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**العـنـوان**

**A comparative study between using of photobiostimulation and steroidal anti-inflammatory regime as a remedy after sciatic nerve neurotmesis in rabbits**

Summary

A comparison between the using of methylprednisolone administration and the laser application on peripheral nerve regeneration were evaluated. Twenty-five adult rabbits were used in this study, divided into five groups, the control, the laser treatment at the site of nerve injury (LTN), the laser treatment on two places at once (at the site of nerve injury plus at the corresponding segments of spinal cord) (LTNS), the laser treatment at the corresponding segments of spinal cord (LTS), and the methylprednisolone treatment (MPT) groups, five animals of each group. Bilateral sciatic nerves axotomy were done in all animals of all groups followed by immediate suturing of the nerve. In the MPT group a 30 mg/kg B.W of methylprednisolone acetate were given within 3 hr post operation. In the three laser treatment groups (LTN, LTNS, LTS), the 890 nm wavelength diode laser at 1.6W/cm2 power density, 50 HZ frequency, 4 cm2 spot area, for 60 seconds (exposure time) applied between 2-4 hr post operation. The clinical assessments of the motor and sensory function of the nerve throughout the 16 wks the time of the experiment were recorded. The macroscopic and the histopathological examinations of the coaptated nerves, and the examinations of the spinal cord cross sections were evaluated after killing of the animals at the end of the experiment. The clinical assessment of the motor and sensory function, the macroscopic finding, the neurohistopathological examinations of the nerve and the spinal cord sections indicate that, the using of MP (in the treatment parameters used in the present study) after peripheral nerve injury was effective as neuroprotective and anti-inflammatory drug in early reducing the inflammatory response resulting in promotion of peripheral nerve regeneration and significant motor and sensory functional improvement of the nerve. The laser therapy in the treatment parameters used in the present study was significantly improve the motor and the sensory function of the nerve and promote peripheral nerve regeneration only when applied at two places at once as in LTNS group. The methylprednisolone treatment appears to be superior to the laser at the parameters of treatment tested. Timing and doses are the most important factors in those treatment protocols.