

Historical and Physical Examination Red Flags for Identifying Serious Secondary Causes of Headache

Category	Element	Sensitivity (%)	Specificity (%)	Likelihood Ratio Positive	Likelihood Ratio Negative	Notes
History	Change in previously existing headache (intensity, frequency, pattern)		Poor			Symptom of possible chronic intracranial process
History	Daily or continuous headache		Poor			Symptom of possible chronic intracranial process
History	Dizziness or lack of coordination			49 (3.4-710.0)	NS	LR based on reference standard of significant abnormalities on neuroimaging
History	Effort-related or positional headache		Poor			Symptom of elevated intracranial pressure
History	Headache associated with change of personality or mental status					Symptom of possible chronic intracranial process
History	Headache brought on by coughing, sneezing, or bending over		Poor			May be a symptom of elevated intracranial pressure (usually benign)
History	Headache brought on by exercise or orgasm		Poor			May be a symptom of elevated intracranial pressure
History	Headaches awakening from sleep			98 (10-960)	NS	Symptom of elevated intracranial pressure; LR based on reference standard of significant abnormalities on neuroimaging
History	Headaches that become refractory to previously effective treatment					Symptom of possible chronic intracranial process
History	History of syncope			NS	NS	LR based on reference standard of significant abnormalities on neuroimaging
History	Migraine aura that begins or persists after the headache has dissipated (i.e., reversal of usual sequence of aura preceding headache)					Symptom of possible stroke or AVM

History	Nausea			NS	NS	LR based on reference standard of significant abnormalities on neuroimaging
History	New onset headache					
History	Onset after age 50					Possible arteritis or chronic intracranial process; migraine usually occurs for the first time during adolescence; the incidence diminishes in mid-life and is rarely a new diagnosis in patients over age 40
History	Persistent pain on one side of the head without any contralateral attacks ("side-locked" headache)					Symptom of possible chronic intracranial process
History	Previous head trauma					May cause postconcussion syndrome or acute or chronic subdural hematoma
History	Rapidly increasing headache frequency			12 (3.1-48.0)	NS	LR based on reference standard of significant abnormalities on neuroimaging
History	Subjective numbness or tingling (apart from consistent pattern of sensory auras in a patient with migraine with aura)			49 (3.4-710.0)	NS	Sensory aura is present in 20% of patients with migraine with aura; LR based on reference standard of significant abnormalities on neuroimaging
History	Sudden, explosive onset of headache, with rapid progression over seconds to minutes					Possible acute intracranial process (e.g., subarachnoid hemorrhage)
History	Worsens with Valsalva maneuver			2.3 (1.1-4.6)	NS	LR based on reference standard of significant abnormalities on neuroimaging
History	Worst headache of life			NS	NS	LR based on reference standard of significant abnormalities on neuroimaging
History and Physical Exam	Any focal neurologic sign or symptom			1.1 (1.05-1.20) 6.0 (4.7-7.8)	0.47 (0.25-0.89) NS	LR based on reference standard of significant abnormalities on neuroimaging
History and Physical Exam	New headache, jaw pain (claudication), and abnormal (tender or nodular) temporal arteries	34%	>99%	47	0.7	LR based on reference standard of clinical diagnosis of giant cell arteritis; Jaw pain also may suggest temporomandibular joint dysfunction

Physical Exam	Any focal abnormality on neurologic examination	3.0 (2.3-4.0)	0.7 (0.52-0.93)	LR based on reference standard of significant abnormalities on neuroimaging; combined estimate from 5 studies
Physical Exam	Diastolic BP > 120 mm Hg			Severe hypertension or preeclampsia can cause headache
Physical Exam	Diminished or absent temporal artery pulsations			Sign of possible temporal arteritis
Physical Exam	Fever			Possible acute intracranial process (e.g., meningitis) or arteritis
Physical Exam	Necrotic lesions of scalp or tongue			Possible arteritis
Physical Exam	Nuchal rigidity or limitation of anterior neck flexion			Classic signs of meningeal irritation
Physical Exam	Papilledema			Sign of elevated intracranial pressure
Physical Exam	Reddened, tender scalp nodules			Possible arteritis
Physical Exam	Tenderness to palpation over temporal artery	20%-40%		
Physical Exam	Decreased visual acuity and elevated intraocular pressure			Acute glaucoma can present with orbital headache, nausea, and vomiting but should have associated visual symptoms (e.g., blurred vision, seeing halos around lights)

AVM = arteriovenous malformation; BP = blood pressure.

Table from *Physicians Information and Education Resource (PIER), Migraine module.*