

Research Submissions

Neuroimaging for Migraine: The American Headache Society Systematic Review and Evidence-Based Guideline

Randolph W. Evans, MD; Rebecca C. Burch, MD; Benjamin M. Frishberg, MD; Michael J. Marmura, MD; Laszlo L. Mechtler, MD; Stephen D. Silberstein, MD; Dana P. Turner, MSPH, PhD

Objective.—To provide updated evidence-based recommendations about when to obtain neuroimaging in patients with migraine.

Methods.—Articles were included in the systematic review if they studied adults 18 and over who were seeking outpatient treatment for any type of migraine and who underwent neuroimaging (MRI or CT). Medline, Web of Science, and Cochrane Clinical Trials were searched from 1973 to August 31, 2018. Reviewers identified studies, extracted data, and assessed the quality of the evidence in duplicate. We assessed study quality using the Newcastle-Ottawa Scale.

Results.—The initial search yielded 2269 publications. Twenty three articles met inclusion criteria and were included in the final review. The majority of studies were retrospective cohort or cross-sectional studies. There were 4 prospective observational studies. Ten studies evaluated the utility of CT only, 9 MRI only, and 4 evaluated both. Common abnormalities included chronic ischemia or atrophy with CT and MRI scanning, and non-specific white matter lesions with MRI. Clinically meaningful abnormalities requiring intervention were relatively rare. Clinically significant neuroimaging abnormalities in patients with headaches consistent with migraine without atypical features or red flags appeared no more common than in the general population.

Recommendations.—There is no necessity to do neuroimaging in patients with headaches consistent with migraine who have a normal neurologic examination, and there are no atypical features or red flags present. Grade A Neuroimaging may be considered for presumed migraine for the following reasons: unusual, prolonged, or persistent aura; increasing frequency, severity, or change in clinical features, first or worst migraine, migraine with brainstem aura, migraine with confusion, migraine with motor manifestations (hemiplegic migraine), late-life migraine accompaniments, aura without headache, side-locked headache, and posttraumatic headache. Most of these are consensus based with little or no literature support. Grade C.

(*Headache* 2020;60:318-336)

OBJECTIVES

The American Headache Society (AHS) develops guidelines and practice parameters for clinicians.

This guideline summarizes evidence from the existing literature about when to recommend neuroimaging in patients with migraine. We specifically reviewed

From the Department of Neurology, Baylor College of Medicine, Houston, TX, USA (R.W. Evans); John R. Graham Headache Center, Department of Neurology, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA (R.C. Burch); The Neurology Center, Carlsbad, CA, USA (B.M. Frishberg); University of California at San Diego School of Medicine, San Diego, CA, USA (B.M. Frishberg); Jefferson Headache Center, Thomas Jefferson University, Philadelphia, PA, USA (M.J. Marmura and S.D. Silberstein); Dent Neurologic Institute, Headache Center, Buffalo, NY, USA (L.L. Mechtler); Department of Anesthesia, Critical Care and Pain Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA (D.P. Turner).

Address all correspondence to R.W. Evans, Department of Neurology, Baylor College of Medicine, 1200 Binz #1370, Houston, TX 77004, USA, email: revansmd@gmail.com

Accepted for publication November 21, 2019.