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Poster Presentation

Auto Graft Transplantation of Adult Human Neural Stem Cells in Treatment of Traumatic Brain Injury as a Hypothesis

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Abstract

Traumatic brain injury (TBI) leading to 5 million deaths annually is 1 of the 5 major causes of morbidity and mortality worldwide. In Iran, accidents are the main cause of death in youth as well as a dominant factor in reducing quality of life. In developing countries TBI incidence as one of the worst consequences of these accidents is growing due to wide use of motor-vehicles. Therapeutic strategies for TBI are limited to supportive care such as reduction of intracranial pressure and maintaining blood pressure. Currently there are no specific effective treatments available. Cell replacement strategies have become a major focus of innovative therapies over the last 15 years. Neural stem cell (NSC) transplantation in treatment of various neurological and neurodegenerative diseases (stroke, TBI, spinal cord injury, brain tumors, Parkinson's disease, etc.) have showed promising effects including promoting tissue regeneration, replacing the lost neural cells and improving functional deficits. Several studies suggest anti-inflammatory and neuroprotective effects of human NSCs derived from human fetus and embryonic stem cells after TBI. However, to our knowledge efficacy of adult NSC transplantation in treatment of TBI has not been studied previously. Transplantation of auto graft adult NSCs derived from the patient's brain can be considered as a potential treatment to minimize TBI side effects and its extensive economic burden to hospitals including emergency department visits, hospitalizations, and utilization of intensive care units. This method has minimal autoimmune responses therefore ample use of immunosuppressant medication is not required.

Keywords: Traumatic Brain Injury, Stem Cell Transplantation, Human Neural Stem Cells

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