When Blood Hits the Brain

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July 2004
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

Source: PACS, BIDMC
Subdural Hematoma

• Usually caused by injury to bridging dural venous sinuses.

• For hematomas >1cm, 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.
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

Source: PACS, BIDMC
Patient CC

• L frontal intraparenchymal hemorrhage
  • Subarachnoid hemorrhage
  • R intraventricular hemorrhage
References

Acknowledgements

- Pamela Lepkowski
- Larry Barbaras, our Webmaster
- Gillian Lieberman, MD