The Incidence of Post-Intubation Hypotension in Trauma Patients After Etomidate Administration

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BACKGROUND

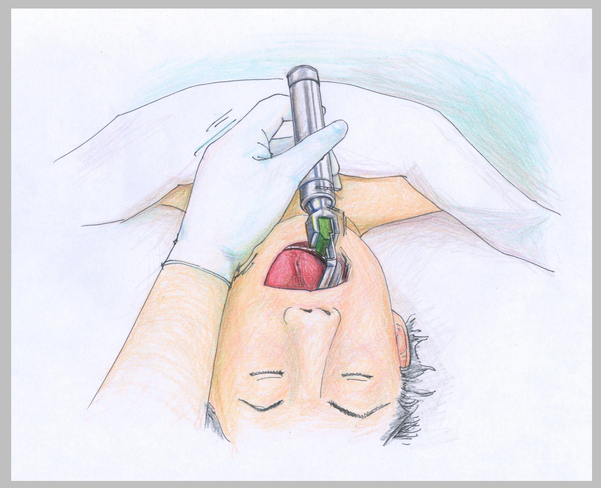
Post-intubation hypotension (PIH) is found in up to 44% of patients emergently intubated in the ED[1]. Etomidate is a popular agent used in rapid sequence induction (RSI) for emergency intubations due to its stable hemodynamic profile[2]. The purpose of this study was to prospectively investigate the incidence of PIH in trauma patients requiring emergent intubation using etomidate as the induction agent.

MATERIALS AND METHODS

All patients intubated in the Parkland ED who were induced using etomidate were prospectively recruited for this study. Patients who received different induction agents or were intubated without the use of induction agents were excluded from the study. Serial vital signs were recorded just prior to RSI drug administration and every 5 minutes after for a total of 20 minutes. Other pertinent demographics and ED disposition were also recorded. The data was collected over a 2-month span by medical students who staffed the ED 24 hours a day, 7 days a week.

RESULTS

20 adult patients were recruited for this study over an 8-week period, 12 (80%) medical and 8 (89%) trauma. Each patient received an average etomidate dose of 22 mg. See Table 1 and Figure 1 for a comparison of mean arterial pressure (MAP) changes observed in medical patients verses trauma patients just prior to the administration of RSI medications and at 5, 10, 15, and 20 minute intervals. There was a significant drop in MAP ($p < .05$) for the trauma group (n=6) receiving etomidate at 5 and 10 minutes post RSI (Fig 1, Tab 1). No significant drop was noted in MAP in the medical group (n=14).



http://aic-server4.aic.cuhk.edu.hk/web8/Hi%20res/Laryngoscopy%202.jpg (Kathy Mak 2004).

FIGURE 1.

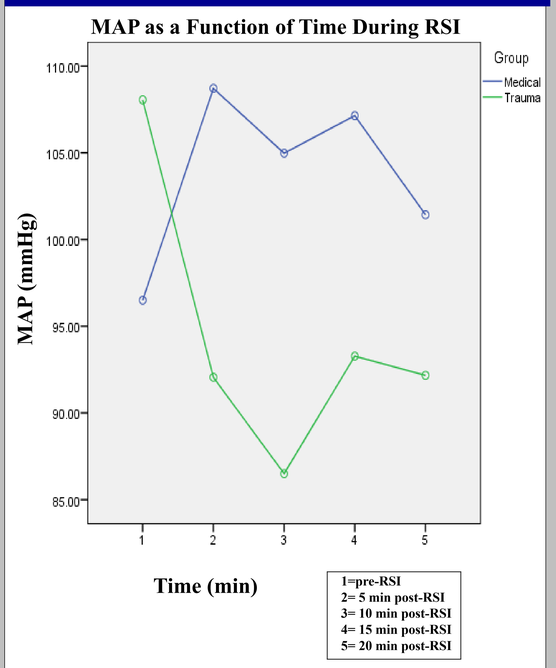


TABLE 1.

Table 1. Mean Arterial Pressure Changes

Group		Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Medical	Pre-RSI	76.86	6.18	63.87	89.85
	5 min	88.57	5.67	76.65	100.49
	10 min	85.57	4.71	75.67	95.47
	15 min	88.29	4.87	78.06	98.51
	20 min	83.64	6.05	70.93	96.36
Trauma	Pre-RSI	92.17	9.45	72.32	112.01
	5 min	77.00	8.66	58.80	95.20
	10 min	68.67	7.20	53.55	83.79
	15 min	76.00	7.43	60.38	91.62
	20 min	74.67	9.25	55.24	94.09

*Analysis of Variance Results – 1 between (Group) and 1 within (Time) effects (F-tests)
Time * Group Interaction - significant, p=.026

CONCLUSION

Etomidate can significantly reduce the MAP in trauma patients. One plausible explanation in the immediate post-intubation period is the reduced sympathetic stimulation that results once unconsciousness is induced. Critically ill trauma patients who require emergent intubation are likely to have concomitant injuries and are at risk for hemorrhagic shock or worsening cerebral injury from precipitous decreases in blood pressure. Resuscitative measures should be cautiously instituted to mitigate adverse effects of hypoperfusion from PIH in these critically ill patients.

LIMITATIONS

The main limitation in this study was sample size as several ED intubations were not included, either because the patient did not meet inclusion criteria or the intubation started before the research assistant could be present to collect data.

REFERENCES

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