

Photobiomodulation (PBM) / Low Level laser Therapy (LLLT)

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Search criteria: autoimmune conditions

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Notes: A selection of papers evidencing positive impact of PBMT on autoimmune conditions

Safety and Efficacy of Low-Level Laser Therapy in Autoimmune Thyroiditis: Long-Term Follow-Up Study.

Höfling DB, Chavantes MC, Buchpiguel CA, Cerri GG, Marui S, Carneiro PC, Chammas MC

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Introduction: A randomized clinical trial (RCT) was performed to evaluate the efficacy of low-level laser therapy (LLLT) for hypothyroidism induced by chronic autoimmune thyroiditis (CAT). Objective: **The objective was to assess the safety and actions of LLLT 6 years after completion of the RCT.** Materials and Methods: Forty-three participants were invited to participate in this study 6 years after completion of the RCT. Twenty-five were subjected to LLLT (group L), and 18 were subjected to placebo (group P). Primary outcome measure: frequency of thyroid nodules, which were subjected to fine-needle aspiration biopsy. Secondary outcome measures: dose of levothyroxine required to treat hypothyroidism, thyroid peroxidase antibodies (anti-TPO), and anti-thyroglobulin antibodies (anti-Tg). Results: In group L, a nodule was observed in three patients, who all had a Bethesda II classification. In group P, a nodule was also observed in three patients, with two classified as Bethesda II and one as Bethesda III. The levothyroxine dose required by group L was significantly lower than that required by group P (Conclusion: **LLLT, by the methods described, has been shown to be safe for the treatment of hypothyroidism resulting from CAT.** This trial is registered with ClinicalTrials.gov Identifier: NCT02240563.

Int J Endocrinol 2018

<https://pubmed.ncbi.nlm.nih.gov/30532779>

Low-level laser in the treatment of patients with hypothyroidism induced by chronic autoimmune thyroiditis: a randomized, placebo-controlled clinical trial.

Hofling DB, Chavantes MC, Juliano AG, Cerri GG, Knobel M, Yoshimura EM, Chammas MC

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Chronic autoimmune thyroiditis (CAT) is the most common cause of acquired hypothyroidism, which requires lifelong levothyroxine replacement therapy. Currently, no effective therapy is available for CAT. Thus, the objective of this study was to evaluate the efficacy of low-level laser therapy (LLLT) in patients with CAT-induced hypothyroidism by testing thyroid function, thyroid peroxidase antibodies (TPOAb), thyroglobulin antibodies (TgAb), and ultrasonographic echogenicity. A randomized, placebo-controlled trial with a 9-month follow-up was conducted from 2006 to 2009. Forty-three patients with a history of levothyroxine therapy for CAT-induced hypothyroidism were randomly assigned to receive either 10 sessions of LLLT (830 nm, output power of 50 mW, and fluence of 707 J/cm²); L group, n = 23) or 10 sessions of a placebo treatment (P group, n = 20). The levothyroxine was suspended 30 days after the LLLT or placebo procedures. Thyroid function was estimated by the levothyroxine dose required to achieve normal concentrations of T(3), T(4), free-T(4) (fT(4)), and thyrotropin after 9 months of postlevothyroxine withdrawal. Autoimmunity was assessed by measuring the TPOAb and TgAb levels. A quantitative computerized echogenicity analysis was performed pre- and 30 days postintervention. The results showed a significant difference in the mean levothyroxine dose required to treat the hypothyroidism between the L group (38.59 +/- 20.22 mug/day) and the P group (106.88 +/- 22.90 mug/day, P < 0.001). Lower TPOAb (P = 0.043) and greater echogenicity (P < 0.001) were also noted in the L group. No TgAb difference was observed. **These findings suggest that LLLT was effective at improving thyroid function**, promoting reduced TPOAb-mediated autoimmunity and increasing thyroid echogenicity in patients with CAT hypothyroidism.

Lasers Med Sci 2012 Jun 21

<https://pubmed.ncbi.nlm.nih.gov/22718472>

Induction of complete wound healing in recalcitrant ulcers by low-intensity laser irradiation depends on ulcer cause and size.

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Chronic skin ulcers still represent a therapeutic challenge in dermatology. Among the various non-invasive treatment modalities used for the improvement of impaired wound healing, low-intensity laser irradiations are gaining an increasing body of interest. We used low-intensity laser irradiations delivered by a 30 mW helium-neon laser at an energy density of 30 J/cm² three times weekly for the induction of wound healing in ulcers of diverse causes. Twenty patients with the same number of ulcers, which had previously been treated by conventional wound care for a median period of 34 weeks (range: 3-120 weeks) without any significant evidence of healing, were included in the study. Concerning the underlying disorders, patients were divided into four groups: diabetes, arterial insufficiency, radio damage and autoimmune vasculitis. In all ulcers, complete epithelization could be induced by laser therapy. No amputation or any other surgical intervention was necessary and no adverse effects of any kind were noted during low-intensity laser treatment. Regarding the different diagnoses, a statistically significant difference was noted ($P = 0.008$): ulcers due to radio damage healed significantly faster than those caused by diabetes (6 weeks [range: 3-10 weeks] vs. 16 weeks [range: 9-45 weeks], $P = 0.005$). Wound healing in autoimmune vasculitis (24 weeks [range: 20-35 weeks]) required longer than in radiodermatitis, although the difference was not significant. In addition to the diagnosis, wound size was found to be an important factor influencing the duration of wound closure ($P = 0.028$), whereas duration of previous conventional treatment ($P = 0.24$) and depth ($P = 0.14$) showed no effect. Our results indicate that low-intensity laser irradiation could be a valuable non-invasive tool for the induction of wound healing in recalcitrant ulcers, and that healing time is correlated with the ulcer cause and size.

Photodermatol Photoimmunol Photomed 1999 Feb 15(1) 18-21

<https://pubmed.ncbi.nlm.nih.gov/9990664>

[Effects of low-intensity infrared impulse laser therapy on inflammation activity markers in patients with rheumatoid arthritis]

Ilich-Stoianovich O, Nasonov EL, Balabanova RM

AIM: To evaluate effects of low-intensity infrared impulse laser therapy (IRILT) on concentration of immunity activation [not readable: see text] (soluble receptors of TNF-alpha and neopterin) and indicator of the inflammation activity (concentration of C-reactive protein) in patients with rheumatoid arthritis (RA). MATERIALS AND METHODS: Enzyme immunoassay, radioimmunoassay, enzyme immunoassay and radial immunodiffusion were used to measure soluble receptors of TNF-alpha, neopterin and C-reactive protein in 38 females with verified RA receiving IRILT or sham procedures. RESULTS: IRILT induced lowering of neopterin, TNF-alpha soluble receptors ($p < 0.01$) and C-reactive protein ($p < 0.01$). CONCLUSION: The findings give pathogenetical grounds for IRILT use in RA as this treatment suppresses functional activity of macrophages which serve the main source of neopterin and the receptors synthesis.

Ter Arkh 2000 72(5) 32-4

<https://pubmed.ncbi.nlm.nih.gov/11109616>

Low-level laser therapy on the treatment of oral and cutaneous pemphigus vulgaris: case report.

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Pemphigus vulgaris is a chronic autoimmune mucocutaneous disease that initially is manifested by painful intraoral erosions and ulcers which spread to other mucosa and the skin, generally more than 5 months after oral lesion manifestation. The treatment consists of prednisone alone or in combination with an immunosuppressive agent, and the clinical response is perceived within 2 to 4 weeks. Low-level laser therapy has been effective in accelerating the healing of injured tissue, thus inducing cell proliferation and increasing ATP, nucleic acid, and collagen synthesis. We reported two cases of pemphigus vulgaris that received systemic treatment associated with low-level laser therapy for oral and cutaneous lesions. We observed prompt analgesic effect in oral lesions and accelerated healing of oral and cutaneous wounds. Therefore, the present report suggests **LLLT as a noninvasive technique that should be considered as an adjuvant therapy in oral and skin disorders in patients with PV.**

Lasers Med Sci 2012 Apr 27

<https://pubmed.ncbi.nlm.nih.gov/22538841>

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