



## OPTIMIZED THERAPEUTIC APPROACHES FOR PATIENTS WITH COMORBID CONDITIONS FOLLOWING COVID-19

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**Abstract:** The annual incidence of respiratory diseases continues to rise among both adults and children. In adult populations, these conditions are frequently accompanied by the development of bronchial obstructive syndrome (BOS), as well as cardiovascular disorders such as hypertension and coronary artery disease (CHD). These comorbidities have become even more pronounced in patients who have recovered from COVID-19 infection. Timely and effective rehabilitative therapy following COVID-19 can help rapidly prevent disease recurrences and improve clinical outcomes in this patient.

**Keywords:** COVID-19, pathology, treatment, respiratory rehabilitation, patients, relapses, pandemic, prevention, recovery

**Relevance.** Among both children and adults, the incidence of respiratory diseases accompanied by the development of broncho-obstructive syndrome (BOS) and cardiovascular diseases such as hypertension and coronary heart disease (CHD) is increasing every year. Although statistics indicate an increase in the recurrence of these diseases, having had COVID-19 increases the risk of complications. COVID-19 primarily affects the respiratory tract and lungs, causing profound disruption to the respiratory system, followed by cardiovascular and excretory functions.

**The main goal of the work** is rehabilitation treatment after COVID-19, to prevent relapses in patients with comorbidities such as bronchopulmonary



pathology, osteochondrosis; rheumatoid arthritis; gastrointestinal diseases; circulatory disorders; hypertension - of varying severity, of different ages.

Considering that coronaviruses are a large family of RNA-containing viruses that cause zoonotic infections transmitted between animals (cats, dromedary camels, etc.) and humans, the emergence of new types of coronaviruses, which cause severe and rapidly spreading diseases, is due to their spontaneous mutations. Therefore, all types of coronaviruses have the potential to be dangerous to humans, and various mutants are also capable of causing infectious pathological processes in future years. [1, 3, 11, 13, 14, 18].

Prominent scientists studying the effects of coronavirus infection on the body, in particular, immunologist from the University of Texas Vineet Mencheri noted that after 50 years, the immune system undergoes changes, and the presence of chronic diseases only exacerbates vulnerability to the virus and reduces the body's ability to recover from illness.

Coronaviruses may account for 10% to 30% or more of annual cases of acute respiratory viral infections. Coronaviruses can cause illnesses of varying severity in humans, from the common cold (the first case of acute rhinitis was described in 1975) to more severe conditions.[2, 5, 9, 11, 12, 19]

Among the main pathophysiological disturbances in the development of broncho-obstructive syndrome after COVID -19, the following bronchial factors can be noted: increased tone of bronchial smooth muscles, swelling of the mucous membrane, and hypersecretion of bronchial glands that obstruct the bronchi [3, 6, 15, 16, 18, 19]. The pathogenesis of coronavirus infection includes colonization and destruction by coronaviruses Epithelial cells of the upper respiratory tract. Following an infection or with weakened immunity, the process spreads to the alveoli and is accompanied by a disruption of surfactant secretion, excessive exudation, and a



sharp decrease in gas exchange. However, not only with age but also after COVID - 19, active movement in the lungs can be impaired , decreasing, and blood vessels become clogged. In individuals who have recovered from the disease, persistent type-specific immunity develops, and the damaged areas of the alveolar walls are replaced by connective tissue [1, 5, 7, 11, 14, 17].

In turn, the pathogenic microorganism COVID -19 is a powerful irritant, and its impact on the body initiates a complex process. Two key factors are typically involved from the very beginning of this process: the physiological state of the body and the infectious agent. After recovering from COVID -19, pathological changes occur not only in the lungs but also in comorbidities such as cardiovascular disease, diabetes, and others. Therefore, it is necessary to treat comorbidities such as COPD and coronary heart disease during the rehabilitation period to improve patients' quality of life. [1, 6, 8, 10, 11, 13].

Starting from January 21, 2020, WHO began publishing daily reports on the current situation ( Situation The Emergency Committee under the International Health Regulations (IHR ) on pneumonia caused by the novel coronavirus (2019-nCoV) has prepared reports containing information on the number of confirmed cases, deaths, risk level, and disease control recommendations. It is important to consider the possibility of spontaneous mutations, which could contribute to the emergence of new types of coronaviruses that could cause severe and rapidly spreading diseases.

### **Material and methods**

We studied 78 case histories after COVID-19 in the rehabilitation stage in patients with concomitant diseases such as chronic and recurrent bronchitis, bronchitis ectatic disease - concomitant osteochondrosis; rheumatoid arthritis; hypertension; gastrointestinal diseases . Patients were mostly of different sexes and



ages. with varying severity of the disease. Treatment were conducted in accordance with the (sixth version) of the temporary guidelines for the treatment of COVID -19. Of these, the 1st group had a mild course of the disease - 40 patients, the 2nd group with moderate severity - 3.5 patients , and the 3rd group with severe course of the disease - 3 patients. These patients with severe severity The patients were hospitalized. Taking into account their comorbidities, the following were prescribed for rehabilitation: cardiomagnyl 75 mg once daily, aquadetrim 500 IU (8 drops once daily), plenty of fluids, breathing exercises, and a diet in two groups, respectively, for 10 days on an outpatient basis. At the end of the treatment period, 23 patients from both groups returned for consultation, representing 30.7 % of the patients, while the rest apparently feel much better.

In the 1st group of patients who had COVID-19 with concomitant diseases: gastrointestinal tract - 5 ; chronic bronchitis - 7; acute bronchitis - 8 ; hypertension - 5 ; circulatory disorder - 1; diffuse goiter - 2; bronchopneumonia - 1; bronchiectasis - 2; anemia - 4 ; osteochondrosis – 3; rheumatoid arthritis – 1.

In 2 – In the first group of patients with COVID -19 and concomitant diseases: COPD - 3 in remission; chronic cholecystitis - 1; circulatory disorder - 2 ; as well as patients with residual effects of COVID-19 infection, respectively.

In group -3, patients with severe cases were treated in hospital.

All patients underwent clinical and laboratory tests, including a complete blood count, which showed that the red blood cell, white blood cell, and hemoglobin counts were within normal limits, except for one patient with a concomitant disease, grade 1 anemia in 4 patients, which occurred after COVID-19 infection . In the 1st and 2nd groups, blood biochemistry results were also within normal limits, except for the 3rd group, minor changes were noted: Thrombotest ( st ) (  $M \pm m$  ) -  $5.7 \pm 0.23$ ; Hematocrit (%) (  $M \pm m$  ) -  $47.3 \pm 0.7$ ; Blood cholesterol ( mmol / l ) (  $M \pm m$



) -  $6.20 \pm 0.02$ ; PCR- negative . in all patients and instrumental studies in the form of ECG, blood pressure measurements, spirometry and fluoroscopy or chest x-ray; To determine the degree of oxygen saturation of the body, saturation indicators were determined using a pulse oximeter .

The pandemic has given us a new term, "saturation," which is a measure of blood oxygen saturation. Decreased saturation levels can indicate lung problems, and this has become especially acute since the emergence of the novel coronavirus and continues. Coronavirus pneumonia is becoming one of the main complications of COVID-19. A pulse oximeter is a very convenient device and can be used not only in medical facilities but also at home to measure blood oxygen saturation (saturation - SpO<sub>2</sub>). By determining whether the body is deficient in oxygen, it will be easier to treat it.

Decreased blood oxygen levels can occur for various reasons, including problems with blood, liver, gastrointestinal, or respiratory diseases. However, the recent characteristic changes associated with COVID-19 infection have prompted its use. Among blood disorders, stage II and III anemia are common . Due to a deficiency of red blood cells or hemoglobin, oxygen delivery to the organs is impaired, leading to oxygen saturation levels falling below normal. All of these symptoms contribute to oxygen deficiency, resulting in shortness of breath, chest pain, confusion, headache, rapid heartbeat, and cyanosis of the nasolabial folds and fingertips. If the level drops to  $\leq 93\%$ , oxygen supplementation is necessary. Even a common respiratory illness can lead to inflammation in the lungs and serious complications, not to mention pneumonia of any origin, and a pulse oximeter can help clarify this condition.

On the recommendation of reforming medical rehabilitation and reducing disability to speed up recovery To improve the respiratory process through the use



of accessory respiratory muscles, a series of exercises were proposed to enhance recovery and treatment . Maintaining a sleep and nutritional regimen, as well as taking walks in the fresh air , were also recommended. The obtained data were statistically analyzed. A literature review was conducted.

### **Result and discussions**

In the first and second groups, patients receiving the drug experienced improvement within 6-8 days of adequate therapy. However, patients in the second group with concomitant gastrointestinal diseases were referred to a local gastroenterologist after treatment. All patients were prescribed breathing exercises, which were performed with the help of an instructor and then continued at home. Therapeutic breathing exercises, adequate rest, and a well-balanced vitamin-rich diet will help restore the patient's energy.

The treatment carried out during the rehabilitation period in a clinical setting contributed to an improvement in the patient's condition, an increase in mood, and free breathing, and had a positive effect . Continue the prescribed breathing exercises and continue them for as long as possible, as exercises are the key to health and the prevention of further development of other diseases.

**Conclusion:** Thus, Treatment for COVID -19 infection at a specialized center and rehabilitation treatment were both positive. Treatment and breathing exercises helped normalize sleep, and a nutritious diet is very helpful. Strengthening the health of patients and promoting immune support , not only for COVID - 19 but also for its various newly identified forms . The bronchopulmonary disease season typically begins in the fall and spring and is currently considered severe for this group of patients. Implementing such preventive treatment measures can promote a healthy lifestyle and enhance immune recovery in all patients under clinical observation .



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