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Letter to Editor

Non invasive ventilation to prevent reintubation. Key methodological concerns in cardiothoracic unit

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The study of Sağıroğlu et al. is an important and valuable research on the prevention of postoperative respiratory complications [1]. Prophylactic noninvasive ventilation (NIV) in order to prevent postoperative respiratory failure should be further investigated and developed. We want to congratulate authors for this study, however, we believe that some points need further explanation, and the response of the authors will increase the value of the article.

First of all, there are some methodologic aspects regarding defintions that could be evaluate such as a) definitions of bi-level positive airway pressure (BIPAP) should be extended, b) interfaces used for application of NIV should be described, because comfortable interfaces directly affect the success of NIV. Supplementation of some literary definition would be favorable. At the end of page 3439 in the last line, two components of NIV complications are described with a reference to a study of Jaber et al. The described "so called" complications are actually the benefits of NIV [2]. Moreover NIV does not cause hypotension in patients with normal hemodynamic state. The referenced study does not support the statement of the authors [2].

Secondly, the process and randomization timing are not described in the "material and method" section. In addition, Consort flow diagram (Figure 1) is inconsistent with the study description and allocation written on the text. It is unclear whether 261 or 254 patients were randomized. Fifth inclusion criterion (Partial arterial oxygen pressure (PaO_2) > 60 mmHg with inspired oxygen fraction (FiO_2) ≤ 0.4), and 7th inclusion criterion (PaO_2/FiO_2 ratio > 200) described in the first and fourth lines of page 3443 are not consistent with each other. These criteria should be referenced. In Group 1, 126 patients suffered from acute respiratory failure within the first 48 hours. This needs further explanation. The data given in Table 2 does not suggest the existence of acute respiratory failure in any of the two groups. What is the comment of the authors on the reason high number of the respiratory failures observed? The parameters applied for BIPAP settings and mean time of BIPAP initiation should also have been reported.

Thirdly, the authors suggested in discussion that significant increase of PaO_2 at first and forth hour after BIPAP in patients with acute respiratory failure was due to hypoxia prior to BIPAP treatment. Conversely, there are no hypoxic PaO_2 levels (PaO_2 < 60 mmHg) on the data given at Table 2. Arterial blood gas values before the BIPAP treatment in Group 1 should be registered to clarify the statement. Furthermore, the referenced study does not support this statement [3].

Fourthly, the effects of thoracic and cardiac surgeries on hemodynamic and respiratory function differ. Therefore evaluating these surgery types together may impair the standardization. Results could be more vigorous if cardiac and

thoracic surgeries were evaluated separately. There is no information on the anesthetic techniques used and patient position. As stated by the authors in discussion, pain is a very important risk factor for postoperative respiratory failure. There is no information on postoperative pain treatment protocol, pain score targets and whether or not these targets were achieved. Ineffective pain treatment can cause serious respiratory problems.

Another issue needs further explanation. Although, Table 3 shows no difference in the risk factors for mortality and morbidity between both groups, re-intubated patients are higher in Group I compared to Group 2. In addition, intensive care unit (ICU) and hospital stay are shorter in Group 1. How do the authors explain this result? The other risk factors that can cause a difference also may be overlooked. For example the atelectasis, which can occur up to 50% in cardiopulmonary bypass and thoracic surgeries, is not shown in the risk factor table [4]

Finally, in acute respiratory failure and unsuccessful NIV applications, one of the first and important symptoms is tachycardia as a result of hypoxia and hypercapnia. However in this study bradycardia is described as one of the respiratory failure criteria. It is essentially a sign of end stage of respiratory failure. This situation may delay diagnosis and this delay might have an effect on the re-intubation rates, hospital and ICU stay durations and mortality.

Disclosure of conflict of interest

None.

Abbreviations

BIPAP, bi-level positive airway pressure; ICU, intensive care unit; NIV, non invasive ventilation.

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