

Editorial

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Pulmonary Rehabilitation in Multimorbidity and Multiple Disabilities

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In Chronic Obstructive Pulmonary Disease (COPD) patients, it has been proven that Pulmonary Rehabilitation (PR) helps in increasing the exercise ability, in easing the difficulty in breathing, in improving Health Related – Quality of Life (HR-QoL) and in decreasing the period in hospital and the utilization of medical resources.¹

Although there is insufficient evidence to determine whether PR improves survival in patients with COPD, this lack of evidence does not necessarily indicate that PR has no effect on survival, but in order to be reasonably powered to detect an effect of this magnitude the sample size would have to be a magnitude larger than those found in existing studies.² Moreover, PR program significantly showed a large decrease in the risk of death in rehabilitated patients as measured using the BODE index.³ The timed walk distance and MRC-rated dyspnea do improve with PR, and these variables are correlated with survival in patients with COPD.²

In contrast, Cardiac Rehabilitation (CR) improves prognosis (reduce all-cause mortality and cardiac death), exercise capacity, QoL of patients by reducing symptoms associated with Activities of Daily Living (ADL) in patients with ischemic heart failure and Coronary Artery Disease (CAD).⁴

Moreover, Renal Rehabilitation (RR) including exercise training in patients with hemodialysis improves in VO₂ max, left ventricular function, cardiac sympathetic and parasympathetic disharmony, malnutrition-inflammation-atherosclerosis syndrome, anemia, sleep quality, anxiety, HR-QoL, activities of daily living, shunt size, Kt/V and mortality.⁵

Until a recent date, medicine has aimed to prolong the life expectancy; that is, “Adding Years to Life” (improvement of vital prognosis) has been the focus of the medicine. In addition, the extension of disability-free life expectancy has become the major target of medicine by trying to prevent the diseases that may cause disabilities.

The rehabilitation medicine has been proactively implemented to accomplish the concept of “Adding Life to Years (the improvement of living functions and QoL)” by helping overcome the disabled conditions through the assessment of and intervention in socially disadvantaged functions.⁶ In recent, it was found that the rehabilitations of internal organ impairment such as CR and RR have been useful to accomplish the concept of not only “Adding Life to Years” but also “Adding Years to Life” (“Adding Life to Years and Years to Life”).⁶

COPD often coexists with other diseases (comorbidities such as ischemic heart disease, chronic kidney disease, osteoporosis) that may have a significant impact on prognosis. Thirty-three percent of elderly patients with heart failure had COPD and 25% of elderly patients with COPD also had heart failure.⁷ This risk of comorbid disease can be increased by the sequelae of COPD; e.g., reduced physical activity. As super-aged society has come, the number of persons with Multimorbidity and Multiple Disabilities (MMD)⁸ and their needs of rehabilitation have

increased rapidly more than we have expected.⁸ In CR or RR in patients with COPD, CR should be done according to usual CR guidelines as there is no evidence that CR or RR should be done differently in the presence of COPD.

Generally the rehabilitation is effective for people whose physical strength is deteriorated and it may be so for persons with MMD. Considering the results of the survey on disabilities and the report that the death rate of dialysis patients who experienced the cardiac infarction has decreased by 35% owing to the rehabilitation treatment.⁹

In the era of MMD, the rehabilitation needs to consider the existing principle of FITT (Frequency, Intensity, Type, Time). The unique problems of each organ and the relationship among them such as brain, heart, lung and bone joints should be considered simultaneously. For example, even a simple walk may lay a burden on the patient's heart, because the energy consumption during the walk of the patients with hemiplegic stroke remarkably increases of the energy consumption. Therefore, exercise therapy needs to be implemented with using walking stick in the early stage of rehabilitation, because the energy consumption during the walk may be reduced by using walking stick. In the case of the co-occurrence of stroke and chronic heart failure, the criteria of exercise therapy depends on the criteria of heart failure.

The more studies on the rehabilitation of persons with MMD need to be implemented, because the contents of rehabilitation including the exercise intensity and hours to accomplish "Adding Life to Years" may be different from those to do "Adding Life to Years and Years to Life". As to the rehabilitation medicine in the era of MMD, it is important that individualized programs should be prepared considering the condition of entire body or risk factors of the patients, their social or environmental conditions comprehensively and, most of all, which to choose "Adding Life to Years" or "Adding Life to Years and Years to Life".

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