

ORIGINAL RESEARCH

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Pre-hospital emergent intubation in trauma patients: the influence of etomidate on mortality, morbidity and healthcare resource utilization



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Abstract

Background: Due to its favorable hemodynamic characteristics and by providing good intubation conditions etomidate is often used for induction of general anesthesia in trauma patients. It has been linked to temporary adrenal cortical dysfunction. The clinical relevance of this finding after a single-dose is still lacking appropriate evidence.

Methods: This retrospective multi-centre study is based on merged data from a German Helicopter Emergency Medical Service (HEMS) database and a large trauma patient registry. All trauma patients who were intubated prior to hospital admission with a documented Injury Severity Score ≥ 9 between 2008 and 2012 were eligible for analysis. The primary endpoint was hospital mortality. Other outcome measures were organ failures, sepsis, length of ventilation, as well as length of stay in hospital and ICU.

Results: One thousand six hundred ninety seven patients were enrolled into the study. Seven hundred sixty two patients received etomidate and 935 patients received other induction agents. The in-hospital mortality was similar in both groups (18.9% versus 18.2%; $p=0.71$). Incidences of organ failures and sepsis were not increased in the etomidate group. However, health care resource utilization parameters were prolonged (after adjusting: + 1.3 days for ICU length of stay, $p=0.062$; + 0.8 days for length of ventilation, $p=0.15$; + 2,7 days for hospital length of stay, $p=0.034$). A multivariable logistic regression analysis did not identify etomidate as an independent predictor of hospital mortality (OR: 1.10, 95% CI: 0.77–1.57; $p=0.60$).

Conclusions: This is the largest trial investigating outcome data for trauma patients who had received a single-dose of etomidate for induction of anesthesia. The use of etomidate did not affect mortality. The influence on morbidity and health care resource utilization remains unclear.

Keywords: Anesthetics i.v., Etomidate, Morbidity, Mortality, Healthcare resource utilization, Trauma

Introduction

Etomidate is a carboxylated imidazole used for induction of general anesthesia and sedation. It was introduced into clinical practice in 1972. Due to its favorable hemodynamic characteristics and by providing good intubation conditions, it became one of the most

frequently used drugs for rapid-sequence induction (RSI) of anesthesia in critically ill patients [1–3]. As many trauma patients suffer from hemorrhagic shock, etomidate is often considered the drug of choice during emergent intubation in the field or in the Emergency Department [2].

In the early 1980s first reports of an increased mortality among ventilated trauma patients in the ICU receiving etomidate for prolonged sedation were published [4]. Adrenal cortical inhibition by etomidate was identified as a trigger for adrenal insufficiency in these patients

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