

Influence Of Ecological Factors On The Development And Progress Of Bronchial Asthma In Children

Barno Turdikhodjaevna Khalmatova¹, Gulnoza Aloyevna Tashmatova², Erkin Abdurazzakovich Xudoyqulov³, Maftuna Shukhrat Qizi Shakarova⁴

¹*DSc, Professor of the Department of Children's Diseases No. 1 of Tashkent Medical Academy, Uzbekistan.*

²*Senior Lecturer of the Department of Children's Diseases No. 1 of Tashkent Medical Academy, Uzbekistan.*

³*Associate Professor of the Department of Children's Diseases No. 1 of Tashkent Medical Academy, Uzbekistan.*

⁴*Master Student Of 3rd Year, Department Of Children'S Diseases №2, Medical Faculty, Tashkent Medical Academy, Uzbekistan*

Abstract. The article provides data on the influence of environmental factors on the development of bronchial asthma in children living in the industrial regions of the Tashkent region. The increase in the air pollution index has led to an increase in the number of children suffering from bronchial asthma. The clinical features of bronchial asthma in children living in industrial regions is the predominance of the cough variant.

Key words: *Bronchial asthma, children, industrial regions, ecological factor.*

1. INTRODUCTION.

Epidemiological studies indicate that in different regions of the world, bronchial asthma suffers from 4 to 8.2% of the population. At the same time, in the adult population, the frequency of bronchial asthma fluctuates within 5%, and in the child population it rises to 5-12% [1,4,11,15]. Assessment of the role of adverse effects on the human body caused by environmental pollution is the most important task of medicine and is of great not only medical, but also social significance. This task is of particular importance for pediatrics dealing with a growing organism that is sensitive to any environmental influences. It has been found that among the reasons that negatively affect the health of the population, the ecological component exceeds 20%. Until now, epidemiological studies have not been carried out in the industrial regions of the Tashkent region, risk factors and features of the course of bronchial asthma in children have not been studied[2,3,5,6].

Assessment of the role of adverse effects on the human body caused by environmental pollution is the most important task of medicine and is of great not only medical, but also social significance [9,10,12,14]. The list of causative factors of BA also includes industrial chemical compounds. In studies carried out in collaboration with professional pathologists, sensitization to industrial allergens (nickel, chromium, formaldehyde, etc.) was revealed, which contribute to the formation of BA [7,8,15]. According to researchers, sources of anthropogenic pollution of the atmosphere are transport, thermal power engineering, nuclear fuel cycle enterprises, industrial and agricultural enterprises [3,5,13,14].

Considering the above, the identification of risk factors for the development of asthma in children living in industrial regions is an urgent problem not only in pediatrics, but also in all medicine.

The aim of the study was to identify risk factors and features of the course of asthma in children living under the influence of unfavorable environmental factors.

2. MATERIALS AND METHODS.

The paper presents the results of anamnestic, clinical, laboratory, instrumental and immunological studies.

An analysis of the impact assessment of unfavorable external factors of air, water and soil was carried out in the regions of the Tashkent region (Angren, Almalyk, Chirchik).

The basis for the study in three regions of the Tashkent region was the fact that there are several industrial facilities in these regions. For example, in Almalyk there is a large industrial holding AGMK (Almalyk Mining and Metallurgical Combine), where zinc is periodically released into the water. In Chirchik, there is a large industrial holding LLC Uzneftegazmash, which produces technological equipment for the chemical industry, where chlorine vapors are periodically emitted into the atmosphere. In Angren, there is a branch of the metallurgical industry, where aluminum is emitted into the soil in large quantities. For comparison, a survey was conducted among children living in an ecologically more favorable region of the Tashkent region (Kibray).

Risk factors for development and its influence on the course of the disease were studied in 220 children aged 2 to 14 years with a diagnosis of BA.

Results and discussion. The children of the main group were divided into 3 groups: group 1 - children living in Angren (n = 60), group 2 - children living in Almalyk (n = 60), group 3 - children living in Chirchik (n = 60). The comparison group consisted of children (n = 40) living in an ecologically safe region of the Tashkent region (Kibray).

The groups were divided by sex, age and severity of BA disease (Table 1).

Table 1

Indicators of BA patients included in the study

№	Number of patients, n=220		
1	Average age in years		
	6,21±1,9		
	2-5 years		
	76 (34,5%)		
2	5-12 years		
	102 (46.3%)		
	12-18 years		
3	42 (19,1%)		
	Sex	Boys	124 (56.3%)
Girls		96 (43.6%)	
3	Severity, people	1st stage	140 (63.7%)
		2 nd stage	80 (36.3%)

As can be seen from the data in Table 1, children aged 5-12 years (46.3%), boys (56.3%) with mild BA prevailed.

To assess the influence of environmental factors on the BA course, Uzhydromet obtained data on weather and climatic indicators. Five main pollutants were reported: dust (particulate matter), carbon monoxide (carbon monoxide), nitrogen dioxide, sulfur dioxide, nitrogen oxide. Analysis of the data showed that during the period under study, the increase in the air pollution index was increased in all the studied cities of the Tashkent region, but especially in the city of Angren. The integrated pollution indicator was 5.12 in 2014, 5.32 in 2016 and 5.30

in 2017 and corresponded to the II degree corresponding to an increased level of atmospheric pollution, which leads to a deterioration in the living conditions of the population.

Despite the decrease in gross emissions of pollutants in the industrial sectors of the surveyed regions, the sanitary condition of the air in the settlements of the Tashkent region is not accompanied by stabilization.

To assess the influence of specific environmental factors, the state of sick children with BA was studied. When studying the risk factors for the development of bronchial asthma in the patients we observed, weighed down by allergies heredity (58.8%), while in 16% of cases one of the parents of the observed children had bronchial asthma, 14.9% - hay fever, 11, 3% - allergic rhinitis, 9.3% - food allergy and 7.3% - drug allergy.

Most of the patients observed by us (84%) had a history of previous or existing frequent respiratory infections, which enhance the effect of causal factors and contribute to the formation of bronchial asthma. All children with asthma had difficulty in breathing mainly at night. In addition, in 82.3% of children, seizure equivalents (feeling of lack of air, dry paroxysmal cough) were often recorded, which were repeated 1-3 times a month, lasting from 5-10 minutes, the difficulty in breathing was stopped on their own or after a single use of bronchodilators.

A specific feature of the course of asthma in children living in industrial regions was that the change in environment contributed to a more rapid relief of symptoms of the disease.

3. CONCLUSION.

The incidence of asthma in children living in industrial cities of the Tashkent region is 2.2 times higher than in children living in an ecologically more favorable zone (Kibray). The study of the frequency of BA occurrence depending on the place of residence of children showed that the largest number of children with BA was among children living in Angren ($p < 0.05$). But at the same time, an increase in the incidence was noted in all studied regions. A statistically significant correlation was found between the level of asthma morbidity in Angren and the concentration of nitrogen dioxide, which confirms the role of air pollutants as risk factors for the development of asthma among children and adolescents.

4. REFERENCES.

- [1] Alhamwe B. A. et al. The role of epigenetics in allergy and asthma development //Current Opinion in Allergy and Clinical Immunology. – 2020. – T. 20. – №. 1. – C. 48-55.
- [2] Choi J. W. et al. The prevalence of symptoms of allergic diseases in children residing in industrial regions of Uzbekistan //International Journal of Psychosocial Rehabilitation. – 2020. – T. 24. – №. 4. – C. 2105-2115.
- [3] Csoma Z. et al. Prevalence and characterization of severe asthma in Hungary //Scientific Reports. – 2020. – T. 10. – №. 1. – C. 1-11.
- [4] Khabibullayevna M. M., Murotkhonovna S. A. Optimization Of Allergic Rhinitis Therapy In Children //The American Journal of Medical Sciences and Pharmaceutical Research. – 2020. – T. 2. – №. 08. – C. 119-125.
- [5] Kozik A., Huang Y. J. Ecological interactions in asthma: from environment to microbiota and immune responses //Current Opinion in Pulmonary Medicine. – 2020. – T. 26. – №. 1. – C. 27-32.
- [6] Martinez F. D. Childhood asthma inception and progression: role of microbial exposures, susceptibility to viruses and early allergic sensitization //Immunology and Allergy Clinics. – 2019. – T. 39. – №. 2. – C. 141-150.

- [7] Miadich S. A. et al. The impact of cumulative stress on asthma outcomes among urban adolescents //Journal of Adolescence. – 2020. – T. 80. – C. 254-263.
- [8] Mirrahimova M. H., et al. Learning efficiency and possibility of anti-leukotriene preparations for children with a bronchial asthma in Uzbekistan conditions //Problems and perspectives in pharmaceutics and drug discovery. – 2018. – T. 4. – №. 1. – C. 85-89.
- [9] Mirrahimova M. K. et al. Bronchial asthma: prevalence and risk factors in children living in the industrial zones of the Tashkent region //Central Asian Journal of Medicine. – 2020. – T. 2020. – №. 1. – C. 29-35.
- [10] Rege S. et al. Documentation of asthma control and severity in pediatrics: analysis of national office-based visits //Journal of Asthma. – 2020. – T. 57. – №. 2. – C. 205-216.
- [11] Shioya H. et al. Characteristics of breath sound in infants with risk factors for asthma development //Allergology International. – 2019. – T. 68. – №. 1. – C. 90-95.
- [12] Toshmatova G. A., Shakarova M. S. Q. Meaning Of Respiratory Mycoplasma Infection In Children With Bronchial Asthma //The American Journal of Medical Sciences and Pharmaceutical Research. – 2020. – T. 2. – №. 12. – C. 47-54.
- [13] Von Mutius E., Smits H. H. Primary prevention of asthma: from risk and protective factors to targeted strategies for prevention //The Lancet. – 2020.
- [14] Wu P. et al. The economic burden of medical treatment of children with asthma in China //BMC pediatrics. – 2020. – T. 20. – №. 1. – C. 1-11.
- [15] Zaytseva O. V. Bronkhial'naya astma i respiratornyye infektsii u detey //Pul'monologiya. – 2020. – №. 4. – S. 106-111.