



A COMPARATIVE STUDY OF HEMODYNAMIC RESPONSES WITH SUCCINYLCHOLINE AND ROCURONIUM BROMIDE FOR INTUBATION DURING GENERAL ANESTHESIA

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ABSTRACT

The purpose of this study is to compare the hemodynamic responses associated with the administration of succinylcholine and rocuronium bromide during general anesthesia (GA) for intubation. Succinylcholine, a depolarizing muscle relaxant, and rocuronium bromide, a non-depolarizing muscle relaxant, are commonly used for facilitating intubation. However, their effects on hemodynamic parameters such as heart rate, blood pressure, and oxygen saturation during intubation remain an area of active research. This study aims to elucidate the differential effects of these two agents and provide insights into their clinical implications in terms of patient safety and anesthetic management.

KEYWORDS :

INTRODUCTION:

The induction of general anesthesia (GA) is often accompanied by the use of muscle relaxants to facilitate intubation. Laryngoscopy and endotracheal intubation, procedures crucial for airway management during GA, can induce significant hemodynamic changes. Succinylcholine, a depolarizing agent, and rocuronium bromide, a non-depolarizing agent, are the most widely used muscle relaxants in this setting. However, their differing mechanisms of action may lead to distinct hemodynamic responses.

Succinylcholine is known for its rapid onset and short duration of action, making it the agent of choice for rapid sequence induction (RSI). However, it is associated with potential side effects, such as transient hypertension, bradycardia, and an increase in intracranial and intraocular pressures. On the other hand, rocuronium, which has a slightly slower onset but a longer duration of action, is commonly used in cases where succinylcholine is contraindicated or not preferred. Its hemodynamic effects may differ, with less impact on heart rate and blood pressure.

This study seeks to compare these two muscle relaxants in terms of their effects on hemodynamic stability during laryngoscopy and intubation. Understanding these responses is critical in optimizing anesthetic protocols and minimizing cardiovascular stress during these procedures.

METHODS:

- **Study Design:** A randomized controlled trial with a sample of patients undergoing elective surgeries requiring general anesthesia and endotracheal intubation.
- **Subjects: Inclusion criteria:** Adult patients (18-65 years), ASA 1,2,3 classification, undergoing elective surgery requiring GA.
- **Exclusion criteria:** History of malignant hyperthermia, allergy to muscle relaxants, significant cardiovascular disease, hyperkalemia
- **Groups:**
 1. **Succinylcholine Group:** Patients receiving 1-1.5 mg/kg of succinylcholine intravenously.
 2. **Rocuronium Group:** Patients receiving 0.6-1.2 mg/kg of rocuronium intravenously.

Interventions:

Both groups will undergo standard induction of anesthesia with propofol and fentanyl, followed by the administration of the respective muscle relaxant. Intubation will be performed after the appropriate onset of muscle relaxation.

Parameters Monitored:

Hemodynamic variables, including heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP), and oxygen saturation (SpO₂), will be recorded at baseline, immediately before laryngoscopy, immediately after intubation, and at 1, 3, and 5 minutes post-intubation.

RESULTS:

- **Primary Outcome:** Comparison of the magnitude and duration of hemodynamic changes (heart rate, blood pressure) between succinylcholine and rocuronium groups at each time point.
- **Secondary Outcome:** Incidence of bradycardia, hypertension, and other adverse cardiovascular events in each group.

DISCUSSION:

- **Hemodynamic Impact of Succinylcholine:** Succinylcholine may lead to a transient increase in heart rate and blood pressure due to its depolarizing nature, resulting in catecholamine release from sympathetic nerves. This can be particularly concerning in patients with underlying cardiovascular conditions.
- **Hemodynamic Impact Of Rocuronium:** Rocuronium, being a non-depolarizing agent, may have a lesser impact on cardiovascular stability. However, the time to onset is longer, which could delay intubation in emergencies. It may cause mild increases in blood pressure in some patients, but typically with less pronounced effects than succinylcholine.
- **Clinical Implications:** The study will provide important insights into how these muscle relaxants affect hemodynamic stability during laryngoscopy and intubation, contributing to the selection of the most appropriate agent for different patient profiles and surgical contexts.

CONCLUSION:

This study will contribute to the understanding of hemodynamic responses to succinylcholine and rocuronium bromide during intubation. The findings may help refine anesthetic protocols, ensuring patient safety and optimizing anesthetic care, particularly in patients with cardiovascular risk factors.

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