Reviewer’s report

Title: Exogenous hydrogen sulfide alleviates surgery-induced neuroinflammatory cognitive impairment in adult mice by inhibiting NO signaling

Version: 0 Date: 13 Oct 2019

Reviewer: Jonathan Ball

Reviewer's report:

Thank you for the invitation to review this manuscript.

The authors describe a well designed series of experiments to investigate the mechanism of, and possible therapies for, POCD. Using an established mouse model of extracranial surgery they produced a predictable neuroinflammatory insult with reliable effects on memory and cognitive function assessed using established techniques. Using appropriate controls they investigated the effects of an established slow H2S donor and an NO synthase inhibitor. They found that both of these drugs equally reduced the surgically induced neuroinflammatory insult but found no increased efficacy by co-administration. They conclude that POCD / surgery induced neuroinflammation is partially mediated by increased levels of endogenous NO and / or reduced levels of endogenous H2S. Furthermore, they propose that the drugs used might offer prophylactic protection against POCD.

I have no suggestions for the authors regarding improvements to their manuscript.

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 am able to assess the statistics

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

Acceptable

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