

THE IMPACT OF CORONAVIRUS INFECTION ON THE CLINICAL CONDITION, LEVEL OF EXERCISE TOLERANCE, AND QUALITY OF LIFE IN PATIENTS WITH CHRONIC HEART FAILURE

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Abstract. Heart damage is a common complication of COVID-19. A study by Ruan Q., Xu Z., et al. in Wuhan found that heart disease, either alone or in combination with respiratory failure, accounted for 40% of all deaths. On the other hand, pre-existing cardiovascular disease (PCVD) increases the risk of complications, including death, in patients with COVID-19. A meta-analysis by Li B. et al. of hospitalized patients with COVID-19 found that the incidence of cardiovascular disease was 16.4% in patients not requiring intensive care, but three times higher in patients requiring intensive care.

Keywords: COVID-19, Ischemic heart disease, heart failure, exercise tolerance.

ВЛИЯНИЕ КОРОНАВИРУСНОЙ ИНФЕКЦИИ НА КЛИНИЧЕСКОЕ СОСТОЯНИЕ, УРОВЕНЬ ПЕРЕНОСИМОСТИ ФИЗИЧЕСКИХ НАГРУЗОК И КАЧЕСТВО ЖИЗНИ ПАЦИЕНТОВ С ХРОНИЧЕСКОЙ СЕРДЕЧНОЙ НЕДОСТАТОЧНОСТЬЮ

Аннотация. Повреждение сердца является распространенным осложнением COVID-19. Исследование, проведенное Ruan Q., Xu Z. и др. в Ухане, показало, что сердечные заболевания, как в отдельности, так и в сочетании с дыхательной недостаточностью, составляют 40% всех случаев смерти. С другой стороны, уже имеющееся сердечно-сосудистое заболевание (PCVD) увеличивает риск осложнений, включая смерть, у пациентов с COVID-19. Метаанализ госпитализированных пациентов с COVID-19, проведенный Li B. и др., показал, что частота сердечно-сосудистых заболеваний составила 16,4% у пациентов, не нуждающихся в интенсивной терапии, но в три раза выше у пациентов, нуждающихся в интенсивной терапии.

Ключевые слова: COVID-19, ишемическая болезнь сердца, сердечная недостаточность, переносимость физических нагрузок.

Research.

The clinical condition, exercise tolerance, and quality of life of patients in both groups were studied, and the impact of coronavirus infection on these indicators was assessed. The results of the clinical condition assessment scale - ХБСИ (ШОКС) in the group of patients

with SYuY II FS who had COVID-19 were significantly different from the group of patients with SYuY II FS who had not had COVID-19 (Tables 3.3.1 and 3.3.2). The average value of the sum of XBCIII (IIIOKC) scores in patients with SYuY II FS who had COVID-19 was 33.3% higher than in patients without COVID-19, and was 4.5 ± 0.2 points and 6 ± 0.2 points in the first and second groups, respectively. In patients with COVID-19 with stage III FS, the average value of the sum of the SHOC scores was 20.8% higher than in patients without COVID-19, and this indicator was 7.2 ± 0.2 points and 8.7 ± 0.1 points in the first and second groups, respectively. Accordingly, the average value of the sum of the SHOC scores in patients with stage II FS who had COVID-19 was 1.33 times higher than in patients without COVID-19, and in patients with stage II FS who had COVID-19 was 1.2 times higher than in patients without COVID-19.

Table 1.

Clinical status, exercise tolerance, and quality of life in patients with and without COVID-19 with SYuY II FS

Indicators	COVID-19 not passed (n=13)	COVID-19 spent (n=14)	p
KHBSH – IIIOKC (score)	$4,5 \pm 0,2$	$6 \pm 0,2^{***}$	$<0,001$
6 DYT (m)	$363,9 \pm 13,4$	$307,7 \pm 7,9^{**}$	$<0,01$
Minnesot questionnaire (score)	$22,4 \pm 2$	$33,7 \pm 1,5^{***}$	$<0,001$

Note: *p – confidence level relative to the indicators of patients who did not have COVID-19.

When examining the patients' exercise tolerance through the results of the 6-minute walk test (6-MWT), it was found that coronavirus infection had a direct effect on this indicator (Tables 3.3.1 and 3.3.2). In patients with stage II COVID-19, the average value of the sum of the 6-MWT indicators was 18.3% lower than in patients without COVID-19, and was 363.9 ± 13.4 meters and 307.7 ± 7.9 meters in the first and second groups, respectively. In patients with stage III COVID-19, the average value of the sum of the 6-MWT indicators was 34.3% lower than in patients without COVID-19, and was 255.8 ± 7.2 meters and 190.5 ± 6.1 meters in the first and second groups, respectively. Accordingly, the average value of the sum of 6 DYT indicators was 1.18 times lower in COVID-19 patients with SYuY II FS than in patients who did not have COVID-19, and 1.34 times lower in COVID-19 patients with SYuY III FS than in patients who did not have COVID-19.

Table-2

Clinical status, exercise tolerance, and quality of life in patients with and without COVID-19 with stage III FS

Indicators	COVID-19 not passed (n=17)	COVID-19 spent (n=16)	p
KHBSH – IIIOKC (ball)	7,2 ± 0,2	8,7 ± 0,1***	<0,001
6 DYT (m)	255,8 ± 7,2	190,5 ± 6,1***	<0,001
Minnesot questionnaire (score)	36,4 ± 2	54,6 ± 2,4***	<0,001

Note: *p – confidence level relative to the indicators of patients who did not have COVID-19.

Also, according to the results of the Minnesota questionnaire, there was a difference in the overall index of quality of life of patients (Tables 1 and 2). According to the presented data, in patients with SYuY II FS who had COVID-19, the average value of the sum of the Minnesota questionnaire scores was 50.4% higher than in patients without COVID-19, and was 22.4 ± 2 points and 33.7 ± 1.5 points in the first and second groups, respectively. In patients with SYuY III FS who had COVID-19, the average value of the sum of the Minnesota questionnaire scores was 50% higher than in patients without COVID-19, and was 36.4 ± 2 points and 54.6 ± 2.4 points in the first and second groups, respectively. Accordingly, the mean value of the Minnesota questionnaire score was 1.5 times higher in COVID-19 patients with SYuY II FS than in patients without COVID-19, and 1.5 times higher in COVID-19 patients with SYuY III FS than in patients without COVID-19. Thus, infection with coronavirus infection in patients with SYuY complications negatively affects their clinical condition, level of tolerance to physical exertion, and quality of life. COVID-19 o'tkazmagan bemorlar klinik holati, jismoniy yuklamaga nisbatan tolerantlik darajasi va hayot sifati ko'rsatkichlarining qon zarobidagi NT-proBNP miqdori bilan o'zaro korrelyatsion bog'liqligini tekshirish natijasida quyidagilar aniqlandi: bemorlar klinik holati ko'rsatkichlari (IIIOKC) va NT-proBNP o'rtasida II FS ga ega bemorlarda kuchsiz to'g'ri bog'lanish ($r=0,08$), III FS ga ega bemorlarda kuchsiz to'g'ri bog'lanish ($r=0,14$); jismoniy yuklamaga tollerantlik darajasi va NT-proBNP o'rtasida II FS ga ega bemorlarda kuchsiz to'g'ri bog'lanish ($r=-0,06$), III FS ga ega bemorlarda kuchsiz teskari bog'lanish ($r=-0,23$); hayot sifati ko'rsatkichlari va NT-proBNP o'rtasida II FS ga ega bemorlarda kuchsiz to'g'ri bog'lanish ($r=0,16$), III FS ga ega bemorlarda o'rtacha kuchdagi to'g'ri bog'lanish ($r=0,47$) mavjud.

Conclusion. As can be seen from the above, coronavirus infection can cause various complications in the body for a long time after recovery from the disease. In post-COVID patients, significant negative changes were detected in serum NT-proBNP levels, cardiac ExoKG parameters, clinical condition, exercise tolerance level, and quality of life indicators. It was also proven that these changes increase depending on the severity of the disease.

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