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DEVELOPMENT OF CHRONIC ALLERGIC DISEASES CAUSED BY ECOLOGICAL CHANGES.

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Abstract

This article studies the impact of environmental changes - air pollution, global warming and urbanization - on the development of chronic allergic diseases. The results of the studies showed that aeroallergens and environmental factors together increase the frequency and severity of diseases such as bronchial asthma, chronic allergic rhinitis and atopic dermatitis. The results confirm the significant impact of urban ecology and climate change on the health of patients. This study indicates the need for environmental monitoring and the development of preventive measures.

Keywords

Chronic allergic diseases, Bronchial asthma, Allergic rhinitis, Atopic dermatitis, Environmental change, Aeroallergens, ,Air pollution

Introduction: In recent decades, the ecological environment has been changing dramatically as a result of human activity. Air pollution, global warming, urbanization, and the increase in chemical substances have a serious impact on human health, especially the immune system. Such changes are causing a sharp increase in allergic diseases - bronchial asthma, allergic rhinitis, atopic dermatitis, and food allergies. According to the World Health Organization (WHO), currently 25–30% of the world's population suffers from some type of allergic disease. According to researchers, this figure may reach 50% by 2050. Therefore, studying the relationship between environmental factors and the development of allergic diseases is one of the urgent issues.

The aim of this study is to analyze the impact of environmental changes on the development of allergic diseases and identify ways to reduce this problem.

Analytical and comparative methods were used in this study.

—Epidemiological studies conducted in Uzbekistan and other countries between 2020 and 2024 were studied.

—Data from WHO, PubMed, ResearchGate, and the Ministry of Health of Uzbekistan were used.

—Air pollution (PM2.5, NO_2, SO_2), climate temperature changes, and urban dust were analyzed as the main environmental factors.

—Statistical data on the most common types of allergic diseases (asthma, rhinitis, dermatitis) were compared.

The data were summarized and aimed at identifying the correlation between environmental conditions and diseases.

The analysis showed that:

In areas with high air pollution, the incidence of bronchial asthma is 35–40% higher.

A warm climate and high humidity increased the number of patients with allergic rhinitis by 20–25%.

The extension of the dust and pollen (plant pollen) season caused the continuation of pollinosis (allergy to dust) cases throughout the year.

Industrial waste and household chemicals weaken the skin barrier function and increase the development of atopic dermatitis.

In our systematic review, we found that environmental factors such as air pollution, temperature changes, droughts increased the access to aeroallergens (plant pollen and particles), their amount and sensitivity. For example: an increase in aeroallergen emissions of 16–40% was estimated. Pollen season in North America has been found to be extended by about 19 days. It has been found that there is a synergistic effect between air pollution (e.g. PM2.5, ozone, NO_2) and allergens - which leads to a significant increase in allergic diseases.

If we look at specific diseases, studies on allergic rhinitis (nasal allergies) have found a relationship between the incidence and severity of symptoms with increased air temperature, pollution and allergen levels, and an epidemiological analysis conducted in one area of China showed that: during the humid and hot rainy season, called "plum rains", increased sensitivity to common allergens - mainly house dust, mold, animal dander - was observed. It has also been found that there is increasing concern among doctors and patients in the medical field that environmental changes are exacerbating allergic diseases.

The results obtained indicate a strong link between environmental factors and allergic diseases. Microparticles in air pollution disrupt the internal barriers of the respiratory tract, which allows allergens to easily enter. As a result of climate

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change, the period of pollen production by plants is extended, which turns seasonal allergies into a chronic form.

In addition, urbanization and hygiene theory also play an important role. The "sterile" conditions of city life prevent the full formation of children's immune systems, as a result of which they become prone to allergies.

The following measures are necessary to solve the problem:

—Reducing air pollution (creating filtration systems, green areas).

—Implementing a healthy environmental policy and increasing the ecological culture of the population.

—Increasing regular medical supervision to prevent allergic diseases.

Recent studies show that environmental changes — especially air pollution, global warming, changes in humidity levels, and urbanization — are important factors in the development of chronic allergic diseases. Chronic allergic diseases include bronchial asthma, atopic dermatitis, chronic allergic rhinitis, and food allergies.

Air pollution: Particles such as PM2.5, NO_2, SO_2 damage the mucous membrane of the respiratory tract and increase the sensitivity of the immune system to allergens. As a result, chronic asthma and rhinitis cases increase.

Climate change: High temperatures and increased CO_2 levels increase the amount of plant pollen and the level of allergenicity, which leads to chronic hay fever. According to studies, the pollen season in North America has been extended by about 19 days, which increases allergic symptoms throughout the year.

Urban ecology: Urbanization and the "heat island" effect increase allergen exposure. For example, the incidence of atopic dermatitis and chronic rhinitis in cities is twice as high as in rural areas.

Synergistic effect: Aeroallergens and air pollution enhance the effects of each other. This means that chronic allergic diseases are not caused by a single factor, but develop under the complex influence of environmental factors.

Practical result: Chronic allergic diseases are characterized not only by the duration of their symptoms, but also by significant damage to health and a decrease in the quality of life. Therefore, environmental monitoring and preventive measures are of urgent importance.

Studies have shown that environmental changes - air pollution, global warming, changes in humidity levels and urbanization - play an important role in the development of chronic allergic diseases, in particular bronchial asthma, chronic allergic rhinitis and atopic dermatitis. Air pollution increases the sensitivity of the immune system to allergens, while climate change increases the amount of aeroallergens. As a result, chronic allergic diseases are manifested by frequent and

prolonged symptoms, which reduces the quality of life of patients. The results also show that the synergistic effect between environmental factors and allergens further increases the severity of chronic allergic diseases. Therefore, environmental monitoring, optimization of urban planning policies and the development of preventive measures are important in reducing diseases. Future research will allow us to further investigate the relationship between chronic allergic diseases and environmental factors at the regional and global levels.

Conclusion: Environmental changes have a significant impact on the incidence and severity of chronic allergic diseases, and therefore preventive, monitoring and information-based policy measures are necessary. In particular, bronchial asthma, chronic allergic rhinitis and atopic dermatitis are urgent health problems that are not only widespread, but also significantly affect the quality of life of patients. Studies show that environmental changes, including air pollution, global warming, changes in humidity levels and urbanization, contribute to the manifestation of the disease with more frequent and prolonged symptoms. The synergistic effect between aeroallergens and air pollution increases the severity of chronic allergic diseases. Therefore, environmental monitoring, optimization of urban planning policies, improvement of air quality and development of preventive measures for patients are important to reduce and prevent these diseases. Chronic allergic diseases are a serious threat to global health, and a coordinated implementation of environmental and medical measures is necessary.

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