Ketamine vs. Etomidate for Sedation of Emergency Department Patients During Rapid Sequence Intubation

Background:

Rapid sequence intubation (RSI) is a commonly performed procedure in the Emergency Department (ED), and is performed for many indications. In this procedure, a sedative is provided for patient comfort during the procedure. Many sedatives cause hypotension. Ketamine and etomidate are frequently used for sedation as they do not cause hypotension, but it is not currently known if there is any difference in outcomes between the two agents. Current expert opinion is that both are acceptable options, and indeed both are used daily for RSI across the world.

Prior prospective and retrospective trials have demonstrated increased mortality for etomidate in subgroup analysis, but these studies were flawed due to selection bias.[1] The only randomized prospective trial comparing these two agents, in the pre-hospital setting, showed no difference in mortality in all patients. Subgroup analysis of patients with sepsis showed a non-statistically significant trend towards a better outcome with ketamine.[2]

For this reason, a robust randomized controlled trial comparing the two will help determine the best care for this important critically ill patient population.

Methods:

This is a prospective randomized controlled trial of critically ill patients undergoing RSI in the ED. Emergency physicians and Research Associates (RAs) in the ED will screen for eligible patients. Upon confirming eligibility, the patients will be randomized to ketamine or etomidate for sedation as part of RSI. Paralytic choice and all other medical care will be at the discretion of the treating physician.

Inclusion criteria: All patients 18 years and older who undergo RSI in the ED

Exclusion criteria: Known contraindication to either medication
**Medication doses:**

Ketamine 2mg/kg

Etomidate 0.3mg/kg

**Data collection** will be performed by trained RAs and will include:

Indication for intubation

Presumed ED diagnosis

Patient demographic information

Medical co-morbidities

ED vital signs

Number of intubation attempts and occurrence of peri-intubation hypoxemia

Tissue perfusion during intubation

Hospital laboratory values

30-day mortality

ICU and hospital length of stay

Time on vasopressors / type of vasopressors

During **first three days of hospitalization:**

- Maximum Sequential Organ Failure Assessment score (SOFA) score
- Maximum APACHE II score

Type and duration of antibiotics

Total time intubated

Medications given that influence immune response (corticosteroids or immunosuppressants)

Site of infection / Etiology of infection

Total IV fluids

Ketamine v Etomidate
Driver et al.
HSR 13-3601
Amount of blood transfused

Occurrence of ventilator-associated pneumonia or other complications of intubation

Final primary ICU diagnosis

References:
