

عنوان مقاله:

Improvement of Spinal Cord Injury in Rat Model via Transplantation of Neural Stem Cells Derived From Bone Marrow

محل انتشار:

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خلاصه مقاله:

Abstract Background & Aims: Cell therapy is among the novel therapeutic methods effective in the treatment of spinal cord injuries. The aim of the present study was using neural stem cells (NSCs) in treating contusion spinal cord injury in rat model. **Methods:** Bone marrow stromal cells (BMSCs) were isolated from adult rats. After three passages, these cells were transdifferentiated to neurospheres and subsequently to neural stem cells (NSCs). At in vivo studies, 43 adult female rats were divided into 5 groups. For the first group or Sham, laminectomy was the only procedure performed, whereas for the other four groups, after laminectomy, a contusion Spinal Cord Injury (SCI) was induced, as well. In group 2, no treatment was performed. In the other groups, injection was performed 7 days after SCI, as such: in groups 3, 4, and 5 normal saline, BMSCs, and NSCs were injected, respectively. The injections were administered intraspinally (IS). Motor improvement was assessed via BBB test one day before SCI and continued up to 12 weeks afterwards in all groups. **Results:** The current study revealed that a considerable percentage of the cells were BMSCs after the fourth passage. These cells were then transformed into neurospheres and NSCs. In all the experimental cell-therapy groups, a significant motor improvement was observed in comparison with that in the control group. This healing was more obvious during the period between the 2nd and the 4th weeks and less prominent during the period between the 4th and the 12th weeks. **Conclusion:** Transplantation of NSCs leads to partial motor improvement in contusive rat models.

کلمات کلیدی:

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