HOW NOT TO MISS A SUBARACHNOID HEMORRHAGE (SAH)


Take home points:
1. We commonly misdiagnose SAH, especially in stable patients with normal neuro exams.
2. A large number of patients with SAH present atypically; in fact those with benign presentations have greatest potential benefit from surgical therapy.
3. Head CT, in the best of circumstances has only a 90-95% sensitivity, so doesn’t completely rule out SAH.
4. Negative head CT? Proceed to LP, looking for xanthochromia. RBCs in CSF don’t tell you anything.

The problem:
• Physicians commonly and consistently misdiagnose subarachnoid hemorrhage (SAH).
• The patients that benefit the most from surgical therapy are also the most likely to be misdiagnosed.
• More early complications occur in the misdiagnosed patients and they have a worse outcome.

Why is SAH misdiagnosed?
• Failure to appreciate the spectrum of clinical presentation.
• Failure to understand the limitations of head CT.
• Failure to perform and correctly interpret the LP.

How does SAH present?
• Classic presentation is sudden onset, “worst headache of my life” (thunderclap headache) that occurs during exertional activity, but 50% of patients have atypical presentations.
• The headache may be in any location (including the neck only), my resolve spontaneously, and may be relieved with analgesics.
• In any patient with first episode of severe headache, SAH has to be on the differential.

What are the limitations of head CT?
• Head CT sensitivity is approx. 90-95% but only in the first 12 hours, after which sensitivity decreases.
• Correct protocol must be used: thin cuts (3 mm or less) through the base of the brain (usually 10 mm cuts which can miss small bleeds).
• Bottom line: head CT does not rule out SAH so if it is negative, you need to do an LP.

What am I looking for on LP?
• First of all, if you’re asking yourself this question, congratulations because at least you’ve thought about doing an LP which is important for the reasons stated above (when the head CT is negative).
• Always measure the CSF pressure because if it is elevated, the patient probably does not have SAH. Consider cerebral venous sinus thrombosis, pseudotumor cerebri, and meningitis (e.g. crypto).
• Most authorities suggest waiting 6-12 hours to do the LP because this allows blood to lyse and create xanthochromia, which is what you are looking for on the LP.
• If the lab spins down the CSF and the supernatant is xanthochromic, then your patient has xanthochromia and you’re done. However, clear CSF supernatant doesn’t rule out xanthochromia. The lab should to spectrophotometry to truly rule out xanthochromia.

What about RBCs in the CSF?
• RBCs in the CSF can be due to SAH (an early finding) or a traumatic tap (much more common).
• Xanthochromia is a much more reliable indicator of SAH.
• Bottom line: decreasing RBCs in the CSF from tube 1 to tube 4 is not reliable. It doesn’t mean anything. If you want to rule out a traumatic tap, repeat the LP one interspace above the previous insertion site (although even this isn’t reliable, because you could hit a vessel and have another traumatic tap!).