

**DOI 10.26886/2414-634X.1(45)2021.6****UDC: 616.233-002-022.8:616-053.2](477.73)****LEADING ATOPIC PATHOLOGIES IN CHILDREN ON THE TERRITORY  
OF MYKOLAIV REGION****I. M. Horishnyi**<http://orcid.org/0000-0002-9306-4702>e-mail: [igorgorishniy97@gmail.com](mailto:igorgorishniy97@gmail.com)

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*The article is devoted to allergic diseases among children of the Nikolaev area, first of all bronchial asthma of an atopic form. The dynamics of the prevalence of allergic diseases is analyzed, the most rational methods of diagnosis and treatment of allergopathology are determined. Data on hospitalization in the allergy department, the structure of diagnoses that are most often clinically established in children with allergy pathology are presented. The materials will be of interest to allergists, pulmonologists, immunologists, family doctors and pediatricians.*

*Key words: allergy, bronchial asthma, allergic diseases, atopy, allergology, pediatrics.*

**Introduction.** Atopic pathology has acquired the status of a significant socio-economic, medical problem for mankind. Complex mechanisms of anaphylaxis, difficulties in screening atopic pathology and the frequency of its severe course, especially in children, attract the attention of the scientific community. Asthma continues to be a major health problem in the world. According to official statistics, the prevalence of asthma in the world ranges

from 1 to 16%. A large epidemiological study – The World Health Survey, conducted on behalf of the WHO in 70 countries (out of 192), showed that the prevalence of diagnosed asthma in adults is 4.3%, ranging from 0.2% in China to 21% in Australia. [4] There is a need for new studies of the mechanisms of pathogenesis of bronchial asthma, the search for new methods of diagnosis and treatment. [5]

**The aim of the work** was to study the structure of allergic pathology and the dynamics of its incidence in children of Mykolaiv region to determine the most optimal ways to manage atopic nosology, to assess the share of atopic diseases among all allergic. Investigate the ethiotropic factors of allergic diseases that lead to hospitalization of patients to identify the most rational treatments.

#### **Materials and methods of research**

The study was conducted at the Clinical Department of Internal Medicine of the Petro Mohyla Black Sea National University and the Department of Allergy and Pulmonology (APV) of the Mykolayiv Regional Clinical Children's Hospital. Statistical and retrospective research methods were used. The reports of the regional allergy service of the Mykolaiv area, case histories of the children hospitalized with an allergic pathology are analyzed.

#### **Results and discussion**

It is established that the most common among all allergic diseases in pediatric practice in the territory of Mykolaiv region are bronchial asthma (BA), allergic rhinitis (AR) and allergic dermatitis (AD). This, in turn, correlates with a large-scale study on the prevalence of allergic pathologies conducted in the Vinnytsa region [1] and national indicators. For the period 2015-2017 the problem with the underdiagnosis of asthma and AD remains unresolved, the prevalence of these nosologies remains relatively constant. The prevalence of AR has more than doubled, indicating progress in the

diagnosis of AR. Prevalence of asthma in 2017 amounted to 2.94 per 1000 children aged 0-17 years. The dynamics of the prevalence of asthma, AR and AD for the period 2015-2017 are shown in Table 1.

Table.1

<b>Prevalence of allergic diseases at children aged 0-17 years in the territory of the Mykolaiv area in 2015-2017 years</b>			
<b>Nosology</b>	<b>The figure for 1,000 children</b>		
	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Allergic rhinitis (J30.0-4)</b>	4,05	5,02	8,68
<b>Bronchial asthma (J45.-J46)</b>	3,27	3,03	2,94
<b>Allergic dermatitis (L20)</b>	3,54	3,28	4,11

The frequency of registration of allergic diseases with the diagnosis established for the first time in a life among the children's population of the Mykolaiv area in 2016-2017 was analyzed. In terms of age, there was an increase in the frequency of fixation of allergic pathologies at the age of 0-14 years, compared to 2016, the frequency of diagnosing asthma increased by 35%, AR by 13.8% and BP by 75.8% (table 2). Regarding the age group of 15-18 years, there was a lack of dynamics in the diagnosis of asthma, a decrease in newly diagnosed hypertension and a slight increase in the frequency of diagnosis of AR.

Table. 2

<b>Frequency of registration of allegropathology at the age of 0-14 years for 2016-2017 years</b>		
<b>Nosology</b>	<b>2016</b>	<b>2017</b>
<b>Allergic rhinitis (J30.0-4)</b>	3,67 (n=660)	4,26 (n=765)
<b>Bronchial asthma (J45.-J46)</b>	0,28(n=50)	0,43(n=77)
<b>Allergic dermatitis (L20)</b>	0,33(n=60)	1,38(n=248)

To assess the severity of allergic pathology and identify its most common nosologies, an analysis of the structure of diagnoses of patients who were hospitalized in the allergy department of the Mykolaiv Regional Clinical Children's Hospital on the example of 2017 - a total of 298 people. (Fig. 1) The majority of (149) hospitalizations were caused by bronchial asthma. In the etiological aspect, 110 cases were asthma with a predominance of allergic component (atopic), 30 cases with mixed etiology and 9 cases were unspecified asthma.

Urticaria in almost half of the cases (50 out of 98) is caused by allergic factors (atopic), 46 cases of idiopathic urticaria have been reported, as well as 1 case due to exercise.

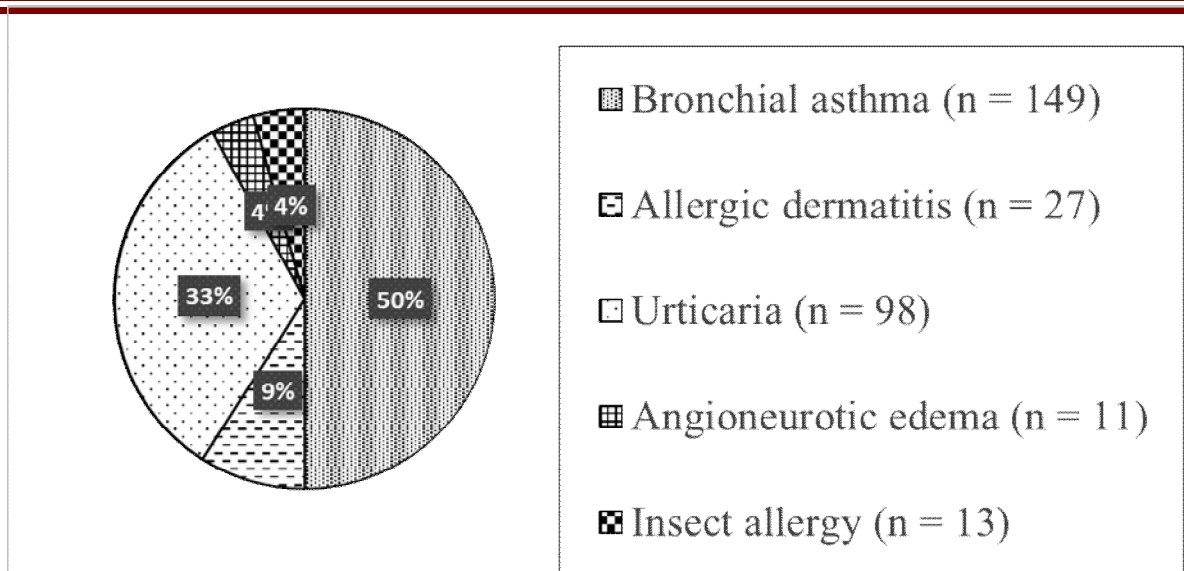
It was found that among all allergic pathologies, asthma, AR, hypertension and urticaria were most often caused by an allergist. For example, in the first quarter of 2018 there were 221 complaints about AR (30.1%), asthma -95 (12.9%), AD -64 (8.8%), urticaria -73 (9.9%).

Atopic forms of allergy ( I type of reactions according to Coombs and Jell) most often led to both treatment by an allergist and hospitalization for inpatient treatment (atopic asthma).

According to the Global Initiative for Asthma 2020, the following asthma phenotypes are common among children:

"Allergic asthma: This is the most easily recognized asthma phenotype, which often debuts in childhood and is associated with a history and / or family history of allergic diseases such as eczema, allergic rhinitis, food or drug allergies.

Non-allergic asthma: Some patients develop non-allergenic asthma. The cell profile of the sputum of such patients may be neutrophilic, eosinophilic or contain a small number of inflammatory cells)." [6]



**Fig. 1. Clinically established diagnoses of the patients who were on inpatient treatment in allergy department of the Mykolaiv regional children's clinical hospital**

Atopic bronchial asthma is a classic example of an IgE-mediated allergic reaction. Excessive activation of T-helpers of the second type (Th2) leads to their production of cytokines: IL-4, IL-13 - stimulate the synthesis of IgE and IL-5, which activates eosinophils. [2]

As a result of allergy diagnostics by the method of syringe tests conducted among children with atopic pathologies in 2017. it was found that 40% of allergens belonged to household (house dust, down, feather), 40% belonged to pollen (ragweed, wormwood, sunflower, quince) and 20% were epidermal allergens (fur, epidermis of cats and dogs). Skin tests with allergens are the main method of evaluation allergic status, easy to use, low cost and high sensitivity. [3] More detailed characteristics of regional allergens of the Nikolaev area are given in table 3:

Table. 3

<b>Regional characteristic of allergens of the Mykolaiv area among the children's population for 2017</b>	
<b>Household allergens (40% of all), including:</b>	
House dust	45%

Down, feathers	30%
Pincers	20%
Cockroaches	5%
<b>Pollen allergens (40% of all), including:</b>	
Ragweed	40%
Tarragon	20%
Sunflower	15%
Orach	15%
Corn	5%
Dandelion	5%
<b>Epidermal allergens (up to 20% of all), including:</b>	
Wool	50%
Epidermis of cats and dogs	20%
Sheep epidermis	10%

## Conclusions

The most common allergic diseases among children in the Mykolaiv region are allergic rhinitis, bronchial asthma, allergic dermatitis and urticaria, these nosologies account for 60% of consultations with a pediatric allergist. Bronchial asthma causes 50% of all hospitalizations in the pediatric allergy department, its atopic form causes more than a third (37%) of all hospitalizations. Household, pollen and epidermal allergens are the most common triggers of atopy.

Bronchial asthma continues to be a significant socio-medical problem, there is a steady incidence among children. The prevalence of atopic form and territory of Mykolaiv region is probably determined by the geographical location of the region and the nature of vegetation.

Further studies of ethological factors of allergy, the most common allergens and methods of their leveling, the introduction of immunospecific

methods of therapy are needed. Due to the prevalence of the atopic form of bronchial asthma, immunospecific methods of managing childhood bronchial asthma, in particular sensitization to small doses of a specific allergen, deserve considerable attention and implementation in pediatric specialized practice.

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