

Treatment of spinal cord injury using human bone marrow derived neural stem cell-like cells

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Background

Stem cells have enormous potential to differentiate or transform into a diverse range of specialized cells that make humans what they are today. In the face of complications that are known to arise during spinal cord injury treatments like laminectomy and open decompression, one has to devise a safer procedure, which brings our focus on stem cell engineering.

Objective

In Stem cell treatment for spinal cord injury, the isolation and culturing of Neural Stem Cells (NSCs) is an arduous process and the alternative and effective method could be trans-differentiation of human adult Bone Marrow Stromal Cells (hMSC) into the Neural Stem Cell-like cells (hmNSCs). This could increase the feasibility of spinal cord injury treatment over existing methods, while improving its economical viability.

Method

Mesenchymal Stem Cells are isolated from adipose tissue, umbilical cord blood, periosteum, synovial membrane, muscle, dermis, blood, bone marrow, trabecular bone. The culture expansion of hMSCs is followed by its conversion into neuroprogenitor-like cells and the osteogenic, chondrogenic adipogenic neurogenic differentiation of the cultured cells are performed by adhering to standard protocols. These cells, after proper analysis like clonal analysis, can be used for spinal cord repair and other related disorders.

Conclusion

Economical feasibility and efficacy of the proposed idea would promote an unbiased chance of undergoing this inexpensive treatment. However, only after conclusive experimental trials the success rate and potential use of this futuristic technology will be deduced.