Reviewer's report

Title: Stem cell therapy for the treatment of early stage avascular necrosis of the femoral head: a systematic review

Version: 2  Date: 16 February 2014

Reviewer: Philippe PhD ROSSET

Reviewer's report:

Minor essential revisions.

In material and methods
The authors may have call to mind the fact that mesenchymal stem cell are included in the bone marrow mononuclear cells but can be identified only after culture by CFU-F. They explained partially this in line 232-233.

For the preclinical studies, the authors may better classified and named the cells to be closer to the clinical aspect.
It may be more interesting to classified the cells implanted (and the articles) as:

1/ cell from bone marrow:
- concentrated bone marrow mononuclear cell (BMMNC): aspiration of bone marrow, concentration but not culture
- mesenchymal stem cell obtained after culture of BMMNC

2/ expanded stem cell from adipose tissue

3/ other cell:
- Peripheral blood stem cell (hematopoietic stem cell, not mesenchymal)
- endothelial progenitor (culture)
- human immature dental-pulp stem cells (hIDPSC)

those corrections have to be made also in the table 1

for the name:
line 150 -161: fresh bone marrow mesenchymal SC, is not the exact term. in reference to the article in marerials and method, it was bone marrow mononucleated cells obtain after centrifugation

line 162-163: the cryopreserved bone marrow derived mononucleaur cell are bone marrow mononucleated cells obtain after centrifugation with no other process of culture

for the clinical studies
same remark.

Line 222 – 22 »: fresh autologous bone marrow mesenchymal cell must replace
by concentrated BM MNQC

corrections to do in table 2

In the discussion, with in mind the cell therapy in human, it will be interesting to discuss concentration versus culture. The feasibility and the cost are not the same. In the concentrated there are all cells and in culture there is only stem cell. Do we need only stem cell?

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

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

member of the European research programme REBORNE ("Regenerating Bone Defects using New biomedical Engineering approaches") and involved in research on cell therapy in human clinic of bone defect and osteonecrosis of femoral head