Penetrating head injury outcome

Surgical intervention in penetrating head injury patients with GCS 3-5 results in improved mortality but comes at a cost of increased resource utilization in the form of longer LOS and higher infection rate. On the other hand, in patients with GCS ≥6, surgery does not provide significant benefits in patient survival. Future prospective studies providing insight as to the impact of surgery on the resource utilization and quality of survival would be beneficial in determining the need for surgical intervention in this population [1].

Reports from civilian cohorts are small because of the high reported mortality rates (as high as 90%). Data from military populations suggest a better prognosis for penetrating brain injury, but previous reports are hampered by analyses that exclude the point of injury.

The purpose of a study was to provide a description of the long-term functional outcomes of those who sustain a combat-related penetrating brain injury (from the initial point of injury to 24 months afterward).

This study is a retrospective review of cases of penetrating brain injury in patients who presented to the Role 3 Multinational Medical Unit at Kandahar Airfield, Afghanistan, from January 2010 to March 2013. The primary outcome of interest was Glasgow Outcome Scale (GOS) score at 6, 12, and 24 months from date of injury.

A total of 908 cases required neurosurgical consultation during the study period, and 80 of these cases involved US service members with penetrating brain injury. The mean admission Glasgow Coma Scale (GCS) score was 8.5 (SD 5.56), and the mean admission Injury Severity Score (ISS) was 26.6 (SD 10.2). The GOS score for the cohort trended toward improvement at each time point (3.6 at 6 months, 3.96 at 24 months, $p > 0.05$). In subgroup analysis, admission GCS score ≤ 5, gunshot wound as the injury mechanism, admission ISS ≥ 26, and brain herniation on admission CT head were all associated with worse GOS scores at all time points. Excluding those who died, functional improvement occurred regardless of admission GCS score ($p < 0.05$). The overall mortality rate for the cohort was 21%.

Good functional outcomes were achieved in this population of severe penetrating brain injury in those who survived their initial resuscitation. The mortality rate was lower than observed in civilian cohorts [2].

At the time of the Boer War in 1899 penetrating head injuries, which formed a large proportion of the battlefield casualties, resulted in almost 100% mortality. Since that time up to the present day, significant improvements in technique, equipment and organisation have reduced the mortality to about 10% [3].

References

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