



Title: Effect of olfactory ensheathing cells transplantation on Wnt / β -catenin signaling pathway in rats with spinal cord injury

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Abstract:

Objective: To investigate the effect of olfactory ensheathing cells transplantation on the proliferation of neural stem cells and Wnt / β - catenin signalling pathway in SCI rats.

Methods: cell experiment: OECs and NSCs were cocultured and divided into NSC group, NSC + OEC group, NSC + OEC -CM group. The expression of Wnt3a, β - Catenin and GSK-3 β protein and primer in cell tissue were detected by Western blot, PCR and immunofluorescence. Animal experiment: Ninety adult male SD rats were randomly divided into sham operation group, DMEM group and olfactory ensheathing cell group. SCI model was made by modified Allen's method at T10 spinal cord segment. The samples were taken at 7 and 14 days after operation. The expression of Wnt3a, β - Catenin and GSK-3 β protein and primer in spinal cord tissue were semi quantitatively detected by Nissl, immunofluorescence staining, Western blot and PCR.

Results: 1. Cell experiment: the expression of Wnt3a and β - Catenin in NSC + OEC group was significantly higher than that in other groups ($P < 0.05$), The expression of protein GSK-3 β was decreased ($P < 0.05$), and the number of positive NSCs was more than the other two groups ($P < 0.05$); 2. Animal experiment: the expression of protein β - Catenin in each group increased first and then decreased; the expression of GSK-3 β increased and then decreased after injury; the expression of protein Wnt3a increased with time after injury, and the expression of OECs group was significant ($P < 0.05$). The number of positive NSCs in OECs transplantation group was more than that in the other two groups ($P < 0.05$).

Conclusion: olfactory ensheathing cell transplantation can promote the proliferation of NSCs, and the expression of Wnt3a, β - Catenin and GSK-3 β in injured spinal cord tissue changes.