Reviewer's report

Title: Prospective Investigation of Patient-Controlled Intravenous Analgesia with Hydromorphone or Sufentanil: Impact on Mood, Opioid Adverse Effects, and Recovery

Version: 0 Date: 09 Dec 2017

Reviewer: Byung-Gun Lim

Reviewer's report:

This is a novel RCT (randomized controlled trial) to investigate the analgesic efficacy, side effects, mood impact, and recovery of patient-controlled intravenous analgesia (PCIA) with hydromorphone or sufentanil in a multimodal perioperative analgesia regimen in patients undergoing radical surgery for colorectal cancer.

Here are some major and many minor points which should be modified or clarified to improve the quality of the paper. Please, read carefully the following concerns and issues and revise them.

Abstract:

1. Several abbreviated terms are recommended to be modified or unified as follows: patient-controlled intravenous analgesia (PCIA) -> intravenous patient-controlled analgesia (IV-PCA), PCA -> patient-controlled analgesia (PCA).

2. What is D/D ratio? Please, describe the full term.

3. "the hospital stay post-surgery" -> "the hospital stay after surgery"

4. English editing is needed to clarify the meaning of some sentences.

Background:

1. Page 4, lines 76-77: Reference 2 is not relevant to this sentence because the reference was performed in the induction period and its focus was not postoperative pain. Thus, it should be replaced with a more proper reference.
2. Page 4, line 84: Provide a reference which is relevant to this sentence.

3. Page 4, line 90: after the procedure[5]. -> after the procedure [5].

4. Page 4, line 90-92: Provide the references which is relevant to the sentence ("only a few studies have been conducted, ~").

5. Page 4, line 92: patient-controlled intravenous analgesia -> intravenous patient-controlled analgesia (IV-PCA)

6. Page 5, line 100: Reference 7 is about use of intrathecal hydromorphone. Please, replace it with one of intravenous hydromorphone.

7. Page 5, line 106: PCIA -> IV-PCA (It should be identically modified in the whole remaining part of the paper.)

8. Describe the hypothesis of the study in the end of the background.

Materials and Methods:

1. In general, English editing including grammar or spacing is needed.

2. Page 6, line 122: What does "abnormal operation or anesthesia" mean?

3. Page 6, line 126: What does "15d" or "24h" mean?

4. Page 6, lines 131-133: The sentence should be modified.

5. Page 7, lines 142-146: Please, simply present the scoring method or criteria of Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS).

6. Page 9, line 196: What is PCA D/D ratio?
7. Page 11, line 234: Does "ANOVA" mean "one-way" or "two-way"? Also, "ANOVA" should be edited with "analysis of variance (ANOVA)". Describe it exactly.

8. Page 11, line 235: What is "LSD"?

9. Describe the infusion device and method of propofol.

10. The authors did not use a neuromuscular monitoring during surgery. How (and what) do you use a reversal agent for neuromuscular blockade? Please, describe it.

11. Describe the information of the PCA device.

12. The study has too many outcomes and so it is very distracting. Simply summarize the primary and secondary endpoints.

Results:

1. In general, English editing including grammar, spacing or reconstruction of some sentences is needed.

2. Page 12, line 261 and Fig.4: What is PCA D/D ratio? Explain it.

3. Table 6: Unlike the values of the title, "Postop.24h" and "Postop.48h" were falsely described in the table. Correct it.

4. Table 7: Group H (n=37) -> Group H (n=35)

5. Table 9: The sample size in each group was omitted.

6. Table 10: The format of the table should be edited.

7. The results section is very distracting and difficult to understand. Reorganize the results with the order of the primary and secondary endpoints.
Discussion:

1. This section is too long at present. Please, reorganize the contents with the order of the primary and secondary endpoints.

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

Yes

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

Yes

**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:

Not suitable for publication unless extensively edited
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