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Poster Presentation

The Effect of Dimethyl Sulphoxide on Sciatic Nerve Regeneration in Rats with Eggshell Membrane Guide Channel

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Abstract

Autograft is gold standard treatment for peripheral nerve repair up to now. Eggshell membrane (ESM) as nerve guide channel effectively enhances nerve regeneration. Dimethyl sulphoxide (DMSO) has anti-inflammatory and anti-oxidant properties. The aim of this study was to evaluate the effect of DMSO+eggshell membrane guide channel on sciatic nerve regeneration in rats. Thirty two adult male rats were randomly divided into sham surgery, autograft, ESM + normal saline (NS), and ESM + DMSO groups. A 10 mm segment of left sciatic nerve was removed. In the ESM groups, the cut ends of the nerve were telescoped into the nerve guide channel, and then DMSO or NS injected into them. In the autograft group the nerve segment used as an autologous nerve graft. Then all animals were evaluated by sciatic functional index (SFI), withdrawal reflex latency, histology, and gastrocnemius muscle weight. The mean of SFI and withdrawal reflex latency were improved in all groups. On the day 30 post-operation, the mean SFI of DMSO group was greater than the autograft and NS groups. The withdrawal reflex latency was not statistically significant in experimental groups. The number of myelinated axons in DMSO was greater than autograft and NS. The mean of muscle weight in DMSO group was significant more than autograft and NS groups. These findings demonstrate that ESM+DMSO effectively enhance nerve regeneration and promote functional recovery in injured sciatic nerve of rat.

Keywords: Dimethyl Sulphoxide, Eggshell Membrane, Nerve Regeneration, Rat

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