

EXPERIENCE OF RECOVERY TREATMENT OF CHILDREN WITH RECURRENT BRONCHITIS USING HALOAEROSOL THERAPY

O. I. Lemko, S. V. Lukashchuk, N. V. Vantuykh

Abstract. *Objectives.* The aim was to study the efficiency of complex rehabilitation treatment using different regimes of haloaerosoltherapy (HAT), based on the evaluation of respiratory function and immune status in children with recurrent bronchitis (RB) by immediate and long-term results. *Materials and methods.* 42 patients aged 6-11 years (the average age $8,6 \pm 0,4$ years) with RB beyond the acute period and 12 practically healthy children of the same age (the average age $8,8 \pm 0,5$ years) were examined. Data of medical history were analyzed by filling out special questionnaires. Spirometric examination with analysis of bronchial patency at various levels of bronchi was performed before and after treatment. Nonspecific immunity was evaluated by determining the phagocytic activity of neutrophils (PAN) and their phagocytic number (PhN). Cellular immunity was studied by indirect immunofluorescence: the number of $CD3^+$, $CD4^+$, $CD8^+$ — lymphocytes, with the calculation of the $CD4^+ / CD8^+$ ratio. The analysis of long-term results was carried out according to specially developed questionnaires at one year after treatment. The treatment was performed according to two treatment complexes (TC). TC — 1 included 18 sessions of HAT with haloaerosol concentration of 40–35 mg/m³. TC — 2 provided 13 analogous procedures of HAT with simultaneous prescription of singlet oxygen therapy (SOT) in a form of foam (12 procedures) and vibroacoustic influence on the chest (10 procedures). *Results.* Analysis of anamnestic data indicated the family history of chronic bronchopulmonary diseases in one third of children. Also, frequent recurrence of bronchitis without proper medical support was a threat for the development of more severe chronic bronchopulmonary pathology in adulthood. In children with RB, even in the non-acute period, mild disturbances of bronchial patency at all levels were found. These changes were more pronounced in the small bronchi. At the same time, persistent disturbances of absorption properties of neutrophils were observed in the examined children. These changes were combined with T-cell suppression and imbalance in subpopulations of lymphocytes and determined the necessity for rehabilitation treatment and immunorehabilitation to prevent further progression of the process. After treatment using HAT a significant improvement in respiratory function was observed with a complete recovery of patency on the level of large and medium bronchi. Tested TC also promoted improvement of nonspecific immunity and indices of cellular immunity, that is, these TC have immunorehabilitation effect. Reducing the course of HAT and maintenance of its effectiveness is possible in case of additional prescription of SOT and vibroacoustic influence on the chest. Monitoring of long-term results of treatment revealed a significant decrease in the frequency and duration of periods of RB exacerbations, which was combined with a significant decrease in the number of days during which the child did not attend educational establishment. *Conclusions.* Rehabilitation treatment using HAT provides an increase in respiratory function parameters, promotes improvement in the absorption properties of neutrophils and T-cell differentiation, which ensures an immunorehabilitation effect. Long-term results of treatment confirm the feasibility of including HAT into the complex of rehabilitation treatment of children with RB and the possibility of reducing the course of treatment with additional prescription of SOT and vibroacoustic influence on the chest.

Key words: children, recurrent bronchitis, rehabilitation treatment, haloaerosoltherapy.

O. I. Lemko,
doctor of medical science, professor,
leading researcher GI «The Scientific-practical Medical Centre «Rehabilitation» of the Ministry of Health of Ukraine»
10, Velykokamyana str., Uzhgorod, Ukraine, 88000; e-mail: o.i.lemko@gmail.com
Asthma and Allergy, 2019, 4, P. 43–49.