

عنوان مقاله:

Bone marrow stromal cell-conditioned medium regenerates injured sciatic nerve by increasing expression of MPZ and NGF and decreasing apoptosis

محل انتشار:

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خلاصه مقاله:

Objective(s): Despite the many benefits of mesenchymal stem cell (MSC) transplantation for tissue regeneration, there are some limitations to using them, including the high costs, applying invasive procedures, the possibility of transplant rejection, and cell malignancy. This study aimed to investigate the effect of secretions of bone marrow stromal cells (BMSCs) with the cell-free strategy on damaged sciatic nerve with an emphasis on the role of apoptosis and the expression of myelin protein zero (MPZ) and nerve growth factor (NGF) proteins. Materials and Methods: BMSCs were cultured and a ۲۵-fold concentrated conditioned medium (CM) from the cells was provided. After creating a crush injury in the left sciatic nerve of male rats, BMSCs or CM were injected into the injured site of the nerve. Four weeks later, the expression of MPZ, NGF, Bax, and Bcl-۲ proteins in the sciatic nerve and histological parameters of the sciatic nerve and gastrocnemius muscle were assessed. Results: The results demonstrated that injection of CM decreased apoptosis and increased expression of MPZ and NGF proteins, improving remyelination and regeneration of the sciatic nerve almost as much as the transplantation of the BMSCs themselves compared to the control group. Conclusion: The results suggest that BMSC secretions may improve remyelination and regeneration of damaged sciatic nerve by increasing the expression of MPZ and NGF and decreasing apoptosis.

کلمات کلیدی:

Apoptosis, Mesenchymal stem cells, Conditioned medium, Myelin protein zero, Nerve growth factor, Sciatic nerve

