



Effect of Active Cycle of Breathing Technique and Postural Drainage Technique on Covid 19 Patients: An Overview Study

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Abstract

Background: COVID19 has emerged to be an global pandemic and it seems the world has to live with it. It belongs to the family of RNA virus which directly surrenders the respiratory system and causes complications including severe respiratory distress and pneumonia, breathlessness and many other symptoms.

Purpose: Physiotherapy is a very demanding field, even in many hospital settings and and ICU's for prevention and management of complication. There are various studies which reflects that there is an important role of physiotherapy on patients in ICU. Physiotherapy may be advantageous in treatment and physical rehabilitation of patients with covid-19.

Method: 200 Patients with the mean age of 35- 60 males and females infected with covid 19 were classified into 2 groups. Group 1 contains 100 patients (n = 100) and group 2 contains 100 (n =100). ACBT and PD was given in the treatment protocol. Parameters observed were SPO2, Chest expansion, Respiratory rate, Breathing pattern, Air entry Sound and Chest X ray.

Results: Significant differences were noted in parameters within both groups.

Conclusions: Active Cycle of Breathing and Postural Drainage techniques had positive effects in treatment of corona virus disease.

Keywords: Active Cycle of Breathing; Covid 19; Physiotherapy; Postural Drainage; Respiratory

Introduction

In 2019, a new coronavirus has emerged that causes severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

WHO declared covid19 as highly contagious disease? It easily spreads from human to human and the person become symptomatic with contact of 2-10 days prior the infection. COVID19 has emerged to be an global pandemic and it seems the world has to live with it. It belongs to the family of RNA virus which directly surrenders the respiratory system and causes complications including severe respiratory distress and pneumonia, breathlessness and many other symptoms [1-9].

WHO elucidated SARS-CoV-2 VIRUS is the causative factor for Coronavirus disease (covid 19)? The conveyance of infection is from persons mouth or nose in small liquid particles when they cough, sneeze, speak, sing or breathe and the droplets sit into the surrounding area; so, when the noninfected person touches or comes in vicinity the infection spreads. The particles may be larger respiratory droplets to smaller aerosols which can barely be seen.

Covid 19 can be allocated under 5 categorised according to the signs and symptoms and the severity of the diseases; these are as follows - asymptomatic or presymptomatic infection, mild illness, moderate illness, severe illness and critical illness.

The typical and most prevalent symptoms include fever, cough, loss of taste, loss of smell or tiredness. Some people also show symptoms like sore throat, red or irritated eyes, headache, body-aches, weakness, pain, diarrhoea. The severe symptoms involves difficulty in breathing or confusion and chest pain; in such condition the fibrosis of the lungs has already been started and patient really find difficulty even to breathe.

Disease severity in COVID 19 can be heterogeneous. 40% of covid -19 subjects develop mild disease (defined as symptomatic patients with without evidence of viral pneumonia or hypoxia); another 40% have a moderate disease (with clinical sign of pneumonia) 15% suffer from a severe disease (with severe pneumonia) that requires oxygen therapy and 5% develop critical disease with complications such as respiratory failure, ARDS, thromboembolism and multiorgan failure.

Various pathological studies were done in covid 19 patients, it was found that there is increase lung weight, diffuse alveolar damage, copious amount of gray-white viscous fluid, consolidation, mild thickening in alveolar walls, edema, consolidation and vascular engorgement.

Early rehabilitation and mobilization involves helping to get patients up and moving. The active cycle of breathing technique is an active breathing technique which is acclimatized by the patient and can be used to mobilize the secretions and clear excess pulmonary secretions. It is generally accustomed to improve lung function. The active cycle of breathing embraces 3 steps breathing control, thoracic expansion followed by huffing 3-4 times.

Postural drainage is a very useful technique which involves various relaxing position. This works on the principle of effect of gravity which is used to drain the secretions from one or more lung segment into the central airways where it can be removed via huffing or coughing. This technique mainly focuses on mobilizing large amount of secretions in people with respiratory conditions.

Purpose

The purpose of the study was to find out the potency of active cycle of breathing and postural drainage technique in treatment of COVID19.

The main motive for conducting the study was to provide information to physiotherapist and acute health care facilities about the role physiotherapist in the management of patient suffering from covid19 disease.

Physiotherapy is a globally known and highly emerging profession. People are getting aware about the noble profession. Physiotherapy is a very demanding field, even in many hospital settings and ICU's for prevention and management of complication.

Likewise, Cardiorespiratory physiotherapy is one of the renowned branch which not only help patient to recover from acute and chronic ailments but also helps the patient to recover the mobility at the faster rate. There are various studies which reflects that there is an important role of physiotherapy on patients in ICU.

Physiotherapy may be advantageous in treatment and physical rehabilitation of patients with covid-19. Specially, in patients who are unable to clear the secretion individually they may be recommended to physical therapy. In patients with co-morbidities having copious secretions there are some techniques and specialized position which help the patients including who are ventilated patients. Prone position increases the oxygenation of the lungs.

Method

- Sample size - 200 patients
- Study setting -

COVID -19 patients with persistent impairments following their SARS-COV-2 infection were referred to following hospital for the treatment.

- Lifecare Hospital khamla Nagpur
- Gracious hospital bhandeplot Nagpur
- Tarangan hospital Nagpur
- Study duration - 2 month
- Study type - Interventional study
- Sampling method - non random sampling
- Study population- covid 19 patients
- Inclusion criteria

Age: 35- 65 years

- Patient's having score of 1-12 in Mild -moderate illness.
- Patient's having score of 12- 25 severe to critical illness.
- Exclusion criteria

Neurological involvement

Psychological involvement.

- Intervention -Active cycle breathing technique and postural drainage.
- Outcomes and measures
 - SPO2
 - Chest expansion
 - Respiratory rate
 - Breathing pattern
 - Air entry
 - Breathe Sound

Materials

- Pulse oximeter
- Spirometer
- Chest vibrator
- Pillows
- Bed

Procedure

The techniques were performed on each patient for a duration of 10-15 days.

Pre Xrays and Post Xrays were compared.

PATIENTS WERE CLASSIFIED INTO 2 GROUPS

Group 1: Patients having mild to moderate symptoms with HRCT score 1-12.

In this group 1 active cycle of breathing was performed with all three phases of breathing control, thoracic expansion followed by huff. Postural drainage positions were given with vibrations. Spirometer was advised including both inspiratory and expiratory exercises. Relaxation positions like prone lying were suggested.

Group 2: Patients having severe symptoms with HRCT score 12-25

In this group 2 postural drainage techniques were given along with vibration as well as patients were educated about the deep diaphragmatic breathing exercises. Relaxation positions were taught.

Result

In Group I it is found that

- In 90% patients the oxygen saturation is remarkably improved from 85% to 95% after conduction of the techniques.
- The chest expansion is bilaterally symmetrical.
- The breathing pattern is synchronised.
- The respiratory effort decreased.
- The respiratory rate gradually progressed towards normal.
- The air entry is found to be bilaterally equal.

In Group 2 it is found that

- In 70-80% patient the oxygen saturation is progressively improved from 75%-90% after the therapy.
- The chest expansion is bilaterally symmetrical.
- The breathing pattern is found more synchronised.
- The respiratory rate gradually progressed towards normal.
- The air entry is bilaterally equal.
- The respiratory effort reduced.

Conclusion

In this study, it is found that there were positive effects of Active cycle of breathing and postural drainage technique on covid 19 patients.

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