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Low-level laser therapy in chronic autoimmune thyroiditis: a pilot study.

Höfling DB, et al. *Lasers Surg Med.* 2010.

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Abstract

BACKGROUND AND OBJECTIVES: Chronic autoimmune thyroiditis (CAT) remains the most common cause of acquired hypothyroidism. There is currently no therapy that is capable of regenerating CAT-damaged thyroid tissue. The objective of this study was to gauge the value of applying low-level laser therapy (LLLT) in CAT patients based on both ultrasound studies (USs) and evaluations of thyroid function and thyroid autoantibodies.

STUDY DESIGN/MATERIALS AND METHODS: Fifteen patients who had hypothyroidism caused by CAT and were undergoing levothyroxine (LT4) treatment were selected to participate in the study. Patients received 10 applications of LLLT (830 nm, output power 50 mW) in continuous mode, twice a week, using either the punctual technique (8 patients) or the sweep technique (7 patients), with fluence in the range of 38-108 J/cm². USs were performed prior to and 30 days after LLLT. USs included a quantitative analysis of echogenicity through a gray-scale computerized histogram index (EI). Following the second ultrasound (30 days after LLLT), LT4 was discontinued in all patients and, if required, reintroduced. Triiodothyronine, thyroxine (T4), free T4, thyrotropin, thyroid peroxidase (TPOAb) and thyroglobulin (TgAb) antibodies levels were assessed before LLLT and then 1, 2, 3, 6, and 9 months after LT4 withdrawal.

RESULTS: We noted all patients' reduced LT4 dosage needs, including 7 (47%) who did not require any LT4 through the 9-month follow-up. The LT4 dosage used pre-LLLT (96 +/- 22 microg/day) decreased in the 9th month of follow-up (38 +/- 23 microg/day; $P < 0.0001$). TPOAb levels also decreased (pre-LLLT = 982 +/- 530 U/ml, post-LLLT = 579 +/- 454 U/ml; $P = 0.016$). TgAb levels were not reduced, though we did observe a post-LLLT increase in the EI (pre-LLLT = 0.99 +/- 0.09, post-LLLT = 1.21 +/- 0.19; $P = 0.001$).

CONCLUSION: The preliminary results indicate that LLLT promotes the improvement of thyroid function, as patients experienced a decreased need for LT4, a reduction in TPOAb levels, and an increase in parenchymal echogenicity.

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