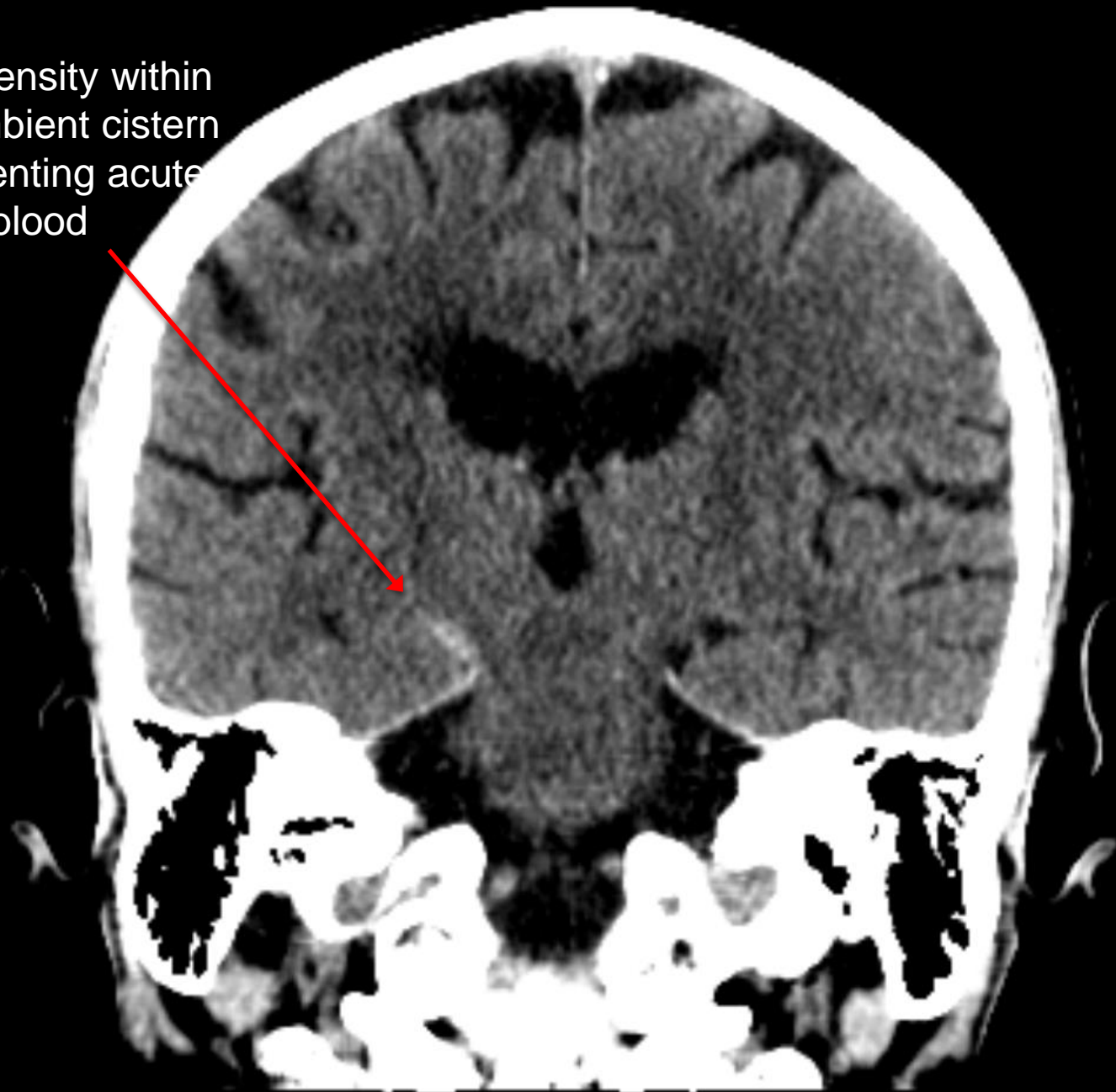
Hyperdensity within
right ambient cistern
representing acute
blood



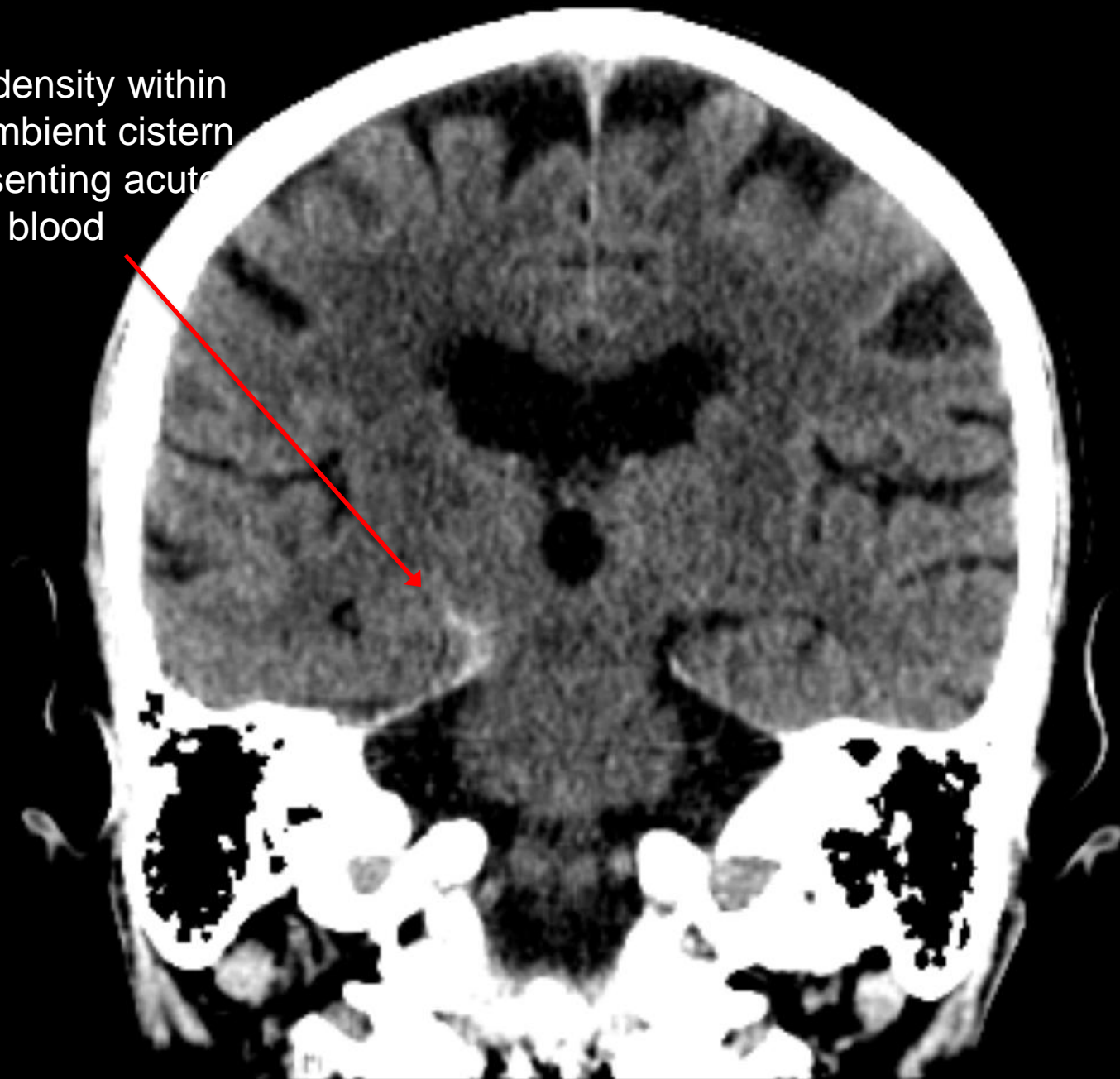
Hyperdensity within
right ambient cistern
representing acute
blood



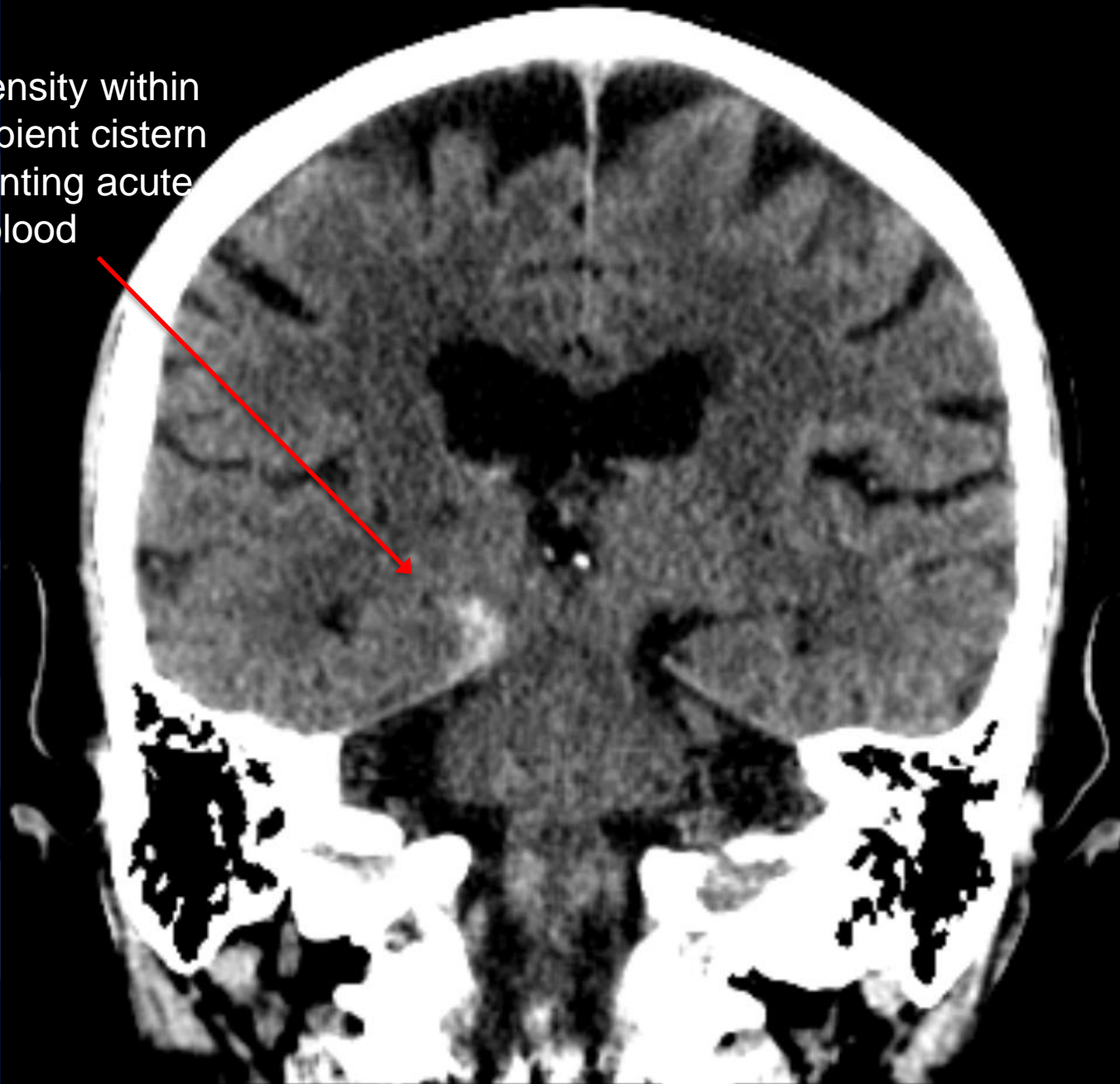
Hyperdensity within
right ambient cistern
representing acute
blood



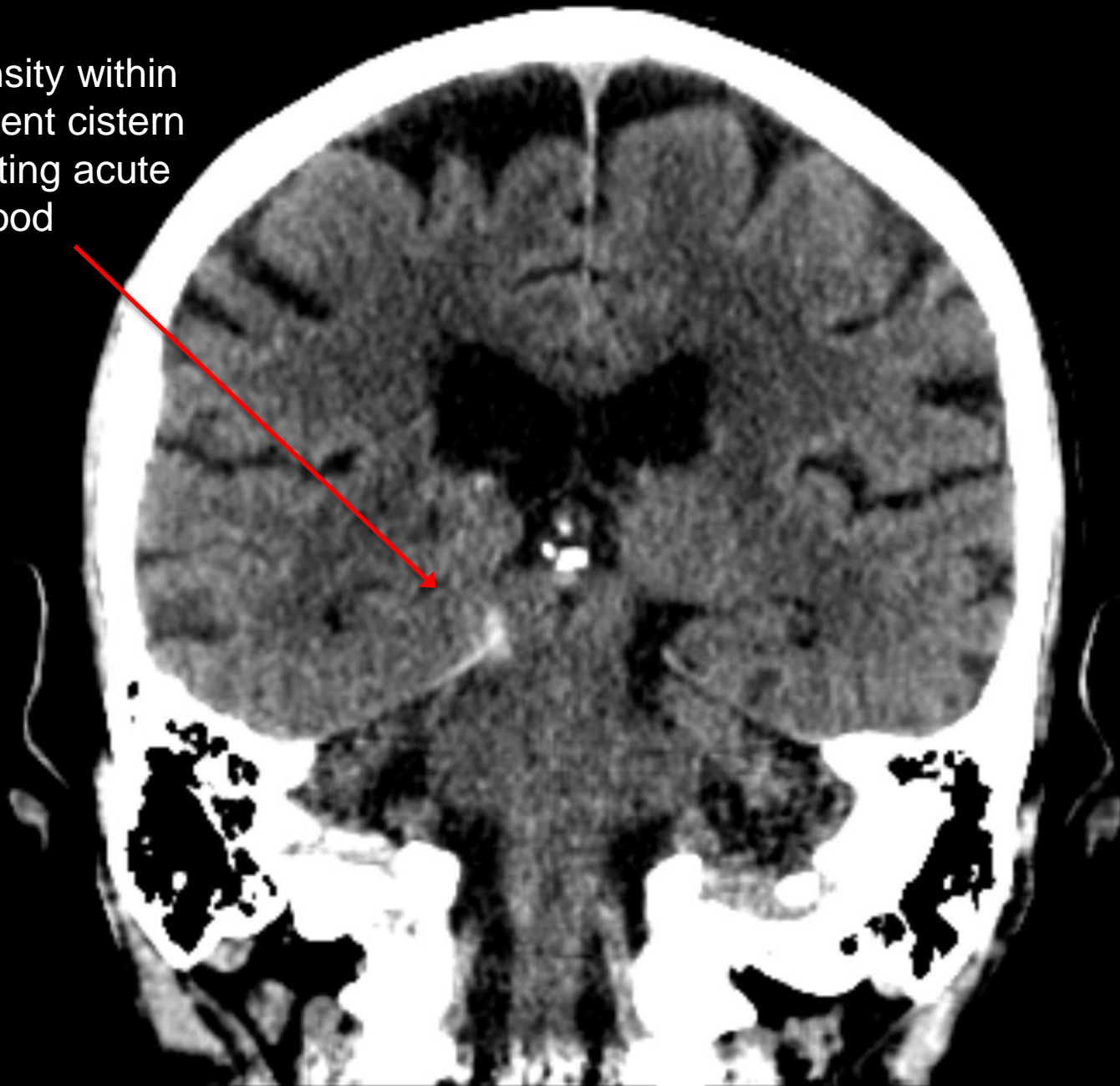
Hyperdensity within
right ambient cistern
representing acute
blood



Hyperdensity within
right ambient cistern
representing acute
blood



Hyperdensity within
right ambient cistern
representing acute
blood



Background

- Extra-axial intracranial hemorrhage into the subarachnoid space
- Typical patient is older middle age (usually < 60 y/o)
- Risk factors: family history, HTN, EtOH, connective tissue disorders (ADPKD, Ehlers-Danlos, Marfan, NF-1), sex (female > male)
- Presentation: sudden onset, severe headache +/- photophobia +/- focal neuro deficits +/- altered consciousness
- 3 distinct patterns:
 - suprasellar cistern with diffuse peripheral extension
 - perimesencephalic and basal cisterns
 - isolated cerebral convexity
- Causes:
 - trauma
 - spontaneous (berry aneurysm most common, followed by perimesencephalic, then various other less common etiologies such as AVM, cerebral amyloid angiopathy, rupture mycotic aneurysm, dural AVF, etc.)

Diagnosis

- Non-contrast head CT is typical imaging modality, although MRI is more sensitive and can better identify cause
- Amount of blood and timing determine CT sensitivity
- Subarachnoid blood is hyperintense on FLAIR imaging in the first ~12 hours
- SWI is very sensitive to blood products
- DWI is helpful to assess for hemorrhage-associated ischemia
- CT angiography and MR angiography are useful to determine cause of subarachnoid bleed
- DSA is the gold standard and can enable treatment

Management

- Treatment is aimed at identifying and reversing the cause of bleeding, and managing the potential complications
- ICP monitoring and EVD placement for hydrocephalus
- Preventing cerebral vasospasm-induced delayed ischemia using hemodilution, hypertension, hypervolemia, calcium channel blockers, endovascular vasodilatory treatments and/or balloon angioplasty
- Prevention of electrolyte imbalances, coronary spasm, neurogenic pulmonary edema, and providing other supportive care, etc.

References

- 1) <https://radiopaedia.org/articles/subarachnoid-haemorrhage>
- 2) Van gijn J, Rinkel GJ. Subarachnoid haemorrhage: diagnosis, causes and management. Brain. 2001;124 (Pt): 249-78.
- 3) F.H.H. Linn, G.J.E. Rinkel, A. Algra, J. van Gijn. Incidence of Subarachnoid Hemorrhage. (1996) Stroke. 131 (24): e535.