عنوان مقاله:

Remyelination improvement after neurotrophic factors secreting cells transplantation in rat spinal cord injury

محل انتشار:

مجله علوم پایه پزشکی ایران, دوره 20, شماره 4 (سال: 1396)

تعداد صفحات اصل مقاله: 7

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خلاصه مقاله:

Objective(s): Neurotrophic factors secreting cells (NTS-SCs) may be a superior cell source for cell-based therapy in neurodegenerative diseases. NTS-SCs are able to secrete some neurotrophic Such as nerve growth factor and glia-derived neurotrophic factor. Our primary aim was to assess transplantation of neurotrophic factor secreting cells derived from human adipose-derived stem cells (hADSCs) into the damaged spinal cord rats and determine the potential of these cells in remyelination. Materials and Methods: To this end, ۴۰ adult male Wistar rats were categorized into four groups including; control, lysolecithin (Lysophosphatidylcholines or LPC), vehicle, and NTS-SCs transplan-tation. Local demyelination was induced using LPC injection into the lateral column of spinal cord. Seven days after the lysolecithin lesion, the cells transplantation was performed. The ultrastructure of myelinated fibers was examined with a transmission electron microscope to determine the extent of myelin destruction and remyelinization ۴ weeks post cell transplantation. Moreover, the presence of oligodendrocyte in the lesion of spinal cord was assessed by immunohistochemistry procedure. Results: The results of current study indicated that in NTF-SCs transplantation group, the remyelination process and the mean of myelin sheath thickness as well as axonal diameters were significantly higher than other groups (P<۰.۰۰۱). Furthermore, immunohistochemistry analysis revealed that in NTF-SCs transplantation group more than ۱۰ percent of transplanted cells were positive for specific markers of oligodendrocyte cells. Conclusion: NTF-SCs transplantation represents a valuable option for cell-based therapy in the nervous tissue damages.

کلمات کلیدی:

Lysolecithin lesion, Myelination, Neurotrophic factor-secreting cells (NTF-SCs), Spinal cord injury