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Evaluation of Peripheral Muscle Strength in Attack of Chronic Obstructive Pulmonary Disease (COPD) Requiring Hospitalization

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Objectives: Chronic Obstructive Pulmonary Disease (COPD) is not only limited to the lung but also has independent systemic effects due to systemic inflammation. However, the relationship between systemic effects and COPD has not been clearly demonstrated yet. The aim of this study was to investigate the effect of peripheral muscle strength on the duration of hospitalization, respiratory muscle strength, pulmonary function tests and serum C-reactive protein (CRP: an inflammatory marker) levels in COPD attacks requiring hospitalization.

Methods: A total of 25 patients (20 males and 5 females) with a mean age of 65.4±8.4 years who were diagnosed with COPD according to GOLD 2011 criteria were included. The data from demographic features, comorbidities, duration of COPD, duration of hospitalization and whether the patients had used long-term oxygen therapy (LTOT) and non-invasive mechanic ventilation (NIMV) or not were recorded. Measurement of peripheral and respiratory muscle strengths, serum CRP levels and pulmonary function tests were carried out on the first day of hospitalization, on the day of discharge and one month after discharge.

Results: CRP levels increased during the attacks of COPD and were negatively correlated with FEV1 (forced expiratory volume at the first second) and positively correlated with spirometric phase of COPD during hospitalization. No relationship was detected between peripheral muscle strength and CRP. FEV1 was positively correlated with muscle strength of the lower extremities; however, this was not statistically significant (p: 0.98, 0.79, 0.19). Peripheral muscle strength decreased insignificantly during hospital stay. There was no significant correlation between peripheral muscle strength and duration of hospitalization.

Conclusion: Although it is supposed that pulmonary rehabilitation should be performed during and shortly after COPD attacks, further studies including greater number of patients with COPD are required.

Keywords: COPD, peripheral muscle strength, C-reactive protein