

OPEN PEER REVIEW REPORT 1

Name of journal: Neural Regeneration Research

Manuscript NO: NRR-D-19-00549

Title: Phase I study of collagen scaffold combined with human umbilical mesenchymal stem cells transplantation for acute complete spinal cord injury

Reviewer's Name: L Bauchet

Reviewer's country: France

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COMMENTS TO AUTHORS

The authors implanted collagen scaffold (CS) adsorbed with human umbilical mesenchymal stem cells (hUC-MSCs) in SCI models of rats and canines, then in human with SCI.

This paper is very difficult to review. Because, it is a huge work that includes pre-clinical studies and one clinical trial. It is an editorial decision to decide, if this submission has to be for one, two, or three papers.

Whatever, the performed work is huge, and the presented results are very impressive.

My comments are listed below:

- In M&M, it is mentioned that this clinical trial was registered at ClinicalTrials.gov as NCT 02510365. In this main registration statement, human umbilical mesenchymal stem cells transplantation was not mentioned.

- Is this paper the official result of the 02510365 clinical trial? If yes, why do the authors describe the pre-clinical works? It could be better to develop the clinical part only.

- The title mentioned "phase I study of collagen scaffold combined with human umbilical mesenchymal stem cells transplantation for acute complete spinal cord injury", and the introduction specified "phase I-II clinical trial". Please, use the same terms.

- For all procedures, please mention the lengths and diameters of the used scaffolds.

- The figures are not introduced in the good order. Please, modify.

- In the clinical part, please, can you give more details? When was performed the ASIA score? Day of the lesion? Day three? Day before surgery? Please specify for all patients.

- Please, can you detailed the surgical procedure? In many cases of ASIA A, the injured spinal cord does not lost its continuity totally. Can you detailed this point? It is specify that surgery was performed "under monitoring of neuroelectrophysiology", what were the procedures? Even if you specified the reference "Xiao et al 2016", you have to mention that you used direct electrical stimulation on the spinal cord. All the surgical procedure is a major point to describe. The anesthetic procedures must also be accurately described.

It is specified that "Metal materials were used to stabilize the spine". Metal materials may interfere with MRI. Which materials were used? Did some patients need to have a secondary anterior surgery?

- In Table 1, "duration of SCI" was about 13 days in both groups. Were some patients operated or not before the enrolment?

- It could be interesting to perform a table that describes the mechanisms of the injury and the initial MRI characteristics of all the patients.

- Can you give more details about the control group? Did all the patients have posterior surgery also? (Of course, without transplantation). Or some patients were treated without decompressive surgery. How was the rehabilitation program? Blind? Or not? Please, specify.

- In Figures 8 B4 and B5, The reviewer can not see that a laminectomy was performed. Please, explain and choose another picture.

- Table 4 shows the adverse effects. Globally, they seem very limited for tetraplegic patients. Are you sure that all of them were collected?