Reviewer’s report

Title: Tracking of In-111-labeled human umbilical tissue-derived cells (hUTC) in a rat model of cerebral ischemia using SPECT Imaging

Version: 2 Date: 23 October 2012

Reviewer: Timo Liimatainen

Reviewer’s report:

The manuscript “Tracking of In-111-labeled human umbilical tissue-derived cells (hUTC) in a rat model of cerebral ischemia using SPECT Imaging” by Arbab et al. describes a stem cell study where authors show the biodistribution of hUTC cells and shows the different accumulation of hUTC cells in rat brain infarct and normal brain tissue. The methods used for the study are carefully selected and appropriate to study the topic. Results are clear and interpretation of the results is fair. The conclusions are based on results, and the manuscript is well written. I recommend acceptance of the manuscript after minor essential revision. The details of the comments are coded as follows: (MC) Major Compulsory Revisions, (ME) Minor Essential Revisions, and (D) Discretionary Revisions.

-Abstract-methods row 3, remove extra ‘,’ (ME)

-Introduction, paragraph 2: Even though the number of strokes in US is large and some of those are hemorrhagic, could you please add percentage or some estimation what is fraction of hemorrhagic strokes of all strokes in US. (ME)

-Introduction, paragraph 2, line 2-3: combine references 2 and 3 (ME)

-Introduction paragraph 3 line 6: replace ‘reported [10]’ by ‘reported by others [10]’ (D)

-Introduction paragraph 4 5 last lines: Arguments of SPECT superiority against MRI are weak here. I recommend authors to forget whole body imaging argument and replace it by the fact that many physiological and pathological conditions like hemorrhage causes similar T2* effects on MRI signal as iron containing contrast agents, and therefore cause possible misinterpretation of iron containing contrast agent accumulation. Also In-111 SPECT has minimal background signal, while in MRI detection and quantification is based on signal loss (with some methods increase of signal, but the phenomenon is the same). (ME)

-Materials and Methods Preparation of In-111 labeled hUTC and In-111 oxine line 12: sentence end seems to be incomplete (D)

-Materials and Methods Image Acquisition line 5: please add time range in parenthesis “(at least 1 hour after injection)” (ME)

-Materials and Methods Image Acquisition two last lines: “…images were difficult
to interpret” Even though the reason for low signal might be clear, it would be useful to add that In-111 was under limit of reliable 3D reconstruction due to In-111 physical/biological decay. (D)

-Results Lesion volume line 1: “Figures” should be “Figure” (D)

- Results Lesion volume line 1: Figure panel of lesion volume seems to be missing in Fig 5. (ME)

- Results Lesion volume line 4: add reference here (D)

-Discussion IV administered hUTC, in vivo imaging and advantage of nuclear medicine technique sentence “This is because of the limited field of view for dedicated small animal MRI system.” Please rephrase, since whole rat and especially whole mouse imaging is possible using small animal MRI systems up to 14.1T (Odintsov B et al. 14.1 T whole body MRI for detection of mesoangioblast stem cells in a murine model of Duchenne muscular dystrophy. Magn Reson Med. 2011 66 1704-14). The demand in MR system is suitable RF coil for whole body imaging and time to compensate loss in SNR due to less sensitive bigger RF receiver. Take this into account in the rest of the paragraph as well. (ME)

Level of interest: An article of importance in its field

Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests