REHABILITATION MEASURES IN THE PALLIATIVE DEPARTMENT, CLINICAL CASE OF A PATIENT AFTER COVID-19

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Summary

Covid-19 is an infectious disease caused by the SARS-CoV-2 virus. It is a pandemic acute respiratory illness. The virus spreads and is transmitted through the mouth or nose drops of an infected person, while talking, coughing, sneezing, and more likely in crowded places. By breathing in respiratory droplets or small particles, a healthy person has a high risk of infection. The disease is experienced in different ways, from the onset of slight malaise to recovery, and from a severe course of the disease, the consequences arising from the viral infection, which do not do without the help of doctors. Objective. To study a clinical case of a patient after Covid-19. Material of investigation was the clinical case of a 61-year-old woman, admitted after 40 days of resuscitation to the Palliative Department, Kyiv City Clinical Hospital № 6. Methods of investigation: history of the patient after Covid-19, collection of anamnesis, laboratory and clinical methods of examination. The multidisciplinary team headed by the head of the palliative department was created. We used all possible rehabilitative measures to achieve the set objectives successfully. Results. The patient received the full range of diagnostic and rehabilitative measures. After the end of treatment and rehabilitation measures, the follow-up observation by the family doctor was recommended, it testifies to the successful improvement of the patient's functional state. Conclusion. The article presents my own experience, and introduction of the patient after Covid-19 in the Palliative Department, Kyiv City Clinical Hospital № 6. Individual approach and cohesion of the multidisciplinary team help to fulfill the patient's needs to the fullest extent. The important practical questions of rehabilitation measures for patients with the consequences of Covid-19 are considered.

Key words: rehabilitation, occupational therapy, Coronavirus disease, examination, physical therapy

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1. Introduction

According to the Ministry of Health, Ukraine has recorded 4,783,835 people with Covid-19 all time; 4,023,033 patients have recovered; 105,229 people have died.

The Covid-19 pandemic has changed lives worldwide *(Wu, F., et al 2020).* Coronavirus Infectious Disease 2019 (COVID-19), was first reported in Wuhan, country of China. Causes severe respiratory illness: pulmonary failure, pneumonia, low saturation, the appearance of rapid fatigue, and low endurance when performing active movements in an upright body position. The cardiovascular system is affected, and myocarditis occurs as a consequence. Coronavirus – severe, acute respiratory syndrome (SARS-CoV-2), causative agent COVID-19, a new coronavirus (*Memish, Z., et al 2020*). Symptoms: runny nose, fever, headache, dry cough, difficulty in breathing, increased body temperature, lack of smell and taste, muscle pain, rapid fatigue, low saturation *(Guan, W. J.,et al 2020).*

Purpose: The clinical case of a patient after Covid-19 who was in the intensive care unit for 1 month and 9 days was analyzed. After that, she was taken to the Palliative Care Unit, due to complete dependence on outside help. Effective rehabilitative measures were implemented to restore the patient's independence after Covid-19.

2. Clinical case

Epicrisis. The patient was admitted to the Palliative Care Department of Kyiv City Clinical Hospital № 6, from the Intensive Care Unit, where she stayed for 40 days, with the following condition: general atherosclerosis with predominant lesions of the brain, heart, kidneys, and lower extremities vessels. Pain syndrome. Coronary heart disease: Diffuse cardiosclerosis. Atherosclerosis of the aorta and coronary vessels of the heart. Hypertensive heart disease stage II. Heart failure stage 2 A. Diabetes mellitus type 2, of medium severity, sum compensation stage. Diabetic universal angiopathy, polyneuropathy. III degree obesity. Bilateral multisegmental pneumonia Covid 19 of November 26, 2020. Postvaccine syndrome. Unvaccinated. Respiratory failure of II-III degree. Acute respiratory distress syndrome. Bedsores: facial area, nose, and sacral spine.

On November 27, 2020, according to the results of a polymerase chain reaction test made (a nasopharyngeal swab was performed) – with a positive indicator, which is a confirmation of SARS-CoV-2 virus corona, RNA virus.

Due to her inability to take care of herself, the patient was transferred to the Palliative Care Department, Kyiv City Clinical Hospital № 6. Enzyme immunosorbent assay for Covid-19 was performed during hospitalization.

Anamnesis Morbi: Complaints: general weakness, lethargy, recurrent headache, tinnitus, dizziness, pain in the whole body, namely in muscles and joints. Shortness of breath, lack of sense of smell, distortion of taste, disturbed sleep. Depressed emotional state.

Status localis: Examination of the skin revealed bedsores on the bridge of the nose, size 2 x 3 cm., the edges of the wound are not hyperemic, and the discharge is slight, serous-hemorrhagic. In the sciatic region, namely the sacral spine, bedsores, 5 x 6 cm, with minor hyperemic edges, discharge moderate, serous hemorrhagic. Pain in the decubitus areas.

Anamnesis vitae: Viral hepatitis, tuberculosis, Human Immunodeficiency Virus, and venereal diseases. Allergy to analysis. The patient has a history of type 2 diabetes mellitus, duration 9 years, and takes the pharmacological drug Forxiga 10 mg, and Glucovafage 1000 mg.

Anamnesis communis: On admission of the patient to the Palliative Care Unit, the condition is stable and severe. Conscious, contact available. Hypersthenic build. Skin and visible mucous membranes were clean, warm, dry, and pale. Their body temperature was 36,8 C. The pharynx was clear. Peripheral lymph nodes were not enlarged. Lungs: breathing

was rigid, weakened in the lower parts, with no rules. Heart tones were muffled, with emphasis on the second tone on the aorta, rhythm. The heart rate in the passive state was 88 beats per minute. Blood pressure 140/100 mmHg.

The tongue was covered with a white plaque at the root, moist. The abdomen is symmetrical, not swollen, and participates in the act of breathing. On palpation, it was soft and painless in all parts. The liver and spleen were not enlarged. Percussive muffling is absent in the flattened areas. Auscultatory intestinal murmurs are even, heard throughout the examination. Gases are excreted, and stools are not daily. Peripheral edema is absent.

Pasternatzky's symptom is negative on both sides.

Per rectum: Sphincter tone is satisfactory, and anal reflex is preserved. The rectal ampulla was not enlarged, and no abnormalities were detected.

From the beginning to the end of rehabilitation measures of the patient, stable decubitus treatment and dressings were performed. In the end, significant changes in the treatment of bedsores were achieved.

During rehabilitation activities, the patient's condition considerably improved. Her body temperature was 36.5 C; heart rate 80–85 BPM; blood pressure 120/80 mmHg; saturation 95 BPM. The rehabilitation process from 04.01.2021 to 25.02.2021, proceeded without significant complications. The patient can look after herself independently: moving around, eating, doing hygienic procedures, etc. In stable condition, with positive dynamics, the patient was discharged from Kyiv City Clinical Hospital № 6, Palliative Care Department. Advice for implementation and recommendations for compliance were given.

3. Methods and material of research

All activities at the Palliative Department, Kyiv City Clinical Hospital № 6, were conducted with the voluntary consent of the patient and her caregivers: diagnostic, therapeutic, and rehabilitative.

The patient had a request: “I want to go to Paris, but I need to be independent and be able to walk”. A Multidisciplinary team was invited by the department head, consisting of: Endocrinologist, psychologist, physical therapist, occupational therapist, massage nurse, ward nurse, and nurse aide. Each specialist conducted an examination using evidence-based methods and tests, which further analyzed the dynamics of the patient's psycho-emotional and functional state. Goals were formed in a Smart format.

The psychologist worked on the psycho-emotional state of the patient. There were obstacles to the recovery and achievement of the goals: fear, depression, rapid fatigue, and lack of endurance. Depressed condition. The specialist conducted sessions for up to 1 hour, from the first days of admission until the patient was discharged.

During the initial examination, the physical therapist used: a pulse oximeter, to determine saturation – blood oxygen level control. During verticalization, passive saturation decreased from 65 to 68 beats to 48 beats, the norm being 95 BPM. For almost 3 weeks, the patient needed oxygen support, after verticalization and dosed physical activity. Therefore, the nurse connected the patient to the oxygen concentrator for recovery and support of the patient's respiratory system.

Initial physical therapist examination: Chiropractic-muscular testing, right arm, and leg – 3 points, left arm and leg – 2 points; on the modified Rankin scale – 5 points; on the Berg balance scale – 2 points. Stand up and walk test with time – not possible to perform.

Paresthesias of the lower extremities were noted. There were no contractures or restrictions on the range of motion in muscles and joints.

During the initial examination, the occupational therapist used: a pulse oximeter, at rest and during changes in body position. Barthel Daily Activity Index – 15 points; Montreal Cognitive Function Scale – 16 points. On the Visual Analog Pain Scale – 7 points. There was an impaired superficial sensation in the left arm.

The massage nurse performed lymphatic drainage massage of the upper and lower extremities, for 3 weeks, once a day, lasting 15 to 20 minutes. The lymph drainage massage had a positive effect in restoring lymph circulation to the lower and upper extremities. It improved blood circulation and activated the regeneration of processes in the body.

For the next 3 weeks, drainage massage of the chest and therapeutic massage along the spine once a day for up to 30 minutes were carried out. The purpose of the massage was to eliminate the residual effects of the disease and normalize the respiratory system. Drainage massage was performed with emphasis on the chest, contributing to the improvement of drainage function; lymph flow from the lungs, strengthening and increasing the endurance of respiratory muscles. Therapeutic massage helped to improve blood circulation to the muscles and reduces tension and pain.

During the first 3 weeks, the patient complained of general weakness, choking during minor physical exertion, the sensation of shortness of breath, dry cough, heaviness in the chest, and rapid fatigue.

Periodic swelling of the lower extremities, during verticalization, was a barrier to recovery. Rapid fatigability, low endurance due to an impaired respiratory system, and low saturation contributed to the strain on the cardiovascular system.

The attending physician supervised the process, adjusted the medications, contributed to the improvement of the patient's functional state, and prevented the occurrence of possible negative consequences. Therefore, rehabilitation measures were carried out in a dosed manner and gradually, with constant measurement of saturation, heart rate, and arterial pressure. Sometimes specialists combined sessions: A physical therapist with an occupational therapist or a psychologist with an occupational therapist.

4. Results

Long-term physical therapy goal: After 1 month and 9 days, the patient is supervised, walking 600 meters, with a saturation stable of 95 beats per minute.

Short-term physical therapist goals:

1) After 1 week, the patient performs breathing exercises independently while lying in bed;

2) After 2 weeks, the patient, holds an upright body position for up to 30 minutes;

3) After 1 week, the patient independently performs therapeutic exercises for the upper and lower extremities;

4) After 2 weeks, the patient supervised walked 10 meters in 43 seconds. Her saturation varies from 90 to 95 beats per minute;

5) After 2 weeks, the patient, with minimal help, climbs the stairs to the 2nd floor.

The physical therapist held activities with the patient for 3 weeks, from 30 to 45 minutes a day, depending on the patient's condition and functional capabilities. For the next two weeks, we held two sessions of 45 minutes each. Her stamina gradually increased. For the next 3 weeks, exercises were conducted 3 times a day, for 1 hour each.

The long-term goal of ergotherapy; After 1 month, the patient changes the body position on her own. Without any aids, she walks 4 meters to the closet and puts on: T-shirt, pants, socks, and sneakers. Her saturation varies from 90 to 95 BPM.

Short-term goals of the occupational therapist:

1) After 2 weeks, the patient self-administers breakfast using both hands while sitting at the bedside table.

2) After 2 weeks, the patient sits in bed and puts on her own shirt, pants, socks, and sneakers.

3) After 2 weeks, with minimal help, the patient walks 3 meters to the bathroom to perform hygienic procedures: washing hands, and face, brushing teeth and combing hair.

4) After 2 weeks, the patient walks 6 meters to the toilet under supervision to perform hygienic procedures.

The occupational therapist held activities to restore independence and self-care for 30 to 45 minutes a day for 3 weeks. Next 3 weeks, 3 times a day for 45 minutes. Last 2 weeks, 2 times up to 45 minutes. The occupational therapist conducted sessions to restore the taste and smell receptors. Stimulating and using the functions of the olfactory and gustatory receptors.

The massage nurse performed lymphatic drainage massage of the upper and lower extremities for 15 to 20 minutes once a day, for 3 weeks. For the next 3 weeks, she performed drainage massage of the thorax and therapeutic massage along the spine for up to 30 minutes.

During treatment and rehabilitation measures, methods were used for recovery and achievement of goals:

– Psychological support, 30 minutes to 1 hour each day;

– Recommendations on diet therapy were implemented;

– Breathing exercises, performed steadily every day during exercise and the patient's rest hours;

– Positioning, every 2 hours;

– Mobility training in bed and within the room;

– Gradual verticalization;

– Post-isometric relaxation for the upper and lower extremities;

– Balance and coordination exercises;

– Restoration of gait skills;

– Ergotherapy sessions were aimed at restoring independence in daily activities and the ability to self-care;

– Therapeutic and lymphatic drainage massage.

Auxiliary aids that were used: pulse oximeter to determine saturation at rest and in activity state; tonometer to measure blood pressure; positioning rollers – prevention of bedsores. Elastic leg bandages as prevention of thrombophlebitis.

Regarding auxiliary aids, the patient refused walkers and four support sticks, so a support belt was used for verticalization and restoration of gait skills.

Scales and physical therapy tests on which the patient was examined at the primary, intermediate, and final examinations (Table 1).

Renkin primary examination 5 points, intermediate 4 weeks later 4 points, final score 2 points. Berg balanced primary 2 points, interim 28 points, and final examination 50 points. On manual muscle testing right arm and leg 3 points, left arm and leg 2 points. Scores equalized in the final examination 5 points right arm and leg, similarly left arm and leg 5 points, which gives the ability to be independent and maximize the use of the body in daily activities. Initial

examination according to the results, it is not possible to perform the "Get up and walk" test, but the patient's final examination score is 8 seconds.

Table 1

Results of physical therapist examination

Examination Physical therapist	Rankine scale	Berg's balance sheet	Manual muscle testing	"Get up and walk" test with time recording
Initial examination 04.01.2021 yr	5 points	2 points	Right arm and leg – 3 points; Left arm and leg – 2 points	Not possible to execute
1 week	5 points	3 points	Right arm and leg – 3 points; Left arm and leg – 2 points	Not possible to execute
2 week	5 points	8 points	Right arm and leg – 4 points; Left arm and leg – 3 points	Not possible to execute
3 week	4 points	10 points	Right arm and leg – 4 points; Left arm and leg – 3 points	With medium help, in 1 minute and 15 seconds
4th week Intermediate examination	4 points	28 points	Right arm and leg – 5 points; Left arm and leg – 4 points	With minimal help, in 42 seconds
5th week	3 points	36 points	Right arm and leg – 5 points; Left arm and leg – 4 points	35 seconds
6 week	3 points	45 points	Right arm and leg – 5 points; Left arm and leg – 5 points	18 seconds
7th week	2 points	49 points	Right arm and leg – 5 points; Left arm and leg – 5 points	12 seconds
8- week Final examination 25.02.2021 yr	2 points	50 points	Right arm and leg – 5 points; Left arm and leg – 5 points	8 seconds

Table 2, shows the occupational therapy tests and scales used on admission to the Palliative Care Unit at the primary, interim, and final examinations.

During the initial examination of the patient, the score on the Barthel Index of Activities of Daily Living score 15 points, and during the interim examination 55 points, and the final score reached 90 points. The result of the primary examination of the Montreal Cognitive Functions Scale was 16 points, at the final examination, the result reached 26 points, which improved significantly. On the Visual Analog Pain Scale at the initial stage, the result was 7 points, at the end of rehabilitation measures, achieved no pain of 0 points.

During the initial and final physical therapy and occupational therapy examinations, significant changes in the patient, in positive functional dynamics and independence from external assistance were observed. The multidisciplinary team achieved the goals set, restoration of maximum independence, and autonomy of the patient.

Table 2

Results of an examination by an occupational therapist

Examination by an occupational therapist	Barthel index points	Montreal scale of cognitive functions	Visually analog pain scale
Initial examination 04.01.2021 yr.	15 points	16 points	7 points
1 week	15 points	18 points	7 points
2 week	30 points	20 points	6 points
3 week	40 points	20 points	5 points
4th week Intermediate examination	55 points	24 points	4 points
5 th week	70 points	24 points	3 points
6 week	85 points	26 points	0 points
7 week	85 points	26 points	0 points
8 week Final examination 25.02.2021 yr.	90 points	26 points	0 points

After the sessions with the psychologist the patient's psychoemotional state improved, and the doctor helped to get rid of the fear which was an obstacle to achieving the rehabilitation goals.

5. Discussion

It was important for the multidisciplinary team to restore the patient's endurance during normal physical activities: blood pressure, heart rate, and saturation. To strengthen the respiratory system and reduce the strain on the cardiovascular system.

Table 3 shows the parameters: heart rate, body temperature, blood pressure, and saturation, which were measured at rest and in the condition of dosed physical activity for 8 weeks. When the body position was changed, i.e.: lying on the back, turning from side to side, sitting with the legs down, there was: an increase in heart rate of 145–159 BPM. Blood pressure in the passive lying on the back was 140/100 mmHg. When changing position, sitting at an angle of 90 degrees, the blood pressure was 150/110 mmHg. In the passive state, the saturation was 65 to 68 BPM; when the body position was changed, the saturation decreased from 57 to 48 BPM. During the fall of the respiratory failure rate, the nurse connected the patient to an oxygen machine, which saturated and normalized the blood with oxygen.

The readings up to 5 weeks, were not stable. Therefore, we concluded that the use of rehabilitation methods should be gradual. The first rule we used was to not harm.

At week 6, the heart rate in the passive state fluctuated from 85–90 BPM, and in the active state similarly 85–90 BPM. Their body temperature was 36.6 C. Arterial pressure was 110/85 mmHg at rest, and 120/90 mmHg in the active state. The patient's resting state blood pressure varied from 89–94 BPM, and active state blood pressure varied from 90–95 BPM.

By the end of the 8th week of rehabilitation measures, the patient's indices had stabilized. Heart rate at rest and during active activities ranged from 80 to 85 BPM. Body temperature was normal at 36.5 C. Blood pressure at rest and during activity and participation 120/80 mmHg. The patient's saturation at rest and during activity was 95 BPM.

Table 3

Heart rate, body temperature, blood pressure, and saturation values that varied from the day of admission to the time of discharge

Weeks	Heart rate per 1 minute		Body temperature		Blood pressure in a minute		Saturation in 1 minute	
	Passive	Active	P	A	P	A	P	A
I week	80-88	145-159	36,8	36,8	140/100	150/110	65-68	57-48
II week	80	130-140	36,7	36,7	110/60	140/90	64-70	59
III week	80	125-135	36,6	36,9	120/70	130/95	75-67	57-66
IV week	80	115-120	36,6	37,5	110/70	135/90	80-88	75-86
V week	85	110-115	36,7	36,9	105/70	125/90	84-90	82-90
VI week	85-90	85-90	36,6	36,6	110/85	120/90	89 – 94	90 – 95
VII week	85	85	36,7	36,7	120/80	110/80	90 – 95	92 – 95
VIII week	80-85	80-85	36,5	36,5	120/80	120/80	95	95

At the time of the patient's discharge, the parameters stabilized: blood pressure, heart rate, saturation, and body temperature reached normal values. The goals of the multidisciplinary team were achieved. The patient was discharged home on February 25, 2021, for further observation by the family physician. With the ability to be independent and autonomous in daily activities, travel, and continue her work activities.

6. Conclusions

The article presents data on the clinical case of a patient after Covid-19, transferred from the intensive care unit to the Palliative care unit, in stable severe condition. Her own experience of successful treatment and application of rehabilitative measures is described. Using effective rehabilitation methods, and the cohesion of a multidisciplinary team, headed by the head of the Palliative department, we have achieved the goals of restoring the functional status and normalization of indicators of the patient after COVID-19.

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