HEMODYNAMIC EFFECTS OF KETAMINE VERSUS ETOMIDATE FOR PRE-HOSPITAL RAPID SEQUENCE INTUBATION

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Introduction: Rapid sequence intubation (RSI) is often required in managing critically ill patients in the pre-hospital setting. Etomidate is the most common pre-hospital RSI induction agent due to its neutral hemodynamic effects. Ketamine has gained new interest in pre-hospital management with reported positive hemodynamic effects. Limited data exists to support ketamine as an alternative to etomidate, particularly in the pre-hospital setting. The purpose of this study was to evaluate hemodynamic differences after administration of ketamine versus etomidate in pre-hospital RSI.

Methods: This Institutional Review Board-approved, retrospective study evaluated adult patients undergoing pre-hospital RSI from 12/2015 to 1/2017 within a single center regional emergency transport service (air medical, ground critical care, and paramedic-staffed ambulances). Data included baseline characteristics, ketamine and etomidate dose, time to adjunct medications, and indication for advanced airway placement. Hemodynamic data included blood pressure, heart rate, and shock index (SI) which was collected 15 minutes prior and at least once 15-min post-administration or until additional sedative medications were given. Data was analyzed using SPSS with a p-value <0.05 being considered significant.

Results: Of 225 reviewed, 113 patients met inclusion criteria (ketamine n=33, etomidate n=80) with the primary reasons for intubation being respiratory failure (35%) and trauma (29%). Baseline characteristics were similar between the groups. Ketamine SBP was 132±32 Pre vs 136±40 Post, p=NS and etomidate 140±23 Pre vs 132±45 Post, p=NS. All other post-RSI hemodynamics were similar between groups (HR, MAP, SI). Any decline in SBP was less likely with ketamine, 42% ketamine vs 65% etomidate, p=0.02. The absolute change in SI tended to improve within 7 minutes post-RSI with ketamine (0.06 ketamine vs -0.01 etomidate, p=0.05). Other factors impacting more frequent decreases in SBP included age ≥70 years (7% ketamine vs 37% etomidate, p=0.04) and trauma patients (10% ketamine vs 60% etomidate, p=0.009).
**Conclusions:** There were no differences in hemodynamics after administration of ketamine or etomidate for pre-hospital RSI. There was no difference in time to additional sedatives post-RSI. Patients >70 years of age and patients who required intubation due to trauma experience more reductions in blood pressure with etomidate than ketamine. Larger studies are required to detect clinically significant differences.