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Poster Presentation

The Transplantation of Human Umbilical Cord Mesenchymal Stem Cells in Neonatal Strokes

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Abstract

Brain injuries that caused by strokes (result of intra partum ischemia) are a frequent cause of prenatal mortality and morbidity with limited therapeutic options. Transplanting human mesenchymal stem cells (hmscs) indicates improvement in hypoxic Ischemic brain injury (HIBD) by secretion growth factor stimulating repair processes (Hmscs) known as multi potent cells which isolated from bone marrow, adipose tissue ,placenta and fetal membrane, sub amniotic umbilical cord lining membrane, etc. Serum and growth factor are two vital compounds that influence MSC properties during in vitro culturing, which are associated with malignant transformation and multi potency of MSC. Long time culturing of hmscs increase the probability of malignant transformation and also decline their multi potency. Human umbilical cord derived mesenchymal stem cells (huc-MSC) in comparison with other types of stem cells have several unique characteristics such as a higher rate of cell proliferation and clonally , inhibiting caspase 3 expression and reducing apoptotic cells in early stage and later life periods . However limitation of hich.MSC life span, hinder their clinical usage. New research on TERT (telomerase reverse transcriptase) and BDNF (brain derived neurotropic factor) modifies that UCB- MSC may have longer life span and also maintain neural differentiation. This study suggests intra cerebral transplantation of HUCB- MSC that has been co- modified by TERT and BDNF can be sufficient therapy for neonatal hypoxic ischemic brain damage in early phases.

Keywords: Umbilical cord blood mesenchymal stem cells, Hypoxic-ischemic brain damage, Apoptosis, Malignant transformation

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