

Author's response to reviews

Title: Hyperbaric oxygen treatment of spinal cord injury in rat model

Authors:

Yongming Sun (xieydoctor@163.com)

Dong Liu (wxcxp@aliyun.com)

Qingpeng Wang (sztqf20000@163.com)

Peng Su (anjaneth@qq.com)

Qifeng Tang (sztqf2000@aliyun.com)

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Hyperbaric oxygen treatment of spinal cord injury in rat model
Yongming Sun; Dong Liu; Qingpeng Wang; Peng Su; Qifeng Tang
BMC Neurology

Dear editor in chief:

Many thanks for giving us an opportunity again to resubmit our manuscript for possible publication!

Many thanks for providing us suggestive comments!

Now, we revise our manuscript according to your suggestive comments, make point-by-point responses and detail the changes.

Thank you very much!

Best regards,

Qi-feng Tang, MD.

Reviewer reports:

Siew-Na Lim, M.D., Ph.D (Reviewer 2): 1. The authors still did not answer how the treatment window and duration of HBO were chosen.

In the Method section, they mentioned that "HBO treatment began at two hours after SCI.....The HBO therapy was carried out once a day, for five days". And now they responded that "HBO treatment was employed for 5 days including the next day after SCI, and inflammation response began within 24 hours after SCI and keep rising subsequently". It is confusing whether the HBO treatment started at the second hour or the second day after SCI? and how was this related to inflammation response? There was no any inflammation results or statement in the manuscript, which I think the authors should add it if this is the rationale for their time window and duration. In addition, in the last "response to reviewers", they stated that "In some of our pre-trials, we found that HBO treatment at the earliest possible time (within 24 hours) resulted in a better therapeutic effect". Which time point have the better best therapeutic effect? The authors should specify why they did not use this time point for the subsequent study. At least a sentence or two to discuss this time window trial is necessary. And why HBO was applied for 5 days, not 3 days, 7 days or other duration? Please add the rationale in the manuscript.

Response: A very suggestive comment!

We performed the HBO treatment at 2 hours after SCI. "Next day", which I stated, means 24 hours after SCI, and the accurate statement should be "we performed HBO treatment 5 times, the first one occurred 2 hours after SCI and in the next four days, the treatment was employed once a day". According previous study, the inflammation response began within 24 hours after SCI and keep rising subsequently until almost 7 days and during this period, the secondary cell death is the most significant after SCI.

According to our clinical experience, acute SCI patients usually need at least 7 days for HBO treatment. For rats recover more quickly than men, the time should be shortened. Furthermore, HBO application of 5 days is similar to the clinical therapy.

All the details above have been added in the discussion part.

2. For paper published in other languages including Chinese, there is citation guideline available. Therefore, I don't not agree with the authors that adding the reference is not recommended. Instead, I think the authors should add the reference of their previous cystic degeneration results, and discuss the current results in relation to previous literatures.

Response: A very suggestive comment!

The Chinese reference has been added and the part of discussion has been re-written.

Steven J. West (Reviewer 3): This manuscript explores the potential treatment of spinal cord injury with Hyperbaric oxygen. The main findings are:

- Administration of hyperbaric oxygen 2 hours post spinal cord injury resulted in an enhanced recovery in a number of behavioural assessments.
- Serum SOD showed a significant reduction post SCI, but following hyperbaric oxygen treatment SOD serum levels remained close to control levels.
- Serum MDA was increased after SCI, but treatment with hyperbaric oxygen significantly reduced serum MDA levels.
- Furthermore, hyperbaric oxygen treatment resulted in reduced cystic degeneration of the spinal cord after injury.

Following the second revision, the MS reads nicely, and I see no further issues with the MS. I therefore have no further comments or revisions to suggest.

Response: A very accurate comment! Thank you!

Thank you very much again for your suggestive comments and hard work!