



The 5th International Road Safety and Pediatric Trauma Congress

Shefa Neuroscience Research Center, Tehran, Iran, 20-22 January, 2016

The Neuroscience Journal of Shefaye Khatam

Volume 3, No. 4, Suppl. 3

Poster Presentation

Perspective of Stem Cell Therapy for Treatment of Spinal Cord Injury

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Published: 20 January, 2016

Abstract

In Worldwide, an estimated 40 cases per 1 million people reported with new spinal cord injuries each year. People with spinal cord injuries suffer from severe physical, psychological, social and economic problems. Damaged or lost cells can't be replaced when the spinal cord is injured; therefore, its function becomes disturbed permanently. Despite the significant advances in the understanding of spinal cord injuries (SCI), there has been limited success in treatment of SCI at the preclinical stage. Studies have shown that a transplantation of stem cells may contribute to spinal cord repair by replacement of damaged nerve cells; creating cells that will reform myelin sheath; keeping the cells from further damage at the injury site by releasing protective substances, and eliminate toxins from the environment such as free radicals to prevent the spread of damage by repressing the inflammation that can take place after injury. Different types of stem cells, from a variety of sources, including brain tissue, mucosa of nasal cavity, dental pulp, and embryonic stem cells have been studied for the treatment of spinal cord injury. Substitution of damaged neurons or oligodendrocytes is a significant goal of stem cells transplantation. Achievements in stem cells transplantation in SCI have been considerable but limited. Genetic manipulation of stem cells to over express of neural or glial markers was shown to direct differentiation to neuron or oligodendroglia. Risks associated with stem cells transplantation for treatment of SCI, including the formation of tumors or abnormal circuit that leads to dysfunction should be noticed besides the benefits of this approach.

Keywords: Stem Cells, Transplantation, Spinal Cord Injury.

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