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OPEN PEER REVIEW

Effect of Propofol and Isoflurane on Postoperative Cognitive Dysfunction Following Elective Laminectomy Surgery in Adult Elderly Patients: A Randomized Controlled Trial Study

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About this report

This open peer review (OPR) report shows the public comments made on this article during peer review, by the reviewers, the associate editor and the editor-in-chief, for every revision round, together with the authors' replies. Comments appear only with the consent of the people who wrote them. Reviewers who chose to sign their report are named; the others are shown as "Referee". Comments are edited for language only, and confidential remarks to the editors are not included.

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1 Original submission

3 comments · 8 Nov 2023 – 8 Nov 2023

Referee 1 Reviewer

MINOR REVISION 8 Nov 2023

While the research article is generally well-structured and informative, there are some flaws and areas for improvement:
-Lack of Detailed Randomization and Blinding Information: The materials and methods section briefly mentions randomization and blinding, but it lacks specific details about how these processes were conducted. Readers should have a clear understanding of how patients were assigned to their respective groups and how blinding was maintained to minimize bias.

-Statistical Significance vs. Clinical Significance: While the study reports statistical significance (p-values) in the results section, it doesn't discuss the clinical significance of the findings. It's essential to interpret the practical implications of the observed differences in MMSE scores between the two groups. Are the differences clinically meaningful or only statistically significant?

-In-Depth Mechanistic Discussion: The discussion touches upon the choice of anesthesia agents and their potential impact on POCD, but it lacks a deep exploration of the underlying mechanisms. For instance, how do Propofol and Isoflurane specifically affect cognitive function at a neurobiological level? A more detailed mechanistic discussion could enhance the paper's scientific value.
-Long-Term Follow-Up: The study acknowledges the need for long-term outcome monitoring but does not provide a plan for addressing this limitation. Mentioning a potential follow-up study or providing recommendations for future research on the long-term effects of anesthesia agents on cognitive function would be valuable.

Associate Editor

MINOR REVISION 8 Nov 2023

Dear EIC,
I thank the authors and express my appreciation to the researchers. The manuscript is a valuable piece of research. But some revisions are needed. The authors should revise it based on the comments.

Editor-in-Chief

MINOR REVISION 8 Nov 2023

Dear Author,
Thank you for submitting the article. It needs some revision. Please revise it based on the reviewers' and AE's comments.

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Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Dear Associate Editor,

Thank you so much for sending the prestigious comments of peer reviewers about our submitted study. Four different parts needed to be explained and corrected according to these comments and here I send our explanations. Please do not hesitate if you need any further information and correction.

Kindest Regards,

Arash Heroabadi

1-Randomization and Blinding*:*

Patients were randomized using 4-block methods. Patients monitoring in charge, data collectors, and statistical analysis were blind to the aims of this study

2- It should be mentioned that although there has been a significant difference in MMSE between Propofol and Isoflurane group in the 6^{th} and 24^{th} hour after awakening from anesthesia but the clinical difference may not be meaningful as in both groups the average of MMSE score is more than 21/30 which represents normal or mild cognitive impairment.

3- POCD is frequently a subtle change, but may leave patients less able to live independently at their expected quality of life. Current understanding of the pathophysiology of POCD is thought to be cholinergic dysfunction in response to neuroinflammation and synaptic impairment. It may be caused by the body's inflammatory response to surgery, stress hormone release during surgery, ischemia, or hypoxaemia.

4- Due to limitations for long-term post surgical follow up the research team could collect data from patients during hospital admission. As many patients are referred to this center from different parts of Iran, it is not easy to conduct a regular follow up as many of them never come back again to this center otherwise there is a complication from the surgery. On the other hand, checking mental and cognitive state cannot be made by phone calls or available remote methods.

2 Revision 1

3 comments · 13 Nov 2023 – 13 Nov 2023

Referee 1 Reviewer

ACCEPT 13 Nov 2023

Dear AE,
Previous errors have been corrected, and there are no further recommendations.

Associate Editor

ACCEPT 13 Nov 2023

Dear EIC,
I reviewed the manuscript again. The great effort in improving the manuscript is highly appreciated.
The authors have addressed all comments.
Thank you

Editor-in-Chief

ACCEPT 13 Nov 2023

Dear AUTHOR,
Thank you for paying attention and responding to the reviewer's comments.