

5th International Conference on

Tissue Engineering & Regenerative Medicine

September 12-14, 2016 Berlin, Germany

The immunologic microenvironment affects efficacy of stem cell transplantation: A case study on animal model of acute kidney injury

Željka Večerić-Haler¹ and Martina Perše²¹University Medical Centre Ljubljana, Slovenia²University of Ljubljana, Slovenia

Mesenchymal stem cells (MSCs) are one of the promising tools in regenerative medicine. Non-clinical studies have shown that MSC transplantation markedly improved animal survival as well as functional and morphological parameters of various injured organs. Beneficial effects of MSCs can be attributed to different mechanisms such as their ability to secrete various immunomodulatory molecules as well as other soluble factors that have antiapoptotic, antifibrotic and antioxidative effects. Despite their beneficial effects, the outcome of the MSC transplantation is not always successful. It is suggested that one of the major problems influencing the efficacy of stem cell therapy is the poor MSCs survival following transplantation. Placing MSCs into a foreign tissue or harmful microenvironment may defeat their beneficial effects due to overload of proinflammatory cytokines or insufficient resistance of transplanted stem cells to oxidative and inflammatory stresses at the injured sites. It is interesting that most of the studies that evaluated beneficial effects of human MSCs in cisplatin-induced acute kidney injury have been so far performed on immunocompromised animals; although it is known that both innate and adaptive immune system is important contributor to the pathogenesis of acute kidney injury and can significantly affect the extent of nephrotoxicity. For instance, severely immunocompromised animals are susceptible to cisplatin nephrotoxicity, while mice without T lymphocytes, CD4+ or CD8+ T cells are protected against cisplatin nephrotoxicity. We evaluated the efficacy of MSC transplantation on mice with normal and compromised immune system and found out that difference in immunological environment affected not only the level of inflammation and oxidative stress at the site of injury but beneficial effects of MSC as well.

Biography

Željka Večerić-Haler is a Medical Doctor and Specialist of Nephrology. As a Nephrologist, she faces numerous challenges from the field of Regenerative Medicine on daily basis. She has completed her PhD from University of Ljubljana, Faculty of Medicine in 2016. Her research interests include studies on stem cell transplantation.

zeljka.veceric@gmail.com

Notes: