Reviewer’s report

Title: Anaesthesiology and Cognitive Impairment: A Narrative Review of Current Clinical Literature

Version: 0 Date: 26 Aug 2019

Reviewer: Cyrus Mintz

Reviewer's report:

The authors have provided an up-to-date, salient, and authoritative review of peri-operative cognitive dysfunction with a special focus on putative anesthetic considerations. Overall I found this review to be very readable and informative, and I do not have major changes to propose. However, I have a number of suggestions for improvement:

1) The first three paragraphs of the section on Post-Operative cognitive dysfunction seem to belong in the introduction, as they do not deal directly with a discussion of anesthetic effects. Alternately the section on "Perioperative Cognitive Dysfunction" should be split into two distinct headings, one focused on simply describing the phenomenon of POCD and a separate section describing what is known and not known about the effects of anesthetics in the population of patients who do not have diagnosed cognitive impairment.

2) It should be made clear whether the authors were part of the fifth international perioperative neurotoxicity working group, and also it would be instructive for the authors to comment on the recommendations rather than simply relaying them.

3) In the section on molecular mechanisms, it is a little unclear whether it is the intent of the authors only to discuss Alzheimer's related effects of anesthetics or whether other mechanisms have been revealed as well (the inflammation section at the end suggests mechanisms that would function in any context). It would be helpful if the authors wrote a short paragraph to start this section that served to introduce the topic and to delineate what is discussed here.

4) I think it is difficult to include a section on molecular mechanisms without any reference whatsoever to the animal data, of which there is a fair amount. I suggest that the authors reference the relevant animal literature that either supports or does not support their findings. It would be very useful in interpreting the data and should not take up that much more space.

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