

Clinical update no. 547

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CLINICAL POLICY

Clinical Policy: Critical Issues in the Evaluation and Management of Adult Patients Presenting to the Emergency Department With Acute Headache
Approved by the ACEP Board of Directors June 26, 2019

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<https://www.acep.org/patient-care/clinical-policies/headache/>

CRITICAL QUESTIONS

1. In the adult ED patient presenting with acute headache, are there risk-stratification strategies that reliably identify the need for emergent neuroimaging?

Level B recommendations.

Use the Ottawa SAH Rule:

≥40 years, complaint of neck pain or stiffness, witnessed loss of consciousness, onset with exertion, thunderclap headache, and limited neck flexion on examination

as a decision rule that has high sensitivity to rule out SAH (if none present), but low specificity to rule in SAH, for patients presenting to the ED with a normal neurologic examination result and peak headache severity within 1 hour of onset of pain symptoms. Neck pain and stiffness is strongly associated with SAH. Do not use a single physical sign &/or symptom to rule out SAH.

About 10-15% with sudden-onset severe headache have serious pathology, most commonly SAH. The Ottawa Rule aimed to exclude SAH using clinical criteria without CT or LP. Inclusion criteria were headache reaching maximal intensity within 1 hour. In the initial and a later validation study about 6% had SAH, though only about 2/3rd of eligible patients were enrolled, limiting reliability and CI ranges. Sensitivity was reported as 100% (95% CI 94.6 - 100%); specificity, 13.6% (95% CI 13.1 - 15.8%).

Other studies found no individual risk factor used in isolation could reliably assess for SAH.

There are no reliable biomarkers that can be used alone or in conjunction with other testing.

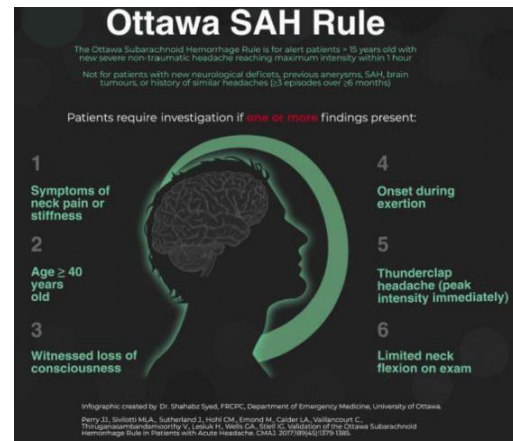


Figure. Ottawa Subarachnoid Hemorrhage Rule.⁸⁸

The rule applies to alert patients >15yr with new severe non traumatic headache with maximal onset within 1hr. Do NOT use for patients with new neurological deficit, previous aneurysm/SAH/brain tumour, or ≥3 similar headache over >6mth.

Investigate if ANY findings are present, including peak intensity immediately, or alternatively if not thunderclap but other findings present. Neck pain or limited neck flexion are high risk findings. Age alone is a poor indicator of risk. Poor specificity limits utility of the rule, however it is the only decision rule that has been studied.

2. In the adult ED patient treated for acute primary headache, are nonopioids preferred to opioid medications?

Level A recommendations. Preferentially use non-opioid medications.

The American Academy of Neurology made reducing opioid usage in migraine care a primary goal in their Choosing Wisely campaign. Surveys show about a third of patients are given opioids for migraine, and up to 2/3rd in some settings.

Studies show IV prochlorperazine is clearly superior to opioids for migraine.

Ketorolac is not more effective than opioids.

There is clear and overwhelming evidence to support the use of non-opioid management.

3. In the adult ED patient presenting with acute headache, does a normal noncontrast head CT scan performed within 6 hours of headache onset preclude the need for further diagnostic workup for SAH?

Level B recommendations. *A normal non-contrast head CT performed within 6 hours of symptom onset and a normal neurologic exam will rule out SAH.*

LP after a normal CT is a long-standing practice. An alternate diagnosis is found on LP in about 10% (8% meningitis, 2% intracranial hypertension). Missing a SAH by this approach is still possible, though rare (<1%).

Early-generation CT was inadequate to rule out SAH. Hyperdensity from blood decreases over time to become isodense with brain; and if Hb <100 g/L may not show up at all.

Perry studied 3,132 patients in Canada, with SAH diagnosed in 7.7%. CT was done <6hr from onset in about 30%, with SAH in 12.7%; sensitivity 100% (95% CI 97-100%), specificity 100% (95% CI 99.5 - 100%), NPP 100% (95% CI 99.5 - 100%), and PPV 100% (95% CI 96.9 - 100%).

Four other studies were not included in the ACEP Policy review because of poor quality. A metaanalysis of 8,907 patients (from those 4 studies plus the Perry study) reported a missed SAH rate of 1.46 per 1,000, with sensitivity 98.7% (95% CI 97.1 - 99.4%).

"A normal noncontrast head CT performed within 6 hours of symptom onset in neurologically intact patients is sufficient to preclude further diagnostic workup for SAH".

Further data may extend the 6hr window when using higher slice CT, but no recommendation can be made from existing studies on an upper time limit >6hr.

4. In the adult ED patient who is still considered to be at risk for SAH after a negative noncontrast head CT, is CTA of the head as effective as LP to safely rule out SAH?

Level C recommendations *Perform LP or CTA to safely rule out SAH in the adult ED patient who is still considered to be at risk for*

SAH after a negative noncontrast head CT result.

CT/LP is the traditional approach to rule out SAH, however LP is often not done when SAH cannot otherwise be ruled out.

Although CTA avoids the problems of an LP, harms include finding incidental aneurysms, radiation exposure, missing diagnosis an LP would have found and a likely increased rate of imaging given ease in ordering.

Only a single study from 2006 directly compared CT/LP v CT/CTA. There was a confirmed aneurysm or SAH in only 5 patients of 106 enrolled (25 of 131 eligible either did not consent or were lost to follow up). CT-A picked up all, though 1 was concluded as false +ve. Of these 5, LP was +ve in just 2 (-ve in 2, 1 refused), indicating an incidental aneurysm with no SAH.

Studies of LP report a rule in rate of <1%, together with problems interpreting traumatic taps and with post-LP headache.

There is no clear CSF criteria as to whether a threshold RBC count can reliably rule out SAH, nor to distinguish from a traumatic tap, including assessing for xanthochromia or a declining RBC count in sequential tubes.

About 15% with SAH picked up by LP have perimesencephalic bleeding, with normal cerebral angiography and no aneurysm. This is benign with no intervention required.

In surveys of patients presented with a hypothetical scenario, 80% opted for CTA rather than LP if needing further evaluation.

2% of the population has asymptomatic cerebral aneurysms at baseline. An LP if an aneurysm is found would assess if it had bled.

CTA is a reasonable alternative to LP when non contrast CT doesn't rule out SAH, though there is little data on test characteristics or implications from introducing this approach.

These updates are a review of current literature at the time of writing. They do not replace local treatment protocols and policy. Treating doctors are individually responsible for following standard of care.