Tracheal intubation without neuromuscular blocking agents

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Anesthesiologists should provide adequate conditions such as unconsciousness, analgesia and muscle relaxation in order to perform direct laryngoscopy and tracheal intubation in a smooth fashion. Usually, a hypnotic agent, an opioid drug, and a neuromuscular blocking agent are given. Over the past few years, tracheal intubation without the use of neuromuscular blocking agents has been attempted and studied. Several factors have led some anesthesiologists to leave the neuromuscular blocking agent out of the drugs for tracheal intubation. Firstly, total intravenous anesthesia has become popular. Propofol has a capability to blunt responses to tracheal stimulation and short acting opioids such as alfentanil and remifentanil are easily available with synergistic effects. Secondly, ambulatory surgeries have been spreaded and the need for a rapid and safe recovery of spontaneous breathing was increased. Thirdly, omitting neuromuscular blocking agents may reduce the potential complications such as residual blockade and the likelihood of awareness during general anesthesia. Lastly, the use of neuromuscular blocking agents is better avoided or contraindicated in some patients with known allergic reactions, myopathies, neuropathies, and so on.

There have been many studies to find the correct choice and dose of hypnotic agents and opioid drugs to make intubating conditions adequate without the use of neuromuscular blocking agents. Two articles in this issue of the Journal deal with this problem.

In one study [1], the goal was to look for the optimal effect-site concentration of remifentanil required for intubation without the use of neuromuscular blocking agents while using propofol as a hypnotic agent. Sixty-four patients were given remifentanil 2, 4, or 6 ng/ml effect site concentrations with propofol 5 μg/ml. Excellent or good intubating conditions were found in 32%, 91% and 95% in patients receiving remifentanil 2, 4, and 6 ng/ml respectively. The use of 6 ng/ml dose was associated with frequent occurrence of hypotension and bradycardia. This study indicates that 4 ng/ml remifentanil with propofol 5 μg/ml might be ideal for intubation without neuromuscular blocking agents. The authors chose 2.5 min following induction for laryngoscopy and intubation. However, in the setting of target-controlled infusion system, it would be better to choose the fixed time after reaching the effect site concentration.

In the other study [2], a closely similar investigation was done in severe burn patients that the endotracheal intubation was expected to be difficult and the use of succinylcholine was contraindicated in. This study was thought to be well-designed in that the bolus of remifentanil was infused over 90 seconds to avoid clinically significant rigidity and tracheal intubation was performed 90 s after the infusion of remifentanil, a time that the effector site concentration was anticipated to be at its peak level. However, the authors were very careful about the dose of remifentanil that clinically acceptable intubating conditions were observed in only 70% of the patients who were administered the maximal dose (2.5 μg/kg) among the studied doses.

A lot of studies, including those in the present issue of the Journal, have revealed the good and the bad of laryngoscopy and intubation without neuromuscular blocking agents. We should also remember that one of the roles of neuromuscular blocking agents is a reduction of main anesthetics. Lack of neuromuscular blocking agents during laryngoscopy and intubation might result in using larger dose of induction agents. It is rational to assume that a larger dose of anesthetics and opioid may be associated with increase in the hemodynamic complications.

To use neuromuscular blocking agents during intubation or...
not is totally up to the associated anesthesiologists according to the various clinical settings.

REFERENCES
