Rocuronium versus succinylcholine for rapid sequence induction intubation (Review)

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Rocuronium versus succinylcholine for rapid sequence induction intubation

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ABSTRACT

Background
Patients requiring emergency endotracheal intubation often require a rapid sequence induction (RSI) intubation technique to protect against aspiration or increased intracranial pressure, or to facilitate intubation. Succinylcholine is the most commonly used muscle relaxant because of its fast onset and short duration; unfortunately, it can have serious side effects. Rocuronium has been suggested as an alternative to succinylcholine for intubation. This meta-analysis is an update since our initial Cochrane systematic review in 2003.

Objectives
To determine if rocuronium creates comparable intubating conditions to succinylcholine during RSI intubation. Comparisons were made based on dose of rocuronium, narcotic use, emergency versus elective intubation, age and induction agent. The primary outcome was excellent intubation conditions. The secondary outcome was acceptable conditions.

Search methods
In our initial systematic review we searched all databases until March 2000. We have updated that search and searched the Cochrane Central Register of Controlled Trials (The Cochrane Library, 2007 issue 3), MEDLINE (1966 to June Week 3 2007), EMBASE (1988 to 2007 Week 26) for randomized controlled trials or controlled clinical trials relating to the use of rocuronium and succinylcholine. We included foreign language journals and handsearched the references of identified studies for additional citations.

Selection criteria
We included all trials meeting the inclusion criteria (comparison of rocuronium and succinylcholine, main outcomes of intubation conditions).

Data collection and analysis
Two authors (JP, JL or VS) independently extracted data and assessed methodological quality for allocation concealment. We combined the outcomes in RevMan using relative risk (RR) with a random-effects model.
Main results
In our initial systematic review we identified 40 studies and included 26. In this update we identified a further 18 studies and included 11. In total, we identified 58 potential studies; 37 were combined for meta-analysis. Overall, succinylcholine was superior to rocuronium, RR 0.86 (95% confidence interval (95% CI) 0.80 to 0.92) (n = 2690). In the group that used propofol for induction, the intubation conditions were superior with succinylcholine (RR 0.88, 95% CI 0.80 to 0.97) (n = 1183). This is contrary to our previous meta-analysis results where we reported that intubation conditions were superior in the rocuronium group when propofol was used. We found no statistical difference in intubation conditions when succinylcholine was compared to 1.2mg/kg rocuronium; however, succinylcholine was clinically superior as it has a shorter duration of action.

Authors’ conclusions
Succinylcholine created superior intubation conditions to rocuronium when comparing both excellent and clinically acceptable intubating conditions.

PLAIN LANGUAGE SUMMARY
Comparison of two muscle relaxants, rocuronium and succinylcholine, to facilitate rapid sequence induction intubation
In emergency situations some patients need a general anaesthetic with an endotracheal tube (tube to help them breathe). It is important to have fast acting medications to allow physicians to complete this procedure quickly and safely. Currently, the muscle relaxant medication most often used to accomplish this is succinylcholine. Succinylcholine is fast acting and lasts for only a few minutes which is very desirable in this setting. However, some patients cannot use this medication as it can cause serious salt imbalances or reactions, so an equally effective medication without these side effects is desired. This meta-analysis compared one possible alternative, rocuronium, for the quality of intubation conditions (the ease with which physicians can quickly and safely pass the endotracheal tube). In this review, we have combined the results of 37 studies, with a total of 2690 patients, which compared the effects of succinylcholine versus rocuronium on intubation conditions. We have found that rocuronium is less effective than succinylcholine for creating excellent intubation conditions. Rocuronium should therefore only be used as an alternative to succinylcholine when it is known that succinylcholine should not be used.