

7th Annual Conference on

Stem Cell and Regenerative Medicine

August 04-05, 2016 Manchester, Uk

Modulation of early inflammatory response in the damaged eye by intravenously administered interferon- γ -treated mesenchymal stem cells

Eliska JavorkovaInstitute of Experimental Medicine, AS CR, Prague, Czech Republic
Faculty of Science, Charles University, Prague, Czech Republic

In this study we investigated the effects of systemically administered bone marrow-derived mesenchymal stem cells (MSCs) on the early acute phase of inflammation in the damaged eye. The surface of eye was damaged by the application of filter paper soaked with 1 M NaOH for 30 seconds. MSCs were prepared from a population of bone marrow cells of BALB/c mice and were depleted of CD11b⁺ and CD45⁺ cells using a magnetic activated cell sorter. Mice with damaged eye were either untreated or treated 24 hours after the injury with an intravenous administration of fluorescent dye-labeled MSCs that were unstimulated or pretreated with interleukin-1 α (IL-1 α), transforming growth factor- β , or interferon- γ (IFN- γ). Analysis of cell suspensions prepared from the eyes of treated mice on day 3 after the alkali burn revealed that MSCs specifically migrated to the damaged eye and that the number of labeled MSCs was more than 30-times higher in damaged eyes compared with control eyes. The study of the composition of the leukocyte populations within the damaged eyes showed that only MSCs pretreated with IFN- γ significantly decreased the percentage of eye-infiltrating cells. The analysis of cytokine and NO production in the damaged eyes showed that the most effective immunomodulation was achieved with MSCs pretreated with IFN- γ , which significantly decreased the levels of the proinflammatory molecules IL-1 α , IL-6, and NO. The results show that intravenously administered MSCs specifically migrate to the damaged eye and that IFN- γ -pretreated MSCs are the most effective in inhibiting the acute phase of eye inflammation.

Biography

Eliska Javorkova completed her PhD study at Charles University in Prague with thesis "The use of immunoregulatory properties of mesenchymal stem cells and their therapeutic potential" in 2014. She has published 15 papers in journals with IF, total IF of her publications is 58,679. Her research project is focused on migratory and immunomodulatory properties of mouse and human mesenchymal stem cells.

javorkova@biomed.cas.cz

Notes: