POEMs

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This series is coordinated by Sumi Sexton, MD, Associate Deputy Editor.

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Best Approaches to Physical Diagnosis of Acute Red Eye

Clinical Question

Which signs or symptoms are indicative of serious eye disease in patients with red eye or a bacterial cause in patients with presumed conjunctivitis?

Bottom Line

Eliciting photophobia via pupillary constriction and the presence of anisocoria (greater than 1 mm) in patients with an acute red eye are the best predictors of serious eye disease (e.g., uveitis, keratitis, corneal abrasion, scleritis) requiring prompt referral. Lack of morning eye matting is a fairly good way to rule out bacterial conjunctivitis, but no sign or symptom in this study consistently identifies a bacterial cause or response to antibiotic treatment. (Level of Evidence = 2a–)

Synopsis

The authors conducted a limited search, using only a single database (PubMed) and selecting only English-language studies that evaluated the diagnostic accuracy of the history and physical examination in adult patients with red eye. They included studies that enrolled patients with presumed conjunctivitis who had bacterial culture or patients with red eye, all of whom eventually underwent slit-lamp examination. Two authors independently extracted the data. They did not evaluate the quality of the research. In five studies of 957 consecutive patients with red eye, the most useful findings that indicated serious eye disease were anisocoria (with the smaller pupil in the red eye and difference between pupil diameters greater than 1 mm; positive likelihood ratio [LR+] = 6.5; 95% confidence interval [CI], 2.6 to 16.3) and photophobia, elicited by direct illumination (LR+ = 8.3; 95% CI, 2.7 to 25.9), indirect illumination (LR+ = 28.8; 95% CI, 1.8 to 459), or finger-to-nose test (LR+ = 21.4; 95% CI, 12 to 38.2). In three studies of 281 patients enrolled consecutively with presumed conjunctivitis, 45% had positive bacterial cultures. No sign or symptom was particularly effective at identifying bacterial conjunctivitis, either alone or in combination. The lack of morning "glue eye" (LR+ = 0.3; 95% CI, 0.1 to 0.8) or failure to observe a red eye at 20 feet (LR+ = 0.2; 95% CI, 0 to 0.8) may be useful for ruling out a bacterial cause. None of the included studies evaluated the ability of any sign or symptom to predict response to topical antibiotic treatment.

Study design: Systematic review

Funding source: Self-funded or unfunded

Setting: Various (meta-analysis)

Reference: Narayana S, McGee S. Bedside diagnosis of the 'red eye': a systematic review. *Am J Med.* 2015;128(11):1220-1224.e1.

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Useful Signs and Symptoms of Severe Intracranial Injury After Minor Head Trauma

Clinical Question

Which clinical signs and symptoms are useful in accurately diagnosing a severe intracranial injury after minor head trauma in adults?

Bottom Line

Specific individual risk factors, clinical signs, and symptoms are useful in identifying adults ▶

with minor head trauma who are at risk of severe intracranial injury. The absence of all features of the Canadian CT Head Rule and New Orleans Criteria is also highly accurate for identifying adults at low risk of severe injury. (Level of Evidence = 1b)

Synopsis

Adults who appear well and have a Glasgow Coma Scale (GCS) score of 13 or higher after traumatic brain injury are defined as having minor head trauma. These investigators searched Medline and the Cochrane Library, as well as pertinent references from retrieved articles, for English-language studies of adults (18 years or older) with head trauma who presented for evaluation with GCS scores ranging from 13 to 15. Inclusion criteria included diagnostic accuracy studies focusing on severe intracranial injuries requiring prompt intervention. A total of 14 studies (N = 23,079) met inclusion criteria with a severe intracranial injury prevalence of 7.1% (95% confidence interval [CI], 6.8% to 7.4%) and a prevalence of injuries leading to death or requiring neurosurgical intervention of 0.9% (95% CI, 0.78% to 1.0%).

The highest risk factors included pedestrians struck by motor vehicles (likelihood ratio range, 3.0 to 4.3), age at least 65 years (positive likelihood ratio [LR+] = 2.3; 95% CI, 1.8 to 3.1), and age at least 60 years (LR+ = 2.2; 95% CI, 1.6 to 3.2). Useful symptoms included the presence of vomiting, especially at least two episodes (LR+ = 3.6; 95% CI, 3.1 to 4.1), or posttraumatic seizures (LR+ = 2.5; 95% CI, 1.3 to 4.3). Likelihood ratios for loss of consciousness or the presence of headache were minimally, if at all, useful for predicting adverse outcomes. Useful physical signs included features suspicious for skull fractures: visible open skull fracture, palpable depressed skull fracture, postauricular ecchymosis (Battle sign), hemotympanum, cerebrospinal fluid otorrhea, or raccoon eyes (LR+ = 16; 95% CI, 3.1 to 59). A GCS score of 13 (LR+ = 4.9; 95% CI, 2.8 to 8.5), a GCS score of less than 15 at two hours after injury (LR range, 1.6 to 7.6), any decline in GCS score (LR range, 3.4 to 16), or a focal neurologic deficit (LR range, 1.9 to 7.0) also increased the likelihood of severe intracranial injury.

Two clinical decision rules, including the Canadian CT Head Rule and the New Orleans Criteria, were also evaluated. The absence of all features on the Canadian CT Head Rule lowers the probability of a severe injury to 0.31% (95% CI, 0% to 4.7%), with the corresponding absence of any of the New Orleans Criteria lowering the risk to 0.61% (95% CI, 0.08% to 6.0%).

Study design: Systematic review

Funding source: Foundation

Setting: Various (meta-analysis)

Reference: Easter JS, Haukoos JS, Meehan WP, Novack V, Edlow JA. Will neuroimaging reveal a severe intracranial injury in this adult with minor head trauma? The rational clinical examination systematic review. *JAMA*. 2015;314(24):2672-2681.

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