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Risks of Developing Urgent Conditions in Children with Respiratory Diseases

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Resume: In the review, the author examines the current risk factors for emergency conditions in children with respiratory diseases. The clinical informativeness of new methods of diagnosis and prevention of acute respiratory viral infections in children based on new research by foreign and domestic authors is analyzed.

Keywords: children, acute respiratory viral infections, urgent conditions, risk factors, pathogenesis.

Introduction

In pediatric practice, the problem of acute respiratory diseases (ARI) is becoming increasingly important every year, due to their significant contribution to the structure of childhood morbidity and mortality, and the high risk of serious complications. That is why the World Health Organization recommends that national health authorities and research teams pay priority attention to the implementation of effective preventive measures and effective therapy of acute respiratory infections in children [10].

Acute respiratory diseases are the most common pathology of the adult and child population. At the same time, frequent infectious diseases of the respiratory tract lead to impaired physical and neuropsychiatric development. In this regard, often ill children (CBD) are allocated to a special group of dispensary supervision [16]. The most important is the study of risk factors contributing to an increase in the frequency of respiratory infections [4], and the development of algorithms based on them for identifying children at high risk of replenishing the CBD dispensary group.

Respiratory diseases have been consistently leading in the morbidity structure of this category of children for many years, with acute respiratory viral infections being the most common infectious pathologies in children attending preschool institutions, especially younger groups, and their prevalence has increased significantly recently [12].

The purpose of the study:

To analyze modern research by foreign and domestic authors on the study of factors of acute respiratory diseases in children.

Results.

Currently, the pathogenetic basis of recurrent acute respiratory infections in children is considered to be transient disorders of immunological reactivity, developing against the background of dysfunction of other adaptive systems of the body and changes in the entire homeostasis. Depending on age and social conditions, children who are often ill make up up to 70% of the child population. Repeated and severe acute respiratory infections adversely affect the health of children, lead to disruption of adaptation of the main functional systems of the body [3].

Children of early and preschool age with frequent acute respiratory diseases have a strain of general protective and adaptive mechanisms, manifested by a decrease in the phagocytic protection coefficient,

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an increase in specific immune lymphocytic-monocytic potential, an increase in interleukin 4, a decrease in interferon and serum IdA levels. Currently, there is evidence of the formation of secondary immunodeficiency in this category of children, as evidenced by multidirectional violations of cellular and humoral immunity, the neutrophil granulocyte system [15].

A number of researchers point to a violation of the processes of interferogenesis and the genetic determination of an individual to produce interferons in frequent infections. The recurrence of diseases contributes to dysimmunoglobulinemia, hyperproduction of immunoglobulin E, activation of Th2-type clones with suppression of suppressive activity of T lymphocytes, development of bronchial hyperreactivity and sensitization of the body to infectious allergens [7].

The role of intensification of lipoperoxidation processes, activation of nitric oxide synthesis in the development of bronchopulmonary diseases is known. Repeated, especially severe acute respiratory diseases also lead to impaired physical and neuropsychiatric development of children, contribute to a decrease in the functional activity of the immune system, the formation of both acute and chronic inflammatory processes in the respiratory organs [6,8].

The high incidence of respiratory infections in so-called "organized" young children is due to a number of reasons. These include: — age—related features of immunity (the so—called third critical period of immunogenesis); - accumulation of immunological experience in relation to most respiratory viruses; - epidemiological prerequisites (expansion of contacts, frequent introduction of infectious agents into the team due to non-compliance with routine measures, high contagiousness of pathogens); — psychoemotional stress caused by joining a children's collective, the so-called early socialization [1, 14].

Young children who are brought up at home, but living in large industrial cities, are also exposed to a large number of ARVI pathogens, this is facilitated by: air pollution of the metropolis; crowding in the apartment of family members where the child lives; not always adequate use of air conditioners; irrational nutrition; overweight at birth; type of feeding, which negatively affects it affects the developing body, weakening the local respiratory and general immune defenses of the baby [5,13].

Since for each age period there may be a predominance of certain risk factors, which determines the need for a further differentiated approach to assessing the role and contribution of individual factors to the development of diseases in children, preschool children are distinguished among the significant risk factors for the development of recurrent respiratory diseases: — pathological course of pregnancy in the mother (gestosis, toxicosis, threats of termination of pregnancy, chronic fetoplacental insufficiency) and the presence of a burdened obstetric history (somatic diseases of the mother, infectious diseases during pregnancy); — the presence of a burdened family history (oncological, chronic somatic, autoimmune diseases); — hypotrophy at an early age, artificial feeding; — intestinal dysbiosis; — unfavorable hereditary and own allergic history; — passive smoking [9, 12].

Children who are passive smokers are characterized by a higher incidence of respiratory infections, with frequent complications and chronic diseases of the nasopharynx, than children whose family does not have smokers. Thus, among children 3-6 years old with two smokers in their family, 70% of children have a complicated course of respiratory diseases, if there is one smoker in the family — 66.7%. At the same time, 19.6% of children have pneumonia, 15% have obstructive bronchitis, and 30% of such children have allergic pathology [10].

Air pollution in megacities is one of the most important problems of our time, which has a significant impact on the health of the population. The child's body has an increased sensitivity to the effects of adverse environmental factors. This is due to a number of physiological features: increased permeability of the skin, mucous membranes of the gastrointestinal tract and respiratory tract, blood-

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brain barrier, low acidity of gastric juice, immaturity of liver enzyme systems, low glomerular filtration of the kidneys, immaturity of systemic and local immunity [2].

Due to the above, the adverse effects of environmental factors primarily affect the morbidity of children. Studies show that in the zone of influence of chemical industries, the incidence of upper respiratory tract increases in children by 1.5–2 times, near metallurgical plants — 4-5 times higher than in residential, more environmentally friendly areas [4].

Also, preschool children, especially those living in industrial areas, significantly more often have disorders of physical development, psycho-emotional status, chronic adenotonsillar pathology caused by biomedical factors, primarily an imbalance of humoral immunity with both an increase in markers of cellular activity and the formation of hyperimmunoglobulinemia of class E [11].

CONCLUSION

As a result of the analysis of the literature, it was possible to identify the main causes affecting the development of diseases in children of early and preschool age. Knowledge of various risk factors contributing to the development of respiratory tract diseases will allow for more effective planning and implementation of preventive and wellness measures in children. It is necessary to implement a set of preventive measures aimed at preparing future parents for the birth of healthy children, working with families to promote a healthy lifestyle and rational nutrition, involving parents in the process of improving children's health, hardening, the use of physical therapy and massage, normalization of the daily routine, as well as rehabilitation of foci of chronic infections, treatment of concomitant diseases, the use of immunotropic drugs, creation and implementation of wellness programs in preschool institutions.

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