Reviewer's report

Title: Comparison of the effect of different infusion rates of sufentanil on surgical stress index during cranial pinning in children under general anaesthesia: a randomized controlled study

Version: 0 Date: 14 Sep 2017

Reviewer: Emmett Whitaker

Reviewer's report:

This is an interesting and well-designed study that investigated a potential methodology for the monitoring of surgical stress under different doses of sufentanil. Especially given concerns re: the effects of anesthesia and/or surgery on neurocognitive development, this is an important manuscript.

Revisions are required, but most of them are due to grammatical and style concerns.

ABSTRACT:

Background: Suggest revision of first sentence. "Surgical stress index (SSI) is a known monitor of intraoperative nociception"

- Third sentence, suggestion for revision: "We investigated the effect of different infusion rates of sufentanil on SSI during pinning in children under general anesthesia"

Methods:

- The mcg/kg/hour did not come through as a proper symbol.

- Suggestion for revision: "Forty-nine children(2-12 years of age) were enrolled for neurosurgery with pinning."

BACKGROUND

- Lines 10-11: Suggest revision to: "Therefore, maintenance of the balance between nociception and antinociception is important during anesthesia"
- Line 16: Suggest revision to: "However, the reliability of these responses is variable due to potential confounders"

- Lines 21-22: Should all of these be capitalized? Example: Analgesia Nociception Index? Some are capitalized and some are not. Please double check

- Line 46: suggest revision to "and the infusion rate is typically adjusted according to blood pressure…"

- Line 47: suggest revision to: "However, BP and HR may not be valid because…”

Final line in background: revise as was suggested for abstract.

METHODS

- Page 4, line 28: revise to "An equal number of patients…”

- Page 4, line 32: The authors state that each patient was "adequately hydrated". What does this mean? It needs to be explained to ensure that readers understand what was done to ensure euvolemia

- Page 5, line 43: revise to "Anesthesia was induced with atropine (0.02 mg*kg-1, 0.5 mg maximal dose) and sodium thiopental…”

- Please explain why atropine was given and how it was ensured that this did not confound results.

- Why were investigators not blinded to the infusion rate? Was this considered?

- The investigators state that pinning was performed "at least one hour following the start of sufentanil administration". Were there patients that received sufentanil for significantly longer than one hour? This should be stated.

- How was sevoflurane vs. desflurane selected? How many patients received des vs. sevo? Can the authors know for sure that this was not a confounder?


- Page 6, line 5: Suggest revise to: "The differences in the primary and secondary outcomes between the groups were evaluated using ANOVA for repeated measures."
RESULTS

- The authors state that there are "no differences among the three groups" in terms of demographic characteristics, but no statistical testing was performed. I don't think you can say there were no differences if you don't run statistics.

DISCUSSION

Page 8, line 5: I would replace "painful" with "stimulating…as the authors state earlier in the manuscript, there is a difference between nociception and pain

Page 8, line 19: same comment as above

Page 8, line 32: "…for nociception response during anesthesia and hypothesized." I think there is something missing from the end of this sentence.

Page 8, line 34: suggest revision to: "However, we found no differences in SSI values despite differing infusion rates of sufentanil in contrast to the previous study."

Page 8, line 43: suggest revision to: "Therefore, SSI measurements and traditional clinical findings exhibited quite disparate results." The study is not designed to measure outcomes.

Page 8, line 52: suggest revision to: "The BP changes seen in this study may explain the lack of differences seen in SSI."

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.

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 am able to assess the statistics

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Needs some language corrections before being published

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