



Decreasing SDF1-CXCR4 Expression after Adipose-Derived Mesenchymal Stem Cells (ASCs) Treatment Combined with Freeze-Dried Amniotic Membrane Wrapping in Rat Sciatic Nerve Injury

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Abstract : Nerve lesions are usually treated by end-to-end repair. Unfortunately, full recovery may never be achieved, particularly with extended lesions. Adipose-derived stem cells (ASCs) are known as one of the promising treatments in tissue regeneration. This study aimed to evaluate SDF1-CXCR4 expression after application of ASCs on sciatic nerve injury. Twenty-one Sprague-Dawley rats weighing approximately 250 g were divided into 6 control group and 6 experimental groups (n:3). Experimental groups were observed at 1st, 3rd, 5th, 7th, 14th and 21st day after surgery. In the functional evaluation, the sciatic function index (SFI) showed the control group value was constant between -80 until -90. Whereas in the experiment group the value progressively increased until was -8 at 14 and 21 days after surgery. Treatment of ASCs decreased the expression of SDF-1 and CXCR4 on injury site at the 1st week after injury. It suggests that the presence of ASCs at injury site causes the stem cells recruitment from another site of the body (ex, bone marrow, fat tissue) does not occur accordingly and lead to the better functional outcome of nerve healing.

Keywords: adipose-derived stem cells, CXCR4, SDF1, Sciatic Nerve Injury.