Cat B6
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Carpenter CR1, Hussain AM2, Ward MJ3, Zipfel GJ4, Fowler S5, Pines JM6, Sivilotti ML7.
Spontaneous Subarachnoid Hemorrhage: A Systematic Review and Meta-analysis Describing the Diagnostic Accuracy of History, Physical Examination, Imaging, and Lumbar Puncture with an Exploration of Test Thresholds. Acad Emerg Med. 2016 Sep;23(9):963-1003. doi: 10.1111/acem.12984. Epub 2016 Sep 6.

Background: Spontaneous subarachnoid headache is one of the most feared, can't miss causes of headache. Its incidence is low (estimated at 1% of acute HA), but missed cases or mismanagement can result in dire consequences for patients (estimated 25% mortality risk in first 24 hours). Due to its low incidence, and similar presentations of other headaches, diagnosis is difficult in neurologically intact patients.

Objectives: To perform a systematic review for evaluation of diagnostic accuracy with meta-analysis of H&P, CSF tests, CT Scan, clinical decision tools for spontaneous SAH with secondary objective of assessing "probability of disease thresholds" needed for obtainment of imaging/LP.
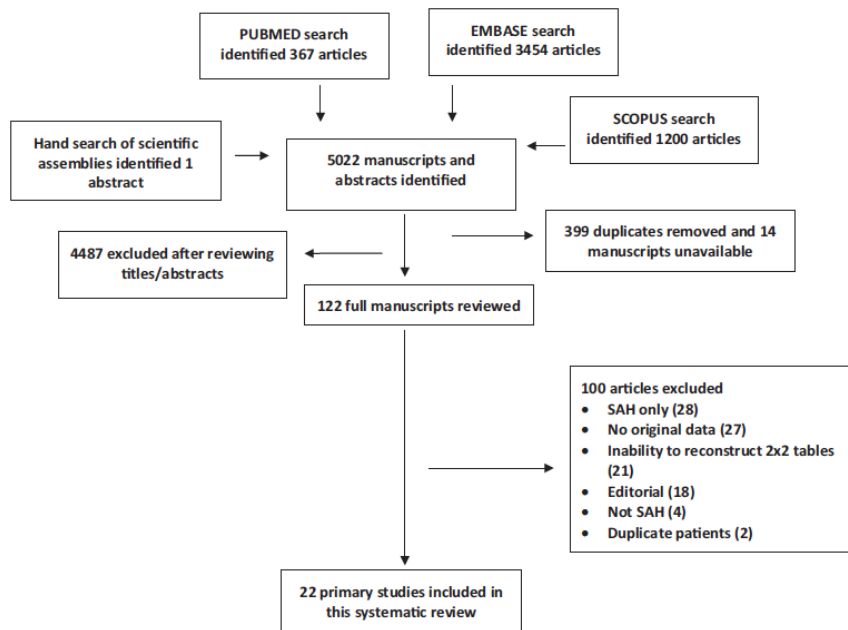
Methods:

Figure 1. Study selection process. SAH = subarachnoid hemorrhage.

Two separate authors used the QUADAS-2 to assess study quality, and as was possible, appropriate results were included in meta-analysis. Outcomes examined were sensitivity, specificity, and positive/negative likelihood ratios. Pauker-Kassirer method and Bernstein test indication curves were then generated using the summary estimates for diagnostic test accuracies.

Results: 5022 publications resulted from search, with a total of 122 receiving full-text review and 22 studies being included for data collection purposes. History and physical items that had the strongest association were neck pain (LR +4.1) and neck stiffness (LR +6.6). Clinical decision rules are not yet ready for evaluation at time of this paper. "Noncontrast cranial CT within 6 hours of headache onset accurately ruled in (LR+ = 230; 95% CI = 6 to 8,700) and ruled out SAH (LR_ = 0.01; 95% CI = 0 to 0.04). LP had limited diagnostic accuracy, with concern for operator error or confused findings.

Conclusions: SAH is a rare cause of headache, and based on author's analysis, less than 10% of headaches concerning for SAH end up being a true SAH. Clinical decision rules wait in the wings, but for now there should be serious consideration of the work up for SAH, with focus on timely CT and higher questioning for benefit vs risk of LP.