

CHARACTERISTICS OF CORONARY HEART DISEASE PROGRESSION IN PATIENTS WHO HAVE RECOVERED FROM COVID-19

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Abstract

The infection caused by the coronavirus pandemic (COVID-19) continues to show its clinical picture. Despite the publication of a number of scientific articles, the course of coronary heart disease in the acute phase of COVID-19, especially SARS-CoV-2, has been little studied. Separately obtained results of the disease require a thorough study of the effect of COVID 19 on the cardiovascular system.

Keywords: COVID 19, post-covid syndrome, coronary artery disease coronary angiography.

Introduction

The consequences of the new coronavirus infection are one of the main problems in the world healthcare system. Currently, there is an increase in risk factors in the cardiovascular system with high cardiorespiratory symptoms, an increase in risk factors during long-term examination of patients with SARS-COV-2 infection. It was noted that patients had no association with other diseases for 12 weeks after the onset of the COVID-19 infection. The relevance of the problem lies in the fact that this pathology is increasingly occurring in a specific clinic. [5]. Even in patients without coronary heart disease, high blood pressure is observed in patients who have had COVID-19. This can be seen in the high maintenance of unstable blood pressure and an increase in mortality from coronary heart disease. A retrospective study in Great Britain analyzed 48,000 patients hospitalized with COVID-19. After 140 days, studies (clinical, demographic) were conducted. In recovered patients, the mortality rate increased from 3.5 to 7.7 per year. (relative to the control group). The deterioration of patients' condition is accompanied by cardiac metabolism disorders, decreased cardiac reserve function, rupture of atherosclerotic plaques, inflammatory processes, thrombotic complications, thrombosis in stents [11-13] due to increased coagulation, blood thickening disorders [15]. Monitoring and evaluation of clinical laboratory studies of patients who have undergone mild and moderate forms of coronary heart disease COVID-19 for 12 weeks were established.

The Temporary Preventive Recommendation was used to determine the severity of COVID-19 in patients in the acute period. In the mild course, an increase in body temperature by 38 degrees, a sore throat, a cough, and the absence of criteria for moderate severity of the keuchi form were observed. In the moderately severe form, body temperature is 38 degrees, respiratory rate is 22





breaths per minute. Shortness of breath during physical exertion, changes characteristic of viral inflammation on a CT scan, SpO₂ < 95% C reactive protein positive, impaired consciousness, systolic blood pressure below 90, diastolic blood pressure below 60, and diuresis below 20 ml were observed.

Material and methods

The examined patients were divided into two groups. The first group included 60 patients with a mild acute course (average age 56.3 ± 6.6 years), the second group included 58 patients with a moderately severe course. The average age was 60.9 ± 5.6 years. From the anamnesis with ischemic heart disease in the first group 4.2 ± 0.5 years. In the second group 3.9 ± 0.6 years. Previously, angioplasty of the coronary arteries was performed in 17 (28.3%) patients of the 1st group and in 14 (24%) patients of the 2nd group. Patients not included in the group: acute coronary syndrome, up to 6 months, post-infarction aneurysm of the left ventricle, atrial fibrillation, patients with a low ejection fraction (EF) of chronic heart failure, patients on electrocardiostimulants, oncological pathologies. In laboratory studies, D-dimer from enzyme-linked immunosorbent assay, Tridmel test from instrumental diagnostics, ultrasound examination of the heart, and diagnostic coronary angiography were performed on all patients. And statistical analysis was conducted. The duration of COVID-19 patients was 3-15 months. 33 patients (56.8%) were admitted to the infectious diseases hospital from the second group. Patients of the first group were treated on an outpatient basis. Arterial hypertension was noted in most patients, 57 people in the first group, which amounted to 95%, and 57 patients in the second group, which amounted to 98%. Controlled arterial hypertension was noted in 35 patients, uncontrolled AH in 28 patients and amounted to 48%. Body mass index (BMI) in the first group was 28.8 ± 4.9 kg/m². In the second group, it was 31.4 ± 4.9 kg/m².

Results

In the post-COVID period, the condition of 21 patients in the first group (35%) and 22 patients in the second group (37.9%) with stable angina worsened, there was a decrease in tolerance to physical exertion, increased anginal attacks, and increased intake of nitrates. ISCHEMIC HEART DISEASE with class III load angina was noted in 29 (50%) patients of the 2nd group, and in the 1st group - in 17 (28.3%) ($p < 0.05$), microvascular angina was noted in 4 patients from each group. Before COVID-19, myocardial infarction occurred in 15 patients (25.0%) of the 1st group and 17 patients (29.3%) of the 2nd group. In patients of the 1st group, type II diabetes mellitus was detected in 15 patients (25.0%), in patients of the 2nd group - in 6 (10%). Disorders of glucose tolerance were observed in 14 patients (24.1%) in the 2nd group and in 5 patients (8.6%) in the first group. Chronic kidney disease (CKD) was observed in all patients.

In the 1st group, bronchial asthma with chronic obstructive bronchitis was observed in 2 patients (3.3%), in the 2nd group - in 6 patients (10.3%). In all patients of the first group, the left ventricular contractile function of the heart was preserved, and in patients of the 2nd group, CHF, a slight decrease in ejection fraction (EF) was observed. CHF stage 1 in 46 patients (76.0%), in group 1 in 32 patients (55.1 patients), in group 2 in 23 patients (39%) with CHF stage 2A, in group 1 in 14 patients (23.3%). In the 2nd group, CHF with stage 2B was observed in only 2 patients (3.4%). In the 1st group, 55 patients (91.6%), in the 2nd group 54 patients (93.1%) underwent drug treatment





for ischemic heart disease and hypertension (in patients who had undergone COVID 19). The therapy included deagregants, β -blockers, calcium antagonists, ACE, and nitrates. In biochemical analyses, there were practically no significant changes.

Echocardiographic examinations showed no particularly reliable changes. However, the left ventricular FV according to Simpson was significantly higher in group 1 ($63.2 \pm 4.8\%$) than in group 2 ($54.4 \pm 3.6\%$) ($P < 0.05$). In the process of angiographic examination, damage to the coronary arteries and disorders of the main vessels were analyzed. Unchanged coronary arteries were found in 5 patients (8.3%) of the 1st group, in 4 patients (6.8%) of the 2nd group. Damage to the coronary arteries of hemodynamic significance (< 70), in the 1st group ((63.3%), in the 2nd group 44 patients (75.8%). The greatest number of coronary artery lesions occurred in the 1st group (16-26%) and in the 2nd group - 8 patients (13.3%). Multiple vascular lesions were observed in 10 patients (17.2%). In patients of group 1, lesions of the left coronary artery trunk were not observed; in group 2, lesions of the left coronary artery trunk were observed in 4 patients (6.8%). In other main vessels, damage in the 1st group was less than in the 2nd group. The recurrence of restenosis in patients who underwent percutaneous coronary intervention practically did not differ in both groups. In the first group, 8 patients (47.0%), in the second group - 5 patients (35.7%) ($p < 0.005$). All patients underwent repeated thoracic coronary intervention. In the post-COVID period, the course of ischemic heart disease was characteristic, and the incidence of uncontrolled AH, high-degree angina pectoris was severe in patients with mild COVID-19 and moderately severe COVID-19. Myocardial dysfunction was also high in patients with moderate severity of COVID-19.

Hyperfibrinogenemia is also the most common marker of coagulopathy in acute COVID-19. It was detected in hospitalized patients.

In patients with moderate severity of coronary heart disease who had COVID-19, damage to the main vessels of the coronary arteries was observed, especially in the right coronary artery. However, it did not differ significantly from patients with mild COVID-19.

Conclusion

The obtained results show that patients with ischemic heart disease in the acute infectious stage of moderate severity of COVID 19 are a special risk group and cause a severe course of the underlying disease. A severe course of coronary heart disease can lead to respiratory failure, fibrotic changes in the lungs, and coagulopathy due to a previously transmitted coronavirus infection. Patients with ischemic heart disease who have undergone COVID-19 (in the post-COVID period) should be assessed based on new views on the cardiovascular system, and special attention should be paid to the prevention of the disease.

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