

ABSTRACT

Background:

Physical activity (PA) is considered as one of the most important prognostic predictors in COPD patients. Longevity gene, SIRT1 is reported to be involved in the pathogenesis of COPD by regulating the signaling pathways of oxidative stress, inflammation and aging. We hypothesize SIRT1 is also associated with the benefits of PA in COPD patients, and designed this study.

Methods:

Male COPD outpatients were enrolled in this study, and their PA level was assessed with an accelerometer. We assessed the SIRT1 mRNA expression level in the peripheral blood mononuclear cells (PBMCs) of the subjects. Furthermore, we carried out respiratory function testing, blood gas analysis, the 6-minute walk test and the measurement of the cross-sectional area of the erector spinae muscles (ESMCSA) by chest CT. We analyzed the association of the PA with the results of each of the above examinations.

Results:

A total of 18 male COPD patients participated in this study. The mean age was 72 ± 9 years, and the mean FEV₁ was 1.4 ± 0.56 L ($52 \pm 19\%$ predicted). Our findings revealed a correlation between the daily physical activity-related energy expenditure and the ESMCSA. The SIRT1 mRNA expression level in the PBMCs was positively correlated with moderate-PA time ($r = 0.57$, $p = 0.03$).

Conclusion:

In male COPD patients, we showed that the moderate-PA time was correlated with the SIRT1 mRNA expression level in the PBMCs. This finding suggests SIRT1 plays an important role in the benefits of PA on the outcomes in COPD patients.