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Research Article

Treatment Analysis Respiratory Physical Therapy on SARS-CO V-2

T Karthikeyan*

Physiotherapy Center, NIMHANS, Bangalore, India.

***Corresponding Author:** T Karthikeyan, Physiotherapy Center, NIMHANS, Bangalore, India.

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Abstract

SARS-CoV-2 is a member of a large family of viruses called coronaviruses. This specific virus can infect human and some animals. SARS-CoV-2 was first known to infect people in 2019. The virus is thought to spread from person to person through droplets released when an infected person coughs, sneezes, or talks. It may also be spread by touching a surface with the virus on it and then touching one's mouth, nose, or eyes, but this is less common. Research is being done to treat COVID-19 and to prevent infection with SARS-CoV-2. Also called severe acute respiratory syndrome coronavirus 2. Coronavirus disease 2019, SARS-CO V-2 is the 3rd coronavirus infectious disease happening in 20 years was initially defined in Asia, later Middle East Respiratory Syndrome (MERS), & severe acute respiratory syndrome (SARS). SARS-CO V-2 illness expands globally, intensive care unit (ICU) specialists, health care management, authority, plan creators, and researchers need to brace for sudden increase of high volume in critical patients. Physiotherapists (PTs), mostly respiratory PTs, are healthcare specialists involved in managing and caring for the population of these patients, & play important part in conservative care and treatment, changes in posture, functional mobility and while invasive mechanical ventilator support is being weaned. The objective of the study is to identify treatment analysis recent research evidences for the management of physiotherapist during SARS-CO V-2 pandemic. This study provides a quick respiratory physiotherapist reference guide to set up treatments for the management in acute stages of patients suffering from severe SARS-CO V-2.

Keywords: SARS-COV-2; physical therapy; physical therapy management

Introduction

Coronavirus disease-(SARS-CO V-2), is a severe acute respiratory syndrome coronavirus-2, (SARSCOV-2), is a new coronavirus that appeared in 2019. SARSCOV-2 is extremely infectious disease. It is different from previous respiratory virus in a manner that it seems to have approximately 2-10 days human to human transmission before a person is becoming symptomatic [1]. The virus is transmitted from person to person through respiratory secretions. Large droplets from coughing, sneezing or rhinorrhoea land on surfaces within 2 m of the infected person. SARS-CoV-2 remains viable for at least 24 hours on hard surfaces and up to 8 hours on soft surfaces [2]. SARS-CO V-2 individuals may have influenza-like, respiratory tract infection symptoms such as pyrexia-89%, coughing-68%, extreme tiredness-38%, increased mucus-34% and shortness of breath (SOB)-19% [3]. This new coronavirus was linked to a wet seafood market, recognized as etiologic agent who is presently named as SARS-CoV-2 [2,4]. Up todate, the virus has quickly spreading-at the time of writing this article-a total of 232,259 infected cases and 167,138 cases recovered with 2,223 deaths in kingdom of Saudi Arabia [6]. The Global Surveillance Interim guidance developed by WHO [7]. (1)-A person having severe acute respiratory infection symptoms like pyrexia and coughing who require to admit in the hospital, there is no other cause which completely describes the clinical symptoms along with travel history or stay in China for the period of 14 days before beginning of signs. (2)-A person having any acute respiratory infection with at-least one of given below for the duration of 14 days before occurring symptoms: (i) Contacted a positive or possible SARS-CO V-2 infected patient or (ii). Served or appeared in medical canter where cases with positive or possible SARS-CO V-2 acute respiratory illness individuals were being treated. Suspicious person demarcated by Saudi

Centre for Disease Prevention and Control (SCDC) as follows [7]. An individual with acute respiratory illness (ARI) having pyrexia with coughing & SOB along with one of the succeeding: (i) Travel history to China within 14 days preceding to symptoms. (ii) A close bodily contact within 14 days with a

SARS-CO V-2 positive patient. The novel SARS-CO V-2 guidelines document[8] developed by SCDC offers health care facilities a different

visual triage for acute respiratory illness having a worksheet for admitting a case in isolation provisions scoring more than six, along with traveling history within 14 days before developing signs, which scores 5 points [9].

Amongst health-care workers, physical-therapists, especially respiratory therapists, are also playing an important role in managing and caring novel SARS-CO V-2 patients. They are involved in conservative care, posture correction, mobilization and while training to wean of from the weaning from invasive mechanical ventilator support [10]. Physiotherapist is a key element of the multidisciplinary team (PCD) of active hospital services and intensive care unit. Physical therapy may be useful in the treatment of respiration, in the treatment of SARS-CO V-2, in addition to proven work to prevent or delay intensive care.

Therefore, our aim is to provide worldwide evidence of physical-therapists involvement in managing SARS-CO V-2 infected patients. Viewing the intricacy and frailty of SARS-CO V-2 cases, it is recommended, when likely, to have as a task force, physiotherapists with expertise and/or dedicated training in Respiratory Physical therapy (RT) [10].

Purpose:

This document has been prepared to provide information to physiotherapists and acute care Health care facilities about the potential role of physical therapy in the management of hospital admitted patients with confirmed and/or suspected SARS-CO V-2. SARS-CO V-2 is a disease caused by a new coronavirus, primarily impacting the respiratory system. Symptoms of SARS-CO V-2 can range from mild illness to pneumonia. Some people will have mild symptoms and recover easily, while others may develop respiratory failure and/or become critically ill and require admission to ICU.

Physical therapy might be applicable for SARS-CO V-2 patients presenting with profuse airway discharges which patients cannot clear individually. Patients having associated diseases (like neuromuscular disease, respiratory diseases, lung fibrosis etc.) leading to increased secretion or weak cough may also be benefited from physical therapy. Physical therapists working in ICU can help in clearing airways for patients who are ventilated and provide assistance in placing them in proper position [2].

Materials and Methods

The articles were identified by looking in the PubMed, Scopus and Pedro databases to neglect the physiotherapist's work in serious reflection units in the management of non-invasive ventilation (NIV) without neglecting the risk of contamination for health experts.

Friendly approach

A global specialist in cardiorespiratory physical therapy met to quickly prepare clinical recommendations for the management of SARS-CO V-2 physical therapy. The Creator group met for the first time on March 20, 2020 to investigate the imperative for the global alignment of physical therapy for the purpose of acute consideration according to SARS-CO V-2. There have been immediately made efforts to create an explicit guide for physical therapists in acute viewing situations.

The AGREE II system was used to control the turn of events and to recognize the practicality of these required in the work of the earth and in simple revelation. Direct has been designed according to the GRADE-ADOLOPMENT process method and the evidence of the decision of suggestions and dynamics. The capacity includes acute and intensive hospital physical therapy (all), rehabilitation mediation in the intensive care unit (all), organization of physical therapy (PT, IB, RG, AJ, RM, ShP) and systematic audits (PT), CB, CG, RG, CH, MK, SP, ShP, LV), periodic technique (PT, IB, RG, CH, MK, RM, ShP, LV) and examination of the transmission of the disease (CH MK).

Web search and individual records established recently established rules for the management of SARS-CO V-2 for primarily sick patients from universal offices (e.g., World Health Organization), a basic order consideration or a distinction between meetings relevant social networks (e. g., ICU) Australian and New Zealand society, ICU / European ICU) or social regulations responsible for physical therapy until March 21, 2020. These have been used to provide rules advice on transaction proposals on the main evaluation of the introductory meeting[11].

Integration Criteria:

Patient likely to benefit from physical on call therapy

Patient likely to benefit from on-call physical therapy

- infective exacerbation of copd with acute deterioration
- controlled asthma with evidence of infection, retained secretions, increased work of breathing
- infective exacerbation of bronchiectasis or cystic fibrosis with difficulty managing retained secretions
- significant consolidation with compromised respiratory status
- atelectasis causing respiratory insufficiency
- resolving and productive pneumonia with ineffective cough
- recent estuation with associated retention of sputum and deteriorating abgs/sao2 or significant risk of deterioration of respiratory status

Results

PART 1: Orientation to physical therapy considerations, detection and management Orientation to physical therapy

Follow your hospital's rules and regulations regarding referral to physical therapy for patients who have been admitted to physical therapy in an acute setting[12]. ***Detection and disposition of reported patients***

1. The physiotherapist must perform an indepth assessment of cases remotely using the electronic documentation framework.
2. Patients should be classified according to "Management of patients in physical therapy for acute care SARS-CO V-2,
3. Patients who are approved for the airway without indication should maintain routine physical therapy care in accordance with standard contamination control precautions[13].
4. Patients who have had respiratory side effects but who have doubts about SARS-CO V-2 (low isolation) should be classified as "suspected SARS-CO V-2" until two tests are reported that determine that the tests are negative.
5. Patients who have been approved for other reasons (heart, injury, orthopedics or neurology) and who have indications for the respiratory tract must be classified as "suspected SARS-CO V-2" until two test determinations are reported in each case. which are negative.
6. Patients with respiratory diseases (e.g., shortness of breath, hacking, fever, sputum formation) must always be classified as "suspicious SARS-CO V-2", in any case two provisions for negative laboratory test reports.

Considerations on the management of physical therapy

All suspected or confirmed cases must be reported to the director / supervisor through the group leader with regular updates so that they can

be recorded very well on a COVID physical therapy tracker / database accessible to all physical therapy managers and the head of the Department [14].

Suspicious or positive cases of SARS-CO V-2 should be assigned to the "SARS-CO V-2 Physical therapy Group" for review. This will help limit / prevent the spread of contamination by making ideal considerations[15].

Part 2: Physical therapy management categories

TYPE A: ventilated, calm / incapacitated patients

It contains patients who generally do not feel well, who are calm, unable to act and possibly bowing. Patients with gadgets

ECMO (extracorporeal membrane oxygenation): the understanding of ECMO devices depends on their level of sedation and loss of movement control.

The main goals of promoting physical

therapy at this stage is

- limit the confusion of lying on your back.
- promote oxygen supply.

1. Physical therapy management may include (but not be limited to) distance from-motion (ROM) activity and a recovery situation. (Trials are limited on the use of a wide range of exercise practices in anticipation of muscle weakness ICU.)
2. Physiotherapists should limit presentation to these patients to avoid unnecessary use of PPE and the risk of cross-contamination.
3. Collaborate with MDT to implement common restoration and insurance methods to limit or stop the presentation.
4. The decision for physical therapy treatment should be based on the patient's ability to rehabilitate himself and consideration of the risks in relation to the benefits.
5. Regular correspondence with MD T relating to the physical therapy management.

TYPE B: patients evacuated with negligible ventilation / sedation

1. Develop an individual treatment plan based on the patient's level of knowledge, participation and hemodynamic status.
2. The main objectives of supporting physical therapy mediations in this phase are:
3. Prevent tangles from lying down
4. Promote oxygen supply.
5. Improve freedom of supply Physical therapy management can include drug implementation, ROM activities and dynamic activation[16]. Limiting the aerosol production process and physiotherapists must assess the risk versus the benefit to start these processes. In case of essential and extraordinary precautionary measures should be taken followed by these procedures.

TYPE C: Non-precisely ventilated patients

1. The ESE patient’s classifications isolated based on a conscious level, and practical freedom.
2. The basic goals of physical therapy intercession are
    - reduce craftsmanship through relaxation.
    - improve the lung limit.
    - promote oxygen supply.
    - improve the useful limit.

TYPE C.1: unconscious and out of service patients

- the intercession of physical therapy can integrate latent rom activities and a recovery situation.
- the movement and recurrence of physical therapy treatment depend on the patient's rehabilitation potential.
- regular recovery from mdt if the patient adheres to the practice program.

TYPE C.2: conscious, dynamic and ward patients[17]

- the physical therapy mediations may include rom exercises, dynamic strengthening exercises, dynamic assembly and activities to improve coordination and balance.
- develop a plan individual treatment depending on the oxygen dependence of the patient, the muscle performance and functional freedom, the limit functional advanced and advanced autonomy.
- mobilization should be considered a flight production technique because it can cause piracy or expulsion. the most extreme warning must be followed when implementing these strategies.
- special portability allows you to stay in the isolation area for use by patients with sars-co v-2 in particular.
- make sure you have the necessary resources (by hand - at work as a device) before starting the activation.
- the necessary mobility aids must be labeled and left in the patient's room, or cleaned and disinfected, if they are to be reused for different patients.
- avoid the use of specific large devices as reasonably expected or disinfect them carefully every time they are used in patients with sars-co v-2.
- regular recovery from mdt if the patient adheres to the practice program.
- strict adherence to contamination control procedures and precautions during preparation.

type c.3: conscious, dynamic and free patients[18]

- physical therapy intercession can include rom exercises, dynamic walking exercises and breathing.
- develop an individual training program that depends on the patient's endurance.
- restrict or limit the presentation by instructing the patient in a protected training program and asking him or her to freely continue the training program.
- regular monitoring of the mdt to ensure patient compliance with the training program and changes based on fitt rules (repetition, performance, duration and type).

Part 3: tips for best therapeutic practices.

Respiratory mediation advice[19,20].

- intercession of the respiratory tract as postural infiltration, respiratory exercise strategies and methods of emissions released to the process of aerosol production.
- avoid / limit this intercession and physiotherapists must weigh the risk with the benefits deriving from the initiation of these mediations.
- if breathing needs to be observed precautions in the air are. before entering the patient's room, you need to use the personal protection equipment, such as items for the head, the veil breathing n95 suits cleaned using disposable, clothing uses disposable, eye protection (goggles or face shield), gloves and shoe covers.
- the n95 respirator should be at their ease at the point where the customer must adapt (eg a seal suction), to limit the amount of particles that bypass the channel through the holes between the skin of the customer and the seal of the breathing mask.
- the respirator must be worn (worn) and removed (removed) effectively and worn during introduction.
- for all personal defense equipment (ppe) must meet the pollution control requirements, according to respects the appropriate strategies for extraction and transportation are.
- during patient preparation, physiotherapists must follow the back method (if possible) and be ≥ 2 m away from the patient (if possible) to be outside the "impact zone" cut line.
- in patients with acute hypoxicity they can dyspnoea even in the presence of an organization of oxygen > with a 10-15 l / min bearing cap remaining. in this situation, the use of high flow nasal oxygen (hfno) or continuous positive pressure (cpap) or non-invasive ventilation (niv) can be helpful during all physical therapy procedures.
- when preparing patients with hfno / niv, consider the possible natural distribution of vaporized particles of infection.
- the facial veil / deposition veil is ideal for the nasal cannula when a patient is assembled (facial cover with oxygen flow up to 5 l / min, revised cover up to 10 l / min of o2 or venturi veil up to 60 % fio2) to distribute the limit accounts. a careful blanket covers the patient's face. if this veil is dirty, remove it according to the anti-pollution regulations and use a different cover.
- if the nasal cannula is the primary alternative, it should be fine in the nostrils and the cannula should be carefully covered. a similar standard is the material when the patient uses hfno treatment.
- if the patient is ventilated noninvasively (cpap / bipap), make sure that no air is released before starting a physical therapy session. in addition, it must have care to ensure that no separate allocation of circular machines.
- the vin cover attached to a circulatory t-barrel can be used for patients with respirators to improve oxygen immersion during training.
- limit or a strategic distance from the use of mechanical devices, such as pulse spirometers, peep, seaming, retaining the armor that these processes can theoretically produce in the air and the increase occurs during breathing.
- in ventilated patients with tracheotomy and precise, only if necessary recommended aspiration in closed circuit. bronchial traction movements must be performed with severe signs.
- positioning to improve oxygenation: the patient is best positioned in a semisitting or sitting position while moving from the reclined position. variations in parallel pressure ulcers, in semi-inclined or inclined positions can be very useful. the positions should be resolved in fixed movements to reduce and the muscle of the jewels to relax to the ventilation / perfusion ratio to promote. pads / pads can be used to achieve ideal (eliminated) rest positions.

Advice on preparing mediations[21].

- mobilization should be seen as a vaporized production system because it causes piracy or expulsion. it also requires close contact of the physiotherapist with patients. in this sense, it should be a serious alarm are active in the realization of these methods are and precautions to be followed in the air.
- when assembling carefully ventilated patients, outrageous considerations must be made to maintain the ventilation circuit during activation.
- if the patient is not mechanically ventilated (cpap / bipap), make sure that no air is released before starting a physical therapy session. we must also pay attention to maintaining the machine allocation circle.
- patients not exactly ventilated wear a veil during physical therapy sessions. if this veil gets dirty, it should be removed immediately in accordance with the disease control standards and covered with another cover. make sure the appropriate resources (hand - in - the - job as a hardware, such as portability), before starting preparation. avoid sharing material between patients.

Advice on Infection control rehearses[22] Examine and follow approaches to control hospital contamination. 1. Remove, by way of example, any device / object closes to home that contains earrings, watches, cables, mobile phones, acoustic signals and pens before entering the clinic area.

2. The reusable faculty defense equipment must be cleaned and disinfected before use.
3. In order to avoid cross-contamination, an immediate section of the area to be treated and locally defined documents are needed.
4. Physiotherapists who treat patients with SARS-CO V-2 are encouraged to wear clean coveralls or one-way coveralls that need to be cleaned daily before starting treatment.
5. Counsellors need to tie their hair and male specialists are asked to lose facial hair.
6. All physiotherapists must undergo an N95 fit test to determine the correct veil size.
7. All physiotherapists must complete the "use and remove" skill of the portable PSA and hand cleaning.

Procedures should be applied during the acute phase with a blatant alarm[23] It is essential that **physical** therapy procedures do not lead to weight gain during the manufacture of breathing. In SARS-CO V-2 patients, the primary goal of respiratory physical therapy is to reduce the signs of shortness of breath and improve lung capacity, neutralizing the discomfort caused by respiratory illusions and immobilization, reduction of disability, improvement of personal satisfaction and reduction of the

level of nervousness and discouragement of balance. After completing a physical therapy assessment, such as examining airway conditions, the physiotherapist must decide questions that are useful in the patient's treatment process based on clinical purposes. The point of administration of physical therapy at this stage of the infection movement may include:

- Reduce unnecessary respiratory activities (for example, with respiratory strategies and places that reduce wheezing, the oblique position, the course).
- Clean the rest of the program,
- Increase in the lung limit,
- Improve the gas trade,
- Gradually mobilize and expand the campaign,

General well-being acts, prevents the effects of immobilization and increases resistance to physical movements.

Postural situations to reduce shortness of breath Shortness of breath caused by cheating breathing can decrease and immobilize the patient's limit of activity. By placing the patient in a forward tilted position, we can rationalize the effects of the respiratory muscles and reduce the impression of dyspnea. It is recommended to prepare the patient out of bed if the persistent limit allows it.

Respiratory system to reduce shortness of breath[24]:

- Breath control - this is supposed to be done. In the case of the patient's condition does not take such a position into account, act on a semi-reclining position (as above). It is important that the patient relaxes the inspiratory flying muscles, in particular those of the arms and neck, at this point he begins to breathe through the nose (warms and hydrates the air), at this point he plays a moderate relaxation and widens at the expiration with the establishment of adequate airways (lower thoracic breathing and stomach). Breathing should be calm (shallow, slow).
- The conclusion must be made with the alleged relaxing lip of the lips. This method can be added for normal breathing while you rest and keep this movement in mind. It serves to slightly fix the lips while you exhale.

Physiotherapists work in a variety of environments and regardless of how the CPI can be the same for everyone and in all environments, the rest of the work will help reduce the need to do is in clinical centres, able to distinguish the activity of a physiotherapist in any context. In the basic idea (e.g. private offices, joint specialist studies or general practitioners), the highlight will be the rapid and visible identification and confirmation of cases. In taking care of society (e.g. at home), the supplement is to show patients and healthcare professionals. In serious reflection (for example, in the clinical centre), the complement will be in the organization of respiratory reactions.

Discussion

The current epidemiological situation is an excellent test for any clinical expert. Now it is estimated that about 15 to 20 percent of patients with SARS-CO V-2 need to be hospitalized and 5-6 percent need a serious consideration for a period of time longer. As is common with this type of pandemic, the clinical staffs themselves are particularly contaminated and must take satisfactory measures to verify it.

Physiotherapists are an essential element in the multidisciplinary group of active hospital services and intensive care units. Early rehabilitation after the acute period of respiratory pain can limit the discomfort of stability in this way and promote rapid practical recovery. The expectation of this proposed good practice is to soften and improve the care physical therapy of patients with acute COVID and, at the same time, focus on the need to adhere to the undeniably well-established welfare rules [**22,23,24,25]**.

Conclusion

The written survey showed the importance of physiotherapists in treating patients who are fundamentally critical in ICU. The ICU is a unique field in which physiotherapists are an essential part of the multidisciplinary group; the base camp offers various types of mediation, from physical therapy in the thoracic phase, to the prevention and recovery of lack of strength. The primary goal of intensive care physical therapy is the type of remote regeneration rather than temporary resistance, and physiotherapists do a lot of work to achieve this. It also seems essential to characterize teaching methods for healthcare professionals in order to receive adequate teaching, as well as for patients who require training on the use of equipment, if common rules can be established. Finally, due to the contamination of flight routes, the use of PSA should not be neglected, since in physical therapy procedures, in which mist concentrates are generated, there is a high risk of transmission due to the contamination that is now Observe the coronavirus SARS 2 and in this way a risk is conceivable by the physiotherapists who use them.

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