Reviewer’s report

Title: The Effect of Sedation and/or Analgesia as Rescue Treatment during Noninvasive Positive Pressure Ventilation in the Patients with Interface Intolerance after Extubation

Version: 0 Date: 15 Feb 2017

Reviewer: Jacek Nasiłowski

Reviewer's report:

The study "The Effect of Sedation and/or Analgesia as Rescue Treatment during Noninvasive Positive Pressure Ventilation in the Patients with Interface Intolerance after Extubation" touches on an interesting topic about the role of sedation in the treatment with non-invasive ventilation. The major finding of the study of Yue-Nan Ni et al. is that sedation and/or analgesia should be used in patients who require NIPPV after extubation and do not tolerate the interface, because it reduces the risk of re-intubation and death, and shortens the stay in ICU.

However, the retrospective, observational methodology of the research limits the strength of the results and the conclusions must be withdrawn with caution. The important methodological drawbacks have to be fixed before potential publication. More details concerning methods of treatment of the cohort are needed to improve the drawing of conclusions.

The points of criticism are as follows:

1. In Abstract:
   a. the most important results (mortality, need for intubation) should be incorporated into the text, giving only an adjusted odd ratio is not enough.
   b. Statement "some time during NIPPV" must be defined and added to results
2. In Methods:

a. The study design was retrospective, so authors could not say the study was conducted from December 2014 to August 2016, as patients hospitalized between December 2014 to August 2016 were included.

b. If I understand correctly: the authors were searching in medical records of the eligible subject. It must be clearly stated.

c. The indications to start NIPPV after extubation that were followed must be given. Authors mention that ABG prior to NIPPV was performed but there is no such data in the results section.

d. Interface intolerance is a very broad spectrum of problems: claustrophobia, inability to match an interface, high leakage, etc. Sometimes ineffectiveness of NIV itself may be addressed as mask intolerance. The authors should define what medical staff understood by the statement in the records: "interface intolerance".

e. The statement that ABG was recorded at the start and after 4 h of NIPPV suggests that there was a common protocol of treatment in all ICUs taking part in the study. Could they give more details about this protocol?

f. The criteria of failure of NIPPV and the need for intubation should be detailed.

g. What were the rules of administration of sedoanalgesia? Was it only in the discretion of the physician?

h. The kind of used interfaces must be detailed. Facial mask - does it mean an interface covering mouth, nose and eyes, e.g. Performax or total face mask?

3. In the results section:

a. 309 patients required NIPPV after extubation and only 80 were recorded as not tolerated an interface. Half of them had sedoanalgesia. But sedation is not only indicated in the mask intolerance, but also in asynchrony and agitation caused by other issues than an interface. It would be useful if the authors gave information about administration of sedoanalgesia in the group not recorded as mask intolerance.

b. The dosage and duration of administration of the drugs must be incorporated in the text or a table.
c. The time between extubation and starting NIPPV can be of importance and should be given.

d. The length of treatment with NIPPV until intubation or recovery should be given.

e. The results of ABG half an hour after initiation of NIPPV shows no acidosis nor relevant hypercapnia and put in doubt the further use of NIPPV. ABG results just before starting NIPPV must be given.

f. Are the authors sure that NIPPV was efficient while the pressure support was quite low: 8-9 cmH2O? Maybe the failure of NIPPV was due to low pressures not the asynchrony and "mask intolerance" caused by a lack of sedation?

g. Table 4 is quite striking. It shows that patients with pneumonia and hypoxaemic respiratory failure had a higher risk of NIPPV failure, than patients with COPD and hypercapnia. This finding is rather obvious. NIPPV is mainly dedicated to ventilatory respiratory failure, while hypoxemic respiratory failure should be treated with NIPPV with caution and intubation should be undertaken as soon as there is no sign of improvement. This topic and the results in Table 4 have to be discussed by the authors.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

No

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review
Quality of written English

Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

Declaration of competing interests

Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal