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When Blood Hits the Brain

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The Non-contrast Head CT

- The radiologic study of choice for acute neurologic presentations and/or head trauma.
- High sensitivity for detection of intracranial blood given high contrast against brain parenchyma. Blood appears white.
- Can be followed by contrast study (CTA) for visualization of cerebrovascular anomalies. MRI can also be useful to better define underlying etiology.

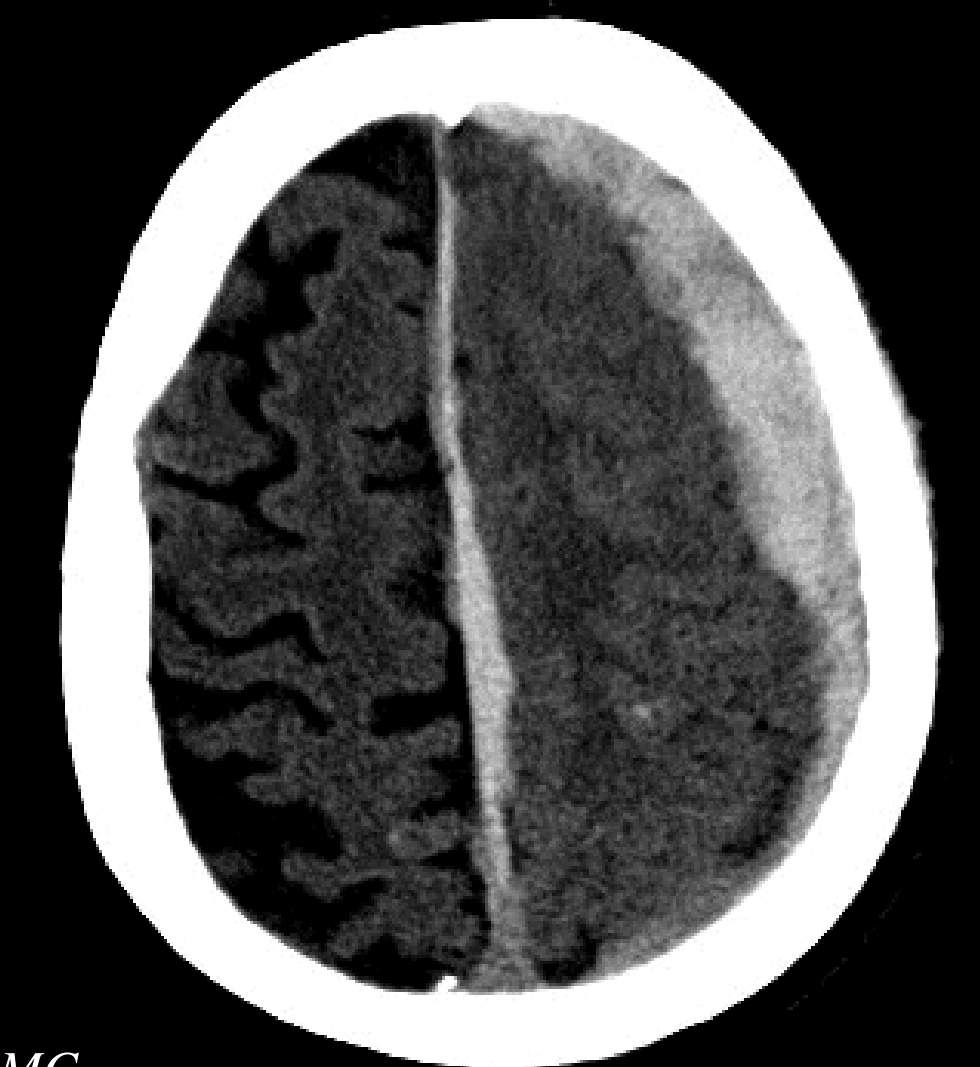


Patient RT

78 yo man with transient LOC s/p trauma. He had previously tripped over a garden hose, striking the back of his head. On exam in the ED, he was neurologically intact.



Patient RT





Subdural Hematoma

- Usually caused by injury to bridging dural venous sinuses.
- For hematomas $>1\text{cm}$, surgical evacuation should be attempted prior to 4 hours (Mortality 30% vs. 90%)
- Smaller hematomas can be managed medically with goal to lower ICP. Neurological exam should be followed serially to catch early herniation, and changes should trigger repeat CT.



Subdural vs. Epidural Hematoma





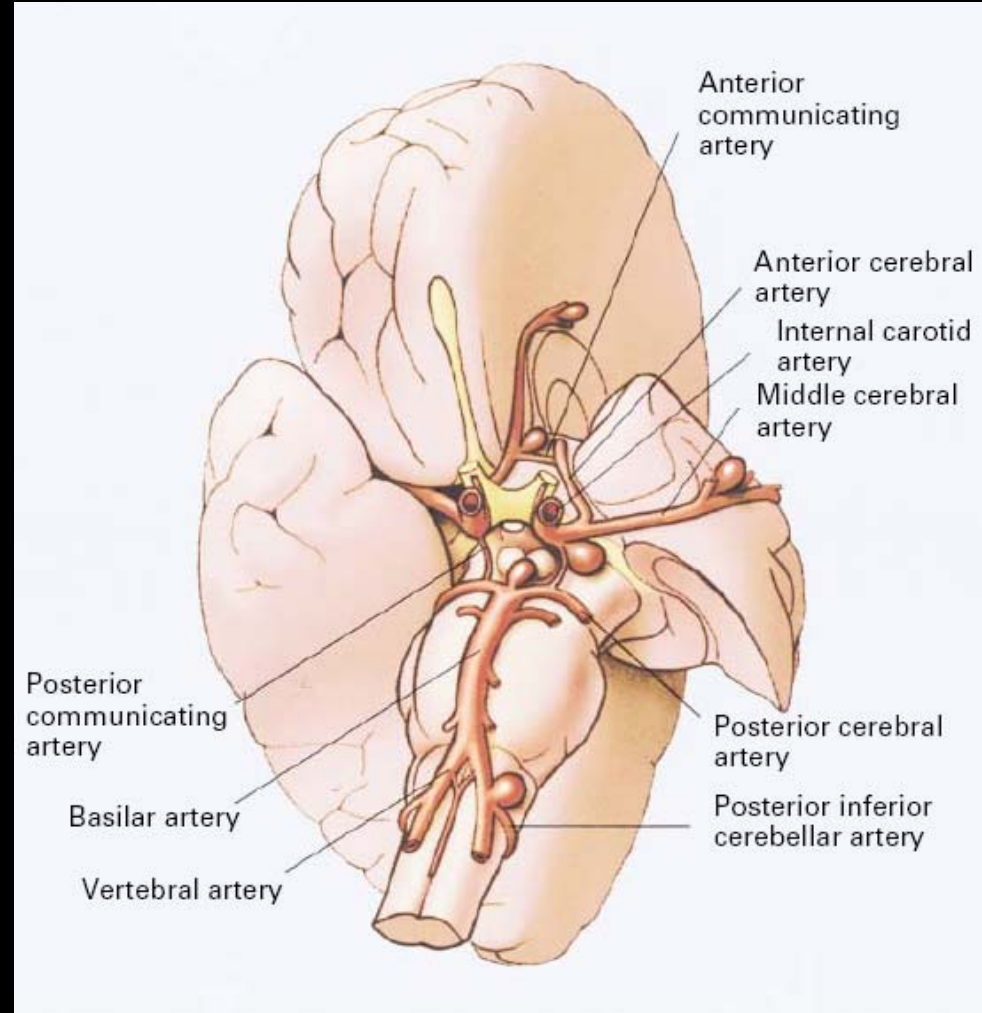
Subarachnoid Hemorrhage





Intracranial Aneurysms

- Prevalence: 1-6%
- 80-85% in anterior circulation
- SAH Mortality: 12% before reaching medical attention; 40% within 1 month of event.
- SAH complications include vasospasm and hydrocephalus.
- Tx: coiling or clipping





Patient JM

78 yo man presenting following sudden development of L facial droop and dysarthria. PMH includes HTN and hypercholesterolemia; Daily meds include ASA.



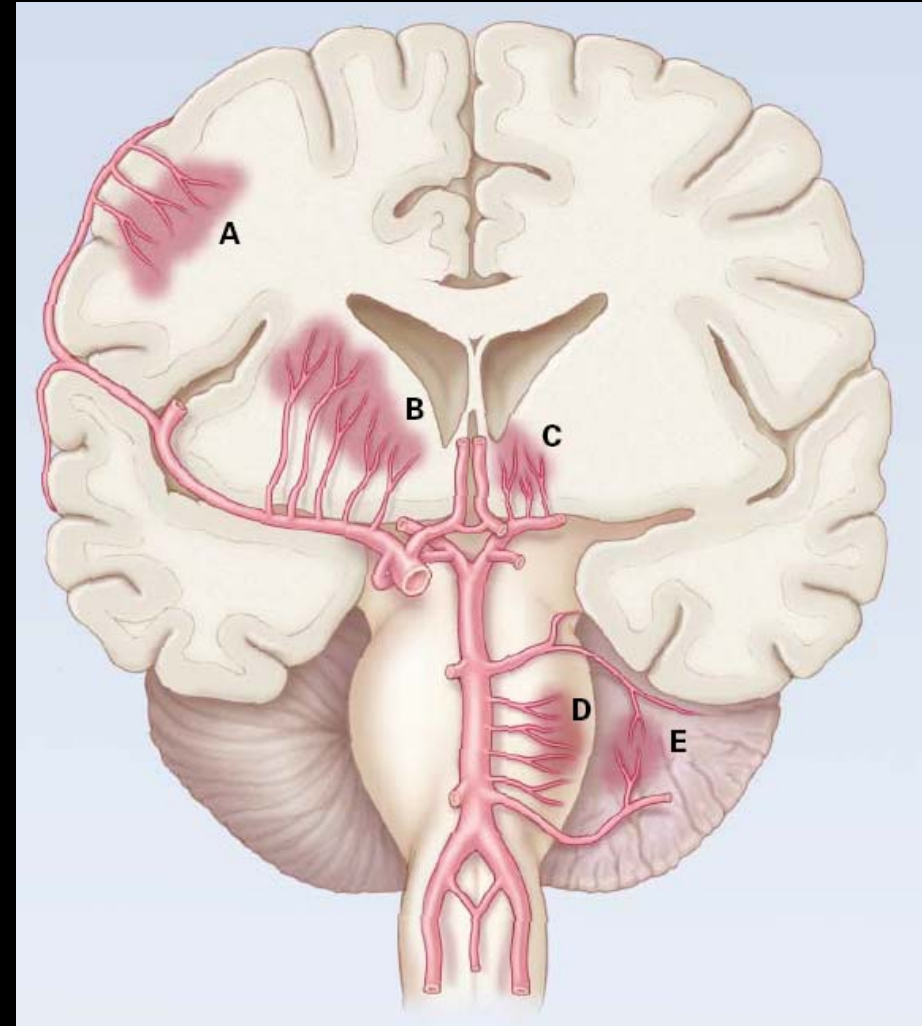
Patient JM





Intraparenchymal Hemorrhage

- AKA hemorrhagic stroke (12%)
- 60% mortality in 1 yr
- small vessel rupture
- primary (>80%): hypertension or cerebral amyloid angiopathy
- secondary: ischemia, AVMs, aneurysms, tumors, or coagulopathy



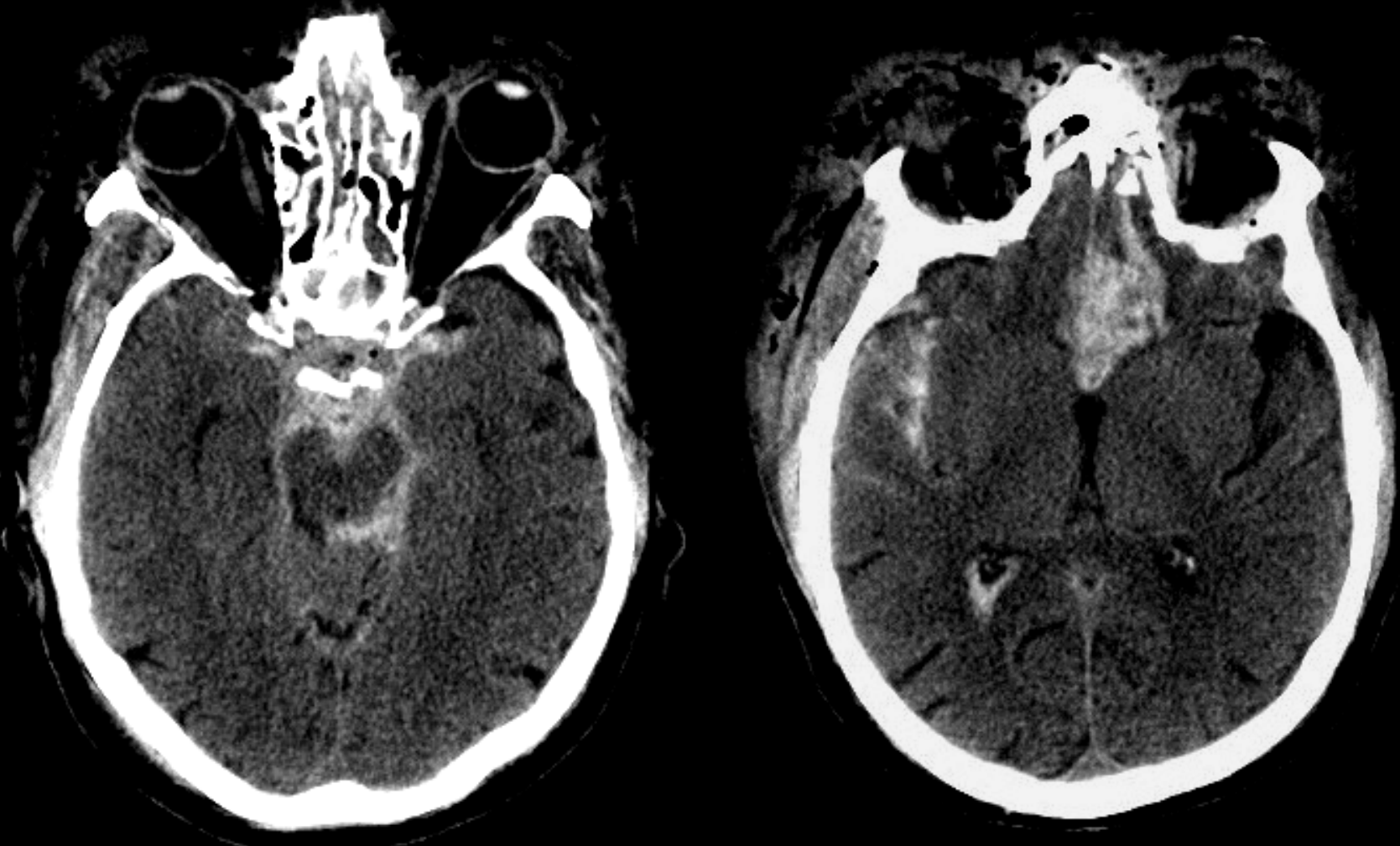


Patient CC

65 yo man thrown from a motorcycle during an MVA.



Patient CC





Patient CC

• *Left frontal intraparenchymal hemorrhage*

• *Subarachnoid hemorrhage*

• *Right intraventricular hemorrhage*



References

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