Association of out-of-hospital advanced airway management with outcomes after traumatic brain injury and hemorrhagic shock in the ROC hypertonic saline trial

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Abstract

Objective Prior studies suggest adverse associations between out-of-hospital advanced airway management (AAM) and patient outcomes after major trauma. This secondary analysis of data from the Resuscitation Outcomes Consortium Hypertonic Saline Trial evaluated associations between out-of-hospital AAM and outcomes in patients suffering isolated severe traumatic brain injury (TBI) or haemorrhagic shock.

Methods This multicentre study included adults with severe TBI (GCS ≤8) or haemorrhagic shock (SBP ≤70 mm Hg, or (SBP 71–90 mm Hg and heart rate ≥108 bpm)). We compared patients receiving out-of-hospital AAM with those receiving emergency department AAM. We evaluated the associations between airway strategy and patient outcomes (28-day mortality, and 6-month poor neurologic or functional outcome) and airway strategy, adjusting for confounders. Analysis was stratified by (1) patients with isolated severe TBI and (2) patients with hemorrhagic shock with or without severe TBI.

Results Of 2135 patients, we studied 1116 TBI and 528 shock; excluding 491 who died in the field, did not receive AAM or had missing data. In the shock cohort, out-of-hospital AAM was associated with increased 28-day mortality (adjusted OR 5.14; 95% CI 2.42 to 10.90). In TBI, out-of-hospital AAM showed a tendency towards increased 28-day mortality (adjusted OR 1.57; 95% CI 0.93 to 2.64) and 6-month poor functional outcome (1.63; 1.00 to 2.68), but these differences were not statistically significant. Out-of-hospital AAM was associated with poorer 6-month TBI neurologic outcome (1.80; 1.09 to 2.96).

Conclusions Out-of-hospital AAM was associated with increased mortality after hemorrhagic shock. The adverse association between out-of-hospital AAM and injury outcome is most pronounced in patients with hemorrhagic shock.