Reviewer’s report

Title: Pre-operative Biomarkers and Imaging Tests as Predictors of Post-operative Delirium in Non-cardiac Surgical Patients: A Systematic Review

Version: 0 Date: 04 Nov 2018

Reviewer: Jakub Kazmierski

Reviewer's report:

Reviewer's suggestions on the article:

"Pre-operative Biomarkers and Imaging Tests as Predictors of Post-operative Delirium in Non-cardiac Surgical Patients: A Systematic Review."

1. The authors discuss pre-operative markers of delirium. However, these markers were not assessed post surgery. Therefore, we do not know if pre-operative or maybe post-operative concentration of markers is associated with delirium occurrence and severity. This issue should be discussed.

2. There are many confounders in studies which analyse predictors of POD. For instance, infections, systemic diseases, depression, dementia may underlay the effect of biomarkers on the risk of delirium development. The variables investigated in the studies should be controlled for potential confounders in multivariate analysis. Thus, according to me, the authors of the present manuscript should only include studies in which multivariate logistic regression analysis was used.

3. Some substances may be markers of delirium only in specific populations. For instance anticholinergic activity may be a predictor of delirium, however, only in subjects with cognitive impairment.

4. The authors should also describe if any of the marker was evaluated with regard to the cut-off points in delirium diagnosing. In such case, specificity and sensitivity of such measures should be reported.

5. The discussion should be deepen with regard to other biomarkers and potential mechanisms leading to delirium development.
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**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.

Unable to assess

**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.

Not relevant to this manuscript

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable
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