

Prevention of Complications of Cardiac Pathologies

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ABSTRACT

The article discusses the prevention of complications of cardiac pathologies. As the author points out, complications associated with heart disease can be serious and even dangerous. Therefore, it is important to consult a doctor in a timely manner and conduct regular medical examinations in order to prevent or detect possible heart problems early. It is also important to lead a healthy lifestyle, including proper nutrition, regular exercise and smoking cessation. In addition to individual prevention measures, it is necessary to regularly develop and implement State programs for the prevention of cardiovascular diseases, which include educational campaigns and subsidizing activities to improve overall health, such as subsidies for physical activity and anti-obesity programs. Large-scale campaigns are also needed to reduce the level of smoking and control alcohol consumption. Keywords: cardiological pathologies, complications, liver

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INTRODUCTION

Cardiovascular diseases are one of the most common causes of death in the world. Here are some statistics about cardiological diseases in the world: - According to the World Health Organization (WHO), cardiovascular diseases are the cause of death of more than 17.9 million people a year. This accounts for 31% of all deaths in the world. In 2022, WHO reported that the main causes of death from cardiovascular diseases in the world are coronary heart disease (8.9 million deaths), stroke (6.2 million deaths) and hypertension (1.3 million deaths); - cardiovascular diseases are the cause of disability all over the world. They can lead to restricted movement, loss of self-care ability and impaired quality of life. According to WHO, cardiovascular diseases mainly affect people over the age of 40. However, recent studies show that young people may also face the risk of developing cardiovascular diseases due to improper lifestyle, including smoking, lack of physical activity and poor nutrition.

Cardiovascular diseases are the cause of significant economic costs for healthcare worldwide. The costs of treatment and prevention of cardiovascular diseases in the leading countries of the world amount to more than \$ 300 billion per year. There are differences in the prevalence of cardiovascular diseases and their causes in different regions of the world. For example, in some developing countries, the high prevalence of cardiovascular diseases is associated with poor nutrition and lack of access to quality medical care. In developed countries, the risk of developing cardiovascular diseases is associated with lifestyle, including sedentary lifestyle, poor diet, smoking and excessive alcohol consumption. Complications of cardiopathologies are also an extremely dangerous factor, since they can cause the development of chronic ailments and an increase in the mortality rate.

MATERIALS AND METHODS

The paper analyzes an array of literature devoted to the study of preventive measures in the field of prevention of complications in cardiopathology. Comparative and analytical research methods are also applied.

KEYWORDS:

cardiological pathologies, complications, liver disease, kidney failure, hearing loss, prevention

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Results. Cardiopathology, or diseases of the heart and blood vessels, are one of the main problems of modern society. Some of the main problems of cardiopathology include the following:

1. High incidence of heart disease. Cardiopathology is one of the most common diseases in the world. According to the World Health Organization, more than 17 million people die annually due to cardiovascular diseases.
2. Lack of awareness about a healthy lifestyle. A modern lifestyle with a high level of stress, lack of physical activity, poor nutrition, smoking and alcohol consumption significantly increases the risk of developing cardiopathologies. Low awareness of a healthy lifestyle and bad habits contribute to an increase in morbidity.
3. The spread of obesity. Obesity is one of the risk factors for the development of cardiopathologies. Modern society is characterized by an increase in the number of overweight people, which leads to an increased risk of developing heart and vascular diseases.
4. Improper nutrition. The consumption of large amounts of animal fats, sugar and salt in food can lead to an increase in cholesterol levels in the blood and an increase in blood pressure, which leads to the risk of cardiopathology.
5. An increase in the number of older people. With the age, people have an increased risk of developing cardiopathologies, and with an increase in the number of older people in society, the number of people with cardiovascular diseases increases.
6. Low availability of quality treatment. In some regions of the world, there is a lack of availability of high-quality treatment of cardiopathologies, which can lead to a deterioration in the condition of patients and an increase in mortality.
7. High stress level. Modern society is characterized by a high level of stress, which can lead to deterioration of the heart and blood vessels. Increased stress levels can increase blood pressure, impair heart function and contribute to the development of cardiopathologies.
8. Genetic factors. Some types of cardiopathologies may be associated with genetic factors. For example, a genetic factor may be the cause of the development of some forms of arrhythmia or congenital heart defects.¹

In general, the problems of cardiopathology in modern society require efforts to raise awareness of the population about a healthy lifestyle, regular medical examination and the availability of quality treatment. Heart diseases can lead to various complications, which can be dangerous and even life-threatening. Some of the most common complications associated with heart disease may have the following forms.²

1. Coronary heart disease. This is the most common complication associated with heart disease. Coronary heart disease develops when oxygen-rich blood does not reach the heart muscle due to a disease of the arteries of the heart. This can lead to myocardial infarction and other serious complications.
2. Arrhythmia. This is a condition in which the heart beats incorrectly. Arrhythmia can lead to weakness, shortness of breath and even loss of consciousness.

Inflammation of the heart: this is a condition in which the lining of the heart becomes inflamed. Inflammation of the heart can lead to chest pain, shortness of breath and other serious problems.

3. Edema. Heart disease can lead to impaired blood flow and increased pressure in the circulatory system, which can cause swelling, especially in the legs and ankles. Edema can be not only unpleasant, but also lead to impaired mobility and pain in the legs.
4. Stroke. Heart diseases, such as atrial fibrillation or cardiac arrhythmias, can lead to the formation of blood clots in the heart, which can be transferred to the brain and cause a stroke. Stroke is a serious complication that can lead to disability and even death.
5. Cardiogenic shock. This is a condition when the heart cannot pump blood efficiently through the body and blood pressure drops to critical values. Cardiogenic shock is a life-threatening condition requiring immediate medical attention.
6. Sudden cardiac death. This is a condition when the heart suddenly stops working, which can lead to death within a few minutes. Sudden cardiac death can be caused by a variety of factors, including arrhythmia, myocardial infarction or other heart diseases. Renal failure may be one of the possible complications of cardiopathology. Cardiovascular diseases, such as hypertension, atherosclerosis, cardiac arrhythmias, coronary disease, etc., can cause kidney damage, which leads to kidney failure.³

The kidneys play an important role in filtering waste and excess fluid from the blood. However, with heart diseases, there may be a violation of blood flow in the kidneys, which leads to the fact that the kidneys do not receive enough oxygen and nutrients. This can lead to the appearance of a slowdown in kidney function, which over time can progress into chronic renal failure.

The cause of kidney failure may also be medications used to treat heart diseases, for example, some diuretics that help reduce swelling, but can increase the load on the kidneys.⁴

Kidney failure, in turn, can worsen the condition of the heart and aggravate cardiopathology. Therefore, it is important to consult a doctor at the first symptoms of heart disease and monitor the condition of the kidneys, especially if there are risk factors such as diabetes mellitus or hypertension. Early detection and treatment of heart and kidney diseases can help prevent the occurrence of kidney failure and improve the patient's quality of life.

With kidney failure, various symptoms may occur, such as fatigue, swelling, lethargy, decreased appetite, nausea and vomiting, itchy skin, pain in the kidney area. In addition, in chronic renal failure, electrolyte imbalance may occur, which can lead to various complications, for example, a decrease in the level of calcium in the bones.⁵

To diagnose renal insufficiency, various studies are carried out, such as urine and blood tests, ultrasound examination of the kidneys, magnetic resonance imaging, kidney biopsy. Depending on the degree of renal dysfunction, conservative treatment may be prescribed (for example, with first-degree insufficiency)

or dialysis (with chronic renal failure of the last stages). Heart diseases can cause various liver complications. For example, with heart failure, there may be stagnation of blood in the liver, which leads to its increase in size. Also, with heart failure, there may be a violation of liver functions associated with the metabolism of drugs and other substances. Congestive hepatopathy may occur - diffuse venous stagnation in the liver, which occurs due to insufficiency of the right parts of the heart (usually due to cardiomyopathy, tricuspid valve insufficiency, mitral insufficiency, pulmonary heart or squeezing pericarditis).⁶

Another cause of liver disease after heart disease is hepatitis insufficiency, which can occur with shocks of various origins (for example, cardiogenic shock). This condition is accompanied by a violation of the blood supply to the liver and can lead to various disorders in its functioning.⁷

To diagnose liver diseases associated with heart diseases, various studies are conducted, such as blood tests for the level of liver enzymes, ultrasound examination of the liver, liver biopsy.⁸

Hearing loss can be associated with various factors, including heart disease. One of the reasons may be the lack of sufficient blood supply to the inner ear, caused by impaired blood flow in the arteries, and low oxygen levels in the tissues of the inner ear. Also, hearing loss may be associated with the use of medications used to treat cardiovascular diseases, such as diuretics and anticoagulants, which may have side effects on hearing.⁹

One of the common heart diseases that can lead to hearing loss is hypertension. This condition is characterized by high pressure in the arteries and can lead to a decrease in blood flow in the inner ear, which can cause hearing impairment. Also, coronary heart disease can lead to a deterioration of the blood supply to the inner ear and cause hearing loss. To diagnose hearing loss associated with heart disease, special studies are conducted, such as audiometry, tomography and ultrasound. Treatment may include correction of drug therapy, lifestyle changes and treatment of underlying heart disease. Arthritis can be associated with heart disease in several aspects. Firstly, some people with heart disease may experience inflammation of the joints, which is called *cardioarthritis*. This is due to the fact that many heart diseases can lead to immune reactions, which in turn can cause inflammation of the joints.

Secondly, some medications used to treat heart disease can cause side effects, including joint inflammation. For example, some ACE inhibitors, which are widely used to treat hypertension, can cause joint pain. Thirdly, patients with rheumatic diseases, such as rheumatoid arthritis, may experience inflammation of the heart, which is called *rheumatic carditis*. Rheumatic carditis can lead to damage to the heart valves and the development of heart failure. To prevent arthritis as a complication of heart disease, it is necessary to carefully monitor health and take doctors' recommendations for treatment and prevention. If the patient has joint pain, then you should contact a rheumatologist for diagnosis and treatment. It is also important to undergo regular examinations with a cardiologist to detect and control heart diseases.¹⁰

DISCUSSION

There are many risk factors that can increase the risk of cardiovascular disease, including age, family history, high blood pressure, diabetes, smoking, poor diet, sedentary lifestyle and obesity. However, many cardiovascular diseases can be prevented or controlled by lifestyle changes and taking measures to control risk factors. This may include physical activity, healthy eating, blood pressure control, diabetes treatment, and smoking cessation. Treatment of cardiovascular diseases may include drug therapy, restorative medicine procedures, surgical interventions and rehabilitation therapy.¹¹ In some cases, as in the case of myocardial infarction and stroke, it is important to get medical help quickly in order to minimize the risk of death and complications.

Early recognition of risk factors for complications in patients with cardiopathology and primary prevention are significantly the most important areas of work of medical specialists.¹²

Risk assessment and preventive therapy is a process involving a joint discussion and decision-making that should take place between the patient and his attending physician. Lifestyle changes through diet, exercise, and quitting smoking are crucial to reducing risk factors for cardiovascular disease. Further control of hypertension, diabetes and hyperlipidemia is necessary to reduce the risk of coronary heart disease. Diet is an important factor contributing to reducing the risk of secondary pathologies. Thus, some experts recommend a plant-based Mediterranean diet (with a high content of vegetables, fruits, legumes, nuts, whole grains and fish). It has been established that the replacement of saturated fats with dietary monounsaturated and polyunsaturated fats is useful for reducing cardiovascular risks, as well as the development of various diseases in people suffering from cardiopathology.

In addition, a decrease in sodium intake with food leads to a decrease in blood pressure and the risk of cardiovascular events. On the other hand, sugar-sweetened products and artificial sweeteners have been shown to increase the risk of developing diabetes, especially against the background of cardiopathologies. Moreover, increased consumption of trans fats also correlates with an increased risk of recurrence of cardiopathologies and concomitant diseases.¹³

Physical activity is also equally useful for reducing the risk of complications of cardiopathology. It is useful to exercise moderate intensity for at least 150 minutes a week, and high intensity - more than 75 minutes a week. Moderate activities include brisk walking, cycling, active yoga and recreational swimming, while active ones include jogging, playing tennis, swimming, etc. Overweight is also a risk factor for the development of complications of cardiopathology. Recommendations include the annual calculation of body mass index (BMI) and lifestyle changes, including caloric restriction and, consequently, weight loss, based on values. Weight loss has been consistently shown to improve the risk profile of CVD. Strict recommendations include a high level of physical activity (from 200 to 300 minutes per week), a low-calorie diet (from 800 to 1500 kcal per day) and, if possible, weight maintenance programs. Tobacco use is one of the leading causes of complications of cardiopathology. Anyone who smokes should be assisted by

health professionals in their willingness to quit smoking through behavioral and pharmacological interventions. Nicotine replacement therapy is possible here in the form of the use of patches, chewing gums, lozenges, nasal spray and oral inhalers. Preventive measures aimed at preventing the development of diseases of other organs against the background of cardiopathologies are also important. To prevent kidney failure, it is important to monitor the state of the cardiovascular system and promptly consult a doctor at the first symptoms of heart and kidney diseases. It is also necessary to monitor blood pressure and cholesterol levels, control blood sugar levels, avoid alcohol and smoking, eat right and lead a healthy lifestyle. For the prevention of liver diseases, it is important to treat heart diseases in a timely manner and monitor their condition, as well as avoid alcohol and other substances that can negatively affect liver function.¹⁴

For the successful implementation of preventive measures in the field of prevention of complications of cardiopathology, medical control plays an important role. Monitoring the state of health of cardiac patients through telemedicine is one of the most promising areas for the development of medical technologies. Telemedicine allows remote monitoring of the patient's health and timely identification of possible problems associated with the cardiovascular system.

Among the methods of telemedicine monitoring of the condition of cardiac patients, the following can be distinguished¹⁵:

1. Blood pressure monitoring: the patient wears a special device that periodically measures blood pressure and transmits data to a remote server. A doctor can access this data and analyze it, identifying possible problems with the cardiovascular system.
2. Electrocardiography (ECG): The patient can use a portable ECG machine to take ECG measurements and transmit the results to a remote server. The doctor can view this data and identify possible problems with the cardiovascular system. Remote monitoring of vital signs: The patient can wear a special sensor that measures vital signs such as heart rate, respiratory rate, oxygen saturation and body temperature. This data is transmitted to a remote server and can be used by the doctor to monitor the patient's health
3. Telemedicine monitoring allows for earlier detection of possible problems with the cardiovascular system and timely measures to prevent them. In addition, it is convenient for patients who can monitor their health in comfortable conditions and not come to the clinic for this.

In addition, telemedicine monitoring makes it possible to more effectively organize the treatment of cardiac patients. Doctors can conduct a remote consultation and prescribe treatment based on the data obtained. Telemedicine also makes it possible to more effectively organize the joint work of different specialists, such as cardiologists, therapists, electrophysiologists, etc., for more accurate diagnosis and treatment of cardiogenic patients.

It is important to note that telemedicine monitoring does not replace full-fledged medical care and cannot be used for the diagnosis and treatment of all types of cardiovascular diseases. It can be effective for monitoring the condition of patients who

have already passed a full medical examination and received appropriate treatment.¹⁶

It is also important to note that the use of telemedicine to monitor the condition of cardiac patients may be limited by the technical capabilities and availability of this technology in various regions of the world. However, with the development of technologies and the expansion of the availability of telemedicine, its use for monitoring the condition of cardiac patients may become more widespread.¹⁷

Patient education programs are of fundamental importance for the prevention of cardiovascular diseases and their complications. They are designed to allow people with chronic diseases to actively participate in the management of their condition, promoting self-care behavior and changing risk factors. The goals are to improve health outcomes and reduce the incidence of heart complications in patients through information and consulting support, rather than replacing medical care. It has been shown that educational activities in the field of cardiological care increase physical activity, develop healthier eating habits and stimulate smoking cessation.¹⁸

The implementation of patient education programs can vary significantly: the venue may be in clinics, classrooms or at home; the target audience may be an individual or groups, and the content may be individual or general. Common topics include nutrition, exercise, changing risk factors, analysis of psychosocial factors, pharmacological consultations, etc.¹⁹

It is also important to take into account the negative impact of natural factors on the development of complications of cardiopathology. Broad coalitions between government structures and environmental agencies are needed to raise awareness of the adverse health effects of air pollution and promote effective decision-making. Currently, there is no generally accepted global standard for informing about the risk associated with different levels of air pollution. With increased access to high-quality, higher-resolution air pollution monitoring data, there is an unmet need for a coherent global platform for standardizing reporting, prevention and mitigation strategies. Improving access to clean energy with lower emissions and more efficient approaches to cooking remain key global priorities in the fight against air pollution.²⁰

Accordingly, it can be concluded that the most effective method of treating complications of heart diseases is their prevention. It is important not only to control the underlying disease, but also to take measures to reduce risk factors such as smoking, alcohol consumption, diabetes, hypertension, etc. It is also important to be regularly examined by a cardiologist and follow his recommendations for the treatment and prevention of complications.²¹

CONCLUSION

Thus, the prevention of complications of heart disease depends on the specific disease and its severity.

However, there are several common approaches that help prevent or reduce the risk of complications. This is the observance of a healthy lifestyle, which includes moderate physical activity, a healthy diet, quitting smoking and limiting alcohol consumption; taking medications prescribed by a doctor for the treatment of a specific disease. It is important to follow the doctor's recommendations and take medications regularly and in those dosages that are recommended; regular monitoring by a cardiologist. The doctor can conduct regular examinations and monitor the condition of the disease in order to timely identify possible complications and adjust treatment; lifestyle changes and treatment of concomitant diseases. Some diseases, such as hypertension, diabetes mellitus or obesity, may increase the risk of developing complications of cardiovascular diseases. Therefore, it is important to treat concomitant diseases and change your lifestyle in accordance with the doctor's recommendations.

The interaction of medical specialists working in different fields of medicine is also very important. Collaboration on the global burden of cardiovascular disease complications is an ongoing effort to improve the quality and accessibility of evidence for health decision-making. Estimates of the burden of cardiovascular diseases and risk factors can serve as a guide for allocating and prioritizing resources for public health research.

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