

COVID-19 : Providing Rehabilitation Care in the Time of Pandemic

Abu Hassan S.A

Department of Orthopaedics, International Islamic University Malaysia

INTRODUCTION

In the wake of COVID-19 infection in the world, it is more devastating when a developing country is affected. Fortunately, due to coordinated infection control measures in Malaysia, the national morbidity and mortality rate is kept low. As of May 6th 2020, 22 patients required intensive care and the mortality rate was 1.66%.¹ The majority of patients contracted a milder form of the disease.

As the fight to treat and contain the infection is being carried out, another set of question emerges: what happens to the infected patients after acute illness? How severe are the long term pulmonary complications? How best can we facilitate physical and functional recovery while protecting the rehabilitation team? For effective rehabilitation, the damage to the pulmonary system needs to be fully understood.

Since the early phase of infection, there is a predilection for the lower lobe of the lungs to be affected as it is where the ACE 2 receptors, a COVID-19 binding site, are predominantly located. In milder cases, subpleural lesions were detected resulting from inflammation caused by pneumocyte destruction. Up to 75% of patients develop bilateral pneumonia.³

Radiological changes of the lungs occurs within 7 days of onset of symptoms. Early infection manifests as ground glass opacity and consolidation.^{3,4} As the disease progresses and become widespread, multi-lobular consolidation become more conspicuous.⁴

Severe alveolar inflammation results in exudative acute lung injury with edema and infiltrates. Within 9 to 13 days, the majority of radiological changes showed consolidation.³ Recovery period with resolution of consolidation. Long lasting pulmonary damage and functional limitations are yet to be studied in COVID-19 survivors. However, long term follow up with MERS-CoV patients showed that up to 33% have radiological evidence of lung fibrosis.⁵

The approach to rehabilitation in COVID-19 patients must be timely and with necessary caution to benefit patients and protect the rehab team. Early exposure to rehabilitation is important to reduce morbidity, mortality and length of hospital stay.⁶ Timely exposure to respiratory exercises and mobilization also enables patients to better understand and comply with therapy. This will assist rehab personnel in providing reinforcement of techniques later in the course of the disease.

To protect the rehabilitation team, mode of therapy is based on illness severity. Asymptomatic or mild cases should perform aerobic and deep breathing exercises.^{6,7} Other than the standard incentive spirometry, daily items like balloon inflation or bubble blowing may be used as a cheaper and more enjoyable alternative. Patients with pneumonia and increased secretions are advocated to perform active cycle breathing therapy (ACBT).⁶ It consists of 3 steps encompassing breathing control, thoracic expansion exercises and huffing, or forced exhalation.⁶

For patients with severe infections requiring oxygenation or ventilation, secretion management and proper positioning are the main techniques to improve pulmonary drainage. Closed suctioning should be performed in a negative pressure room. Appropriate Level 2 personal protective equipment (PPE) usage which are N95 mask, face shield, fluid resistant long sleeve gown, gloves and shoe cover cannot be overemphasized.⁷ If the patient is

Corresponding Author:

Dr. Salmah Anim binti Abu Hassan
Department of Orthopaedics, Traumatology
and Rehabilitation, Kulliyah of Medicine
International Islamic University Malaysia,
Kuantan Campus, Bandar Indera Mahkota,
25200, Kuantan, Pahang
Tel No : +6012-5797406
Email : anim@iiu.edu.my

cooperative, early mobilization or aerobic activity as tolerated by the patient need to be encouraged.^{6,7}

Worldwide, COVID-19 patients have restricted access to rehabilitation in order to reduce healthcare worker exposure and economize PPE usage.^{6,8} Pulmonary rehabilitation and prolonged close contact with patients increase the risk of disease transmission. Level 2 PPE, a resource which have become scarce in developed countries, may be a luxury in poorer regions despite its necessity.

Alternative methods, such as usage of printed materials and telerehabilitation, to disseminate information are currently employed to guide patients with milder form of illness for respiratory exercises.⁶ Telerehabilitation has become a vital tool to mitigate the spread of the virus by limiting healthcare worker contact with positive cases.^{6,7,8} In rehab practice, videoconferencing with COVID-19 patients enables demonstration and subsequent review of exercise techniques. Telephone consultations also increase frequency of rehabilitation consultations. Most importantly, these forms of communication build rapport and maintain a personal touch with patients who are already anxious and isolated. Online materials especially videos for respiratory exercises are made widely available on social media platforms since the pandemic has started.⁹

Despite the obvious benefits of telerehabilitation, it has been sparingly used in previous emergencies, for example as reported by the Australian healthcare service during the 2019 bushfires.⁸ The big leap in change from traditional medical practice has many physicians skeptical of its efficacy.^{10,11} Clinicians are also wary regarding privacy issues on both sides during teleconsultation. Furthermore, technical factors in developing countries like lack of hardware and reliable internet connection may also be a hindrance.¹¹

The COVID 19 pandemic has indeed forced the rehabilitation fraternity to change our practices and be more innovative in order to provide the best patient care while minimizing risk of transmission to the treating personnel.

Conflict of Interest

The author has no conflict of interest to declare.

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