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Poster Presentation

Toward Treatment of Post-Traumatic Spinal Cord Injury: Differentiation of Oligodendrocytes from Bone Marrow Stem Cells

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Abstract

Traumatic central nervous system injuries lead to a severe and permanent neurological deficit. Oligodendrocytes (OLCs) are vulnerable to damage in a variety of neurologic diseases. Although no effective therapeutic option is currently available, recent other studies have shown that cell therapeutic strategies hold promise to enhance functional recovery after injury. The aim of this study is to analyze transplantation of OLCs which differentiated from bone marrow stem cells (BMSCs) in rat models of spinal cord injury. BMSCs were isolated from twenty-day old rat and were plated for differentiation to neurosphere. BMSCs were evaluated by different immunocytochemistry markers such as fibronectin, CD106, CD44, CD90 and CD45. Cell viability was assessed by trypan blue method. OLCs were assessed by immunocytochemistry for O4, oligo2 and O1 markers. Our results showed that the fibronectin, CD44, CD90 and CD45 expressed $94.32 \pm 0.45\%$, $95.48 \pm 0.24\%$ and $97.16 \pm 0.82\%$ respectively. Expression of O1, O4 and oligo2 showed that combination of HRG, PDGF, bFGF and T3 (25ng/ml) have an effective role in transdifferentiation of BMSCs into OLCs. BMSCs can differentiate mature OLCs. Our suggestion is that oligodendrocytes can be used as a therapeutic strategy for treatment of spinal injuries in future.

Keywords: Oligodendrocyte, Spinal Cord Injury, CD marker, Fibronectin.

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