

EFFECTS OF LOW-LEVEL LASER THERAPY ON GAIT ANALYSIS OF WISTAR RATS POST PERIPHERAL NERVE INJURY

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Background: Clinically, a peripheral nerve injury (PNI) is not life-threatening to the individual, however it may generate a negative impact on life due to the possibility of motor or sensitive disorders by incomplete regeneration. Low-level laser therapy (LLLT) has demonstrated positive effects on treatment of PNI, especially on time and quality of neuromuscular repair. To analyze the effects of LLLT on the functionality of Wistar rats post crush injury of sciatic nerve (SN). The objective of this study is to analyze the effects of LLLT irradiation on nervous and muscle repair after crush injury of the sciatic nerve.

Study: A total of 85 Wistar rats were used, randomly divided into five groups: Control, Injury (crush of SN), Injury þ LLLTn (LLLT on PNI area), Injury þ LLLTm (LLLT on muscle area), and Injury þ LLLTnm (LLLT both in PNI area and muscle area). The laser treatment was initiated 2 h after PNI with LLLT (780 nm, 0.04 cm

2,1W/cm², 3.2 J) on PNI area (20 J/cm², 0.8 J per point, 4 points), and/or on muscle area (10 J/cm², 0.4 J per point, 8 points). At the end of the experimental period, the gait analysis was performed using the sciatic functional index (SFI), tibial functional index (TFI) and peroneal functional index (PFI), data were subjected to statistical analysis (ANOVA/Tukey, $p < 0.05$).

Results: All injured groups (Injury, Injury þ LLLTn, Injury þ LLLTnm and Injury þ LLLTm) in SFI, TFI, and PFI, after 1 week showed a decrease of gait functionality when compared to Control group. After 2 weeks, the Injury group showed a decrease of gait functionality when compared to Control group, moreover, the Injury þ LLLTn group demonstrated an increase on gait functionality when compared to Injury group considering the TFI and PFI evaluation. After 3 and 4 weeks, there was no statistically significant difference between all groups.

Conclusion: LLLT increased the gait functionality analyzed by TFI and PFI 2 weeks post PNI.