Effect of dexmedetomidine on endotracheal intubating conditions during endotracheal intubation without neuromuscular blocker following propofol/remifentanil

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INTRODUCTION

Propofol and remifentanil (2–4 µg/kg) are known to be able to induce a condition appropriate for endotracheal intubation without a neuromuscular blocking agent.

Dexmedetomidine as an adjuvant for induction of anesthesia is known to have sedative and airway reflex blunting effects, providing better conditions for awake fiberoptic intubation, awake blind nasotracheal intubation, and laryngeal mask airway placement when used with propofol. Thus, when performing endotracheal intubation without a neuromuscular blocker, dexmedetomidine may provide good intubating conditions without the use of a relatively high dose of remifentanil. In the present study, we investigated the effect of 1 µg/kg dexmedetomidine on the intubating conditions and hemodynamic changes during endotracheal intubation following anesthetic induction performed using propofol 2 mg/kg and remifentanil 1.5 µg/kg without a neuromuscular blocking agent

PATIENTS AND METHODS

We selected 70 adult patients aged 20 to 65 years scheduled to undergo general anesthesia. Induction was performed using 2 mg/kg of propofol and 1.5 µg/kgg of remifentanil. The patients were divided into two groups, a dexmedetomidine group (Group D) and a control group (Group C). Group D received an infusion of dexmedetomidine 1 µg/kg for 10 minutes before induction, and Group C received the same volume of normal saline infused in the same manner. Intubating conditions were evaluated and blood pressure and heart rate were recorded at various time points to assess hemodynamic stability.

Table 1. Assessment of Intubating Conditions (According to Cooper intubating conditions scale)

Score	Laryngoscopy	Condition of vocal cords	Response to intubation
0	Poor (impossible)	Closed	Severe coughing or bucking
1	Minimal (difficult)	Closing	Mild coughing
2	Moderate (fair)	Moving	Slight diaphragmatic movement
3	Good (easy)	Open	None

Table 2. Intubating Conditions Classification (According to Cooper intubating conditions scale)

Points	8–9	6–7	3–5	0–2
Intubating conditions	Excellent	Good	Poor	bad

Table 3. Patients Characteristics

	Group C (n = 35)	Group D (n = 35)
Female/Male	24/11	27/8
Age (yr)	44.7 ± 8.7	39.1 ± 11.7
Weight (kg)	61.9 ± 10.3	59.5 ± 10.8
Height (cm)	159.2 ± 5.5	160.2 ± 11.8

RESULTS

Table 4. Intubating Conditions Classification

	Group C (n = 35)	Group D (n = 35)
Excellent	4	34
Good	20	1
Poor	4	0
Bad	7	0

Values are number of patients. P value is 0.000. Group C: The group which is injected with 0.9% normal saline, Group D: The group which is injected dexmedetomidine 1 µg/kg.

This figure represents the heart rate from starting dexmedetomidine or saline infusion to 5min after intubation.

***: < 0.001, **: < 0.01, *: < 0.05 vs Group C, †††: 0.001, ††: < 0.01, †: < 0.05 vs baseline.

T0 : Baseline, T1 : 10 min after dexmedetomidine infusion, T2 : after Induction T3 : Immediately after intubation, T4 : 3 min after intubation, T5 : 5 min after intubation, Group C: The group which is injected with 0.9% normal saline, Group D: The group which is injected dexmedetomidine 1 µg/kg.

Fig. 2. This figure represents the mean blood pressure from starting dexmedetomidine or saline infusion to 5min after intubation.

***: < 0.001, **: < 0.01, *: < 0.05 vs Group C, †††: 0.001, ††: < 0.01, †: < 0.05 vs baseline.

T0 : Baseline, T1 : 10 min after dexmedetomidine infusion, T2 : after Induction T3 : Immediately after intubation, T4 : 3 min after intubation, T5 : 5 min after intubation, Group C: The group which is injected with 0.9% normal saline, Group D: The group which is injected dexmedetomidine 1 µg/kg.

Conclusions

Dexmedetomidine 1 µg/kg improved the intubating conditions and stabilized hemodynamic changes following anesthetic induction performed using propofol 2 mg/kg and remifentanil 1.5 µg/kg without a neuromuscular blocking agent.