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RELATIONSHIP BETWEEN GLOBAL CLIMATE CHANGE AND CARDIOVASCULAR DISEASE: ANALYSIS AND FORECASTS

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Abstract
The article discusses the relationship between global climate change and cardiovascular diseases. The mechanisms of climate change impact on the cardiovascular system, as well as statistical data confirming the increase in the number of diseases in the context of rising temperatures and air pollution are discussed from cardiovascular diseases. To combat these threats, a comprehensive approach is proposed, including the adaptation of medical systems and the improvement of public health.

Keywords: Climate change, cardiovascular diseases, global warming, air pollution, prevention, World Health Organization.

Introduction

Global climate change is not just an environment, but also a serious challenge to human health. Rising temperatures, changes in precipitation, and an increase in the number of extreme climatic events can affect various body systems. This is especially true for the cardiovascular system, since diseases of the heart and blood vessels continue to be the leading cause of death in most countries of the world. The World Health Organization (WHO) emphasizes the importance of studying the link between climate change and health, as in recent years there has been an increase in the number of diseases related to the cardiovascular system[1].

The aim of this study is to analyse the link between global climate change and cardiovascular disease, with a focus on the mechanisms that may contribute to this, and to use relevant data and research to confirm these links.

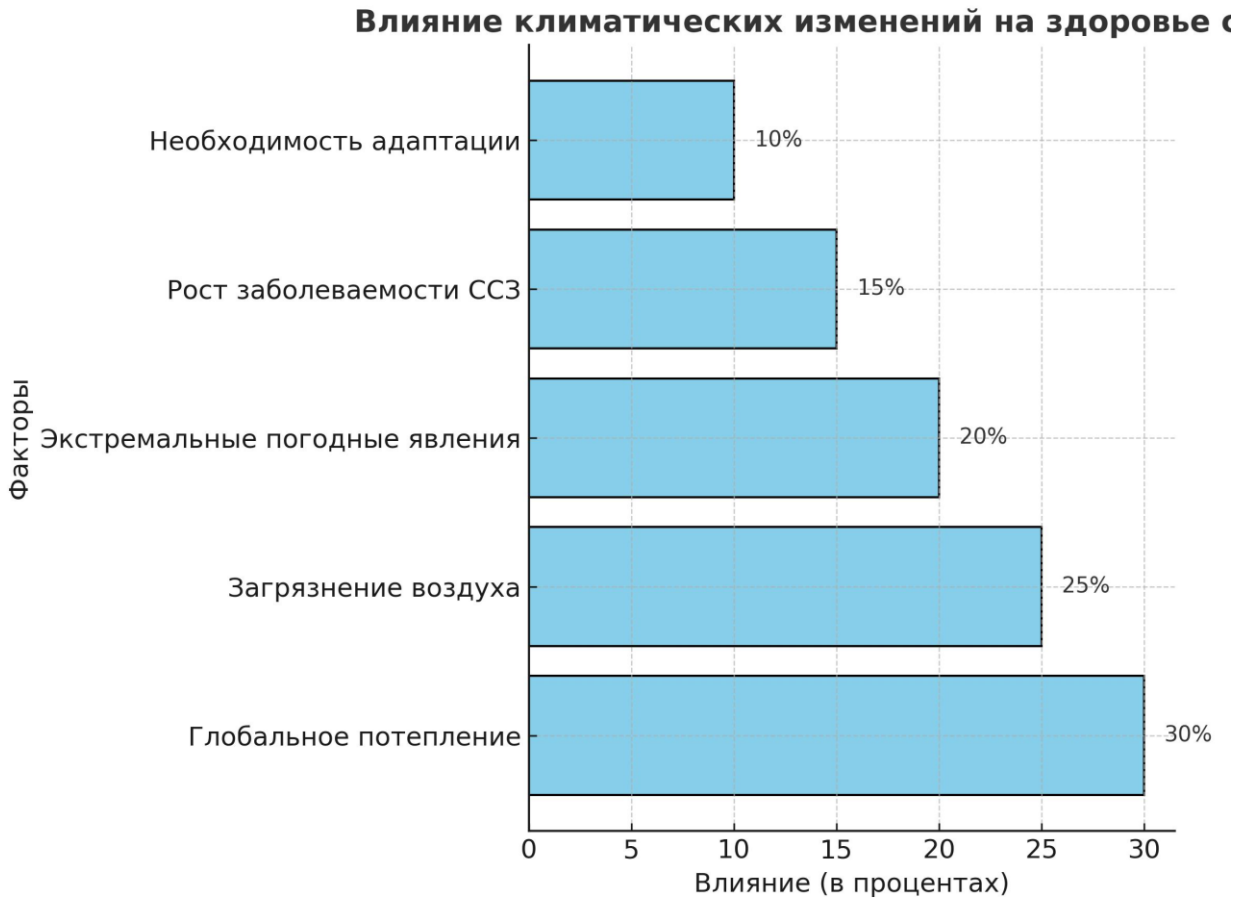
Global Climate Change and Its Impact on the Environment

Climate change includes factors such as an increase in the average temperature on the planet, changes in weather conditions, and an increase in the frequency of extreme weather events. According to the WHO, since the end of the 19th century, the Earth's temperature has increased by 1.2°C, which has devastating consequences for ecosystems and human health. In 2019, the WHO predicted that by 2050, about 250 thousand people will die annually from diseases associated with climate change, including cardiovascular diseases[1.2].

These changes are leading to an increase in natural disasters such as hurricanes, floods, and droughts. Heat waves are becoming longer and more intense, which increases the stress on health, in particular on the cardiovascular system, especially in the elderly, children and people with chronic diseases.

Mechanisms of climate change impact on the cardiovascular system

Changes in temperature and humidity affect the cardiovascular system through several mechanisms. First, hot weather causes vasodilation, which lowers blood pressure, but can also lead to heart overload, especially in people with hypertension. High temperatures also increase the risk of heat stroke and dehydration, which can severely damage the cardiovascular system. Studies show that a 1°C increase in temperature can lead to a 0.5% increase in cardiovascular mortality.[2.3]



The chart illustrates the main factors linking global climate change and the rise in cardiovascular disease (CVD). The diagram shows the following:

1. Global warming (30%) – Rising temperatures cause an increase in heat load on the body, which is especially dangerous for people with cardiovascular disease.
2. Air pollution (25%) – An increase in the concentration of harmful substances in the air leads to inflammation, vascular damage and an increase in heart disease.
3. Extreme weather events (20%) – The frequency of hurricanes, floods, and droughts is increasing, increasing stress and the risk of cardiovascular complications.
4. Increased incidence of CVD (15%) – Climate change is exacerbating risk factors such as hypertension, stroke and heart attack.
5. Need for adaptation (10%) – There is a growing need to develop health and societal measures to mitigate the health impacts of climate change.

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Air pollution associated with climate change also has a devastating effect on the heart and blood vessels. In 2018, a study conducted in the European Union found that high levels of air pollutants can increase the risk of atherosclerosis, heart attacks, and strokes. Pollutants such as fine particulate matter and nitrogen dioxide cause inflammation in the body, which contributes to vascular damage and puts more strain on the heart.

Cardiovascular diseases as a consequence of climate change

According to the WHO, cardiovascular disease (CVD) is the leading cause of death, accounting for about 31% of all deaths worldwide. At the same time, climate change is exacerbating the impact of external factors such as the hot summer months, high levels of air pollution and extreme weather events on vulnerable populations. People suffering from hypertension, diabetes, obesity, as well as the elderly and children, are most susceptible to the adverse effects of climate change[1.4.].

Studies show that a 1°C increase in temperature could increase the number of deaths from cardiovascular disease by 0.5% in temperate countries such as the European Union, while in tropical and subtropical regions the rate could be significantly higher. For example, in India in 2020, studies showed that a 1°C increase in the number of heatwaves could increase the incidence of hypertension by 10% among people over 50 years of age[1.5.8].

Research and evidence on the link between climate change and heart disease

There are many scientific studies confirming the link between climate change and an increase in the incidence of cardiovascular disease. One of the largest studies conducted in the United States in 2017 found that a 5°C increase in temperature during the summer months increases the number of hospitalizations due to cardiovascular disease by 6%. In addition, a study published in the Lancet journal in 2019, showed that air pollution in major metropolitan areas such as New Delhi and Beijing is associated with an increase in strokes and heart attacks[2].

WHO is also focusing on climate change and its impact on health. In its report "Health and Climate Change" (2014), the organization emphasizes the need to develop new health strategies aimed at adapting to climate change, as well as the need to improve urban infrastructure to protect vulnerable populations from adverse climatic factors [1].

Conclusion

Global climate change is having a significant impact on health, including an increase in cardiovascular disease. Rising temperatures, changing air pollution levels, and extreme weather events pose additional risks to heart health. Given existing evidence and research, it is clear that urgent action is needed to mitigate climate change, including improving urban infrastructure, protecting vulnerable groups, and improving health services.

The future requires a comprehensive approach to addressing these challenges, including enhanced international cooperation and the development of effective strategies to protect health in a changing climate.

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