PHYSIOTHERAPY A WELL EQUIPPED STRATEGY FOR REHABILITATION OF COVID-19 PATIENT.

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ABSTRACT:

Covid-19 pandemic which started in late 2019 in Wuhan province of China spread to the whole world and became a disaster to many countries. The effect of Covid-19 pandemic on world economy is immense which may be recover with in a time schedule but the effect on physical as well as mental health require a special care. The actual wealth of an individual is his/her physical and mental health and both are interdependent. So Rehabilitation is important for all categories of patients. To minimise urgency in hospital need to develop a strategies of segregating patients based on verifying the complications. Thus it is also necessary to develop rehabilitation strategies to restore physical health to overcome anxiety and depression. Some patient may need invasive procedure in place of general treatment. It is also important to develop and train the therapist on proper sanitation and hygiene management for the safety measure. This article summarises the basic guidelines for patients and physiotherapist in management of COVID-19.

Keywords: Physiotherapy, rehabilitation of covid-19 patient.

I. INTRODUCTION

Patients with coronavirus disease 2019 (COVID-19) infection have shown various complication at various level at same individual.¹,²,³ The deterioration of physical health of a patient suffered from the covid-19 effects is uncertain.⁴ There are mainly three types of phases for a covid-19 patient. These are preliminary infection, acute phase and post acute phase for which different care are needed.⁵,⁶ The rehabilitation facility should be designed according to it, for prelin phase patient need mobilisation with proper care and for acute phase patient ICU should be provided.⁷,⁸ Post-acute patient can be treated in hospital ward. The various conditions of patient which includes neuropathy, myopathy, muscle weakness, joint pain as well as in neck and shoulders and some of the critical patients are remains bedridden for extended periods in ICU.⁹ Currently those who effected must need support to rehabilitate their health. Some recent study shows physiotherapy a best strategy for rehabilitation during both in acute, post-acute as well as long-term conditions.¹⁰,¹¹,¹²,¹³ To bring back of a person’s health to normal condition from covid-19 impact need specially designed health rehabilitation programme. Physiotherapists are better equipped with health rehabilitation approaches and can facilitate patients for recovery or early discharge during and after the covid-19 effects.¹⁴,¹⁵ In this article we have discussed some of the best guidelines and recommendation currently employed throughout the world.

II. PHYSIOTHERAPY FOR COVID-19 REHABILITATION:

Physiotherapy is well known for treatments and rehabilitation program for neurological, cardiopulmonary and musculoskeletal difficulties, But to restore health of covid-19 patient it needs extensive protection for both patient as well as physiotherapist.¹⁶,¹⁷ Various recommendations were developed to provide maximum level of care considering the covid-19 precautionary measures.¹⁸,¹⁹ The recommendations were basically developed on safety...
and remedy for all types of patients. The safety recommendation includes the personal protective equipment, protective and management of mechanical ventilation in severe cases like hypoxemia, methods of weaning ventilated patients, and equipment and hand hygiene. And the recommendation for therapy includes conventional chest physiotherapy, oxygen therapy, non-invasive ventilation, nebuliser treatment and high-flow nasal oxygen, endotracheal intubation, prone positioning, exercise and early mobilisation, cuff pressure, tube and nasotracheal suction and use of humidifier for ventilated patients.

III. PERSONAL PROTECTIVE EQUIPMENT (PPE):

Covid-19 which caused by coronavirus 2 are spread through droplets, direct contacts with infected person, and can stay few hours in air and various surfaces. As physiotherapist are subjected to be close contact with patient for mobilisation, exercise and other activities a proper training need to be provide for maintaining safety and wearing protective equipment. The protective equipment should include N95 masks, face shields, surgical caps, safety goggles, gowns, and gloves. In some case to avoid possibility for aerosol formation then it a negative pressure room or in closed door and open window room to keep the air flow unidirectional. The number of people inside the room should follow the local guidelines to reduce the risk of contamination.

IV. VENTILATION MANAGEMENT:

As per various literatures, sedation and continuous neuromuscular block to reduce respiratory drive was recommended for the patient of severe hypercapnia and those unable to maintain protective ventilation. For severe ARDS, 12 to 16 hours Prone ventilation a day is recommended in adult patients and to provide uninterrupted and safe service sufficient human resources with proper training should be maintained. Prone position should be change or repeated after the 20% reduction of PaO2/FiO2 in the supine position. The cuff pressure should be maintain at 20 to 30 cmH2O or 25 to 35 mmHg and pressure to be maintain to avoid aerosol formation. The measurement of cuff should also perform once or twice per day. In presence of neuromuscular block or absence of inspiratory effort mechanically control ventilation should to be performing in lower TVs at 4-6 ml/kg body weight and lower respiratory pressure. Similarly in the absence of neuromuscular block and mild respiratory effort it was recommended to use pressure-controlled ventilation with same control value.

Patient should recommend using humidifier and filtering for breathing. As per report heated humidifier and heat and moisture inhalation treatment has proven to be clear airways blockage and reduce complications in adult patient. HAPA filter should be used for filter on exhalation valve in mechanical ventilator and proper discarding should be followed after use.

V. MAINTAINING HYGIENE:

All instrument and equipments should be clean immediately after use with 0.5% hypo chloride or any chlorine based substance with followed by 70% alcohol. Avoid touching face with hand and gloves and washing of hand and sanitising with alcohol should follow in regular interval. Face mask and face shield should be use while talking or working with patient. Proper distance should me maintained with patient while performing physical exercise. The activity room should be sanitizing daily with fixed time interval.

VI. BREATHING EXERCISES:

Oxygen therapy:

Covid-19 is a respiratory disease with complication in breathing with shortening and difficulties in inhaling. Thus patient needs higher percentage of oxygen to fulfil the requirement of body. More critical patient may need ventilation support but unavailability of ventilator is a major issue in the peak period. So it is important to understand the complication and urgency of ventilator and need to segregate patient based on it. For all types of patient excluding those who need ventilator support must avail the oxygen therapy procedure. In case atmospheric oxygen level is <93% supplemental oxygen should be provided by maintaining the level below 96%. The socket use for oxygen supplement has risk of generating aerosol. So the device must be change at regular interval and discarding of used one should be followed with proper guidelines of decontamination. And the therapist must use PPE while assisting patient with infection.
Spirometric breathing:
The trained therapist must follow the recommendations and guidelines for techniques and cleanliness of incentive device to maintaining hygiene. After the perfect sitting posture patient should be instructed to make a tight seal in mouth to inhale deeply and slowly. After inhaling for 4-5 second relax the seal around the mouth and exhale. Patient with requirement of oxygen should use it in nasal cannula which contains oxygen. Though deep breathing technique offers a similar effect but using an incentive device as feedback may increase the inhaled volumes, control the flow and motivate the participant in therapy. This technique is useful for patient in prelim phase as well as in post acute phase.

Diaphragmatic Breathing Exercises:
This techniques need to perform by patient lying on its back in bed or flat surface with knees bent. Then hand to be placed in chest and belly to perform breathing slowly. This needs to practice several times a day. In this technique the expiration should be slow or in control manner to minimise the contamination and spread. Patient should be recommend to perform the exercise 3-4 time at once to avoid hyperventilation. This technique is beneficial for patient having post traumatic stress disorder. It also increase muscle stability as well as respiratory capacity and lower breathing rate, blood pressure and reduce harmful effect of various stress hormones in our body. This technique can perform and will be beneficial for both prelim and post acute phase patients.

Thoracic expansion exercise:
In this technique person need to take long, slow and deep breath through nose or mouth by keeping chest and shoulder at relaxed condition. Before breathing out air patient needs to hold it in lungs for 2-3 seconds. To maximise inspiration hand need to place on the thoracic cage which will increase the chest wall and improve ventilation. It is recommended that if a patient fell uncomfortable during deep breaths decrease the time of inhalation and number of breath. The exercises are required to perform in well ventilated area with unidirectional air flow.

VII. CONCLUSION:
For covid-19 patient rehabilitation will have a positive effect on individual and society. Improving patient health, recovery of patients from post covid-19 complications and reducing patients of Intensive care unit to minimise the complications like Post Intensive Care Syndrome (PICS), Intensive care unit acquired weakness (ICUAW). The rehabilitation strategy will also intervene in Physical, Cognitive and Swallow impairments for psychosocial supports. It has been seen that people having pre existing comorbidities and aged patients are more prone to covid-19. Rehabilitation strategies are more important to them for keeping them physically fit and healthy. In many countries there is urgency to get hospital beds during the peak time of pandemic which hospitals are discharging patient before complete recovery. In this condition rehabilitation of such patients are important to get back his/her normal health. Rehabilitation program may also help in reducing the risk of re-infection by keeping people healthy. Those who get cured from the covid-19 and return home should also need physical exercise in open and community level.

REFERENCES

www.turkjphysiotherrehabil.org


