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The Relationship Between Insulin Resistance and Peripheral Muscle Strength, Exercise Capacity in Patients with COPD

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Objectives: One of the comorbidities in chronic obstructive pulmonary disease (COPD) is insulin resistance. Our aim was to investigate relationship between insulin resistance and peripheral muscle strength, exercise capacity in patients with COPD.

Methods: 76 patients with stable COPD were enrolled to the study. Peripheral muscle strength, exercise capacities, body composition (body mass index (BMI), fat mass (FM), fat free mass (FFM), fat free mass index (FFMI) were evaluated. Patients (with insulin resistance: Group I, without: Group II) were divided into two groups according to HOMA-IR index. The recorded parameters of two groups were compared.

Results: While 26% of patients in group I, group I and II were similar in terms of stage, gender, age, mMRC, smoking history (pack/year), comorbidities, CRP levels and exercise capacity. BMI, FM, FFM, FFMI of group I were found to be significantly higher than both normal values and group II. Positive correlation was found between HOMA-IR index and body composition, peripheral muscle strength in both all patients and group II. While peripheral muscle weakness was found in all patients, peripheral muscle strength, FFM, FFMI were found to be significantly higher in group I than II. A significant correlation was found between peripheral muscle strength and FFM, FFMI in both groups.

Conclusion: In this study, it was shown that peripheral muscle weakness and exercise capacity may develop independently from insulin resistance in patients with advanced stage COPD. Also in this study, it was shown that in stable COPD insulin resistance may be present in 26% of patients regardless of age, amount of cigarette, disease stage, comorbidity, dyspnea and CRP level besides decreased exercise capacity and peripheral muscle strength.

Keywords: COPD, peripheral muscle strength, insulin resistance