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Do trauma patients with a Glasgow Coma Scale score of 3 and bilateral fixed and dilated pupils have any chance of survival?

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Abstract

BACKGROUND: Low Glasgow Coma Scale score (GCS) and pupillary status predict poor outcomes in head injury (HI) patients. We compared the mortality of GCS 3 patients having bilateral fixed and dilated pupils (BFDP) with GCS 3 patients having reactive pupils (RP). We then determined if trauma system or patient factors were responsible for the difference in mortality.

METHODS: We reviewed all adult, blunt HI patients with GCS=3, admitted to our institution from January 1, 2001 to December 31, 2003. Demographics, injury data, prehospital times, procedures, and outcomes were recorded.

RESULTS: During this period, 245 patients were admitted with GCS of 3, and met inclusion criteria. In all, 173 patients were analyzed, after excluding 23 patients who were dead-on-arrival, and 45 others, who were intoxicated with alcohol, or received paralytic agents in the trauma room. All BFDP patients died, whereas 42.0% of reactive pupil (RP) patients died ($p < 0.0001$). With regards to patient factors, BFDP patients were more likely to be unstable, have extra-axial bleeding, and evidence of midline shift and/or herniation. Trauma system factors, however, may also have had an impact on outcome. Despite having more extra-axial bleeding, BFDP patients were less likely to have a neurosurgical operation than RP patients.

CONCLUSION: Patients with GCS of 3 and BFDP have a dismal prognosis. These patients have suffered devastating brain injuries and tend to be hemodynamically unstable. Clinicians, however, are less likely to aggressively treat BFDP patients than RP patients. Further prospective studies are required to determine which patients with GCS of 3 and BFDP are likely to benefit from aggressive treatment.

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