Reviewer’s report

Title: Homing and reparative effect of intra-articular injection of autologus mesenchymal stem cells in arthritic animal model

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Reviewer: Farida Djouad

Reviewer’s report:

Comments to the Authors

The article by Abir Mokbel et al. aimed to evaluate the homing and the reparative effect of mesenchymal stem cells (MSC) in the healing process of experimentally-induced animal model of osteoarthritis (OA). The induction of OA was performed by intra-articular injection of amphotericin-B in the carpal joints of donkeys and treatment approaches consisted in injection of hyaluronic acid (HA) based polymers alone or in combination with MSCs in the carpal joints. The authors showed the presence of the injected MSC within the repaired cartilage and a regression of the clinical and radiological symptoms of the diseases.

Major compulsory revisions

1/ The results provided by the authors regarding the MSC identification and characterization is not convincing. First, the authors should add a phenotypic analysis of the MSC used in the study. Second, the staining on which relies the assessment of the differentiation potential of the MSC is not convincing since the controls are missing (staining of undifferentiated cells).

2/ In the figure 7, authors should add standard deviation and statistical analysis. Moreover, the abbreviations such as ALK, AST, ALT, TP… used in figure 7 should be defined.

3/ In figures 10, 11, 12, 13, 14, 15 and 16 the authors should present the same histological staining for sections corresponding to the control group and the MSC treated group.

Minor essential revisions

1/ In the title, “arthritic” should be replaced by “osteoarthritic”.

2/ In the abstract section:
   - Line 5 the authors should specify osteoarthritis after “the induction…”
   - Line 9 “utilizing” should be replaced by using

3/ In the background section:
   - The aim of the study is not enough detailed in the last paragraph. The authors should precise the animal model they are using (i.e. donkey), describe in detail
the different groups they have chosen for the study and be more specific regarding the different time points studied.

- The references are not updated.

4/ In the results section:

Globally, this section is not properly written and comments associated with the results obtained are not accurate. The authors should rewrite this section being more specific.

- First line in results section, the authors should rewrite the sentence “…3-weeks post-injection of arthritis…” I guess that the authors wanted to say post-induction of OA.

- In the clinical lameness and swelling section the sentence “Lameness in group-I was estimated as (score 2) whereas in group-II and 3….” is not clear.

- In the microscopic histopathology section, the sentence “Histologic assessment of the articular surface of the radio-carpal joint from all animals was determined if there were differences between the MSCs-treated and untreated groups” is not clear. The authors should rewrite this sentence.

- In figures 10, 11, 12, 13, 14, 15, 16 and 17 letters a and b are missing.

- The number of figures should be reduced and for example the authors could make just one figure with several panels with the proposed figures 10, 11, 12, 13, 14, 15, 16 and 17.

5/ The discussion can be shorten that will avoid the numerous redundancies.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests