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Oral Presentation

Human Neural Stem/Progenitor Cells Derived from Epileptic Human Brain in A Self-Assembling Peptide Nanoscaffold Attenuates Neuroinflammation in Traumatic Brain Injury in Rats

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Abstract

Traumatic brain injury (TBI) is a disruption in the brain functions following a head trauma. Cell therapy may provide a promising treatment for TBI. Human neural stem cells cultured in self-assembling peptide scaffolds have been proposed as a potential novel method for cell replacement treatment after TBI. In the present study, we accessed the effects of human neural stem/progenitor cells (hNS/PCs) derived from epileptic human brain and human adipose-derived stromal/stem cells (hADSCs) cultured in the RADA16 on brain function after TBI. hNS/PCs were isolated from patients with medically intractable epilepsy undergone epilepsy surgery. hNS/PCs and hADSCs have the potential for proliferation and differentiation into both neuronal and glial lineages. Transplantation of hNS/PCs and hADSCs encapsulated in the PM inhibited neuroinflammation, and reduced the reactive gliosis at the injury site of TBI. The data suggest the transplantation of human stem cells encapsulated in the PM as a hopeful treatment option for cell therapy in TBI.

Keywords: Tissue Engineering, Human Neural Stem Cells, Traumatic Brain Injury

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