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MUSCLE THICKNESS OF THE RECTUS FEMORIS IS LOWER IN PATIENTS WITH COPD THAN IN HEALTHY PATIENTS MATCHED FOR SEX, AGE AND STATURE: AN EXPLORATORY STUDY

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Rationale: Body mass index (BMI) is often used to categorize patients into weight classes. However, we have come to realize muscle mass is an important indicator of nutritional status and BMI does not necessarily reflect body composition. New methods, such as muscle thickness measured with ultrasound, have been suggested as an indicator for overall muscle mass. However, little is known about how muscle thickness in patients with chronic obstructive pulmonary disease (COPD) compares to muscle thickness in healthy persons. In this explorative study we compared BMI and rectus femoris (RF) thickness in patients with advanced COPD with BMI and RF thickness in matched healthy controls.

Methods: Patients with advanced COPD at the start of a pulmonary rehabilitation program were matched for age (5 years difference tolerance), sex (exact match), and stature (0.1 m difference tolerance) with healthy controls in a 1:4 case control ratio. BMI (kg/m^2) was calculated and muscle thickness (mm) of the RF was measured with a Bodymetrix ultrasound device (Intelametrix). Difference between cases and control were analyzed with paired sample t-tests. BMI and RF thickness of the patients were paired with the mean BMI and RF of their controls. A p-level of <0.05 was considered significant and 95% confidence intervals (CI) were presented for the mean difference.

Results: In total, 21 cases (median GOLD score 3 [interquartile range 3-4]; age 64.5±6.4 years; female 62%; height 1.68±0.07 m; BMI 26.9±6.1 kg/m^2; RF 12.4±3.4 mm) and 84 controls (age 64.5±6.4 years; female 62%; height 1.71±0.09 m; BMI 25.8±4.5; RF 14.6±4.5 mm) were included in the analyses. In the paired analysis, BMI was not significantly different between patients and controls (p=0.645, mean difference 0.95 kg/m^2 [CI:-2.12 – 4.01]), whereas RF thickness of patients was significantly lower (p=0.003, mean difference -2.33 mm [CI:-3.73 - -0.92]).

Conclusion: In this relatively small sample of patients with severe COPD, RF thickness was significantly lower than RF thickness in matched healthy controls. Larger study samples are needed to confirm whether muscle thickness measured with ultrasound provides more clinically relevant information about body composition and nutritional status than BMI in patients with COPD.

Disclosure of Interest: None Declared

Keywords: COPD, malnutrition, muscle thickness