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Is Evaluation of Lower Extremity Muscle Mass Important Before Thoracic Surgery?

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Objectives: In the COPD patients who were diagnosed with lung cancer before surgery, the test performed for the purpose of evaluating the operability (shuttle walking test at increasing speed) was the test used in daily practice to show the maximal oxygen consumption (VO2max). In recent years, measurements of rectus femoris cross-sectional area (CSA) measurements and exercise capacities in COPD patients have been remarkable. The aim of this study was to investigate the effects of the patients who were referred for VO2max measurement (CSA) on the relationship between exercise capacity and survival.

Methods: Pulmonary function tests (PFT), diffusion capacity (DLCO), body mass index, lean body from the registered files of 74 COPD patients with 66 male patients who underwent preoperative shuttle field test with the diagnosis of lung cancer between 2015 and 2018 in the pulmonary rehabilitation unit. Fat free mass index measurements (FFMI) were evaluated retrospectively. Radiographs of the rectus femoris muscle surface area (CSA) obtained from the sections of the patients with simultaneous PET CT were evaluated. The level of statistical significance was accepted as $p<0.05$. Pearson correlation test and Cox regression tests were analyzed.

Results: The demographic data of 74 patients (66 male, mean age 63±7) were summarized. There was a strong correlation between VO2max measurements of the patients and total CSA, both rectus femoris cross-sectional area. ($p<0.005$, 0.008 and 0.02, respectively). The results of the Survival analysis were CSA 800mm2 ($p<0.007$) and FFMI: 18kg/m2 ($p<0.027$) as cut-off values.

Conclusion: The Rectus femoris cross-sectional area measurement correlated with VO2 max values measured by shuttle test. As the muscle mass of the patient increases, the exercise capacity increases and therefore the chance of operability increases. Lean body mass index and rectus femoris muscle mass are important in terms of mortality

Keywords: Shuttle test, rectus femoris, fat free mass index