Reviewer’s report

Title: Bone marrow-derived cells can acquire renal stem cells properties and ameliorate ischemia-reperfusion induced acute renal injury

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Reviewer: Benedetta Bussolati

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The paper by Xiaohua Jia and colleagues investigates the effect of endogenous BM-derived cells in renal regeneration and the effect of their mobilization with G-CSF.

The contribution of BM-derived cells is a highly debated question.

The majority of the studies have challenged the relevance of differentiation of BM-derived SC into tubular epithelial cells after injury [see Krause D et al, 2005 and Lin F et al, 2005]. In particular, the experiments (also cited in the paper) by Lin, 2003 Lin et al. were subsequently rediscussed by the same authors showing that renal tubular resident cells provide a major contribution to renal repair after ischemia-reperfusion injury.

The contradictory results in the localization of BM-derived stem cells may be ascribed to methodological hindrances in tracking BM-derived cells, particularly in injured tissues and particularly in the kidney, which presents a very high fluorescent background. The same methodological problems may be referred to this article.

The role of intrinsic epithelial cells in kidney repair after injury has been definitively confirmed by Humphreys et al., who provided evidence, using genetic phase mapping techniques, that surviving tubular cells are the predominant cellular components involved in the repopulation of ischemic injured tubuli.

In addition, the role of circulating BM-derived cells in organ repair is very debated as mesenchymal stem cells are considered to be present in almost every organ as a perivascular resident stem cells. Therefore, the stem cell repertoire of every organ is considered to rely on resident cells.

Major issues

1. To prove stem cell differentiation within the kidney, the evaluation of at least two different techniques (Fish analysis and cell tracking) is required.
2. Appropriate discussion on the role of BM-derived cells in renal repair, and on the presence of non BM-derived resident stem cells should be added.

Level of interest: An article of limited interest
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