

MODERN TECHNOLOGIES OF MAGNETIC LASER THERAPY IN PEDIATRIC OTOLARYNGOLOGY

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Pharynx tonsils is a regional immunocompetent center which keeps under control the protection of local mucous immunity in the upper respiratory tract. The role of pharyngeal tonsil in local and systemic immunity: 1.top immunologic activity of the pharyngeal tonsil is observed at the age of 5-7 years; 2.it is a regional center which keeps under control the local immunity of the upper respiratory tract mucosae (S Ig A, S Ig M); 3.It provides the mucous membrane of the nose and of the accessory nasal sinuses with immunocompetent cells (Houming's law); 4.It is a peripheral organ of the immune system; 5.while being chronically inflamed, the pharyngeal tonsil continues the production of immunoglobulins (Ig A, Ig M, Ig G, Ig D, Ig E).

Up to now there has been no age-oriented approach in the strategy of medical programs on the management of frequently ailing children with lymphadenoid ring pathology. The main purpose of this research was to develop optimal immunodefence regeneration methods for the children of 3 - 7 years old (196 children under school age) with a chronic nasopharyngeal infection.

Hypertrophy of pharyngeal tonsil of the I –st degree was diagnosed in 76 children (38,38%), in 122 children (61,62%) it was hypertrophy of II –nd degree. Children with hypertrophy of pharyngeal tonsil of the III–d degree were not included into group because conservative methods of treatment have little effectiveness in such cases. The control group was composed of 30 children, they were administered a symptomatic therapy (bathing of nasopharynx, vasoconstrictive preparation, ultraviolet irradiation of the nose).

The scheme of differentiated therapy in children with chronic adenoiditis is suggested. It takes into account the etiology of lymphadenoid ring damage and the character of pathologic process. The research methods included the definition of lysozyme activity by Dorofeytchuk and of S Ig A concentration at the nasal secret, nasocytograms, bacteriological culture; also the number of cases of respiratory diseases during the year has been registered. The programs of treatment of adenoiditis exacerbation taking into account the type of inflammation were elaborated, which included magnetic infrared laser (MIL) therapy using the apparatus "Rikta", with the therapeutic dose of irradiation $0,5 \text{ J/cm}^2$, applied on the projection of palatine tonsils, cervical lymph nodes, the projection of maxillary sinuses (exposition - 60 sec on each zone, frequency 5 Hz), on the mucosae of nose and palatine tonsils (exposition -60 sec, frequency 50 Hz, pulse power 4 Wt). (table №1).

Table №1

Quantum therapy for frequently ailing children with chronic adenoiditis, the II-nd degree adenoid vegetations

The quantum therapy apparatus «RIKTA -01» (M 1)

1. 1.Nozzle No. 2. Endo-nasal irradiation. Frequency 50 Hz, exposition 1 minute, symmetrically
2. Nozzle No. 2. Direct irradiation of tonsil mucous. Frequency 50 Hz, exposition 1 minute, symmetrically.

3. Projection of tonsils. Frequency 5 Hz, exposition 1 minute, symmetrically.
4. Projection of maxillary sinuses. Frequency 5 Hz, exposition 1 minute, symmetrically.
5. Projection of anterior cervical and posterior cervical lymph nodes. Frequency 5 Hz, exposition 1 minute, symmetrically.
6. Paravertebral area (C3-C4). Frequency 50 Hz, exposition 1 minute on each zone.
7. At transitional immunodeficiency state. Projection of the thymus gland. Frequency 5 Hz, exposition 30 seconds - 1 minute.
8. At transitional immunodeficiency state. Projection of adrenal glands. Frequency 50 Hz, exposition 1 minute, and 5 Hz, 1 minute for one procedure, symmetrically.

Children suffering from chronic adenoiditis with purulent exudate were treated by application of local antibacterial therapy (bioparox – 7 days), then local therapy with bacterial lysate IRS-19 during 4 weeks and 8-10 sessions of MIL-therapy from the beginning of treatment of adenoiditis, biopreparations (locally (narine) 10 days and inwards - 3 weeks (table №2).

Table № 2

Scheme of differentiated therapy of children`s chronic adenoiditis

Chronic Adenoiditis		
With purulent exudate	On the background of allergic rhinitis	On the background of intracellular infections (Chlamydia, micoplasma)
Lavage Of The Rhinopharynx		
Local antibacterial therapy: - bioparox, 7 days	Local antihistaminic (allergodil) and anti-inflammatory therapy: intalum, flixonase-during 2-3 weeks	Macrolides:rovamicine 14d ays (2 courses). Local anti-bacterial therapy: - bioparox.
Quantum Therapy 10 Sessions		
Antioxidants (aevit, 10 days)		
Local immunocorrective therapy Irs 19 for 4 weeks		
Biopreparations - locally (narine) 10 days - inwards 3 weeks		
Under indications: thymogene		Interferonogenes (viferon) Interferon inducers(ridostin).

To treat chronic adenoiditis on the background of the allergic rhinitis, another scheme is proposed: MIL-therapy, local antihistaminic (allergodil) and anti-inflammatory therapy (intalum, flixonase), then IRS-19. For chronic adenoiditis on the background of respiratory intracellular infections (chlamydia, micoplasma) the treatment was as follows: MIL-therapy, 2 courses of macrolides, local anti-bacterial therapy (bioparox). viferon during 14 days, then interferon inducers (ridostin), biopreparations.

A long term observation has confirmed the significant effect of these programs on the formation of respiratory tract immunodefence (lysozyme and S Ig A of mucosas were increased), improvement of clinical picture in comparison with a group of children treated with symptomatic therapy (table№3).

Table №3

Indices dynamics of local immunity in often ailing children with chronic adenoiditis after the differentiated treatment (m+m)

Period	Parameters	
	Lysozyme, % , n =196	SIgA, g/l ,n=196

Before treatment	54,9 + 1,73**	0,16 + 0,01**
10 days after treatment	67,4 + 2,2*	0,23+0,01 _x **
1 month after treatment	65,3 + 2,8*	0,23 + 0,03 _x **
3 months after treatment	63,3 + 2,05*	0,20 + 0,03*
Parameters of episodically ailing children	62,2 + 2,0	0,193+0,03

* -Veracity of differences between these parameters and reference value;

** - Veracity of differences between these parameters and standard value.

The dynamics of adenoiditis clinic changes depending on the character of conducting therapy is reflected in table №4.

Table №4

The dynamics of clinical picture on the background of studied variants of pharyngeal tonsil chronic diseases treatment

Indices	Children with chronic adenoiditis,%			
	differentiated therapy (n=196)		symptomatic treatment (n=30)	
	Before treatment	1 month after treatment	Before treatment	1 month after treatment
Nasal breathing with difficulty,%	97,93	41,84*	96,97	93,94
Hypertrophy of pharyngeal tonsil of the II –nd degree	72,45	19,39**	51,51	54,55
Hypertrophy of pharyngeal tonsil of the I –st degree	27,55	80,61**	48,49	45,45
Adenoiditis signs	98,98	25,92**	96,97	100

The truth of differences *- p<0,01

** -p<0,001

Differentiated treatment lead to the adenoiditis clinical signs disappearance (p<0,01), improved subjective sensation of a child because of the improvement of nasal breathing (p<0,01). Differentiated therapy lead to a reduction of the number of children with the II –nd degree of pharyngeal tonsil hypertrophy from 72,45% to 19,39% (p<0,001). And the number of children with the pharyngeal tonsil hypertrophy of the I –st degree (p<0,01), and has demonstrated 2-2,8 times reduction of the number of chronic adenoiditis exacerbations and respiratory disease frequency in comparison with a control group (30 children with symptomatic treatment) (p < 0,01)

The important role of the lymphadenoid ring dictates the necessity of organ-conserving tactics of tonsillar disease treatment. Due to such highly effective application MIL-therapy may be considered as one of the health-saving technologies. In 85 % of children such an approach eliminated a necessity to perform adenotomy.

Conclusion.

Thus, the suggested differentiated approach which includes quantum therapy in treating children with chronic adenoiditis may be considered as an original rehabilitation

conception in children suffering often and for a long period of time. It permits to organize an affective collaboration of pediatrician, otolaryngologist and lasertherapist. Psychological advantages of our approach is evident. It permits avoidance of psycho-traumatizing situation for patients and their parents. Staged differentiated depending on etiology of adenoiditis and the character of the pathologic process- use of local antibacterial means – bioparox, systemic antibiotics, local immunomodelling means in combination with quantum therapy provides a stable clinical effect with the reduction of pharyngeal tonsil hypertrophy degree to the first one. It is the variant of the standard. The latter circumstances testify to economic advisability of the suggested approach to the conservative treatment of lymphadenoid ring pathology. The suggested differentiated method of tonsillar disease staged treatment corresponds to modern conceptions about important functions of lymphadenoid ring. The prophylaxis of chronic adenoiditis development is very important, as this pathology plays an important role in the formation of rhinopharyngeal and rhinobronchial obstruction. The conservative treatment is indicated to children with the 1st degree adenoids. They belong to a group of children with frequent respiratory diseases and allergic reactions. (Table 5).

Table 5

QUANTUM METHODS
TO PREVENT CHRONIC ADENOIDITIS DEVELOPMENT
FOR THE CHILDREN WITH PHARYNGEAL TONSIL HYPERPLASIA
of the 1st DEGREE

The quantum therapy apparatus "RIKTA-01"

1. Nozzle No. 2. Irradiation of nasal mucous. Frequency 50 Hz, exposition 1 minute, symmetrically.
2. Nozzle No. 2. Irradiation of palatine tonsil mucous. Frequency 50 Hz, exposition 1 minute, symmetrically.
3. Projection of tonsils. Frequency 5 Hz, exposition 1 minute, symmetrically.
4. Nozzle No. 3. Irradiation of biologically active points: V2, Gi20, E2, Gi19, E9, V10, VG (T) 14. Frequency 5 Hz, exposition 1 minute.

Prophylactic administration of magnetic infrared laser radiation is one of more prior and economically effective directions of quantum method of medicine development.