

**Effectiveness Of Using Laserotherapy In The Treatment Of Auto-Immune Thyreoiditis**

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During last 10 years quantity of chronic auto-immune thyreoiditis (AIT) patients increased more than 10 times. This causes the search of new alternative methods of treatment. New pathogenic method of treatment AIT, which includes low-energetic laser radiation of thyroid gland (TG), was developed in Surgical Department. Transcutaneous radiation of TG projection was done on 21 patients with the help of semiconductor apparatus "Mustang-BIO" (Russia), wavelength 0,89 [μm, pulse regime. Energetically control was provided by automated system of integral and differential electropuncture diagnostics "Lotos". Dynamic investigations, conducted during 7 months after laserotherapy, showed decreasing sizes of TG and lymphoid infiltration centres with almost all patients, normalisation of thyroid hormones level against decreasing of substitutive therapy doses. When studying cellular and humoral immunity was found normalisation of T-suppressors and T-active lymphocytes against authentic decreasing of antithyroid anti-bodies (anti-bodies index to thyroglobulin lowered from  $1,25 \pm 0,11$  to  $0,45 \pm 0,05$ ,  $P < 0,001$ , tomicrosomal antigen from  $0,69 \pm 0,05$  to  $0,41 \pm 0,03$ ,  $P < 0,01$ ). Normalisation of cellular and humoral immunity in the patients organism and also stop of auto-immune aggression processes and stimulation of reparative regeneration processes in TG proves that the method developed by us is pathogenic and may be recommended for AIT treatment.

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**Restoration Of Structure And Function Of Thyroid Gland And Timus Of Rabbits With Experimental Autoimmune Thyroiditis**

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With the aim to find out mechanism of low-intensive laser radiation (LILR) effect on auto-immune thyreoiditis (AIT) pathogenesis we provided researches at 30 Shinshilla rabbits with experimental AIT (EAIT). Laser radiation was done by apparatus Mustang-BIO (Russia), wavelength 0,89 (μm, power 10 W in pulse, frequency 80 Hz, exposition on thyroid gland (TG) projection for 30 sec., every day, during 7 days. Studying of morphofunctional state of TG rabbits with EAIT in 14 days after laser therapy showed normalization of Klein index, height of follicular epithelium and coefficient of functional activity restrain, and also practically all figures of main TG structural components relative volumes (RV). Thus lymphoid infiltration RV decreased from  $(10,1 \pm 1,2)\%$  to  $(0,24 \pm 0,2)\%$ ,  $P < 0,001$ ; stromes RV - from  $(15,0 \pm 1,8)\%$  to  $(10,2 \pm 1,1)\%$ ,  $P < 0,05$ ; grease cells RV - from  $(6,8 \pm 0,5)\%$  to  $(4,3 \pm 0,5)\%$ ,  $P < 0,01$ . Simultaneously RV of follicular epithelium increased from  $(10,0 \pm 0,1)\%$  to  $(21,5 \pm 2,8)\%$ ,  $P < 0,001$ , and RV of inter-follicular epithelium increased from  $(4,2 \pm 0,5)\%$  to  $(11,2 \pm 1,5)\%$ ,  $P < 0,001$ . RV of crust and brain substance increased authentically in timus up to the norm limits at the account of decreasing RV of grease cells from  $(28,6 \pm 2,3)\%$  to  $(3,9 \pm 0,3)\%$ ,  $P < 0,001$ . Density of lymphocytes in crust and brain substance increased authentically. Thus LILR exerts favorable influence on the leading links of AIT pathogenesis: it stops auto-immune aggression in TG and stimulates reparative regenerative processes by restitutive type, against stop of involutive processes in timus and activation of lymphocitopoiesis.

**A Quantitative Investigation Of Microvascular Changes In The Thyroid Gland After Infrared (IR) Laser Radiation**

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**Summary.** We present an ultrastructural study of thyroid capillaries in which 50-day-old rats Wistar rats, were irradiated with an infrared (IR) laser, (total dose, 46.80 J/cm<sup>2</sup>), the tissue quantified 1 day after ending treatment and a quantitative capillary analysis carried out by light and electron microscopy. Light microscopy was used to calculate capillary volume density revealing a significant increase in the irradiated rats. The quantitative measurement of parameters by electron microscopy required a two stage analysis: Level I, Electron Microscopy (Magnification x5,000); and Level II, Electron Microscopy (Magnification x26,000). At Level I, the following parameters were measured in each capillary: capillary area, capillary diameter, luminal area, luminal diameter, endothelial area, nuclear area and mean endothelial thickness. At Level II, pinocytotic vesicle diameter and their numerical density in endothelial cells were evaluated. Electron microscopic analysis revealed an increased luminal area in the capillaries of the irradiated rats. They also presented a decrease in endothelial cell thickness and vesicular diameter and an increase in vesicle numerical density. This latter increase is indicative of presumptive changes in capillary permeability, but the possible functional significance of these morphological changes in the endothelial cells requires further investigation.

