DISEASES OF THE POPULATION FROM THE LEVEL OF AIR POLLUTION IN REGIONAL CONDITIONS

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Abstract

In recent years the study of the dependence of changes in the health of the population under the influence of environmental factors has become an important object of numerous scientific studies. It is air pollution that causes up to 30% of common diseases. The relationship between the concentrations of atmospheric pollutants and the prevalence of diseases of the respiratory system, cardiovascular system, bronchial asthma is considered proven.

Introduction

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Special studies by hygienists show that only 15% of the urban population lives in areas with air pollution levels within acceptable standards. According to the joint report of the working group of the US National Heart and Lung Institute (Bethesda) and the World Health Organization "Bronchial Asthma. Global Strategy", air pollution is defined as the accumulation of irritants in the atmosphere to a level capable of causing damage to humans, animals or plants. However, it is often difficult to prove the presence of direct links. At the same time, the analysis of mathematical models made it possible to establish the minimum levels at which health indicators may deteriorate. A reliable increase in overall morbidity can be predicted in the range of 7-10 MAC, including in combination and in combination with factors of a different nature. Indicators of the functional state of the body change reliably in the range of 1.5-3 MAC. For example, Komarov Yu.M. in his studies found that the most sensitive to air pollution in general were diseases such as pneumonia, acute respiratory viral infections, diseases of the genitourinary organs, liver, gall bladder. This gives grounds to consider that the incidence rates under these headings are becoming the most important in understanding the patterns associated with the influence of external conditions. However, the problem of long-term exposure to air pollution, especially when exposed to low-intensity environmental factors, on the processes of health formation in children and adults is still unresolved and has its own regional characteristics. There is some experience in identifying changes in cellular and humoral immunity in populations of different age groups at the regional level, but these data are not unambiguous. Allergic diseases are environmentally dependent diseases. The implementation of hereditary predisposition to them is carried out under the influence of environmental factors, which are the cause of 44% of cases of bronchial asthma (BA) in different countries. In particular, BA, especially in childhood, is a sensitive marker of air pollution. At the same time, significant differences are noted in the prevalence of asthma symptoms and other allergic diseases in different regions of the world. Epidemiological studies conducted by domestic and

foreign scientists show a relationship between the level and structure of air pollution and the level and structure of allergic diseases in the population. Other researchers consider this relationship to be unclear. Against the background of constant exposure to air pollutants (even in concentrations below the MAC), the course of respiratory diseases is characterized by frequent relapses and refractoriness of the therapy. Therefore, the issues of studying the influence of environmental conditions on public health are currently being raised with particular urgency. The effectiveness of prevention is determined by the possibility of the earliest possible detection of pre-pathological changes in the body. Therefore, the search for methodological techniques for assessing the influence of environmental factors on the body is an urgent problem at the current stage of medicine development.

The purpose of the study is to substantiate the degree of influence of air pollutants on the incidence of respiratory diseases in the Tashkent region.

Research Objectives

Conduct a sanitary and hygienic assessment of atmospheric air pollution in the Tashkent region. Analyze the prevalence of allergic respiratory diseases among the population of the Tashkent region in terms of gender and age. Identify the degree of relationship between allergic respiratory diseases and medical and environmental risk factors by developing mathematical models.

The results of the study consist in the fact that a comprehensive study of the sources of air pollution in the Tashkent region by aero-pollutants was carried out. An assessment of the prevalence of respiratory diseases of an allergic nature is given on the example of bronchial asthma, taking into account gender, age and seasons of the year among the population of the Tashkent region. The relationships between the level of air pollution and the number of people seeking medical help with bronchial asthma in the age aspect are revealed. The results of an immunological examination of people with bronchial asthma are studied. It is shown that exposure to low levels of formaldehyde, nitrogen dioxide affect the incidence rate and the number of children of different ages with bronchial asthma and associated diseases in the clinic and emergency room. Mathematical models of the relationship between the levels of air pollution by aero-pollutants and respiratory diseases are developed, taking into account the gender of patients and seasons of the year. Recommendations are given for the implementation of a set of preventive measures. Calculations are presented on the resource provision of primary health care specialists, taking into account the level and structure of bronchial asthma diseases. Practical significance. The assessment of transboundary and own sources of air pollution in the Tashkent region made it possible to explain the reason for the high incidence of respiratory diseases of allergic origin among the population. The developed mathematical models revealed the degree of dependence of the population's disease on the concentration of air pollutants in the atmospheric air, taking into account the sex, age of patients and seasons of the year, which made it possible to prove the necessity and adequacy of preventive measures. The conducted

study of the spectrum of medical and environmental factors influencing the prevalence of bronchial asthma made it possible to identify high-risk groups for bronchial asthma among the population of the region, taken into account during medical examinations and preventive examinations of the child population.

A comprehensive sanitary and hygienic assessment of atmospheric air pollution in the Tashkent region forms the basis for determining the degree of influence of air pollutants on the incidence of respiratory diseases among the population and should take into account not only local sources, but also transboundary emissions from other regions of Uzbekistan. A cause-and-effect relationship between the prevalence of respiratory diseases of allergic origin and the content of air pollutants in the atmospheric air of the Tashkent region has been established. The developed mathematical models of the dependence of respiratory diseases on the concentration of air pollutants in the atmospheric air make it possible to predict the development of respiratory diseases among different age groups of the population with a high degree of reliability. The principles of organizing care for patients with allergic diseases are an effective measure for preventing environmentally conditioned respiratory diseases. The results of the work have been implemented in the practice of the regional clinical hospital, territorial departments of the Federal Service for Supervision of Consumer Rights Protection and Human Welfare of the Tashkent region.

1. Sanitary and hygienic assessment of air pollution in Tashkent region allowed to establish the main harmful emissions into the atmosphere (nitrogen and carbon oxides, formaldehyde, ammonia, phenol, dust) exceeding the MAC and their relationship with the development of respiratory diseases in the population. It has been proven that transboundary emissions from other regions of Uzbekistan, motor transport and local industry are the main sources of air pollution and create multicomponent air pollution with air pollutants, which determines the level and structure of morbidity of the population.

2. Analysis of the research results showed that in Tashkent region the content of nitrogen oxides in the atmospheric air on average exceeds the MAC by 1.25 times, formaldehyde by 2 times, ammonia by 1.25 times, dust by 1.3-2.7 times. The maximum one-time concentrations exceeded 3-10 MAC for dust, 4.0-4.8 MAC for nitrogen dioxide, 2.4-2.6 MAC for nitrogen oxide, 2.8 MAC for ammonia, 1.9 MAC for phenol and 1.2-1.9 MAC for formaldehyde.

3. The incidence of respiratory diseases among the population of the Tashkent region is higher than in Uzbekistan, mainly due to allergic diseases.

4. The degree of influence of individual air pollutants on the incidence of hospital visits by different population groups is not the same. Fluctuations in the levels of maximum formaldehyde content and, to a lesser extent, nitrogen dioxide affect the number of children visiting a polyclinic with asthma and associated diseases. A reliable correlation between the level of air pollutants and the number of visits to the hospital was established for children with bronchial asthma aged 10-14 years, with allergic bronchitis, acute respiratory viral infections aged 1-3 years in spring and autumn. The frequency of ambulance calls in people with bronchial asthma over 60 years of age is also affected by the content of formaldehyde in the atmosphere.



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5. The frequency of exacerbations of bronchial asthma depends on the season and the levels of air pollutants. The highest level of visits to the hospital with bronchial asthma among the female population occurs in spring, and among the male population - in summer. For different seasons, high-quality regression models of the dependence of bronchial asthma incidence on the levels of air pollutants were obtained. The developed models can be used to predict the incidence of the population in gender and age groups.

6. In adult patients with bronchial asthma, against the background of high levels of total E, non-specific protection of the body is reduced both at the level of general (absence of lactoferrin response during exacerbation of the disease) and local immunity.

7. The total need of the Tashkent region (adult population of 623,000 people) is 12 positions of an allergist. In particular, the need in the Tashkent region (adult population of 232,000) for allergists is 4.5 positions, and in the rest of the Novgorod region - 7.5.

Conclusions

Thus, it was found that the content of total IgE in the blood of adult patients with bronchial asthma is significantly higher than in healthy people, despite significant fluctuations in its concentration. Analysis of the data on the content of total immunoglobulin E and LF in the blood serum of patients with bronchial asthma and healthy adolescents aged 10-15 years showed a significant increase in the concentrations of these indicators in patients. The noted significant fluctuations in the levels of IgE and LF in healthy adolescents suggest an unfavorable impact of the environmental situation on the body. The study of the region allowed to establish the main harmful emissions into the atmosphere (nitrogen and carbon oxides, formaldehyde, ammonia, phenol, dust) that exceed the MAC and their relationship with the development of respiratory diseases in the population. It has been proven that transboundary emissions from other regions of Uzbekistan, motor transport and local industry are the main sources of air pollution and create multicomponent air pollution with air pollutants, which determines the level and structure of morbidity among the population.

Recommendations

1. It is proposed to determine the levels of total IgE and lactoferrin in the blood serum of healthy people as indicators of the adverse effects of the environmental situation on the body in laboratory practice.

2. Qualitative regression models of the dependence of bronchial asthma incidence on the levels of air pollutants were obtained. The developed models can be used to predict the incidence of bronchial asthma in the population in the age aspect depending on the concentration of pollutants in the atmospheric air.

3. It is necessary to strengthen health education work in order to increase the responsibility of the population for their health. Optimization of the outpatient health care link is required. The work of the "asthma school" should be extended to all patients with bronchial asthma and associated diseases.

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