

عنوان مقاله:

Low-Level Laser Effect on Peripheral Sciatic Regeneration Under the Systemic Inflammatory Condition of Periodontal Disease

محل انتشار:

مجله لیزر در علوم پزشکی، دوره 11، شماره 1 (سال: 1399)

تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

Abstract Introduction: Periodontal disease (PD) is an inflammatory condition, which leads to tooth loss, promoting a systemic inflammatory state that can act aggravating the nerve degeneration. As laser therapy may stimulate regeneration, the aim of this study was to evaluate the effect of low-level laser on peripheral nerve regeneration under the systemic inflammatory condition of PD. **Methods:** ۳۲ male rats were used, distributed in ۴ groups: nerve injury (NI); periodontal disease with nerve injury (PDNI); nerve injury and treatment (NDT); periodontal disease with nerve injury and treatment (PDNIT). On the ۷th day of the experiment, the animals had ligatures placed around the lower first molars. On the ۲۲nd day, they underwent peripheral nerve damage, and, on the ۲۵th day, we began the low-level laser treatment, performed for ۲ weeks. The functional index of the sciatic (FIS) was evaluated with subsequent euthanasia of all the animals on the experiment ۳۷th day. The sciatic nerve was collected for morphological and oxidative stress analysis and the hemi jaws for radiographic analysis. **Results:** Regarding the FIS, there was no difference among groups in the first evaluation (EV) pre-injury, as for the EV۲, after injury, all groups presented a decrease in these values, which remained post treatment. For the morphology of the PDNI nerve tissue presented larger diameter fibers, whereas NIT and PDNIT fibers had smaller diameters, with endoneural organization. When it comes to the antioxidant system, there was an increase in protein concentration, higher superoxide activity, and decreased glutathione transferase activity in the treated groups. Catalase and cholinesterase did not differ between groups, and lipoperoxidation was increased in the PD groups. For the mandible radiographic analysis, it was possible to verify the induction of PD. **Conclusion:** As for the used parameters, the low-level laser was not effective in increasing the nociceptive threshold, but it contributed to the regeneration of nerve fibers, although the inflammation was still present in the site. However, the treatment was effective in protecting cells against oxidative damage due to increased SOD and increased protein, although the decrease in GST demonstrates the inhibition of this stage of the antioxidant system. **Keywords:** Lasers Periodontitis Inflammation Nerve Tissue

کلمات کلیدی:

لینک ثابت مقاله در پایگاه سیویلیکا:

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