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Post Intubation Hypotension during Intubation. Can Patient Risk Factors and Drug Selection Predict Hypotension and Mortality?

Background

Intubation and subsequent sedation are known risk factors for hypotension. Previous studies have found an association between hypotension and worse outcomes in patients with neurologic injury. The development of post-intubation hypotension in ED patients with neurologic emergencies and the relationship to sedation choice and pre-intubation blood pressure is as yet unexplored.

Objective

To determine the incidence of post-intubation hypotension in neurologic emergencies and explore the relationship between pre-intubation BP as well as sedation choice.

Methods

We performed a retrospective analysis of normotensive adults (>18 yrs) with a primary neurologic process requiring emergent/urgent intubation in the ED during 2013. Primary neurologic process was defined as CVA, ICH, isolated head trauma, or seizures. Patients were excluded if hypotensive prior to intubation (defined as a single SBP<100 at any time within the 2h prior to intubation, or vasopressor infusion). Patients were identified as hypotensive after intubation if they had any SBP <100 in the 2h after intubation or if vasopressors were initiated. Patients in whom sedation medications were changed were identified. Descriptive statistics were used to describe the cohort, chi-square was used for mortality comparisons between groups, and a Spearmen correlation coefficient was used to evaluate a relationship between pre- and post-intubation SBP.

Results

Out of 337 intubations, 50 were identified as having a primary neurologic etiology driving need for intubation. Of these, 80% (40/50) were sedated with propofol, 14% (8/50) with midazolam and 6% (3/50) with a combination or other. 26% (13/50) developed hypotension following intubation; of these, 11 patients (84.6%) were sedated with propofol with clinicians changing to midazolam in 8 cases (72%). Pre-intubation SBP did not correlate with post-intubation SBP (r=0.17, p=0.245). The patients who

become hypotensive were found to have increased all-cause in-hospital mortality (38% vs. 16%) though this was not statistically significant ($p = 0.13$).

Conclusion

Approximately one quarter (26%) of normotensive patients undergoing intubation for a primary neurologic emergency develop post-intubation hypotension. Propofol was the sedation agent of choice for the overall population but discontinued by clinicians in the majority of hypotensive patients. The pre-event blood pressure status was not associated with post-intubation blood pressure. Future studies are needed to explore potential causal or contributory relationships with initial sedative choice in this population and/or means for predicting which sub-populations are at risk for development of hypotension.