The 2nd International Neuroinflammation Congress and 2nd Student Festival of Neurosience

Shefa Neuroscience Research Center, Tehran, Iran, 17-19 April, 2018

The Neuroscience Journal of Shefaye Khatam

Volume 6, No. 2, Suppl 1

Poster Presentation

Targeting of Microglial M1/M2 Polarization through Stem Cells Therapy as a Promising Candidate in Traumatic Brain Injury (TBI)

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Published: *17 April, 2018*

Abstract

Traumatic brain injury is a serious global health problem with irreversible high morbidity and disability and Because of its unknown pathophysiological mechanisms, efficient therapeutic approaches to improve the poor outcome and long-term impairment of behavioral function are still remains lacking. The microglial cells are the resident macrophage cells of the brain and have M1/M2 phenotype, for expression of pro-inflammatory and anti-inflammation cytokines, respectively. The results have been shown that pharmacological inhibiting of M1 phenotype and activating M2 phenotype of microglial cells could relieve cerebral injuries and increase neurological function recovery after Traumatic brain injury. Mesenchymal Stem Cells (MSCs), a type of multipotent stem cells, are regarded as promising therapies in several CNS diseases clinical trials. In animal models, transplantation of stimulated MSCs could promote the activation of microglia via transforming the classic M1phenotype into alternative M2 phenotype to inhibits the release of pro-inflammatory cytokines and raise tissue repair after traumatic brain injury(TBI). In this review, we summarized the beneficial effects of MSCs on TBI damaged tissues and their function in regulating the immune system to maintain the CNS. Although, lab trials studies have also confirmed that MSCs are able to promote positive outcomes in TBI models, however, there are still some unanswered questions regarding MSCs-based therapy due to complex ethical and safety bconcerns.

Keywords: Microglial Polarization, Mesenchymal Stem Cells Therapy, Traumatic Brain Injury

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