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# Complications of COVID-19

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**Abstract:** The COVID-19 pandemic, caused by the coronavirus SARS-CoV-2, has had a significant impact on global health. In addition, people who have suffered the acute phase of COVID-19 may experience various complications and consequences that can last a long time after recovery. One of the most serious complications after COVID-19 is post-COVID syndrome, or so-called "long-term COVID." Post-Covid syndrome is a pathological condition after coronavirus, which can be accompanied by various symptoms and complications.Almost every person who has had an infection encounters a similar syndrome. COVID-19 can cause severe complications from the heart, blood vessels, lungs, kidneys, brain, gastrointestinal tract, liver, and other vital human systems and organs, and mental health problems may also arise. Complications from COVID-19 therefore pose significant health challenges. It is necessary to pay special attention to the long-term consequences of the disease and develop comprehensive strategies for the rehabilitation and support of patients after infection. In this article we will look at the main complications after COVID-19.

**Keywords:** SARS-CoV-2, COVID-19, T-lymphocytes, coagulogram, virus, thrombosis, arrhythmia, tachycardia.

Complications of COVID and its prevention are important and main issues of today. In the article, I would like to provide information about the heart and blood vessels, their changes, complications, and what measures should be taken to prevent them. One of the reasons for the negative effect of the coronavirus on the heart is the serious damage to the human lungs. If the respiratory function is disturbed, the blood is insufficiently saturated with oxygen, and the heart begins to work hard to feed all the organs with blood. This leads to rapid fatigue of the heart muscles. In addition, both patients with chronic diseases of the cardiovascular system and completely healthy people before contracting the coronavirus are affected. The virus damages the myocardial tissue, reduces the blood supply to the heart, and causes myocarditis, that is, inflammation of the heart muscles. If adequate treatment measures are not taken with attention, myocarditis—arrhythmia (heart rhythm disorder), cardiomyopathy (heart muscle disease), thromboembolism (to blood vessels can lead to serious complications such as thrombus occlusion), and sudden death. After the coronavirus, they have a negative effect on the activity of the heart and blood vessels. Another complication that causes inflammation is the cytokine storm. Cytokine molecules are the first to attract more immune cells to the site of inflammation. Next up It is released by T-lymphocytes. And if the level of cytokines is very high, healthy tissue is damaged, as a result of which the functions of all body systems are disturbed. Infected with COVID-19, patients develop fulminant myocarditis (FM) with a distinct cytokine storm, which is acute in this case; heart failure and cardiogenic shock develop rapidly. This is exactly what a doctor from London said: Natalia McDermott said, "The virus is disrupting the balance of the immune system; as a result, strong inflammation is observed." As mentioned above, the SARS-CoV-2 virus is human blood that binds to ACE2 receptors on the endothelial cells lining the blood vessels. These cells are involved in the control of thrombosis. If the endothelium is damaged by the SARS-CoV-2 virus, the regulation of the blood coagulation system is disturbed, resulting in the formation of a thrombus (blood clots in 38% of 184 coronavirus patients admitted to intensive care in the Netherlands increased). In addition to large vessels, the coronavirus also affects capillaries, in which a thrombus occurs as a result of the blockage of blood clots. Before contracting the SARS-CoV-2 virus, in the

walls of the vessels beforehand in patients with chronic diseases of the cardiovascular system, there are changes (atherosclerotic plaques, blood clots, thickenings).

COVID-19 blood worsens the condition of the blood vessels, which in turn can lead to a heart attack." The virus causes an inflammatory process on a very large scale, as a result of which several organs fail and come out. "If a person's immune system does not defeat the virus, every part of the body will suffer." Dr. Bharat Pankhania. Thus, under the influence of the SARS-CoV-2 virus, in some patients after the coronavirus, the heart and vascular pathologies may appear, for example:

- tachycardia (rapid heartbeat);
- arrhythmia (rhythm disorder);
- heart failure;
- inflammation of the myocardium (myocarditis);
- thrombosis;
- pulmonary embolism;
- stroke;
- myocardial infarction, atypical heart attack.

The main signs of changes in the cardiovascular system:

pain in the heart;

- shortness of breath, feeling of lack of air;
- chest discomfort;
- paleness of cheeks, nose, lips, and surroundings;
- cough not associated with a cold or flu;
- increased heart rate;
- tiredness, restlessness for no reason;
- sleep problems;
- loss of appetite;
- hyperaemia;
- increased sweating.

If these signs are detected, first of all, it is necessary to undergo a series of tests:

- clinical blood test, general analysis of blood;
- coagulogram;
- lipogram;
- ECG, echocardiography;
- Dopplerography of coronary vessels;
- determining the level of D-dimer in the blood to assess the risk of thrombosis;
- Day and night monitoring of arterial pressure (according to indicators).

According to the results of the examination, the cardiologist prescribes medical treatment of the heart, physiotherapy, and diet therapy and creates a program that includes recommendations for physical activity. The heart after the coronavirus disease prevention. Prevention. A person's health and longevity are directly related to the state of the cardiovascular system.

Basic preventive measures:

- timely preventive medical examination at the family polyclinic;
- adherence to a diet, eating more fruits and vegetables, the amount of animal fats reduce;
- Follow the water drinking regimen.
- Pay attention to physical activity (do physical exercises and breathing exercises, of course).
- always walking in a good mood, conducting music therapy;
- spend more time in the fresh air;
- Stop using alcohol, smoking, and drugs;
- avoid stressful situations;
- control of arterial pressure;
- If symptoms of heart or blood vessel disorders appear, consult a cardiologist in a timely manner. To restore blood vessels after the coronavirus, according to the recommendation of therapist Georgiy Sapego, it is necessary to restore the vitamin balance, called to eat five portions of vegetables and fruits a day.

I recommend adding the following ingredients to your diet.

- Red fermented rice (Monacolin K) is a natural statin that suppresses cholesterol production and helps reduce and increase decomposition.
- Vitamin PP ensures healthy energy metabolism; cardiovascular diseases and diabetes help to reduce the risk of development.
- Coenzyme Q is a powerful antioxidant. It plays an important role in the formation of energy; blood lipid normalises its composition and slows down the ageing process. • Bifidobacterium longum— bile limits the absorption of cholesterol derivatives formed through
- Ginger, lemon, honey tea to increase immunity;

Summary. As can be seen from the above, a person should not be indifferent to his health. In himself, when you notice any changes, you must undergo an examination, make an accurate diagnosis, and take your own treatment measures.

It should be done on time. After all, taking care of our health is the guarantee of a prosperous life!

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