

UAMS Journal Club Summary

October 2020

Laura Werline, MD and Matt Deneffe, MD

Faculty Advisor: Carly Eastin, MD

### Peri-intubation hypotension of Ketamine vs Etomidate

#### **Clinical Bottom Line**

Ketamine does not appear to be associated with less peri-intubation hypotension events compared to Etomidate based on the most recent data. Ketamine has often been thought to be safer in patients at risk for hemodynamic compromise; and therefore, many of the studies had selection bias towards the use of ketamine in potentially sicker patients. There was not strong evidence to suggest that ketamine should be prioritized over etomidate when there is concern for potential hemodynamic compromise. The current literature is based on retrospective studies so unable to develop a causal relationship between peri-intubation hypotension and ketamine vs etomidate. Future randomized controlled studies need to be performed where the selection bias of ketamine in potentially more unstable patients is removed as well as other confounding variables accounted for. With current evidence largely inconclusive, clinicians should use the induction agent (ketamine or etomidate) they are most comfortable with regardless of the patient's hemodynamic instability.

#### **PICO Question**

P- Patients being intubated

I- Ketamine

C- Etomidate

O- peri-intubation hypotension.

#### **Background**

It is well known that RSI and positive pressure ventilation has the potential to cause peri-intubation hypotension. Historically Ketamine has been believed to have a safer hemodynamic profile when compared to etomidate as an induction agent for RSI in patients who are hemodynamically unstable. This belief comes from the association between etomidate and adrenal suppression based on a study that observed hospitalized patients who were on prolonged infusions of etomidate. Ketamine is not believed to cause sympatholysis and is therefore thought to cause less peri-intubation hypotension. Few studies have compared ketamine directly to etomidate when used as a single dose in RSI. With RSI frequently occurring in critically ill patients, it is important to fully understand the hemodynamic profiles of ketamine and etomidate when used in RSI.

## Study 1

Melanie A. Pollack, DO, Gregory M. Fenati, DO, Troy W. Pennington, DO. The Use of Ketamine for Air Medical Rapid Sequence Intubation Was Not Associated With a Decrease in Hypotension or Cardiopulmonary Arrest. Air Medical Journal, Volume 39, 2020, pages 111-115

Link: <https://pubmed.ncbi.nlm.nih.gov/32197687/>

### The Basics

Retrospective observational study of 7,466 patients who underwent out of hospital air medical RSI. The crews were able to choose the RSI medications (etomidate, midazolam, ketamine, fentanyl) and post intubation hypotension, desaturation, or cardiac arrest was recorded.

### Inclusion Criteria

- Entered into airway database from April 2015 – June 2017
- Received both paralytic as well as a sedative/ dissociative/ amnestic agent for out of hospital RSI

### Primary Outcomes

- Peri-RSI hypotension and cardiopulmonary arrest

### Secondary Outcomes

- RSI induction agent choice for various difficult airway criteria and clinical category (trauma, cardiac, periarrest, sepsis, shock)
- Intubation success rate

### Results

- Ketamine was associated with higher incidence of both hypotension and arrest compared to other agents
- Use of ketamine increased as the study period progressed, but rate of hypotension and arrest remained steady
- Ketamine was used more often in sepsis, shock, and cardiac patients.
- Cannot conclude that ketamine causes less hypotension or arrest.

### Limitations/ Biases

- Selection bias of ketamine use in more critically ill and injured patients
- Exact vital signs not available
- No exact BP threshold for hypotension
- Overlap in some study groups as some patients received more than one agent
- Limited data on injury severity
- Suspected etiology of arrest is not recorded and may be unrelated to medication