International Journal of Allied Medical Sciences and Clinical Research (IJAMSCR)

IJAMSCR | Volume 9 | Issue 1 | Jan - Mar - 2021 ISSN:2347-6567
www.ijamscr.com

Post covid pulmonary fibrosis - Implications of interdisciplinary pulmonary rehabilitation program: Short communication

Meryl J Colaco[1], Akhil Mathew[2*]

[1] *Head of the Department, Physiotherapy, Medeor 24/7 Hospital Dubai, UAE*
[2]*Physiotherapist, Medeor 24/7 Hospital Dubai, UAE ,**

Corresponding author: Akhil mathew

Email: physioakhil937@gmail.com

INTRODUCTION

Since December, 2019, an outbreak of a novel corona virus disease was reported in Wuhan, China, which has subsequently affected more than 200 countries worldwide. The symptoms associated with COVID-19 are diverse, ranging from mild to moderate upper respiratory tract symptoms to severe acute respiratory distress syndrome (ARDS). The major risk factors for severe corona virus disease are shared with idiopathic pulmonary fibrosis, namely increasing age, male sex, and co morbidities such as hypertension and diabetes. Idiopathic pulmonary fibrosis is a chronic progressive disease in which lung function inexorably declines, leading to respiratory failure [1, 2].

Most patients infected with corona virus present with bilateral ground glass opacities with or without consolidation, and with preference of lower lobes (Radiography). However, it should be considered that long term lung impairment may develop following recovery of fibrotic interstitial lung disease. Pulmonary fibrosis can be idiopathic and is considered as a genetically predisposed, age related fibro proliferative disease, but chronic inflammation may also be involved in the pathogenesis of lung fibrosis. Pulmonary fibrosis is an identified corollary of ARDS. Several studies have shown that protective lung ventilation tends to diminish the radiographic abnormalities following ARDS[2-4].

The pathological correspond of ARDS is the diffuse alveolar damage which is characterized by an acute inflammatory exudative phase with edema, hyaline membranes, and interstitial inflammation, followed by loose organizing fibrosis within the alveolar septa, and type II pneumocystis hyperplasia. A cogent final stage of ARDS may be the fibrotic phase. Abnormal immune mechanisms commence and foster pulmonary fibrosis, possibly as a repercussion of a cytokine cloudburst[5, 6]. Available data's indicate that about 40% of patients with COVID-19 develop ARDS, and of 20% ARDS cases are severe. The prevalence of post covid fibrosis will become apparent in time, but early analysis from patients with corona virus infection on hospital discharge suggests that more than a third of recovered patients develop fibrotic abnormalities. Additionally, 47% of patients had impaired diffusing capacity of the lungs for carbon monoxide and 25% had reduced total lung

capacity. This appears to be even worse in patients with severe infection [7-9].

Pulmonary rehabilitation (PR) is the use of exercise, education, and behavioral intervention to improve function and enhance quality of life among people with chronic lung diseases. Its primary goal is to enable people to achieve and maintain their maximum level of independence and functioning. The education part of the program teaches you to be "in charge" of your breathing instead of your breathing being in charge of you. A pulmonary rehabilitation program has several components, including: Airway clearance techniques, Bronchial hygiene techniques, Inspiratory muscle training to improve lung capacity, Exercise training, Aerobic capacity training, Energy conservation, Psychosocial counseling, Nutritional evaluation and counseling, Drug use and education [10, 11].Physiotherapy is an integral part for the management of interstitial lung disorders and continues to play an integral role. However, with changing disease patterns, the role of physiotherapy in this disorder has altered significantly and is no longer limited to airway clearance but also emphasizes the importance of physical exercise, postural care and addresses the unique complications which are emerging as longevity improves. Previous Cochrane review has reported a lack of enough data with a high level of evidence suggesting that early rehabilitation improves functional status among ARDS patients. Accordingly, there is also no data with a high level of evidence, which will support pulmonary rehabilitation for corona virus cases. Nevertheless, PR will be beneficial in terms of facilitating participation in activities of daily living among patients developing pulmonary fibrosis in the following periods and also to improve the lung clearance, respiratory endurance and aerobic capacity among survivors [10-12].

PR should be planned by carefully determining tolerance, exercise intensity, timing, and applicable methods. An additional burden should not be added with exercise when the patient is fighting against the disease. After the counteraction and risk of infection is lower, it can be started with positioning, range of motion exercises, bed mobility, breathing and airway clearance techniques and a progressive aerobic exercise regimen. Early mobilization in intensive care unit is a gold standard procedure in order to improve respiratory and functional status. The current situation is considered as a fight against a disease that has never been encountered before [11-13].

Survival of critically ill patients is frequently associated with significant functional impairment and reduced health related quality of life. Early physiotherapy of critically ill patients has recently been identified as an important therapeutic tool and has become an integral evidence based component. Prognosis of the disease is learned by living through and experiencing over a period of time. It is very important to conduct every application with maximum care and protection during the fight against an unknown. Since available guidelines have a low level of evidence, further evidence through extensive trials and regular follow up is required in this area.

Conflict of Interest: Nil.

REFERENCES

[1]. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, Liu L, Shan H, Lei CL, Hui DSC, et al; China medical treatment expert group for Covid-19: Clinical characteristics of coronavirus disease in China. N Engl J Med 382, 2020, 1708-1720.

[2]. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, Wang B, Xiang H, Cheng Z, Xiong Y, et al: Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. JAMA, 323, 2020, 1061.

[3]. Burnham EL, Janssen WJ, Riches DWH, Moss M and Downey GP: The fibroproliferative response in acute respiratory distress syndrome: Mechanisms and clinical significance. EurRespir J, 43, 2014, 276-285.

[4]. Cardinal-Fernández P, Lorente JA, Ballén-Barragán A and Matute-Bello G: Acute respiratory distress syndrome and diffuse alveolar damage. New insights on a complex relationship. Ann Am Thorac Soc 14, 2017, 844-850.

[5]. Thille AW, Esteban A, Fernández-Segoviano P, Rodriguez JM, Aramburu JA, Vargas-Errázuriz P, Martín-Pellicer A, Lorente JA and Frutos-Vivar F: Chronology of histological lesions in acute respiratory distress syndrome with diffuse alveolar damage: A prospective cohort study of clinical autopsies. Lancet Respir Med 1, 2013, 395-401.

[6]. George PM, Wells AU and Jenkins RG: Pulmonary fibrosis and COVID-19: the potential role for antifibrotic therapy. Lancet Respir Med: (20), 30225-3.

[7]. Huang X, Xiu H, Zhang S and Zhang G: The role of macrophages in the pathogenesis of ALI/ARDS. Mediators Inflamm 2018, 1264913.

[8]. Wu C, Chen X, Cai Y, Xia J, Zhou X, Xu S, Huang H, Zhang L, Zhou X, Du C, et al: Risk factors associated with acute respiratory distress syndrome and death in patients with coronavirus disease 2019 pneumonia in Wuhan, China. JAMA Intern Med: doi:10.1001/jamainternmed.2020, 0994.

[9]. Wei J, Yang H, Lei P, Fan B, Qiu Y, Zeng B, Yu P, Lv J, Jian Y and Wan C: Analysis of thin-section CT in patients with coronavirus disease (COVID-19) after hospital discharge. J XRaySciTechnol 28, 2020, 383-389.

[10]. Dr. U T Ifthikar Ali, Akhil Mathew, ShikhaFathima. Role of physiotherapy in improving respiratory and functional outcomes among COVID-19 survivors -Short communication. Int J of Allied Med Sci and Clin Res, 8(1), 2020, 83-84.

[11]. Beykumul A, Gülbas G. COVID-19 and pulmonary rehabilitation. Eurasian J Pulmonol, S1-22, 2020, 101-4

[12]. Van der Schans C, Prasad A, Main E. Chest physiotherapy compared to no chest physiotherapy for cystic fibrosis. The Cochrane Database of Systematic Reviews, 2, 2000.

[13]. Vasarmidi et al: Pulmonary fibrosis in the aftermath of the covid-19 era; experimental and therapeutic medicine 20, 2020, 2557-2560.

How to cite this article: Meryl J Colaco, Akhil Mathew. Post covid pulmonary fibrosis - Implications of interdisciplinary pulmonary rehabilitation program: Short communication**.** Int J of Allied Med Sci and Clin Res 2021; 9(1): 18-20.

Source of Support: Nil. **Conflict of Interest:** None declared.