

Pulmonary Rehabilitation

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Cite this article as: Ocal S. Pulmonary Rehabilitation. J Crit Intensive Care 2020; 11(Suppl. 1):16–17.

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Received: May 21, 2020

Accepted: May 27, 2020

Available online: Jun 22, 2020

ABSTRACT

Pulmonary rehabilitation improves symptoms, quality of life, pulmonary function, and health care utilization in patients with chronic respiratory disease. The aims and components of pulmonary rehabilitation will be reviewed here.

Key words: COVID-19, Pneumonia, Respiratory Failure, Pulmonary Rehabilitation

Introduction

COVID-19 is a cause of viral pneumonia, which leads to respiratory, physical, and psychological dysfunction. Pulmonary rehabilitation is an important intervention for clinical patients as well as cure patients. It is recommended an appropriate pulmonary rehabilitation for patients in whom a viral pneumonia due to COVID-19 occurs be applied.

Rationale

Owing to the fact that the viral pneumonia of COVID-19 frequently involves the dependent posterior lower lung areas, patients clinically get benefit from prone position. The importance of positioning and early mobilization are known with respect to protect the lung volumes. Additionally, restraining the atelectasis secondary to long term hospitalization or opening the atelectasis those had already evolved, will both improve the oxygenation and decrease the risk of colonisation and secondary bacterial infection at the atelectatic area. Patients invasively ventilated will be benefit from positioning, active (if patient is awake) and passive exercises preventing the potential complications at the prolonged mechanical ventilation period. It is well known that the risk of complications to occur (ventilatory associated pneumonia, damage to airway, barotrauma, gastrointestinal bleeding, and thromboembolism) increases in line with

the increased invasive mechanical ventilation duration. Thus, the patient has to be weaned from mechanical ventilator as quickly as possible when his/her oxygenation improves.

General aims of pulmonary rehabilitation

- To keep airways open: positioning, mobilization, decreasing the resistance of airways by preventing secretions with effective cough and other secretion drainage methods, and improving ventilation
- Maintaining the diaphragm and other respiratory muscles to be at further normal position and function
- Decreasing the respiratory rate
- Decreasing the work of breath and energy expenditure by suitable education during respiration
- Increasing or preventing the decline of chest wall mobility with individualized exercises, determining the postural deformities at muscle-skeletal system occurring secondary to lung impairments, preventing or healing the deformities by appropriate exercise prescriptions.
- Reducing dyspnea and relaxation
- Improving the endurance and exercise tolerability
- Preventing anxiety and depression
- Improving quality of health and lose of function

The processes of patients being evaluated by specialists of physical therapy and rehabilitation and being supported by physiotherapists must be provided for patients followed both in services and in intensive care units during pandemic. Pulmonary rehabilitation practise for patients includes following issues.

- **Approachs preventing or increasing the lung volume**
 - Positioning
 - Respiratory exercises
 - Incentive spirometry
 - Positive pressure implementations in patients being weaned or in patients who overcome the active illness period (CPAP; BiPAP)
- **Technics for cleaning airways**
 - Aspiration could be applied in patients having been weaned, not awaked yet due to sedo-analgesia, and not having an effective cough. Nasopharyngeal aspiration has to be accepted as an excessive aerosol producing process like intubation. Thus, nasopharyngeal aspiration could be applied after an individual protecting equipment having been worn. For not causing a nose bleeding the aspirator should be off while the aspirating catheter is advancing the nasal passage, when the catheter reaches pharynx then the aspirator should be on. Cough reflex must be stimulated by to and fro motion of the aspirating catheter. This process must be applied at negative pressurized single room with a transparent bag shielded on the patient due to the risk of aerosol spreading. The frequency of aspiration must be adjusted according to circumstance.
 - Postural drainage and manual technics
 - Cough and forced expiration technic

Conclusions

Pulmoner rehabilitation are important due to the increasing number of COVID-19 patients being treated in intensive care units across the world. The earlier rehabilitation can begin, the greater the potential to reverse the effects of immobility and prolonged bed rest.

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