

Effect of Rocuronium vs Succinylcholine on Endotracheal Intubation Success Rate Among Patients Undergoing Out-of-Hospital Rapid Sequence Intubation

A Randomized Clinical Trial

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IMPORTANCE Rocuronium and succinylcholine are often used for rapid sequence intubation, although the comparative efficacy of these paralytic agents for achieving successful intubation in an emergency setting has not been evaluated in clinical trials. Succinylcholine use has been associated with several adverse events not reported with rocuronium.

OBJECTIVE To assess the noninferiority of rocuronium vs succinylcholine for tracheal intubation in out-of-hospital emergency situations.

DESIGN, SETTING AND PARTICIPANTS Multicenter, single-blind, noninferiority randomized clinical trial comparing rocuronium (1.2 mg/kg) with succinylcholine (1 mg/kg) for rapid sequence intubation in 1248 adult patients needing out-of-hospital tracheal intubation. Enrollment occurred from January 2014 to August 2016 in 17 French out-of-hospital emergency medical units. The date of final follow-up was August 31, 2016.

INTERVENTIONS Patients were randomly assigned to undergo tracheal intubation facilitated by rocuronium (n = 624) or succinylcholine (n = 624).

MAIN OUTCOMES AND MEASURES The primary outcome was the intubation success rate on first attempt. A noninferiority margin of 7% was chosen. A per-protocol analysis was prespecified as the primary analysis.

RESULTS Among 1248 patients who were randomized (mean age, 56 years; 501 [40.1%] women), 1230 (98.6%) completed the trial and 1226 (98.2%) were included in the per-protocol analysis. The number of patients with successful first-attempt intubation was 455 of 610 (74.6%) in the rocuronium group vs 489 of 616 (79.4%) in the succinylcholine group, with a between-group difference of -4.8% (1-sided 97.5% CI, -9% to ∞), which did not meet criteria for noninferiority. The most common intubation-related adverse events were hypoxemia (55 of 610 patients [9.0%]) and hypotension (39 of 610 patients [6.4%]) in the rocuronium group and hypoxemia (61 of 616 [9.9%]) and hypotension (62 of 616 patients [10.1%]) in the succinylcholine group.

CONCLUSIONS AND RELEVANCE Among patients undergoing endotracheal intubation in an out-of-hospital emergency setting, rocuronium, compared with succinylcholine, failed to demonstrate noninferiority with regard to first-attempt intubation success rate.

TRIAL REGISTRATION ClinicalTrials.gov Identifier: [NCT02000674](https://clinicaltrials.gov/ct2/show/study/NCT02000674)

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