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The localizing value of asymmetry in pupillary size in severe head injury: relation to lesion type and location.

Chesnut RM, Gautille T, Blunt BA, Klauber MR, Marshall LE.

Department of Surgery, University of California-San Diego Medical Center.

Abstract

Reliable Assessment of the probability that a head injury patient harbors a surgical intracranial lesion is critical to both triage and treatment. The authors analyzed data from 608 patients with severe head injuries (Glasgow Coma Scale score, < or = 8) in the Traumatic Coma Data Bank to assess the reliability of pupillary asymmetry in predicting the presence and location of an intracranial mass lesion. Of 210 patients with pupillary asymmetry of > or = 1 mm, 63 (30%) had intracranial mass lesions, 52 (25%) of which were extra-axial in location, 38 (73%) of these located ipsilateral to the larger pupil. Of 51 patients with asymmetry of > or = 3 mm, 22 (43%) had intracranial mass lesions, 18 (35%) of which were extra-axial in location, 14 (64%) of these located ipsilateral to the larger pupil. For both asymmetry categories, strong interactions were found with age and mechanism of injury, the highest incidence of extra-axial lesions occurring in older patients injured other than as occupants of motor vehicles. The authors developed regression equations that provide a graphic means to predict the presence of an intracranial hematoma using data on pupillary asymmetry, age, and mechanism of injury. This predictive model, interpreted in a hospital- and patient-specific fashion, should be of significant use in directing triage, activating diagnostic and therapeutic resources, and evaluating the utility of exploratory trephination.

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