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THE EFFECT OF THE NUCLEINAT ON FUNCTIONAL ACTIVITY OF BLOOD GRANULOCYTES IN SCHOOL-AGE CHILDREN WITH ASTHMA DEPENDING ON ACETYLATION PHENOTYPE

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Bronchial asthma (BA) is one of the most common and impressive problems in pediatrics now. According to epidemiological studies conducted in different countries, the population suffering from BA ranges from 2 to 30 % of children. The clinical practice is indicative of the fact that by means of standard treatment regimens the diseases can be controlled only in every second patient. The lack of anti-inflammatory therapy effectiveness in some cases necessitates the administration of new drugs in children, such as Nucleinat which will help to improve the course of disease. Nucleinat possesses immunomodulatory and anti-inflammatory effects, therefore its administration can be suggested in a comprehensive basic therapy of asthma in children with decreased activity of the immune system.

Considering this fact the objective of our scientific study was to assess Nucleinat effect in the treatment of BA on indicators of the functional activity of blood granulocytes of school-age children depending on their acetylated phenotypes.

To achieve this purpose we have conducted our study following the two main tasks: to analyze the dynamics of oxygen-dependent metabolism of neutrophilic blood granulocytes due to parameters of spontaneous and Nitroblue tetrazolium stimulated test in children in both clinical groups. And, as well, to analyze clinical-epidemiological index of the therapy effectiveness in school-age children.

36 school-age children with BA in remission were comprehensively examined. All pupils in the complex basic therapy received Nucleinat 0,25 g per day for 21 days. Due to the type of acetylation patients were divided into two clinical groups. The first (I) clinical group included 16 patients with a slow type of acetylation. 20 students formed the second (II) clinical group who had a rapid type of acetylation. The analysis of oxygen-dependent metabolism of neutrophilic blood granulocytes was made for all the children due to parameters of spontaneous and Nitroblue tetrazolium stimulated test (NBT-test).

The results of the study were evaluated from the perspective of clinical epidemiology to the definition of relative risk and odds ratio indicating their 95% confidence intervals (95% CI). The number of formazan positive neutrophils in spontaneous NBT-test less than 0,42 S.U. was determined in 16,6% of patients with slow type of acetylation before treatment and in 83,3% of patients after it ($R\phi < 0,05$). In the II clinical group the number of school-age children with the same value of NBT-test before and after treatment was 50,0% and 60,0% respectively ($R\phi > 0,05$). This definition of a relative risk above the absolute number of neutrophils in formazan positive spontaneous NBT-test in pupils with a slow type of acetylation after therapy was 1,9 (95% CI 1,6-2,4). However, absolute number of formazan positive neutrophils of blood due to stimulated NBT-test after therapy decreased in 83,3% patients from the first clinical group while in 60,0% pupils in the second clinical group only ($R\phi > 0,05$). Thus, the risk of reducing the number of formazan positive neutrophils in patient of I clinical group was higher as compared to the second one, and the odds ratio was 3,3 with 95% confidence interval 1,7-6,4.

Administration of Nucleinat with basic treatment leads to the reduction of severity of chronic inflammation. A significantly higher number of children with slow acetylation phenotype is found with decreased oxygen-dependent metabolism eosinophilic granulocytes of the blood due to possible reduction of inflammatory activity in the body.

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THE FEATURES OF DIAGNOSTICS AND TREATMENT OF THE ATYPICAL RESPIRATORY DISEASES IN CHILDREN

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The atypical respiratory pathogens *Chlamydia pneumoniae*, *Mycoplasma pneumonia* and *Legionella pneumophila* are now recognized as a significant cause of acute respiratory-tract infections, implicated in community-acquired pneumonia, acute exacerbations of chronic bronchitis, asthma, and less frequently, upper respiratory-tract infections. *Mycoplasmas* and *Chlamydia* are the obligate, intracellular bacteria, transmitted from person to person by the respiratory rout. Both produce pneumonia or bronchitis, which is usually clinically mild, but may be associated with pharyngitis, sinusitis, and laryngitis.

Determining the etiology of these clinical manifestations is a challenge, because the diagnostic tests of respiratory samples that are noninvasively obtained are insufficiently sensitive to identify the causative pathogen. A specific diagnosis is important, because β -lactam antibiotic treatment of infections due to these atypical pathogens is ineffective, whereas the use of antibiotics such as macrolides can markedly reduce the duration of the illnesses. Since it is difficult to detect. *M. pneumoniae* and *C. pneumoniae*, in clinical practice specific etiologic diagnoses, are established in only a minority of cases. The detection of antibodies in paired serum samples has been considered the standard laboratory diagnostic method, but PCR has recently been found to be useful for rapidly detecting these pathogens in respiratory secretions.

The aim of this study was to optimize the diagnosis and treatment of atypical respiratory diseases in children.



78 children with respiratory pathology caused by atypical pathogens were treated in the pediatric department of the Municipal Clinical Children Hospital. The average age of children was 4 years and 6 months. In 54 cases a recurrent bronchitis was diagnosed and in 24 – a community-acquired pneumonia; in 58 patients the diagnosis was confirmed in the laboratory by culture, demonstration of bacterial antigens or DNA in body fluids, or evidence of a serologic response. Polymorphonuclear leucocytosis, azotemia, acute liver failure, hyponatremia, and hyperphosphataemia were all common findings. Mycoplasmosis was diagnosed in 32 children, and chlamydia in 26 cases.

On the basis of both clinical and radiological findings, the children were classified into 3 disease groups: (1) acute bronchitis, cough, and/or rhonchi, with a normal chest radiograph; (2) wheezing, cough, and/or dyspnea with expiratory rales and/or wheezes unrelated to any known specific sensitization, with a normal chest radiograph or hyperinflation; and (3) pneumonia, with diffuse or lobar pulmonary infiltration evident on the chest radiograph

The complex treatment included macrolide antibiotics (sumamed, azithrosandos, rovamycin), recombinant interferons (cycloferon), herbal preparations (Umkalor). The significant difference in the efficacy of the antibiotics used to treat the children with atypical bacterial infections highlights the fact that, in the case of M. pneumonia and/or C. pneumonia infections, the use of a macrolide is associated with a better clinical outcome. Cycloferon increased the synthesis of endogenous interferons while the immunomodulatory action of Umkalor was realized by an increase in phagocytic activity of macrophages. The combination of macrolides and immunosorbent medications can be suggested as an optimal approach to the treatment of atypical respiratory diseases and to avoid the further relapses.

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THE PECULIARITIES OF TREATMENT OF ACUTE RESPIRATORY INFECTIONS WITH PREMORBID STATUS

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Acute respiratory infection (ARI) is a major cause of morbidity and mortality worldwide, being responsible for 3.5 million deaths annually. Globally, 30-60% of paediatric outpatient attendance and 20-30% of hospital admissions are due to ARI. Chronic illness like deafness, breathing difficulty, and their subsequent disability among children originate from inadequately treated episodes of ARI. The premorbid conditions such as acetonemic syndrome, anemia, minor anomalies of heart development, minor cerebral dysfunction, physical activity disorder, asthenic syndrome are found in 30% of patients admitted with ARIs.

The objective of this survey was to study the effectiveness of Imupret (corporation "Bionorika") with Cardonate combination therapy. Imupret is a phytopreparation with immunomodulating, antiviral, expectorant and anti-inflammatory action derived from the extracts of seven herbs that have antiviral, anti-inflammatory and immunomodulating effects. Cardonate has a detoxifying effect, stimulates immune responses, and has pronounced antioxidant and membrane stabilizing properties. The clinical experience of using these drugs proves their effectiveness and safety.

Out of 92 surveyed children with ARI and premorbid conditions, respiratory infection was accompanied by acetonemic syndrome in 19 children giving an incidence of 20.8%, 15.3% had anemia, minor anomalies of the heart development were detected in 18.7% of patients, minor cerebral dysfunction - in 8.3%, physical development disorders in 9.7 %. Asthenic syndrome was observed in 16% of children and greatly increased by intoxication. All patients were treated in accordance with the current order of the Ministry of Public Health of Ukraine. The main group (48 children) received additional Imupret and Cardonate treatment in the appropriate dosing. The criteria for assessing the status of children were the dynamics of the following indicators: nasal congestion, rhinorrhea, hyperemia and edema of the fauces, sore throat, cough, intoxication, fever, and signs of decreased mental and physical activity. Starting from the third day of treatment, children in the main group had more pronounced positive dynamics as compared to the control group, where the severity of clinical signs proceeded up to 5 days. On the 10th day patients recovered completely, while clinical signs of the disease in the second group remained active up to 14 days. In all hospitalized children with acetonemic syndrome acetone in the urine was not detected after 3-4 days of treatment in the hospital.

The suggested scheme of treatment is safe and effective for children with ARIs with premorbid features, it reduces the duration of the use of symptomatic therapy. The introduction of Imupret in combination with Cardonate into the basic scheme of treatment shows a reduction of hospitalization duration and prevents the progression of an existing premorbid background.

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THE APPROACH TO THE TREATMENT OF CHILDREN WITH RESPIRATORY INFECTIONS AND UNDERLYING DIGESTIVE DISORDERS

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In addition to the neonatal period, acute respiratory infections (ARIs) are the most common causes of both illness and mortality in children under five, with in an average from three to six episodes of acute respiratory infections