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CORRESPONDENCE

Ketamine for emergency endotracheal intubation: insights into post-induction hemodynamic instability

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We read the original research paper by Matchett et al. with great interest [1]. The authors note the exploratory outcome that patients who were randomized to receive ketamine for induction experienced post-intubation hypotension and cardiovascular collapse significantly more often than patients who received etomidate [1]. No clear confounding factors were documented, as both arms of the study appeared well balanced. This finding is paralleled by multiple large-scale studies, also referenced by the authors, describing the occurrence of post-induction hypotension and hemodynamic collapse with the use of ketamine as an induction agent for critically ill patients [2, 3].

None of these previous studies offer a clear insight into what the mechanism for post-induction hemodynamic instability may be. Ketamine is often regarded as a hemodynamically stable induction agent, as it stimulates sympathetic outflow leading to an increase in heart rate and blood pressure [3].

However, ketamine is a direct negative inotropic agent, an effect that has been well documented both in vitro as well as in vivo, but seems to be lesser known [3, 4]. These effects are more pronounced in diseased myocardium, such as in heart failure patients [5]. In healthy patients, the sympathetic effects of ketamine likely predominate, leading to hemodynamic stability with induction of anesthesia. In critically ill patients, where sympathetic outflow may either be maximized by endogenous responses, or in whom vasomotor response is potentially inadequate due to systemic inflammation, these negative inotropic effects of ketamine could predominate.

Similarly, ketamine may act predominantly as a negative inotrope in patients with chronically disrupted sympathetic function such as those with heart failure.

We believe that previous research outlining the negative inotropic effects of ketamine may offer an explanation for the observation of more frequent hemodynamic deterioration post-induction with ketamine in this high-quality randomized controlled trial. Clinicians should be aware of these properties when selecting ketamine as an induction agent for critically ill patients.

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Declarations

Conflicts of interest
None of the authors report a conflict of interest.

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