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Comparison of the Effect of Aerobic Exercise with Whole Body Vibration in Patients with Bronchiectasis: Single Blind Randomized Controlled Study

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Objectives: Whole-body vibration technique is an exercise training method that is widely used in various areas in rehabilitation applications. There are studies in patients with cystic fibrosis and COPD. It has been reported to improve muscle strength, exercise capacity and quality of life in patients with COPD. However, there is a limited study on the use of whole-body vibration technique in bronchiectasis. The aim of this study is to compare the effect of aerobic exercise with whole body vibration on exercise capacity, respiratory function, dyspnea perception and quality of life in patients with bronchiectasis.

Methods: The study included patients with bronchiectasis who were admitted to the Pulmonary Department. The subjects were randomly divided into two groups by using the closed envelope method. Respiratory physiotherapy, balance and strengthening exercises and whole body vibration were given to the subjects in group 1, respiratory physiotherapy, balance and strengthening exercises and aerobic exercise training(walking on a treadmill in 30 min) were given to the subjects in group 2. The patients in both groups received treatment for 6 weeks, 3 days a week. Demographic data were recorded. Respiratory functions with Pulmonary Function Test(PFT), dyspnoea level with Modified Medical Research Council(MMRC) Scale. Exercise capacities were evaluated by 6-minute walk test(6MWT) and five-times-sit-to-stand test (FTSST), quality of life was evaluated by st. george's respiratory questionnaire(SGRQ). Patients were evaluated at baseline and at the end of treatment.

Results: There were 6 (F=3/M=3) subjects in Group 1 and 7 (F=5/M=2) subjects in Group 2. Demographic characteristics of groups, Before and after treatment measurement. Evaluation of post-treatment results of the groups: A significant decrease was observed in Group 2 in the results of the FTSST ($p=0.015$). No significant difference was found between the two groups in the 6MWT, SGRQ total score, PFT and MMRC scores($p>0.05$). Comparison of the pre- and post-treatment evaluation results of groups: 6MWT and SGRQ total score were found significantly improved in Group 1 ($p=0.028$, $p=0.028$ respectively). 6MWT, FTSST and total score of quality of life showed significant improvement in group 2 ($p=0.018$, $p=0.018$, $p=0.043$ respectively).

Conclusion: According to the results of our study, a significant improvement was achieved in whole-body vibration and aerobic exercise, in terms of quality of life and exercise capacity. We believe that as an alternative aerobic exercise method, whole-body vibration may be useful in rehabilitation of patients with bronchiectasis as increases in quality of life.

Keywords: Whole body vibration, aerobic exercise, bronchiectasis