Reviewer’s report

Title: Neuroprotective effects of hyperbaric oxygen (HBO) therapy on neuronal death induced by sciatic nerve transection in rat

Version: 1 Date: 16 Nov 2017

Reviewer: Wania Partata

Reviewer's report:

The study described in the manuscript shows the neuroprotective effects of hyperbaric oxygen (HBO) therapy on neuronal death induced by sciatic nerve transection in rat. The research topic appears to be within the sphere of interest of the Journal. Institutional approval appears to have been given for animal work.

The study appears well executed, but the manuscript needs revision. The authors need to answer the questions below.

ABSTRACT

- The methods should be better explained in the Abstract. The biochemical parameters were assessed only in spinal cord, but the abstract suggests that biochemical and immunohistochemical parameters were assessed in DRG and spinal cord. The MDA results are not consistent with what is described in the results of the manuscript.

- When did HBO therapy start after surgery?

- There is a disagreement between the conclusion of the abstract and the conclusion of the manuscript. Please, consider showing a similar conclusion.

MATERIAL AND METHODS

- On Page 6, line 21, the authors informed that HBO therapy began immediately after nerve transection. Was there no anesthesia recovery period before beginning the treatment?

- In the manuscript there is information that "The pressure was gradually raised to and maintained at 2.0 atmosphere absolute". What was the increase rate of the pressure in the chamber? What was the rate of decompression?

- Was the same time point used to deliver HBO therapy? Was the rat adapted to the HBO chamber before beginning the treatment?
- Optical densitometry should be clearer. Were the measurements obtained in the ipsilateral or contralateral side to injury?

- How was the protein assessed?

RESULTS

- I think that more information about histological results should be provided in the Results. What was the diameter of the positive cells in DRG? In what cell type was the change located? Where were the changes located in spinal cord? What was the diameter of the positive cells in spinal cord? Information should be provided for all histological techniques.

DISCUSSION

- The discussion about oxidative parameters indicated that HBO treatment decreased MDA levels and increased catalase and superoxide dismutase activities in spinal cord after sciatic nerve transection. However, there is difference in MDA levels in SNT + Pre and SNT + Post-HBO groups. Why has this occurred? I personally think that the authors should show a brief discussion clarifying these differences. It is also important for the authors to briefly discuss the differences between SNT group and SNT + Pre and SNT + Post-HBO groups.

- While there was difference in MDA levels in SNT + Pre and SNT + Post-HBO groups, the results were similar in immunoreaction in these groups. Why has this occurred? I think it would be interesting if the authors showed a relationship between immunohistochemical and biochemical results.

- The conclusion should give more prominence to the results of the study.

FIGURE LEGENDS

- I personally think that the word "staining" is more appropriate than "expression" for reporting immunohistochemical results.

- The figure legends lack essential information for the reader. They should be expanded to include the description of the HBO group that is seen in each figure. In addition, it should include the description of the spinal cord region that is seen in each figure.

Overall the work addresses an important topic, and is generally well executed, but needs revision.
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

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