# THE ROLE OF ECOPATHOGENS IN THE DEVELOPMENT OF VASCULAR DISEASES

***Sultanova Aygul Abdinabijanovna***

*Student of Tashkent State Medical University*

***Аннотация.*** *В статье представлены основные знания о механизмах воздействия факторов окружающей среды и микроорганизмов на кровеносные сосуды. Вследствие синергетического действия экопатогенов организм человека не может защитить себя сам. Функциональное состояние естественной защитной системы оценивается по состоянию здоровой окружающей среды. Для создания здоровой среды необходимо искать пути улучшения качества окружающей среды в развивающихся городах и рационального использования экотехнологий.*

*Экопатогены вызывают различные заболевания сердца и сосудов. В результате органы и ткани не получают питательные вещества и кислород.*

***Ключевые слова:*** *Экотехника, экопатоген, микроорганизм, окружающая среда, сердца, кровеносный сосуд, микроциркуляция, токсичные вещества, артерия, мышца, коллаген, эластик, кислород, клетка, атмосфера, пациент.*

***Abstract.*** *The article presents basic knowledge about the mechanisms of influence of environmental factors and microorganisms on blood vessels. Due to the synergistic action of ecopathogens, the human body cannot protect itself. The functional state of the natural defense system is assessed by the state of a healthy environment. To create a healthy environment, it is necessary to look for ways to improve the quality of the ecology of developing cities and competently apply eco-technologies.*

*Ecopathogens cause various diseases of the heart and blood vessels. As a result, organs and tissues do not receive nutrients and oxygen.*

***Keywords:*** *Ecotechnics, ecopathogen, microorganism, environment, hearts, blood vessel, microcirculation, toxic substances, artery, muscle, collagen, elastic, oxygen, cell, atmosphere, patient.*

Pathogens of the gastrointestinal tract, causing various diseases, also cause cardiovascular diseases. However, the mechanisms of the impact of individual environmental factors and microorganisms on blood vessels have not been sufficiently studied so far.

Currently, the problem of protecting the human body from the negative impact of harmful factors, which are natural sources of ecology, is acute. Therefore, various eco-technologies are used in all aspects to improve the quality of ecology of developing cities. Eco-technologies are measures aimed at preserving the ecology, protecting, restoring and improving the quality of the environment. However, due to the daily growth in the number of newly erected buildings, structures, industrial waste and other environmental factors, the effectiveness of using eco-technologies is low. This creates conditions for the development of eco-pathogens.

Ecopathogens are microorganisms that are environmental factors and cause diseases associated with the immune system. Pathogenic microorganisms cause various diseases of the blood vessels of living organisms. In particular, as a result of their impact on blood vessels, the number of people suffering from cardiovascular diseases increases.

The free movement of blood through the vessels is affected by changes in atmospheric temperature, water pollution, abiotic factors, microorganisms, materials used in construction work, noise, electromagnetic waves, ecopathogens and other factors. As a result, organs and tissues do not receive nutrients and oxygen. This

leads to a change in the number of leukocytes and erythrocytes, a decrease in the number of lymphocytes and a disruption of the function of erythrocytes.

Heavy metals from construction work, targeted insecticides, contaminated beverages, chemicals, food poisoning from the air, and toxic substances in water can contribute to the development of cardiovascular diseases.

As a result of the impact of ecopathogens on the microcirculation of blood in the vessels, the following is observed: the connection between the arteries and veins is disrupted; arterioles, capillaries, venules and arteriovenous anastomoses are affected; the diameter, composition and functional state of the vessels change; the walls of the arteries are damaged by muscle fibers, collagen and elastic fibers; the function of the vessels, which should narrow or expand depending on the amount of blood, is disrupted; the blood flowing through the arteries is not saturated with oxygen and nutrients; the walls of the vessels weaken the smooth muscle fibers; smooth muscles cannot protect cells, blocking the flow of nutrients and oxygen from the blood to the cells; venules do not provide systemic vascular circulation; they impede the flow of blood to the heart; arterioles-venules cannot directly provide blood flow; the function of smooth muscle cells regulating blood flow is disrupted, and so on.

The reaction of the cardiovascular system to environmental factors is assessed by the immune system. The immune system of a living organism performs the function of adapting organs and tissues to the external environment and protecting them from ecopathogens.

The synergistic effect of several substances on the immune system increases platelet activity, which accelerates blood clotting and contributes to the development of cardiovascular diseases.

Excessive concentrations of certain pollutants and ecopathogens in the atmosphere can aggravate cardiovascular diseases and even lead to death.

As the ambient temperature changes, the number of visits to emergency departments increases. Almost all of these patients complain of high blood pressure and shortness of breath. Literature studies have shown that the impact of various pathogens associated with environmental change has led to an increase in the number of people suffering from cardiovascular diseases, flu epidemics, viral infections and other diseases. The occurrence of some diseases is explained by complications from the cardiovascular system.

Thus, when the ambient temperature changes, the pathogens of cardiovascular diseases develop in foci. Based on this, it can be said that cardiovascular diseases are classified as seasonal diseases associated with the environment.

As a result of global environmental changes, pathomechanisms arise in organs and tissues that manifest themselves as a sequence of several interconnected cascades.

The Internet sources provide information on the use of the autoregressive integral method of blood testing in patients with cardiovascular diseases. Mathematical models were used for this. With the help of this model, it is possible to obtain data on the average daily concentration of air temperature, wind speed, relative humidity, abiotic factors, and others. The results of the analysis serve as the basis for predicting the disease.

Thus, the loss of ecotism creates unfavorable conditions. It affects the decrease in the number of lymphocytes, the increase in the number of myelocytes, as well as the systemic microcirculation of blood and vascular functions. This can lead to damage to the formed elements of the blood and the development of various diseases of the blood and blood vessels.

To maintain a healthy lifestyle and protect ecosystems from ecopathogens, it is necessary:

– meeting environmental needs;

– developing environmental safety programs;

– monitoring the targeted use of resources;

– developing environmental technologies that reduce harmful emissions;

– implementing environmental education in kindergartens and schools;

– conducting television and information campaigns;

– conducting public awareness campaigns and so on.

In order for a person to live in a healthy environment, it is necessary to pay attention to measures to resolve environmental safety issues. After all, environmental epidemics develop due to the impact of pollutants in the atmosphere. This leads to the emergence of a number of diseases associated with the immune system, and therefore with the circulatory system. As a result, the incidence of blood pressure disorders, cardiovascular diseases, respiratory failure, endocrine changes and loss of ability to work increases. Therefore, it is important to study the influence of pathogens and atrogens that cause the development of cardiovascular diseases in people living in ecologically unfavorable areas. The anthropogenic factor is characterized by significant climate changes, human development and its impact on the environment.

To protect against environmental pathogens, it is necessary to study the causes of cardiovascular diseases in adults and children living in polluted environments, as well as in workers. To assess the level of impact of factors on the body, it is necessary to regularly conduct sanitary and hygienic dispensary examinations. Based on the results of the examination, develop recommendations.

Based on the developed programs, it is necessary to systematically implement measures for environmental safety, health promotion, prevention, etc. As a result, protective measures will be created against the negative impact of environmental factors and ecopathogens, which will improve the quality of diagnostics, prevention and treatment of various diseases of the cardiovascular system.

There is data in the literature on the development of cardiopathies in schoolchildren caused by various pathogens, which, in turn, is explained by respiratory factors.

The health of the population is closely connected with the ecological situation. As a result of the development of modern technologies, respiratory diseases increase in people who are constantly in contact with man-made factors. This is the basis for the development of various vascular diseases.

To overcome the problematic situations discussed above, it is necessary to find ways to solve these problems, for which it is necessary to develop programs for the effective use of manmade and ecomanmade factors, as well as reducing the concentration of environmental factors.

To sum up the above, it is necessary to develop measures to preserve the natural protective mechanisms of ecology. It is necessary to save energy and water. It is necessary to introduce the use of environmentally friendly materials. It is necessary to form people's attitudes to the environment and regulate the use of abiotic factors and technologies. It is necessary to increase attention to ecopathogens in unfavorable living conditions.

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