frontiers
BETA loop
Search for articles, people, events and more.
Svetlana Masgutova

Immunological Efficiency of MNRI Program at Treatment of Respiratory Diseases

Nelli K. Akhmatova[1], Svetlana Masgutova[2], Olga V. Lebedinskaya[3*], Elvin A. Akhmatov[1] and Irina Shubina[1]

[1] I.I Mechnikov Research Institute for Vaccines and Sera, Russia
[2] Dr. S. Masgutova Neurosensorimotor Reflex Integration Institute, USA
[3] Acad. E.A. Wagner Perm State Medical University, Russia

Chronic inflammatory disease of the respiratory system and recurrent exacerbations are mainly caused by damage to the immune regulation mechanisms [1]. In this study treatment of chronic inflammatory diseases of the respiratory tract in children and adults was carried out by combining a complementary therapy using MNRI®, based on activation of the primary motor system in addition to the traditional treatment [2].

Observation cohorts involved 196 children (2–13 years) and 94 adults (20–60 years) with chronic inflammatory and atopic diseases with concomitant obstructive bronchitis syndrome. They first underwent in-patient and out-patient treatment in clinical hospitals in Poland and Russia, then underwent MNRI®. Control for the immune-modulating effect of the MNRI® program was a children's group (15 children of the same age) suffering from respiratory obstructive bronchitis (ROB) and receiving conventional treatment only.

The main parameters of the immune system were studied on the documentation of children's history of disease prior to therapy (initial background, group 2), after completing conventional therapy (group 3), and after MNRI® program (group 4).

Neutrophil phagocytosis activity was evaluated by the following criteria: 1) percentage of phagocyting cells (% P); 2) absolute number of phagocytes; 3) phagocytic number (PN); 4) phagocytic index (PI).

Subpopulations of lymphocytes were determined by flow cytometry with cytometer FacsCalibur (Becton Dickinson, USA). Cortisol level (nMl/L) was determined in blood plasma by IFA with «Cortisol Kit», DPC «Immule », USA. Statistical data evaluation was made by Mann-Whitney criterion with standard statistical program Windows (StatSoft 7.0).

Clinical assessment of the effectiveness of MNRI® therapy was performed in patients with chronic bronchitis (CB) in less than one year before treatment. MNRI® therapy of patients was started immediately or within one or two weeks following completion of basic therapy (antibiotics). MNRI® therapy resulted in a significant decrease of the period and severity of the disease. Frequency and duration of CB exacerbations in the study group was substantially lower than in the control; Before MNRI® therapy, 13 patients developed three or more exacerbations a year, and after a year of the MNRI® study group there was only one patient. But there were nine patients in the control group receiving standard therapy who developed exacerbations. The index of average days of sick leave registered during a year before and after the conducted therapy, decreased from 65.1±3.4 to 6.6±3.24 in the studied group (MNRI®) and from 55.8±2.53 to 46.8±2.58 in the control group (standard therapy), i.e. in 9.7 and 1.2 times, respectively.

The study of the effectiveness of MNRI® therapy also focused on bronchial asthma (BA). A significant effect was registered in the patients of this group in a reduced number and severity of recurrent disease, decrease in the use of antibiotics and hormones. A positive effect in 19 out 25 patients with BA and two patients demonstrated no marked effect. Twelve patients of 25 of this group had a severe course of the disease. After MNRI® therapy completion, the course of the disease became easier. A positive effect in the control group was registered in only 16% cases versus 76% in the MNRI® group.

The effectiveness of MNRI® therapy was studied in 35 children with BA. The therapy was performed immediately or within 1-2 weeks following the basic treatment approved in the Allergology Department (Kuvatov RCH, Ufa, Russia). After the MNRI® course most children did not have any disease recurrences during 3 months, the rest of the patients also had some attacks with decreased frequency, duration, and severity of the disease. Positive effects of the therapy were registered in 85.7% patients (versus 34.3% in the control group).

Along with the positive dynamics in the course of bronchial asthma, a 3.7-fold decrease in ARVD (acute respiratory virus infection) and 1.8- fold decrease in bronchitis incidence were registered after MNRI® therapy and consequently the number of antibiotics taken was reduced as well.

The following data present examination results of 10 children, aged 3–6 years suffering from ROB with the background of acute respiratory virus infection. At the moment of examination these children did not have sufficient basis for bronchial asthma diagnosis. Analysis of the disease etiology showed that 94% of obstruction recurrences were induced by ARVI, which in 72% was complicated by bacterial infections. The tests in children with ROB showed a statistical significant decrease in the level of phagocyting neutrophils (%

P) and their absorbing activity. At the same time a reliable increase of phagocytosis indexes was noted after MNRI® therapy in comparison with standard therapy. The leukocyte index was reverting to normal values after the completed therapies.
A study of the subpopulation structure in children with ROB revealed the decreased number of D3+, CD4+, D8+, NK, NKT-cells. This data also indicates an increased number of cells expressing molecules of early (CD25) and late (HLA-DR) activation. An increase in B-lymphocyte and T-regulatory numbers was noted. After completing standard therapy, cell phenotype began to normalize gradually though an enhanced immune system reactivity was still noted, which disappeared after MNRI® therapy. The levels of CD3, CD4, CD8, CD25 lymphocytes and NK-cells were already reliably registered in groups 3 and 4.
Cortisol levels in the morning and evening blood plasma samples of children with ROB was statistically significantly lower than that of the control group. Conducting immunocorrecting treatment involving both standard and MNRI® therapy led to a gradual shift towards increased cortisol levels, however the cortisol level of the morning sample after standard therapy was consistently lower than that of the sample taken after adding the MNRI® therapy. The pathological chemical phase of ROB leads to an extensive release of LTB4 that plays a leading role in formation of bronchus obstruction [3]. Possibly the initially low cortisol concentration in this disease may inefficiently regulate formation of LTB4, IgE and other effectors, thus potentiating Th-2 response.
This fact is confirmed by the decrease in the production rate of pro-inflammatory cytokine IL-1, regulatory IFN-γ and IL-12, and the enhanced rate of antiinflammatory cytokines IL-4, IL-10 in peripheral blood mononuclear leukocyte culture (PBML) in children with ROB. In spite of the positive dynamics of cytokine levels after standard therapy, their concentration in the culture medium of leukocytes was reliably different from the control group. When MNRI® therapy was added, the level of regulatory and anti-inflammatory cytokines normalized.
Thus, children with ROB in the exacerbation phase provoked by viral infection develop failure in immunological reaction. Significant changes were noted in innate (inhibition of phagocytic neutrophil function, decrease in the number of NK and NKT-cells) and adaptive immunity (decrease of T- and B-lymphocytes number), levels of pro-inflammatory (IL–1) and regulatory (IFN, IL-12) cytokines. The results suggest that the immune response in children with this disease is polarized towards the Th-2 pathway.
Standard therapy had practically no effect on the number of D3, CD4, NK and T-reg cells. A tendency to immunophenotype normalization was noted when additional MNRI® therapy was performed. Standard treatment exacerbated depression of parameters of neutrophil phagocytosis, pro-inflammatory IL- production and regulatory cytokines, and had no effect on cortisol level.
Therefore, after conventional therapy despite clinical improvement, children with ROB still had insufficient cortisol symptoms and simultaneous inhibition of T-cell immunity.
After the addition of MNRI® to the standard therapy of ROB the results showed a reliable increase in the absolute number, of segmented neutrophils, both in relation to the initial number and to the standard therapy in the group number. MNRI® with standard drug therapy leads to an increase in the absorbing activity of neutrophils and normalization of leukocyte metabolic function, raising the stimulation index of NST-test to the normal value (from 0.97 to 1.3). In addition, a statistically significant increase of the number of cells expressing differentiation antigens and NK-cells (CD16) was registered.
In addition to its immunoregulating effect, the therapeutic MNRI® program increased cortisol levels up to physiological concentrations. IL-1 produced by mononuclear leukocytes enhanced the secretion of glucocorticoids as a consequence. MNRI® therapy may determine adrenal cortex regulation by hypophysis ACTH by IL-1 production. Thus MNRI® therapy enhanced the Th-1 pathway immune response and its positive effect on immune system cells surpassed that of standard therapy.
Follow-up observation for one year showed that ARVI incidence in children receiving MNRI® decreased by 2.8 times (from 4.51±1.1 to 1.6±0.62) and the frequency of exacerbation decreased by 2.5 times (from 6.4±2.35 to 2.52±0.33). ARVI incidence and exacerbation frequency in children receiving standard treatment only remained at the previous rate. Similar results were noted in patients with CB and BA after addition of MNRI® to the basic therapy the disability index in children decreased, the frequency and severity of the disease reduced, and, ARVI and bronchitis incidence decreased.
We can conclude that including the MNRI® therapeutic program in treatment of children with recurring obstructive bronchitis and adults with BA and CB leads to correction of the impaired mechanisms of the immune system. MNRI® therapy leads to a decreased incidence of ARVI disease, of ARVI disease incidence, an increase in the positive dynamics of the course of chronic respiratory diseases and an extension in the remission of the disease.

References

1. Martinez, F. J., Curtis, J. L., Albert, R. (2008). Role of macrolide therapy in chronic obstructive pulmonary disease. // International Journal of Chronic Obstruct Pulmon Dis 2008;3(3):331–50.
2. Masgutova, S., Akhmatova, N., Shubina, I., Kiselevskij, M. (2009). Immunological assessment of effectiveness of reflex integration therapeutic program for chronic inflammatory respiratory disease. Immunology Journal. Moscow, Russia. (Translation at www.MasgutovaMethod.com).
3. Sechenov I. M. (1995). Physiology of behavior. Scientific Works/Ed.: M.G. Yaroshevsky. Moscow, Russia. 319 p.; p. 26-90.

Keywords: Masgutova neurosensorimotor reflex integration, MNRI, recurrent obstructive bronchitis, Lymphocytes, Cytokines, Natural Killer cells

Conference: IMMUNOCOLOMBIA2015 - 11th Congress of the Latin American Association of Immunology - 10o. Congreso de la Asociación Colombiana de Alergia, Asma e Inmunología, Medellin, Colombia, 13 Oct - 16 Oct, 2015.

Presentation Type: Poster Presentation **Topic:** Immunotherapy

Citation: Akhmatova NK, Masgutova S, Lebedinskaya OV, Akhmatov EA and Shubina I (2015). Immunological Efficiency of MNRI Program at Treatment of Respiratory Diseases. *Front. Immunol. Conference Abstract: IMMUNOCOLOMBIA2015 - 11th Congress of the Latin American Association of Immunology - 10o. Congreso de la Asociación Colombiana de Alergia, Asma e Inmunología.* doi: 10.3389/conf.fimmu.2015.05.00072

Received: 16 May 2015; **Published Online:** 14 Sep 2015.

* **Correspondence:** Ms. Olga V Lebedinskaya, Acad. E.A. Wagner Perm State Medical University, Perm, Russia, lebedinska@mail.ru

Back to top

© 2007 - 2015 Frontiers Media S.A. All Rights Reserved