

CRITERIA FOR EVALUATION OF LOCAL IMMUNITY IN FREQUENTLY ILL SCHOOL STUDENTS AFTER LASER THERAPY

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Low efficacy of medical treatment of frequently ill children prompts the search for alternative therapies. Laser therapy has been suggested as a new noninvasive rehabilitation modality.

The goal of this study was to evaluate effects of laser therapy by monitoring local immunity (total protein, lysozymes, secretory immunoglobulin A) in nasal lavage fluids.

The study used an AZOR-2K laser therapeutic device with a wavelength of 0.67 μm and a continuous radiation output power of 5 mWt. Radiation was applied to the upper respiratory tract mucosa, reflexogenic areas, biologically active points and transcutaneously to projections of tonsils and regional lymph nodes. The total duration of laser therapy was 8-10 daily treatments, except for weekends.

The study enrolled 60 frequently ill school students and used low-intensity laser radiation as a major intervention in the range of other rehabilitation treatments. Clinical and morphological improvement was seen in 57 children. Lower turbinate edema resolved and the mucosa regained pink color in children with chronic rhinitis. Nasal breathing improved and nasal secretions decreased.

Typical findings in patients with chronic tonsillitis were tonsillar lacuna clearing of pus, milder inflammatory infiltration of palatine tonsillar arches and return of mucosa pink coloration. Prominent adenoid vegetations reverted to Grade I. Sustained clinical improvement (4-5 months) was seen in children with chronic pharyngitis, with normalisation of pharyngeal mucosa color and humidity, and contraction of posterior lymphoid granules.

There were less complaints of throat pain, dryness, itching and cough.

Laser therapy improved the general condition, sleep and the rate of undue fatigue.

Laser radiation activated nonspecific respiratory tract immunity as was indicated by return of normal granulocyte phagocytosis. Neutrophil counts, lysis, activity and destruction index remained positive for five months after therapy. A stable increase in nasal secretion lysozyme levels was seen starting from the tenth day of therapy. Lysozyme levels remained optimal within six months (65.1+3.7 percent), and muramidase levels returned to initial low values thereafter (44.3+1.12 percent).

Protein levels before treatment (0.95±0.11 mg/ml), at three months (1.7±0.19 mg/ml) and at 6 months (1.22±0.12 mg/ml) were in a normal range of statistically significant values.

Secretory IgA levels were below normal before therapy (0.21±0.01 g/l), rose during and after therapy (0.40±0.03 g/l) and decreased at five-six months following the rehabilitation course.

Laser irradiation-induced enhancement of specific local immunity reduced the respiratory disease rate in initial six months after therapy by 68.5 percent and the disease duration by 71.1 percent.

Therapy results were very good in 42 (70 percent) of school students, and the frequency of relapses decreased to three a year in 15.

In summary, low-intensity laser therapy of frequently ill children resulted in a 3.1-fold decrease in general morbidity. The local respiratory immune response was retained for an average of six months after therapy.