COMPUTED TOMOGRAPHY
Head CT Basics : Trauma

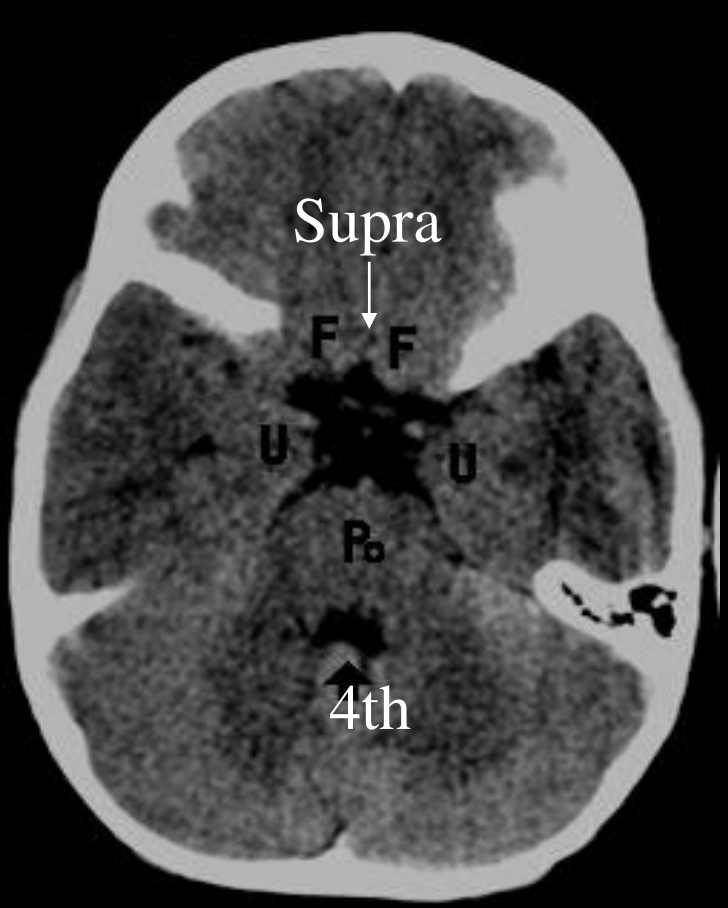
- BY AHMED JASEM ABASS
- MSC of Medical Imaging

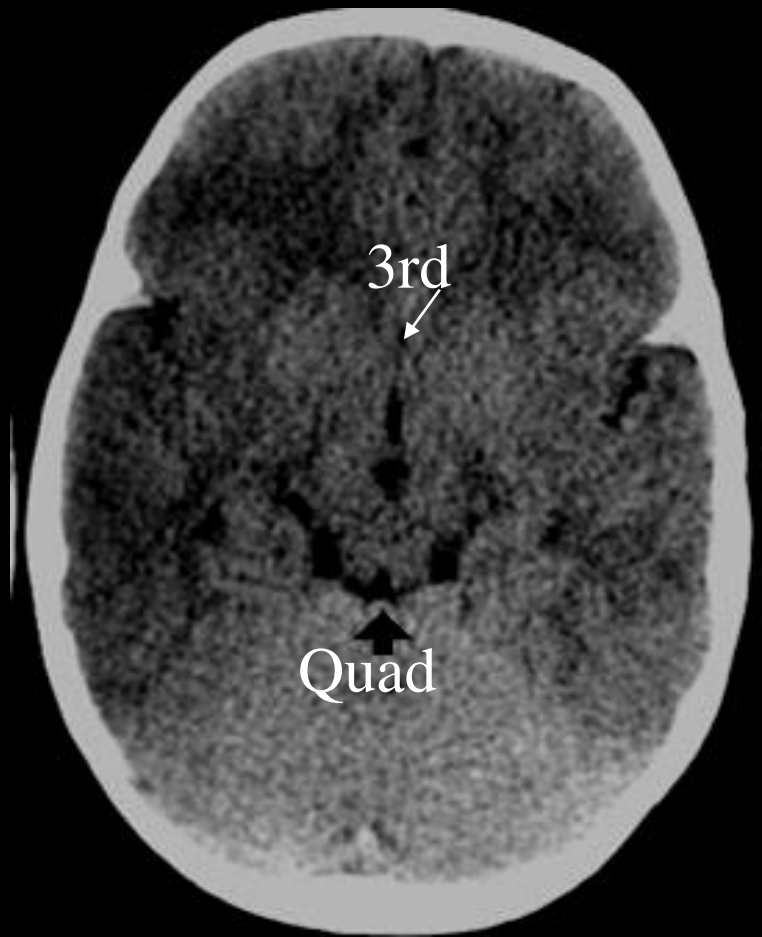


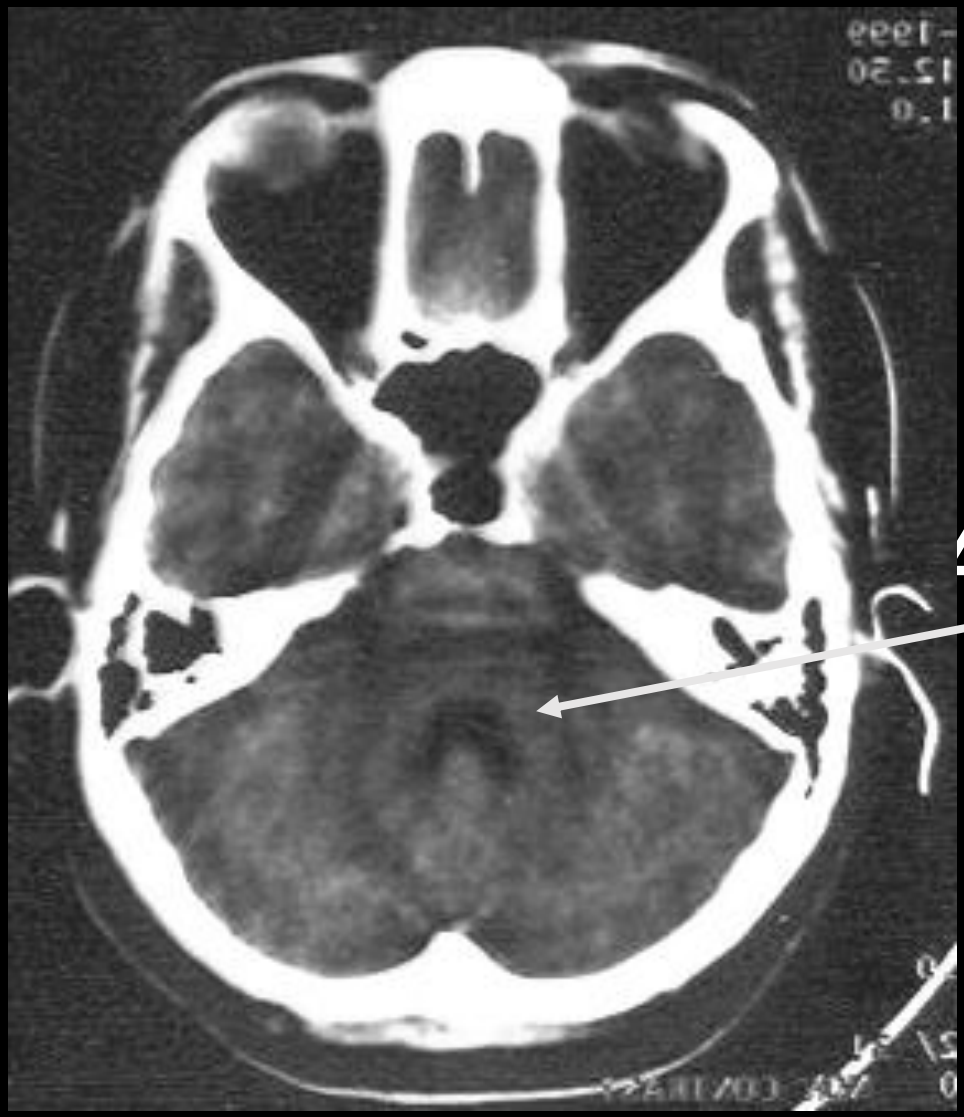
Head CT Interpretation
the basics

Before we look at abnormal, A little normal geography:

- Use the Cisterns& Ventricles as landmarks



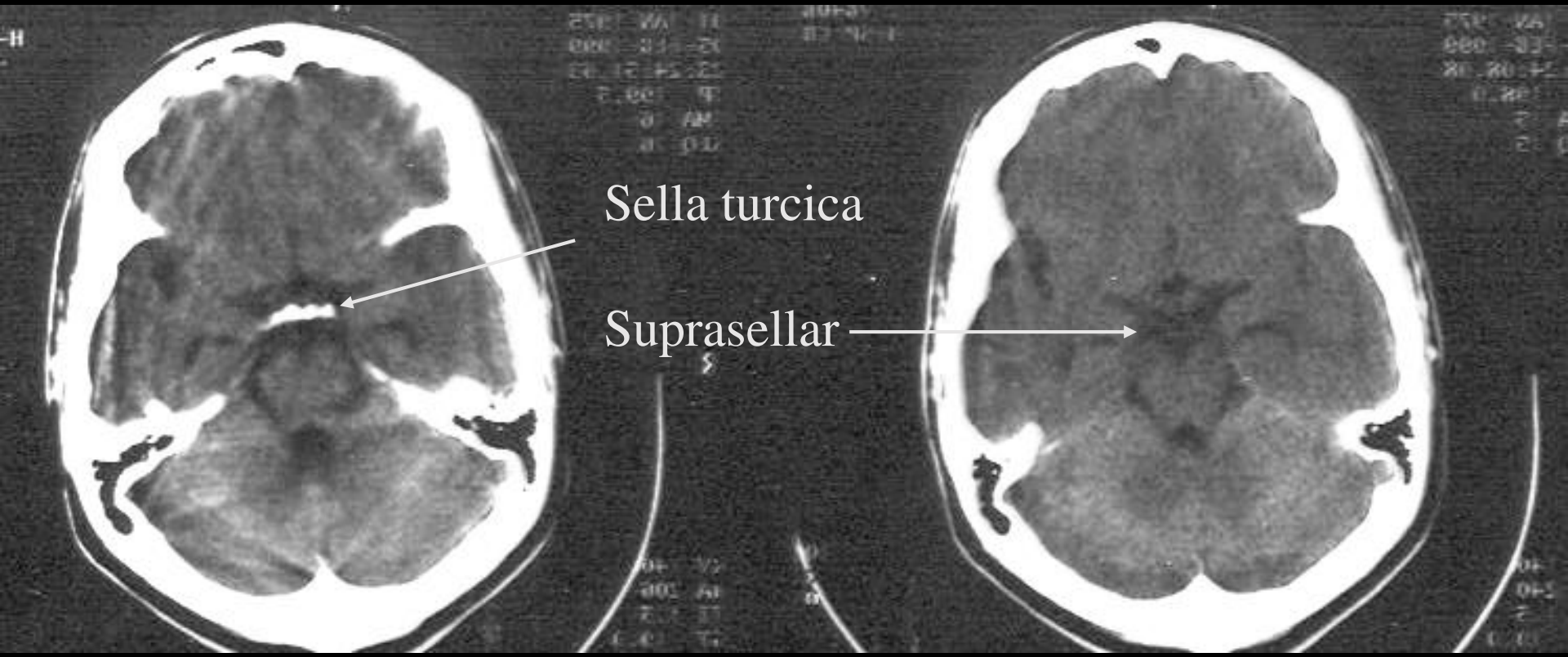




4th Ventricle

Suprasellar Cistern

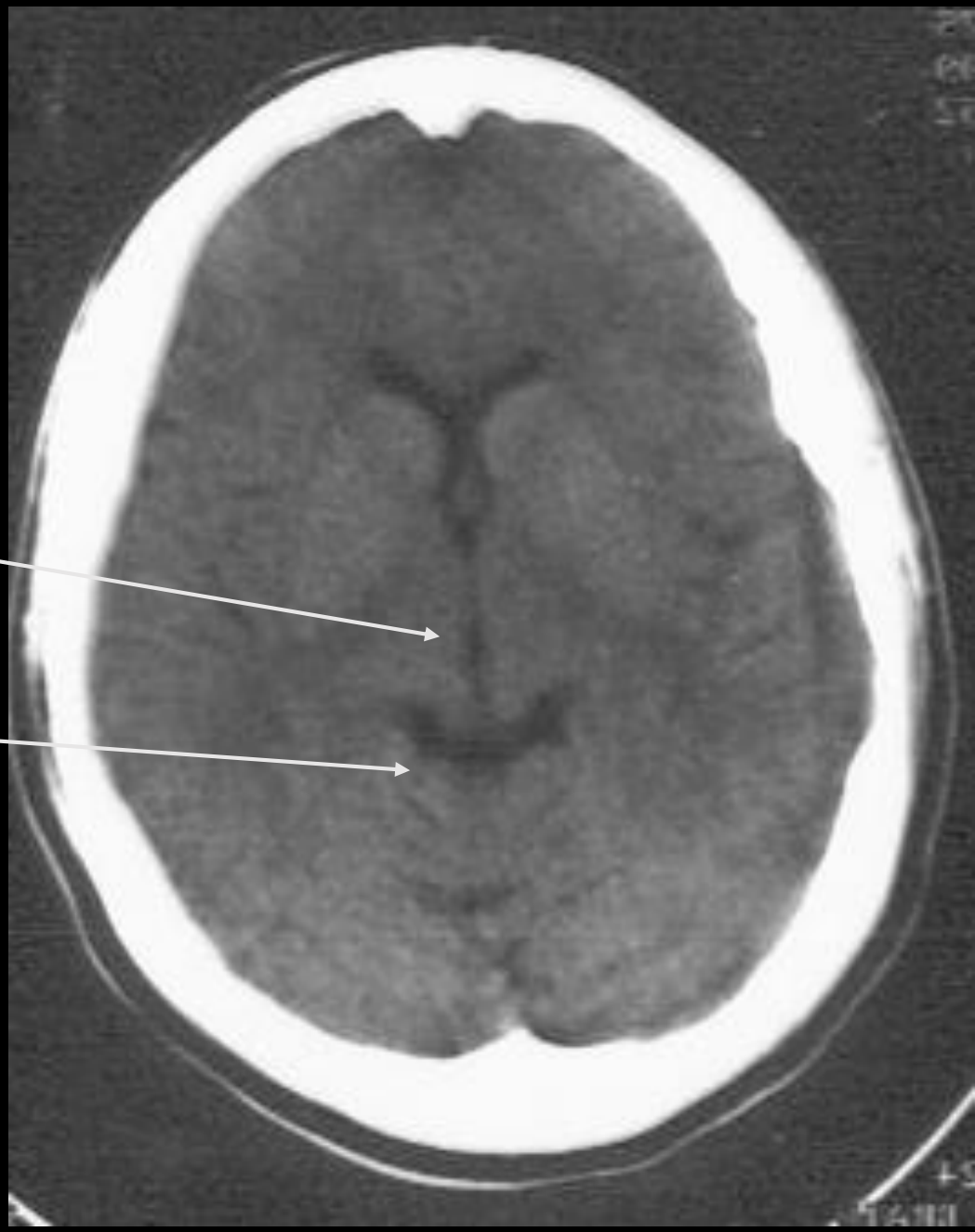


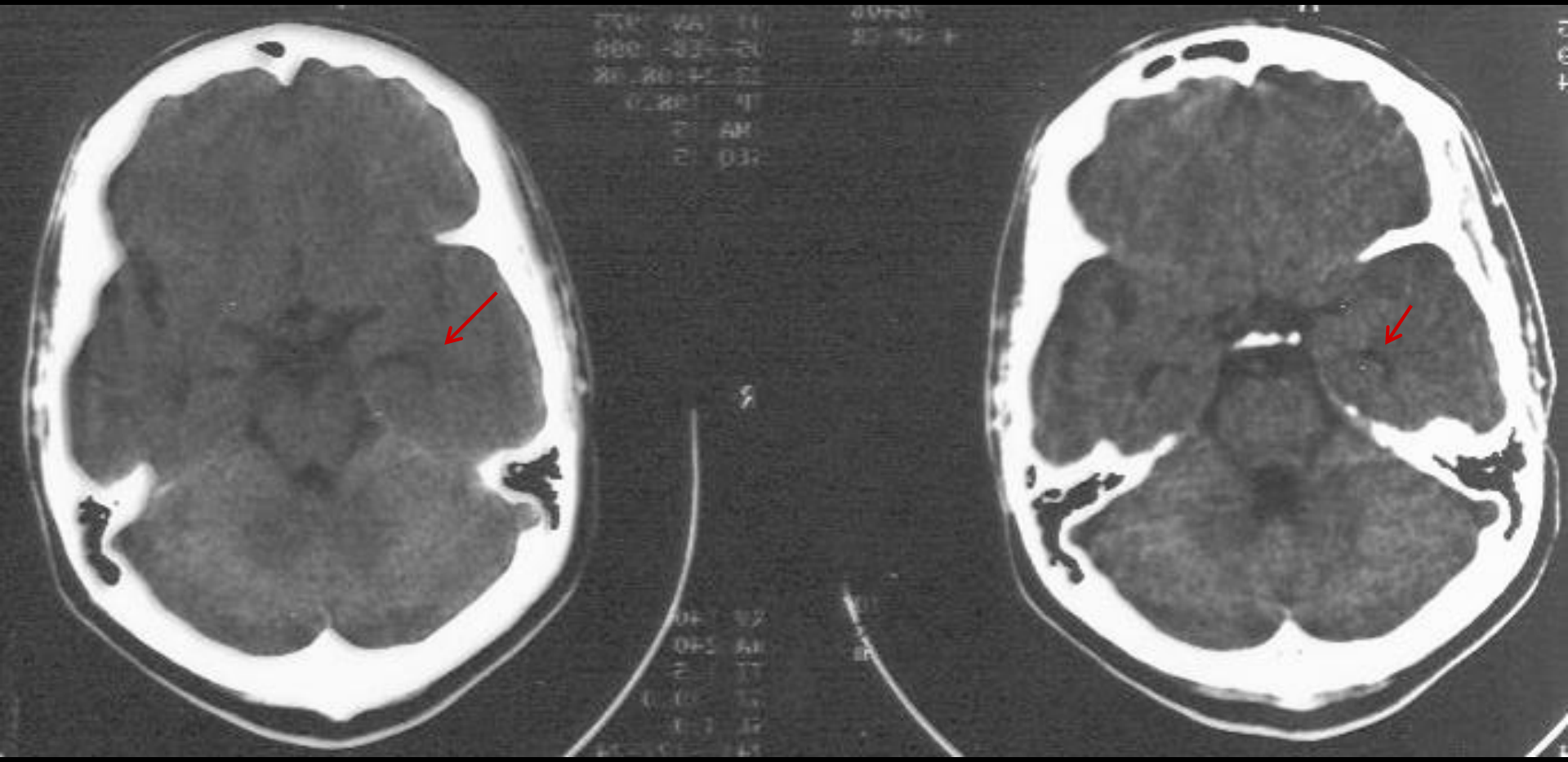


Suprasellar Cistern

3rd Ventricle

Quadrigeminal Cistern



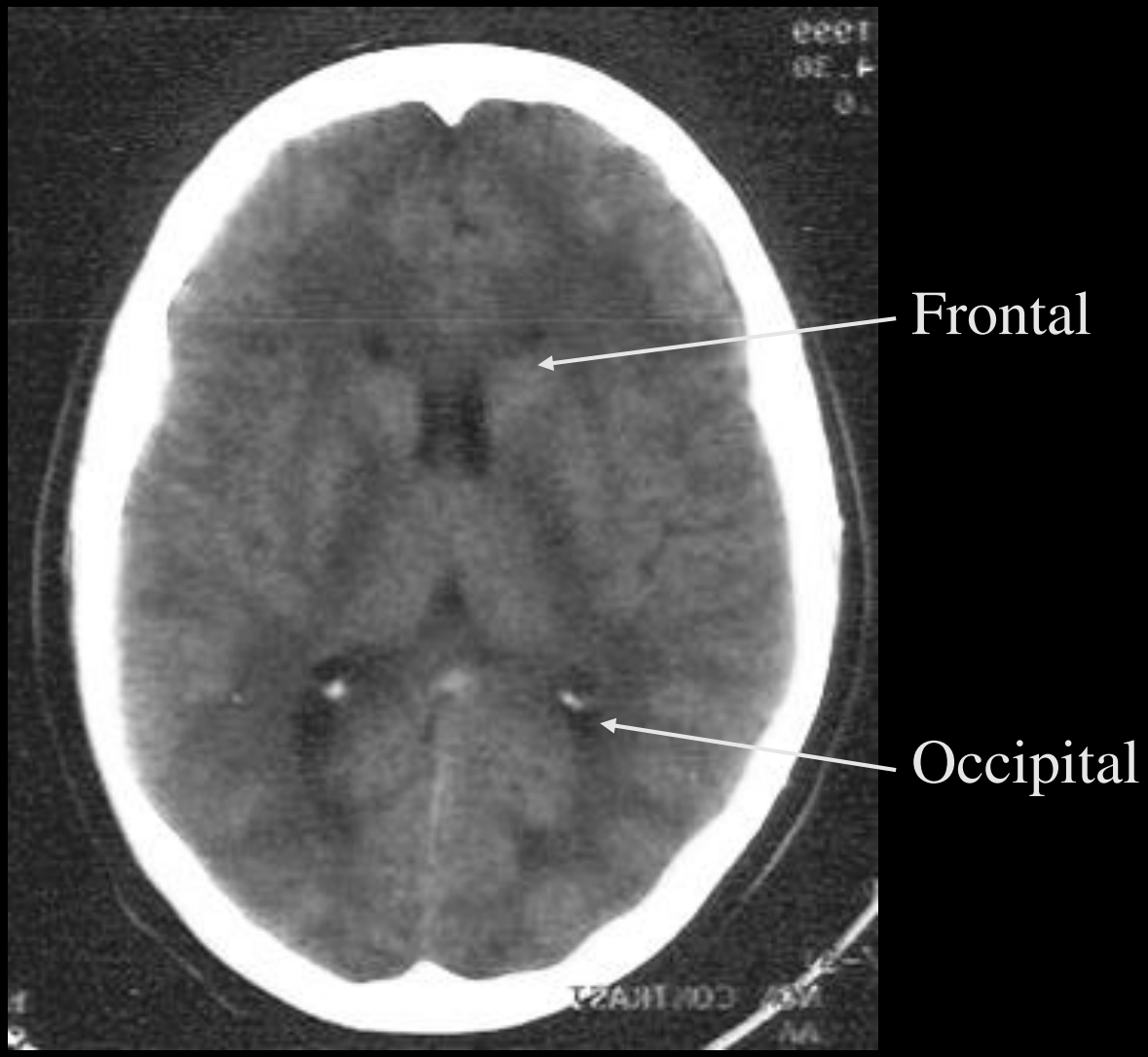


Temporal Horn of Lateral Ventricle



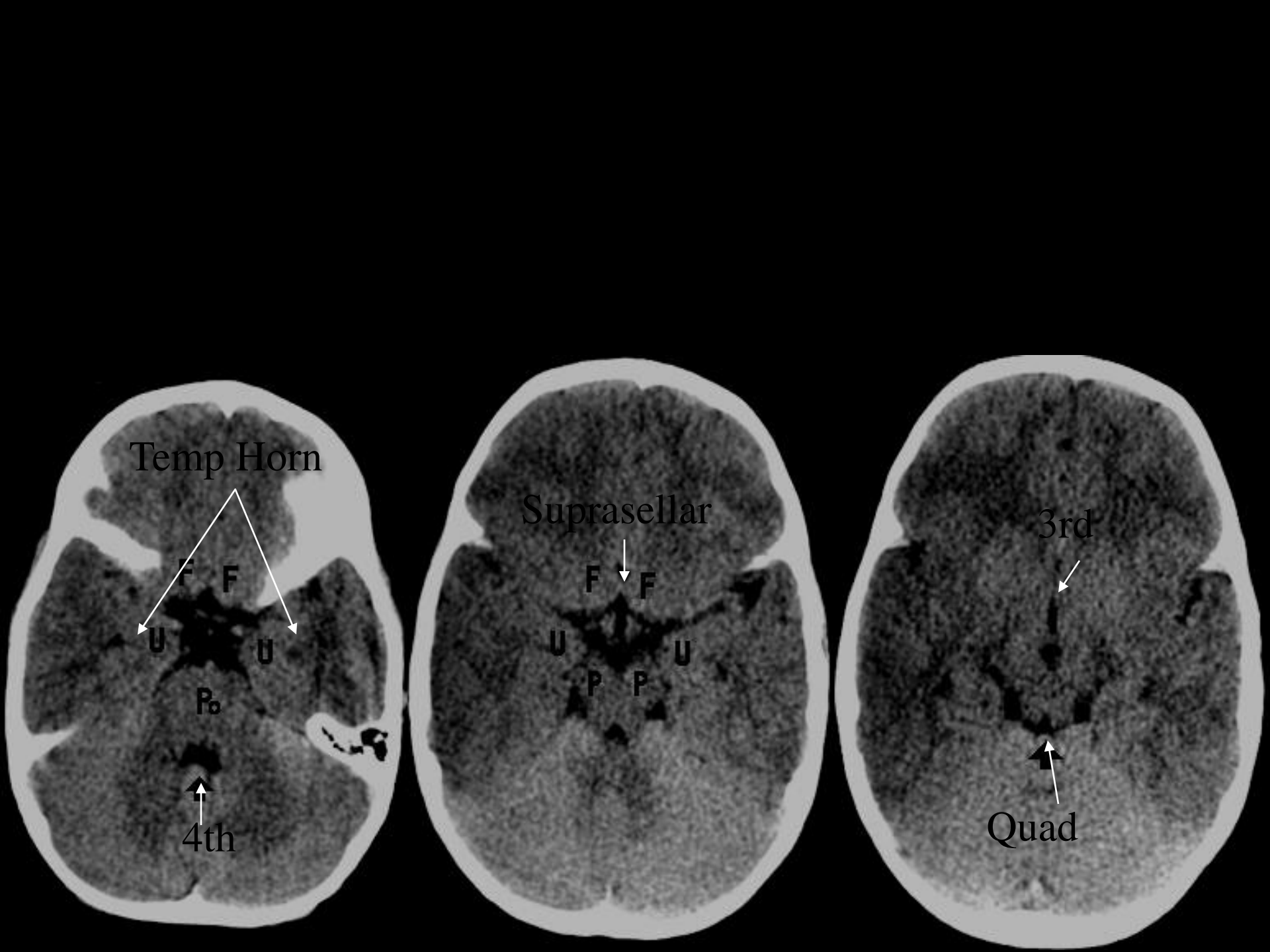
3rd Ventricle &
Quadrigeminal
Cistern

Lateral Ventricles



Lateral Ventricles




Temp Horn
F F
U U
Po
4th
Suprasellar
F F
U U
P P
3rd
Quad

ABNORMAL CTs

On each brain slice look for:

- **Symmetry, symmetry, symmetry**
  - **sulci**
  - **cisterns and ventricles**
  - **grey-white differentiation**

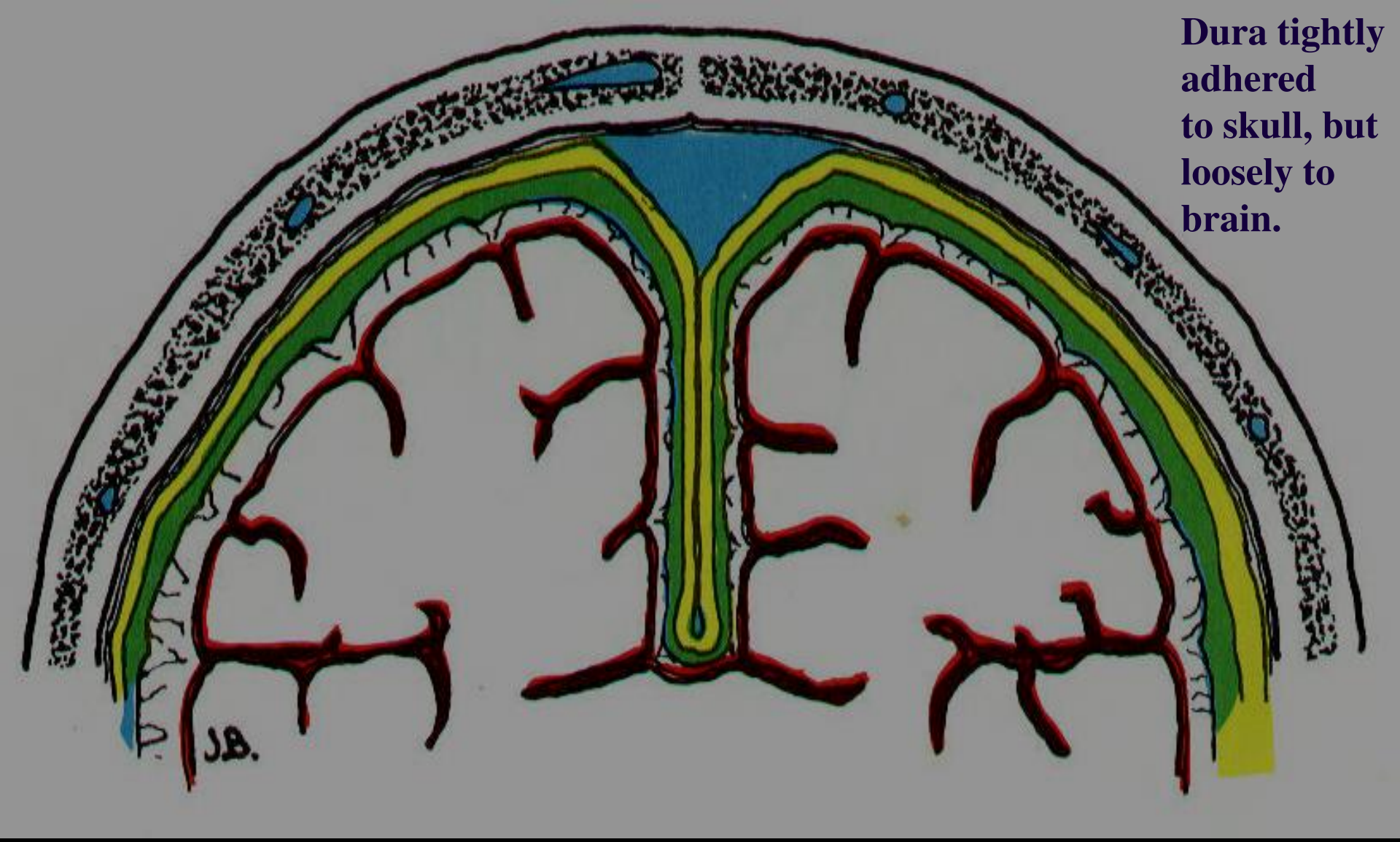
Identify What Doesn't Belong

- Hyperdensities (whiter)
  - extra-axial hematomas (SDH, EDH)
  - ICB or contusion
  - SAH in sulci, cisterns or ventricles

- Hypodensities (darker)
  - pneumocephaly (air is darker than CSF)
  - infarction

Blood: Acute blood is white (60-80 HU) on CT, due to the density of hemoglobin.

As hgb breaks down, the HU decrease (i.e. subacute and isodense hematomas)

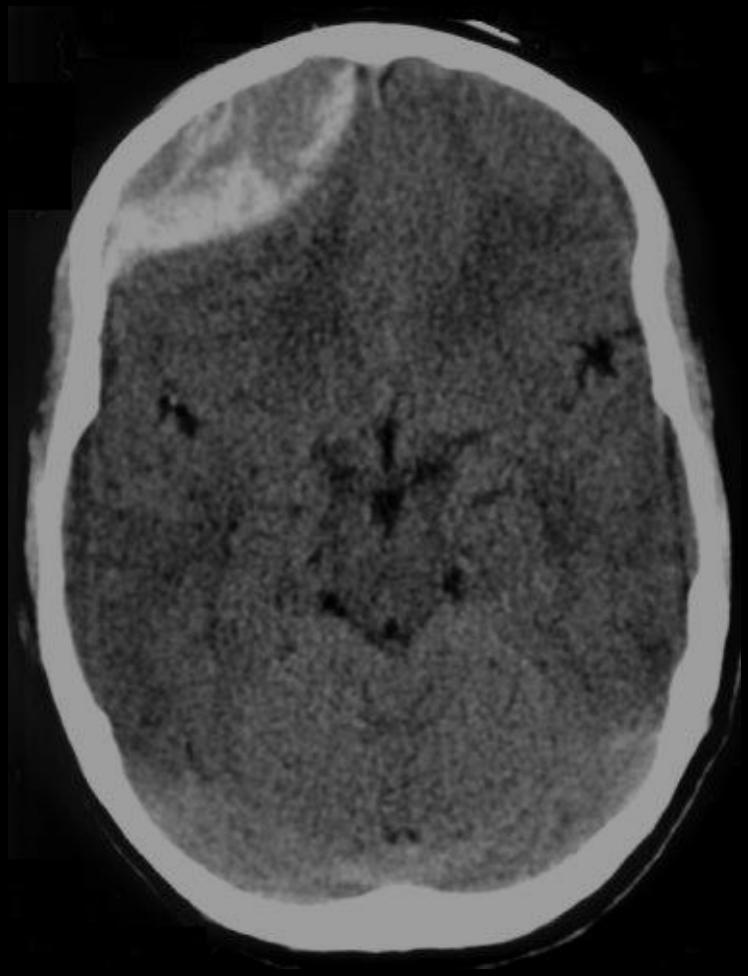

Dura tightly adhered to skull, but loosely to brain.
J.B.
Dura mater
Arachnoid
Pia mater

Epidural Hematoma

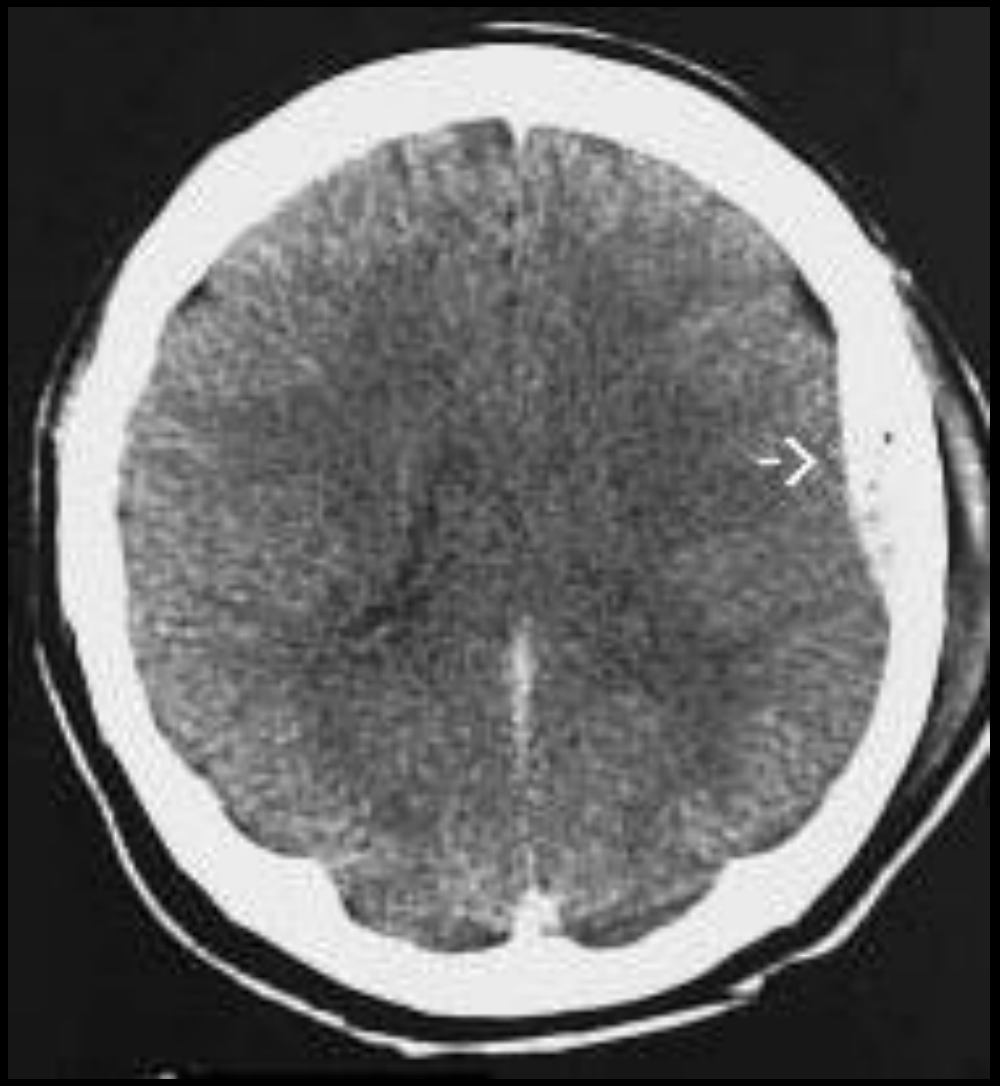
-Lens shaped (dura tightly adhered to skull

-Can cross midline

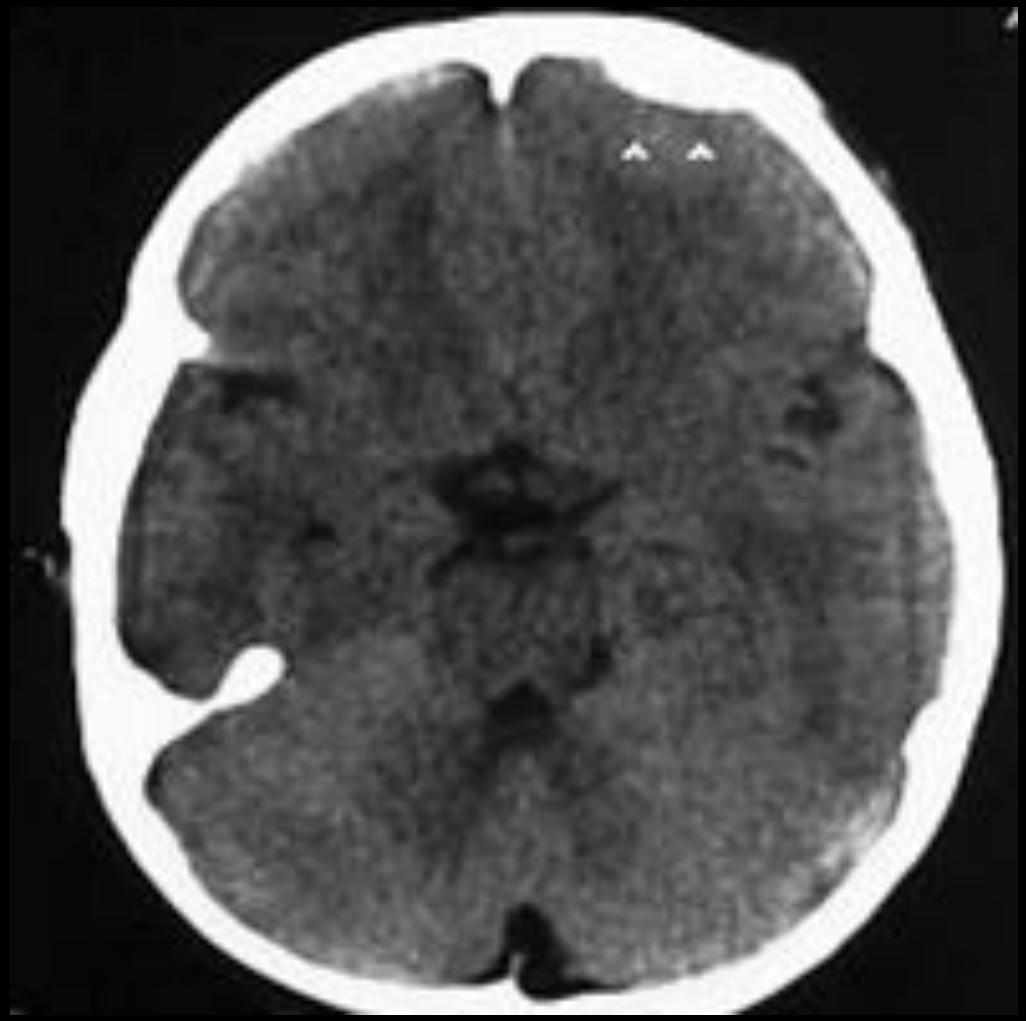
-Frequently assoc. with fracture



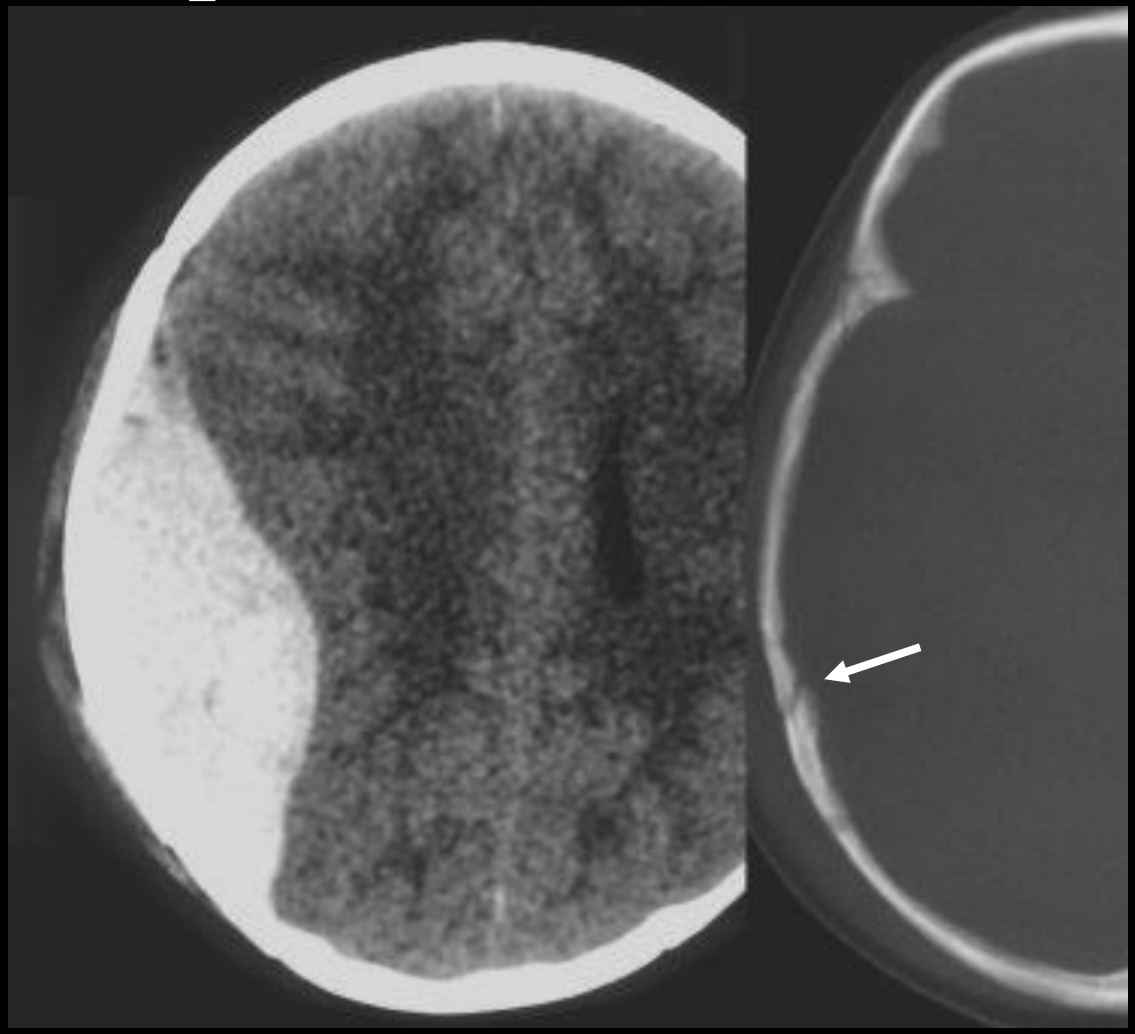
Small Epidural Hematoma



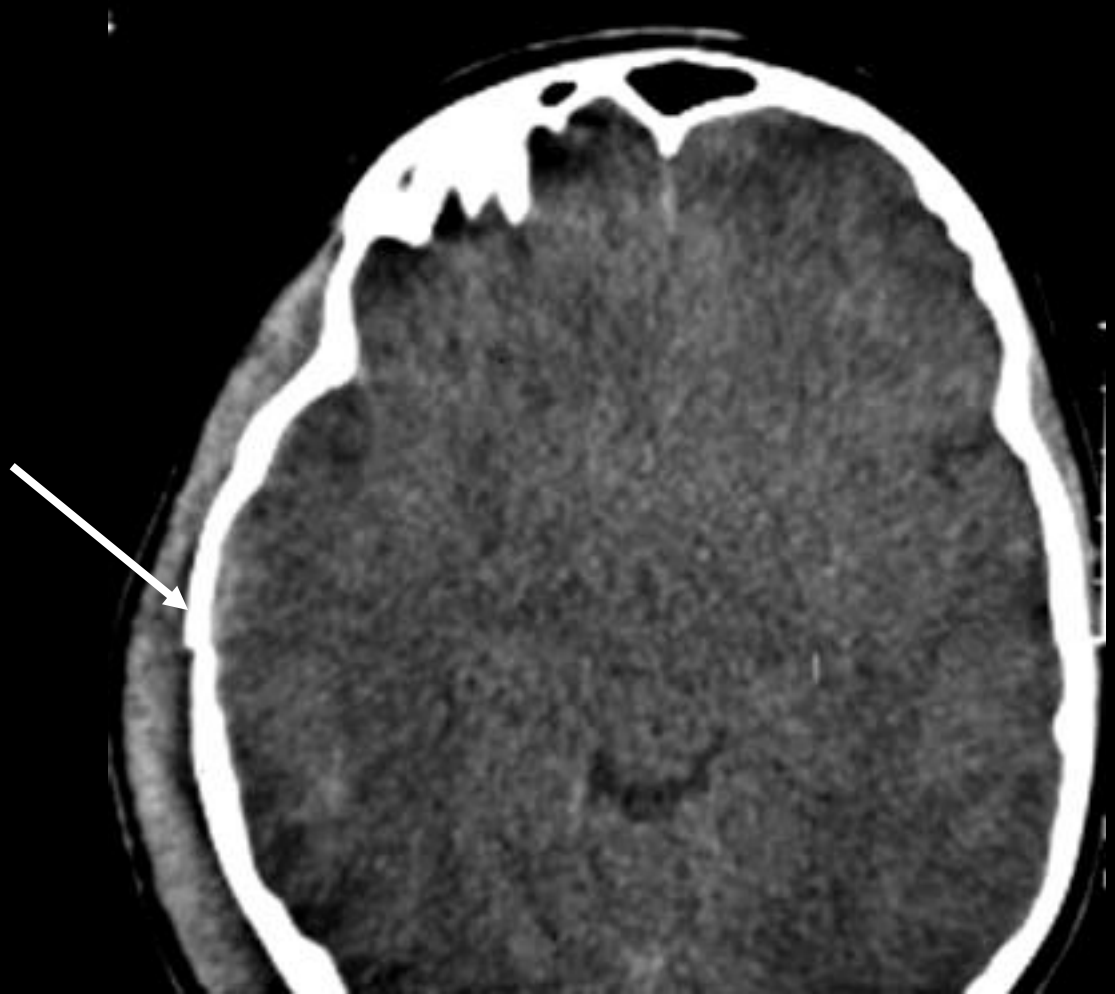
Very Small Epidural Hematoma



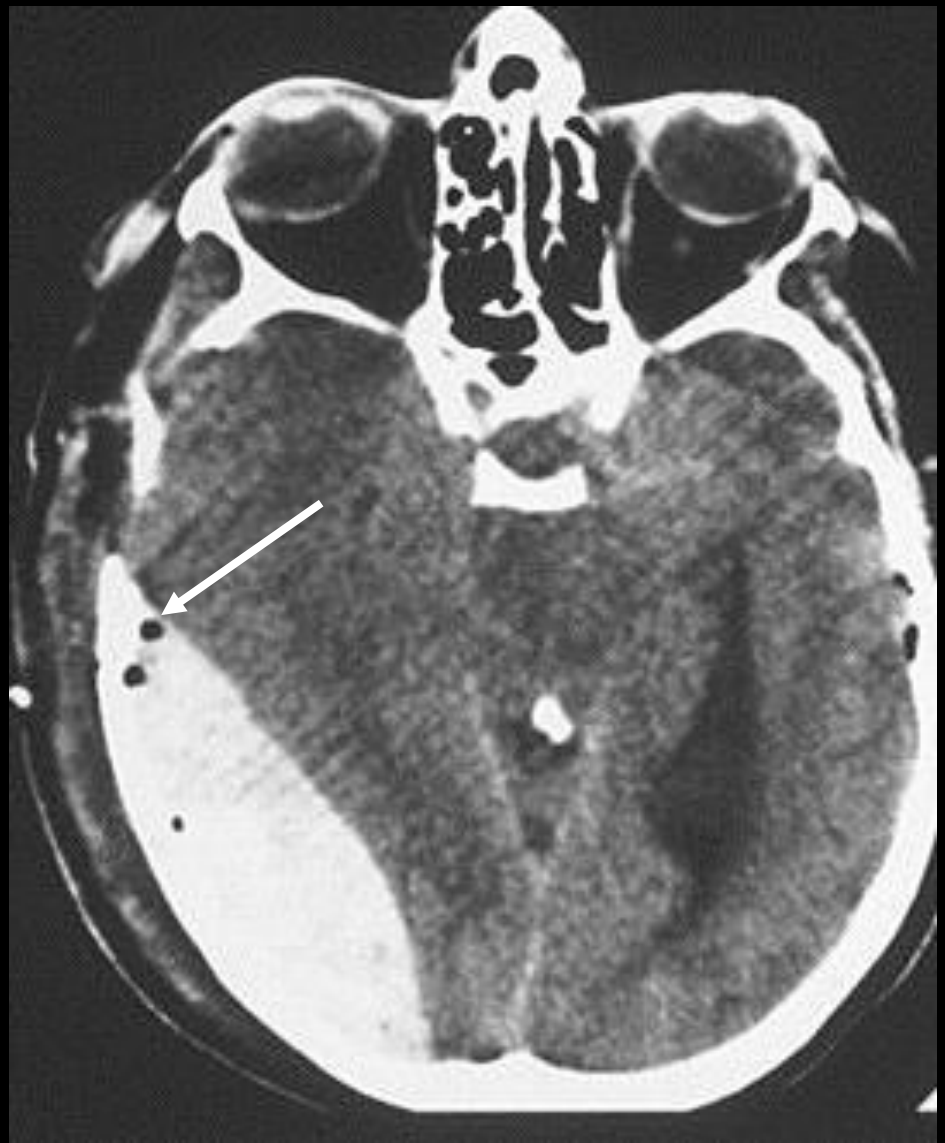
Epidural with fracture



Very Small Epidural Hematoma with fracture



Epidural with Pneumocephaly



Subdural Hematoma

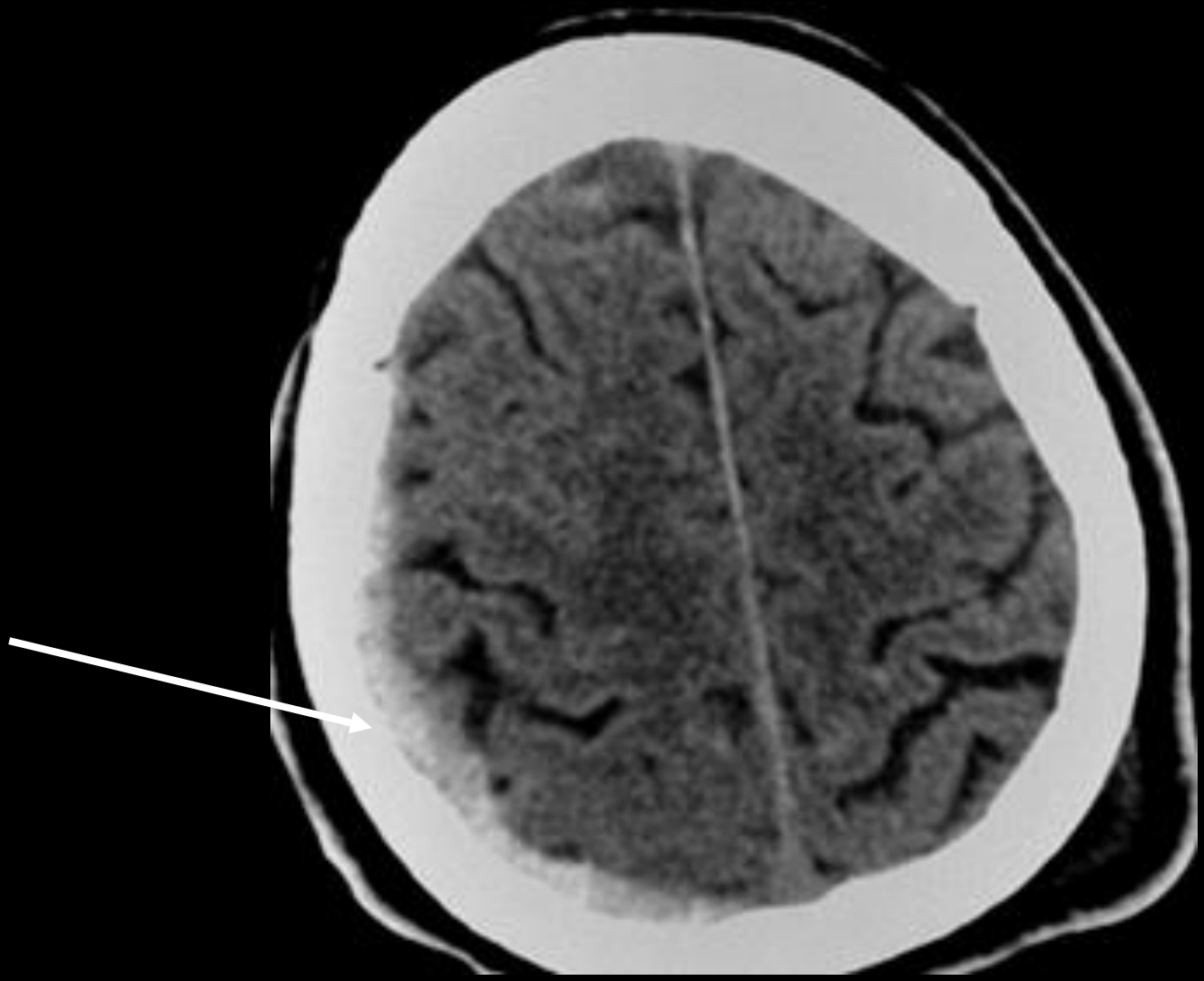
Follows the contour of the brain & doesn't cross the midline



Small SDH tracking down midline



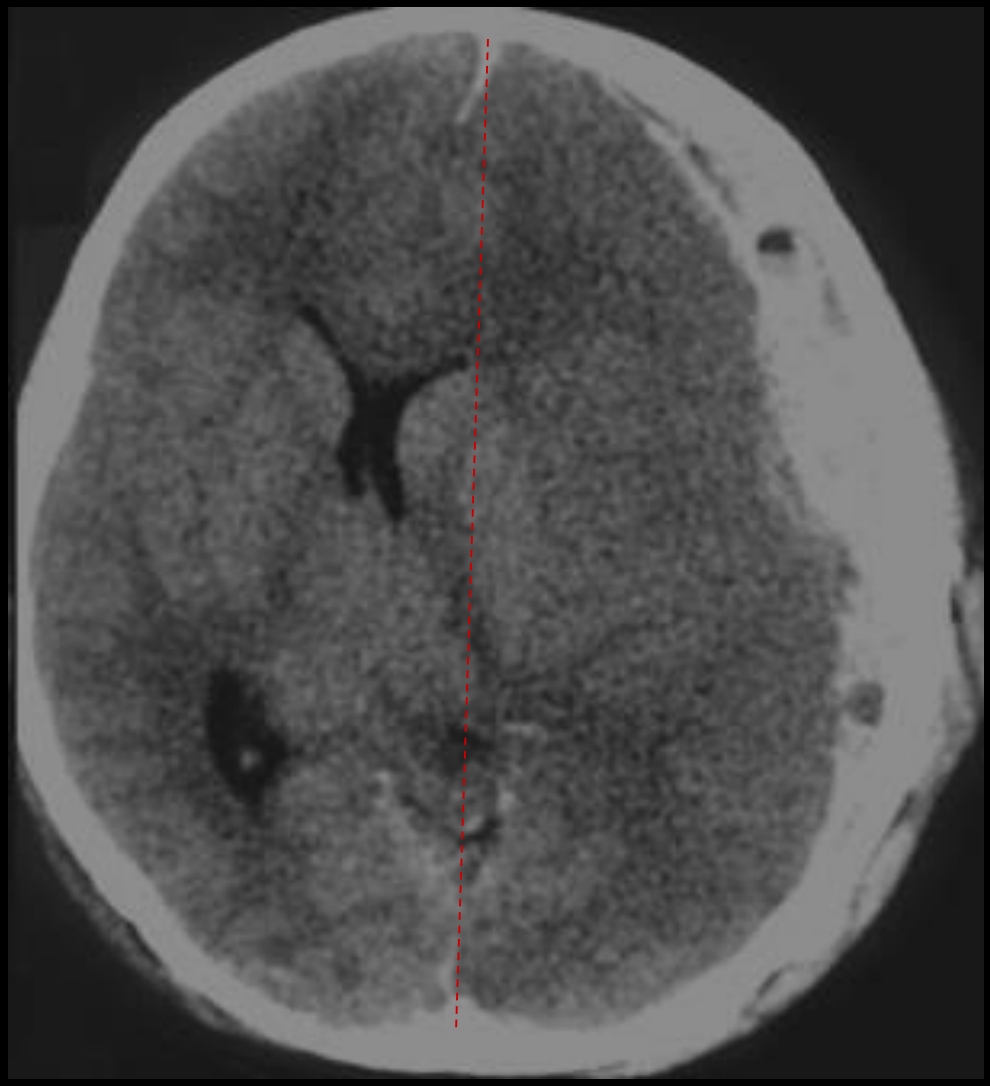
Small Subdural Hematoma



Very Small Subdural Hematoma



Large Subdural Hematoma with shift



Isodense Subdural Hematoma



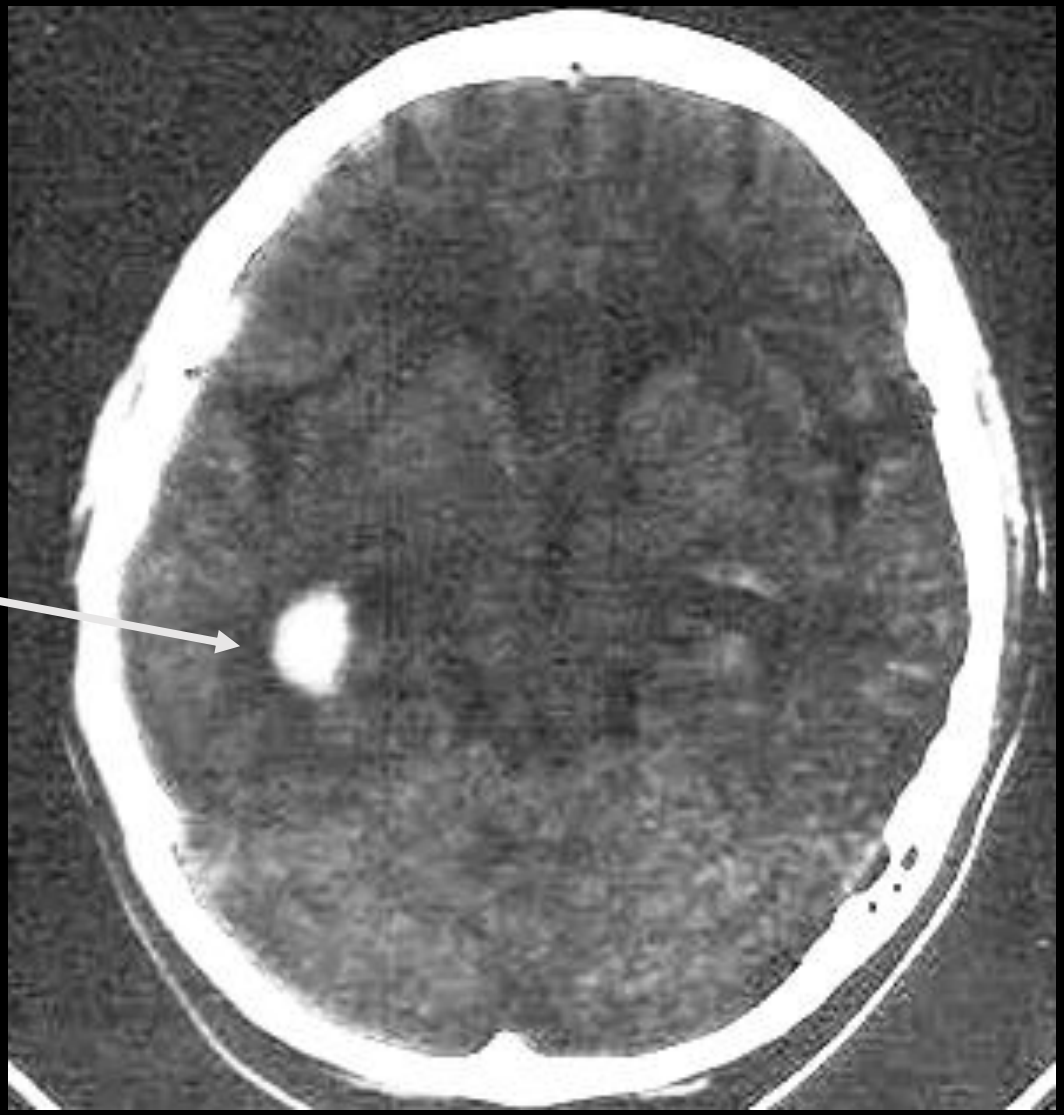
Hygroma with shift s/p SDH



Acute on Chronic Subdural Hematoma



Intraparenchymal Bleed

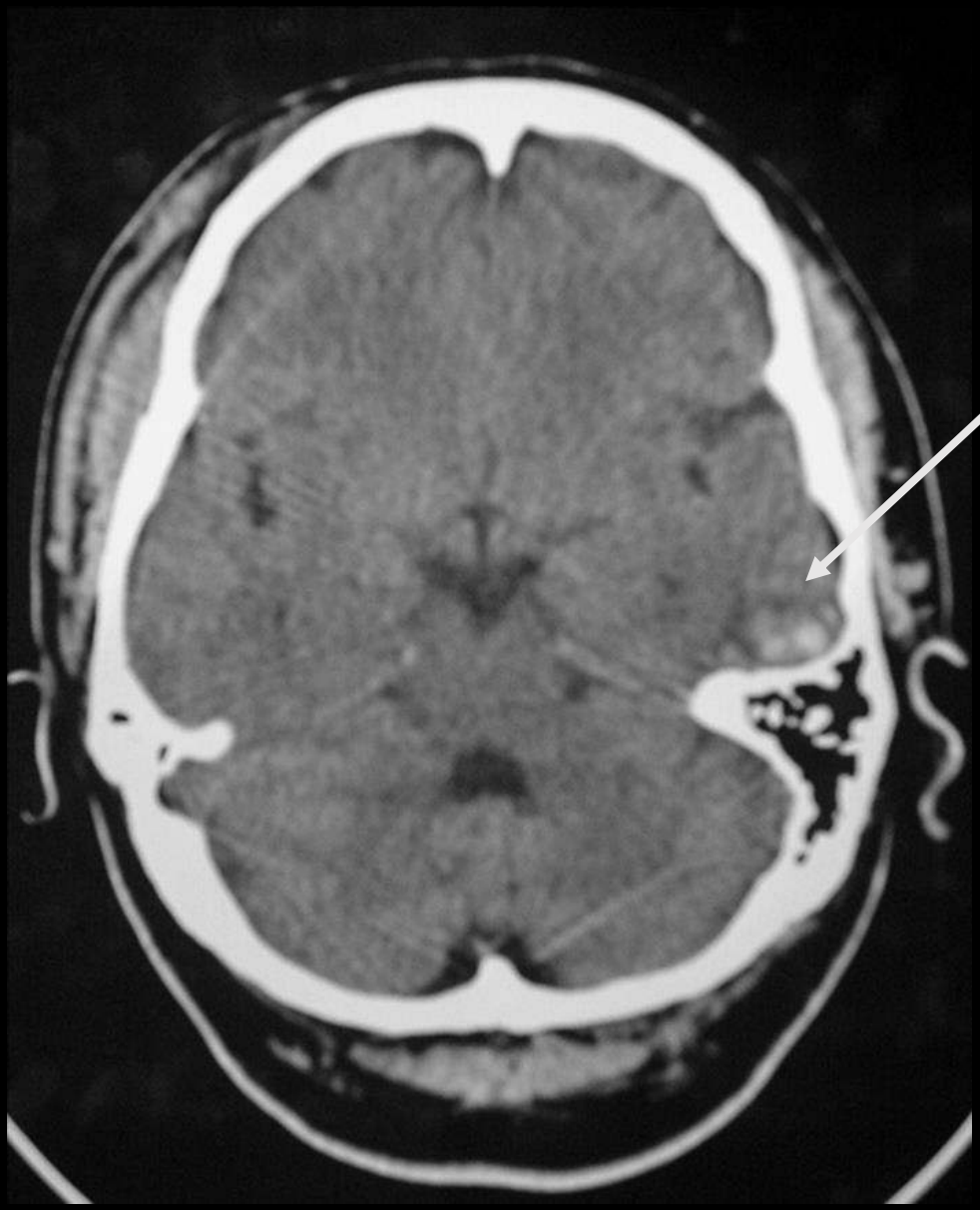


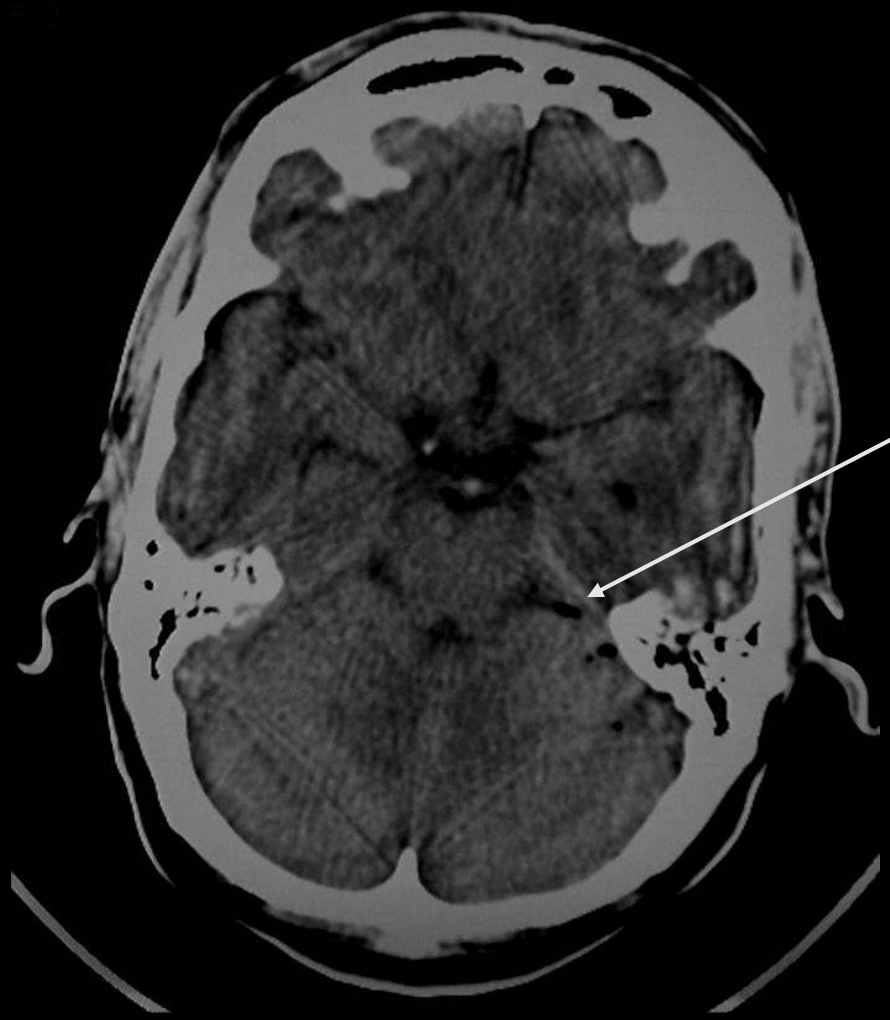
Intraparenchymal Bleed & Skull Fracture



Intraparenchymal Bleed & Contusions




Contusion

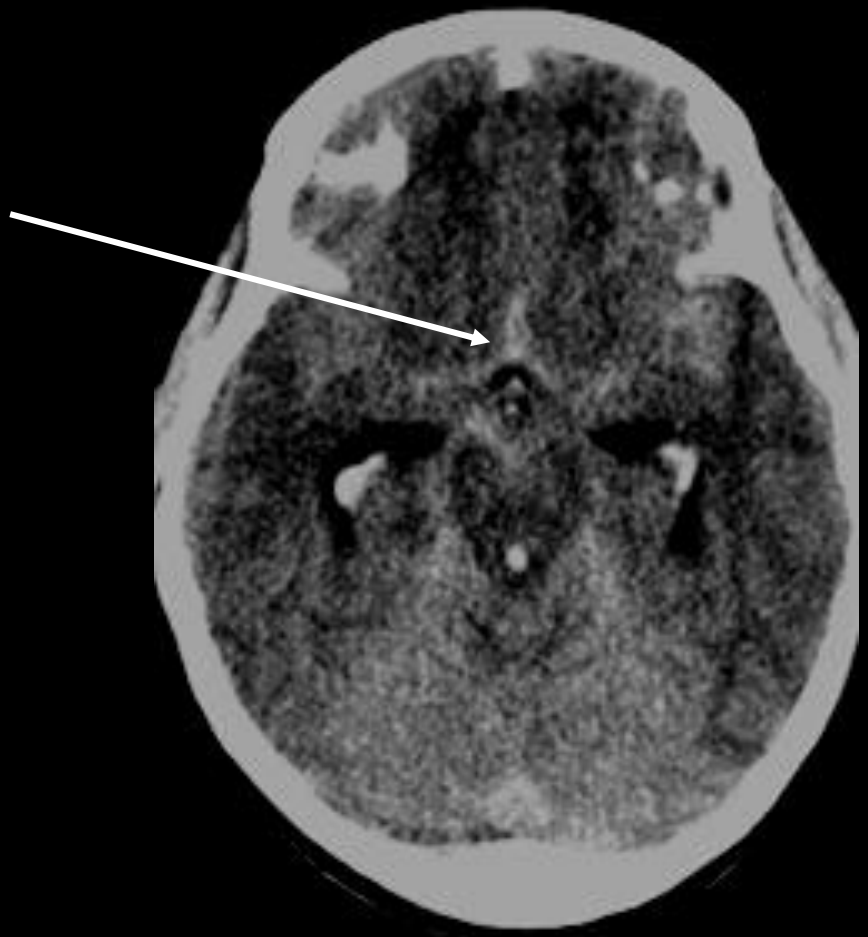


Pneumocephaly
and contusion

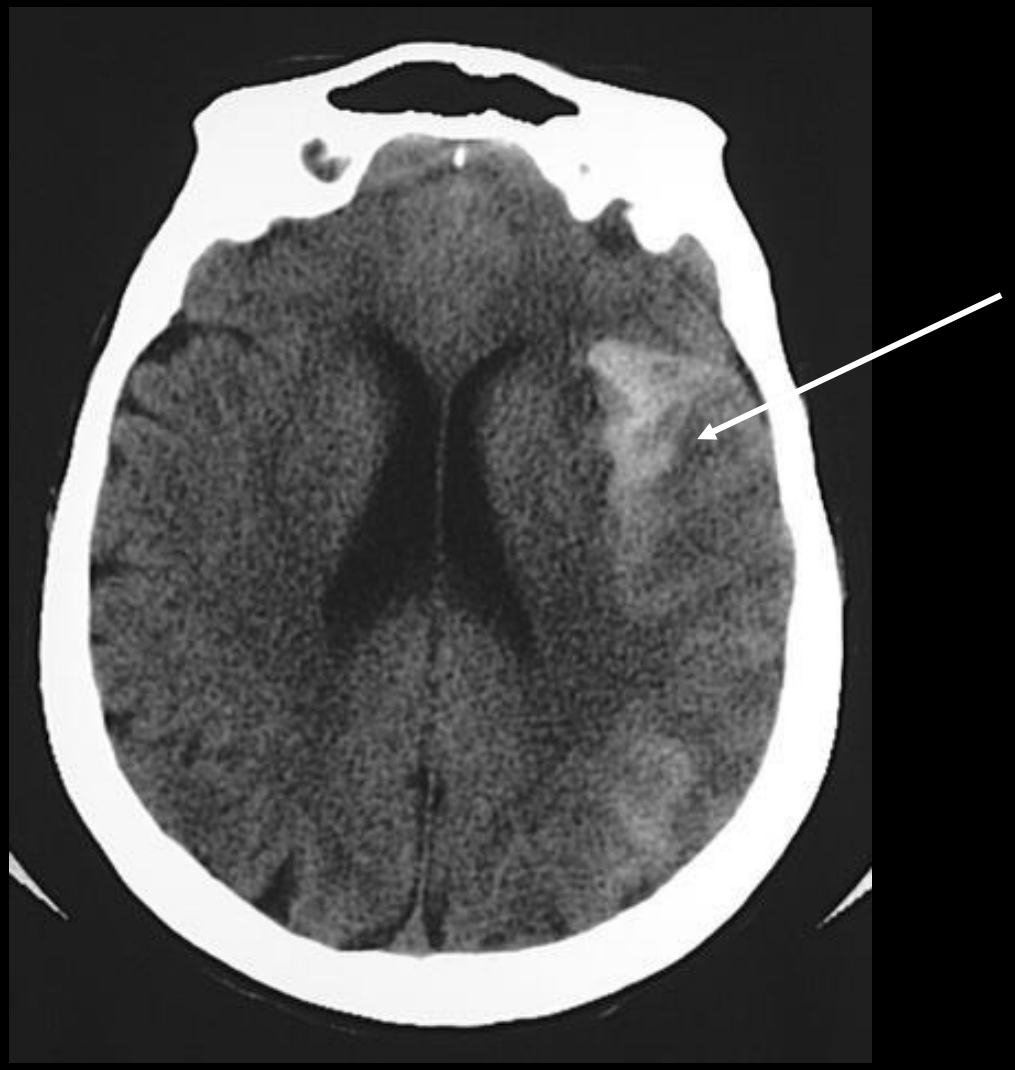
Subarachnoid hemorrhage-
Blood in the 4th Ventricle



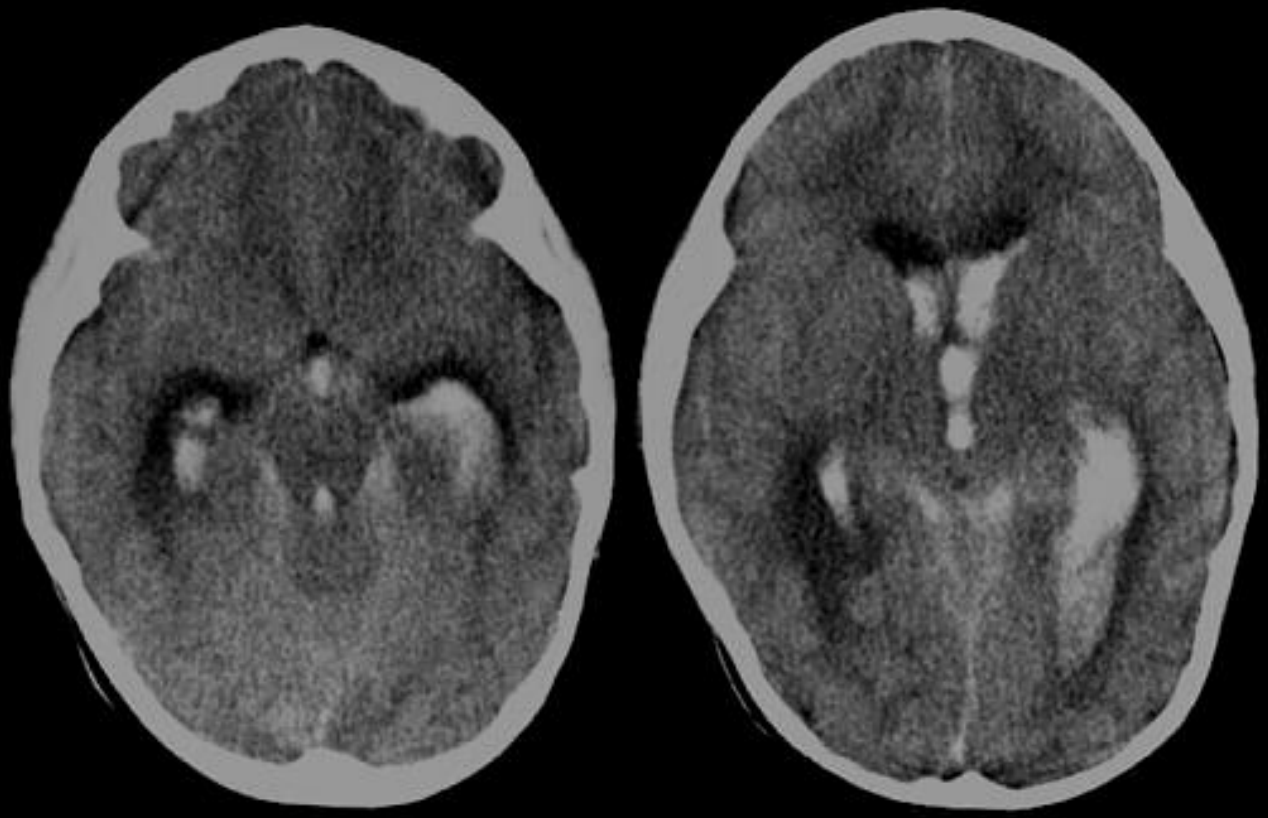
Subarachnoid blood in the suprasellar cistern

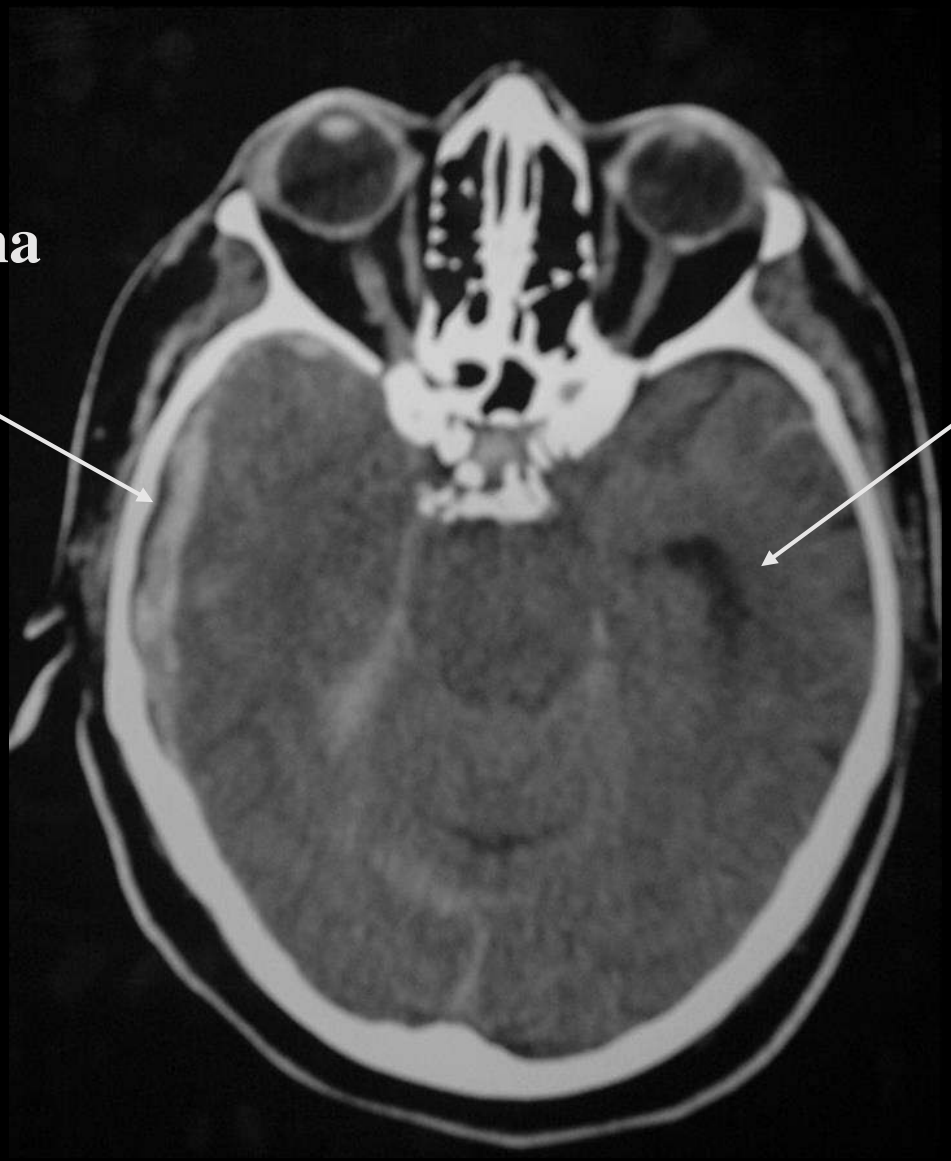


Subarachnoid blood tracking along the sulci



Intra-Ventricular Blood throughout

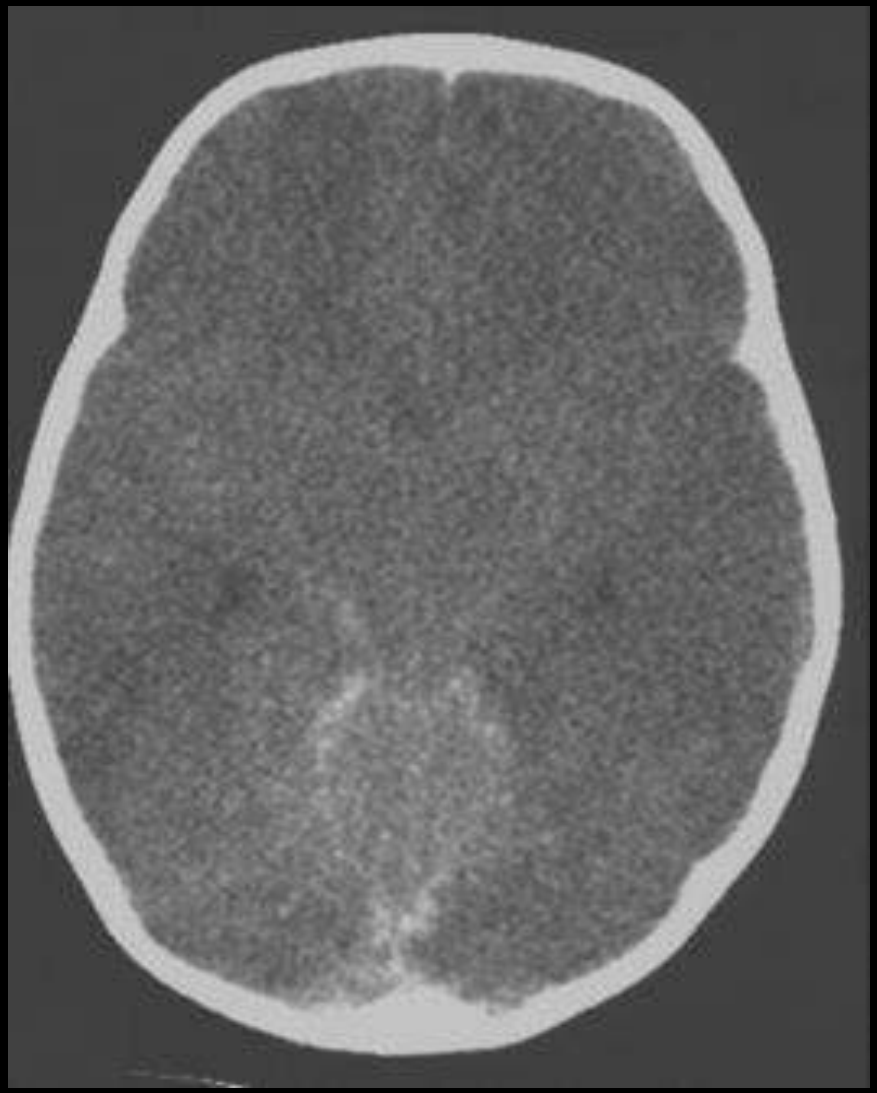



Subdural hematoma
Temporal Horn enlargement

Epidural



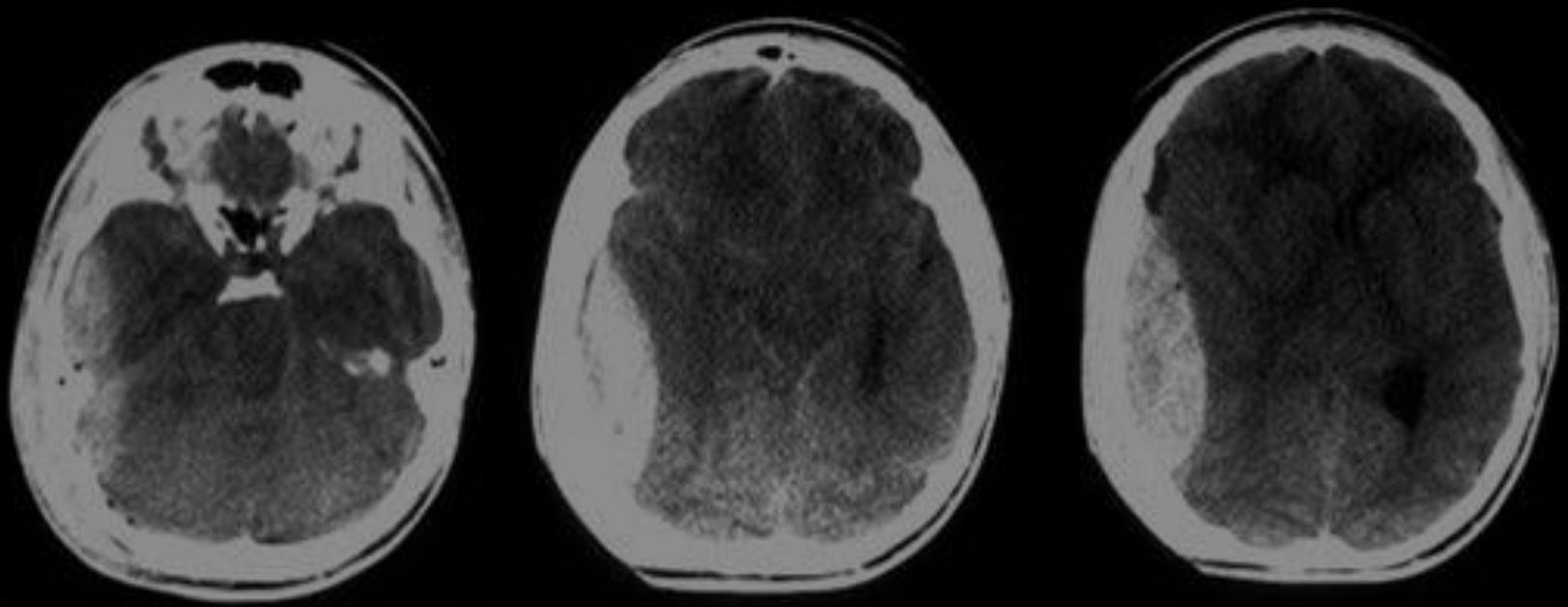
Diffuse Edema, SAH tracking across tentorium



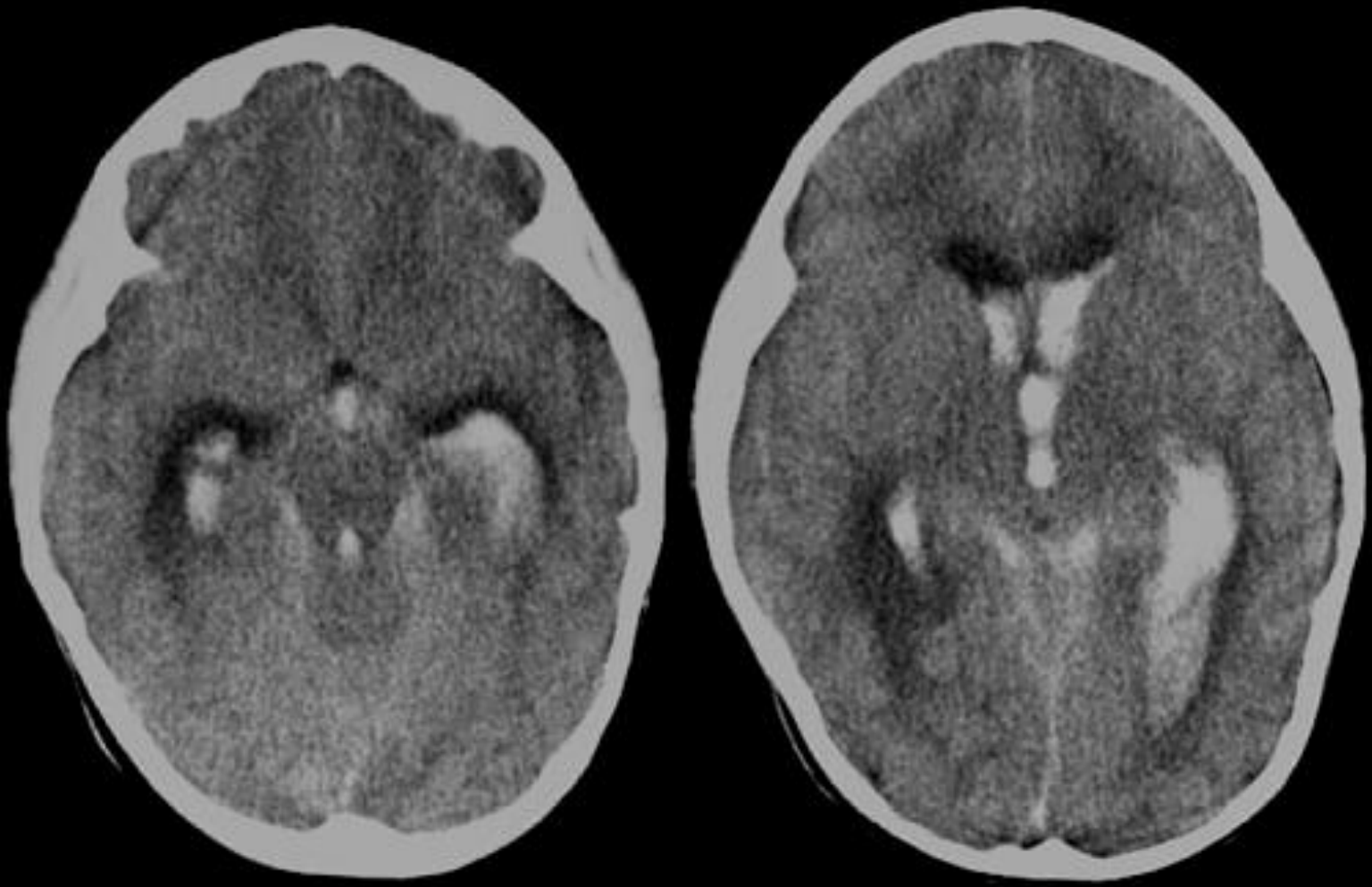
Subfalcean herniation (midline shift) due to SDH

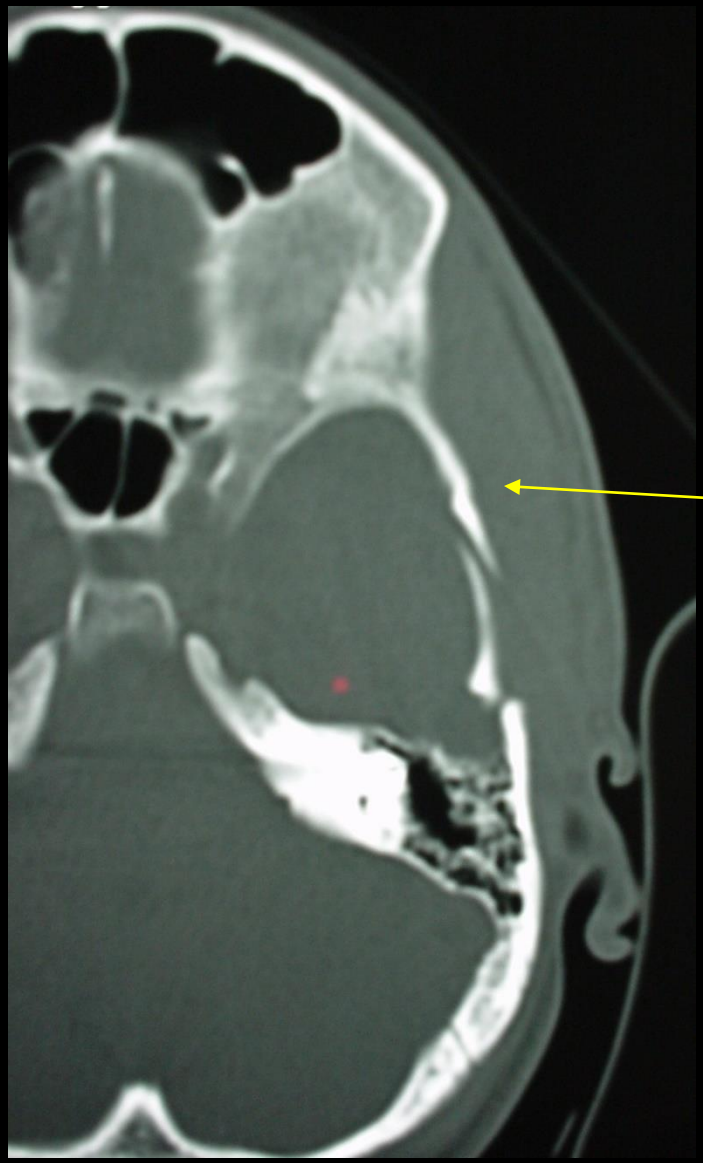


Uncal herniation (EDH & subfalcean herniation)



Diffuse Edema s/p SAH





Soft-tissue swelling

Fracture




Thank You!
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