Available online at www.sciencerepository.org

Science Repository

Letter to the Editor

Rapid Sequence Intubation with Remifentanil During COVID-19 Pandemic

Sergio Bevilacqua[1*] and Pierluigi Stefàno[2]

[1]Department of Anesthesia and Intensive Care, Azienda Ospedaliera Universitaria Careggi, Firenze, Italy
[2]Department of Experimental and Clinical Medicine, University of Florence, Italy

ARTICLE INFO

Article history:
Received: 4 January, 2021
Accepted: 19 January, 2021
Published: 29 January, 2021

Dear Editor,

We greatly appreciate the interest that De Melo MS, *et al.* showed on the use of remifentanil in a rapid sequence intubation technique that we recently proposed for patients undergoing surgery during the current SARS-CoV-2 pandemic [1, 2]. The authors also reported the response that Tang and Wang wrote to comment on that paper [3]. Given the interest aroused by our article, we think it would be worth making some clarifications. In brief, in order to limit aerosolization, we proposed to systematically perform rapid induction and intubation in the surgical patient after he had reached a state of deep analgesia with a continuous infusion of high-dose remifentanil (0.2-0.3 μg/kg/min) [2]. Although in the title of the article this method is labeled as a rapid sequence induction, in the text, we explain how this technique, far from being standard rapid sequence intubation, was a rather longer technique in which the patient, although in a state of profound analgesia and sedation induced by remifentanil, breathed spontaneously and at last on command, until hypnosis, and muscle paralysis was rapidly induced with a low dose of propofol (<0.5 mg/kg) or midazolam (0.05-0.1 mg/kg) and a full dose of rocuronium (1 mg/kg) [2].

Therefore, we could define it as a rapid intubation sequence that is performed at the end of a longer procedure aimed at acquiring a state of deep analgesia. Thus, the rapid pharmacological sequence concerns only hypnosis and muscle relaxation. The attainment of the analgesic component of anaesthesia that is also needed for intubation, is instead reached through a longer period of remifentanil infusion in which such infusion has to be tailored on the single patient. This is of crucial importance for what we are dealing with. In fact, as we have shown in the past, the remifentanil dose needed to obtain a target of deep sedation and analgesia is very variable and unpredictable [4]. Tailoring the dosage on the patient means making the technique more effective and safer. It is likely that the adverse hemodynamic effects that have sometimes been attributed to remifentanil infusion and that Tang and Wang mention in their response, are to be considered related not only to remifentanil itself but also to hypnotic drugs used in combination for induction at an excessive relative dose [3].

Thus, it is worth summarizing and highlighting the main advantages that we found performing a rapid sequence induction with remifentanil. At the same time, we intend to respond to the observations made by Tang LY *et al.* and De Melo MS *et al.* regarding the side effects that high dose-remifentanil can potentially produce [1, 3]. During the proposed technique, the anaesthesiologist can maintain verbal contact with the patient up to 30-105 seconds before intubation [5]. In addition, the patient is able to maintain airway control until then. This means that the patient may be asked to deeply breathe pure oxygen up to that point and therefore, it is not needed to actively perform mask ventilation at all [2].

[*]Correspondence to: Sergio Bevilacqua, M.D., Department of Anesthesia and Intensive Care, Azienda Ospedaliera Universitaria Careggi, Viale Morgagni 85, Firenze, 50134, Italy; Tel: +393478301634; Fax: +390554277506; E-mail: sergiobevilacquadr@gmail.com

http://dx.doi.org/10.31487/j.ACR.2021.01.01

Thus, preventing the entry of gases into the stomach makes the possibility of aspiration of gastric material very unlikely.

In addition, the proposed technique was applied to elective or urgent patients who entered the operating room after an adequate period of fasting. For this reason, we think that the doubt raised by Tang and Wang and also reported by De Melo about the potential risk of aspiration of gastric material, is very unlikely and in any case comparable with that of a standard technique of rapid-sequence induction when it is applied to patients with an empty stomach [1, 3]. In fact, in our experience, no patient was subjected to this type of induction in the last year complicated with the aspiration of gastric material. The other distinctive feature of this approach is that when the patient reaches the target of deep sedation and analgesia induced by remifentanil, the dose of hypnotic drug needed to accomplish orotracheal intubation is much lower than usual. This aspect allows the patient to quickly reach an adequate state of anaesthetic depth and, at the same time, it reduces the unfavourable effects that hypnotic drugs at full dose usually have on hemodynamics.

In conclusion, this is the most remarkable detail that emerges from this experience. In our practice, patients reached an adequate anaesthetic depth to perform orotracheal intubation with arterial blood pressure values that were very close to those with which they enter the operating room. At the same time, bradycardia has never been life-threatening. This is all the more surprising as we have experienced this in patients undergoing heart surgery, among whom we often deal with patients prone to hypotension at the induction of anaesthesia such as those affected by critical aortic stenosis or low ejection fraction and patients who poorly tolerate bradycardia such as those with severe aortic valve regurgitation. Thus, future studies will be necessary to understand, beyond the pandemic emergency and regardless of the rapidity of execution, what would be the role of a type of induction that involves high dose-remifentanil combined with a lower dose of hypnotic drugs in patients with compromised hemodynamics.

Author Contributions

Sergio Bevilacqua developed the original technique and contributed to adapt it to the current scenario. He also wrote the manuscript. Pierluigi Stefàno as a heart surgeon, validated the impact of the technique on cardiac surgery patients. He also revised the manuscript.

Funding

None.

Conflicts of Interest

None.

REFERENCES

1. De Melo MS, Nogueira JF, Dos Santos LVA, de Sousa LCB, Santana RN et al. (2020) Review of Anaesthesia and Analgesia in Patients with COVID-19 in Brazil. *Anesth Clin Res*.
2. Bevilacqua S, Bottari V, Galeotti I (2020) Systematic Application of Rapid Sequence Intubation With Remifentanil During COVID-19 Pandemic. *Semin Cardiothorac Vasc Anesth*. [Crossref]
3. Tang LY, Wang J (2020) Response to "Systematic Application of Rapid Sequence Intubation With Remifentanil During COVID-19 Pandemic". *Semin Cardiothorac Vasc Anesth*. [Crossref]
4. Bevilacqua S, Romagnoli S, Ciappi F, Lazzeri C, Gelsomino S et al. (2009) Anesthesia for carotid endarterectomy: the third option. Patient cooperation during general anesthesia. *Anesth Analg* 108: 1929-1936. [Crossref]
5. Han TH, Martyn JA (2009) Onset and effectiveness of rocuronium for rapid onset of paralysis in patients with major burns: priming or large bolus. *Br J Anaesth* 102: 55-60. [Crossref]