ESPEN 2020 Abstract Submission

Topic: Nutritional assessment

Abstract Submission Identifier: ESPEN20-ABS-1229

ASSOCIATION BETWEEN MUSCLE THICKNESS, FAT-FREE MASS AND MALNUTRITION IN PATIENTS WITH COPD: AN EXPLORATORY STUDY

M. Engels [1], L. Zuurman [2], M. J. Sealy*, [3], J. Plas [4], H. Jager-Wittenaar [3, 5], H. van der Vaart [4]

[1]Department of Nutrition and Dietetics, School of Health Care Studies, [2]Department of Medical Imaging and Radiation Therapy, School of Health Care Studies, [3]Research Group Healthy Ageing, Allied Health Care and Nursing, Hanze University of Applied Sciences Groningen, [4]Department of Pulmonary Diseases and Tuberculosis, [5]Department of Oral and Maxillofacial Surgery, University of Groningen, University Medical Center Groningen, Groningen, Netherlands

The presenting author fulfills the above conditions and wants to apply for a travel award: No

The presenting author fulfills the above conditions and wants to apply for the ESPEN Prize: Yes

Rationale: Malnutrition is a common problem in patients with Chronic Obstructive Pulmonary Disease (COPD). Whereas estimation of fat-free muscle mass index (FFMi) with bio-electrical impedance is often used, less is known about muscle thickness measured with ultrasound (US) as a parameter for malnutrition. Moreover, it has been suggested that in this population, loss of muscle mass is characterized by loss of the lower body muscles rather than of the upper body muscles.Therefore, we explored the association between FFMi, muscle thickness of the biceps brachii (BB) and the rectus femoris (RF), and malnutrition in patients with COPD.

Methods: Patients were assessed at the start of a pulmonary rehabilitation program. Malnutrition was assessed with the Scored Patient-Generated Subjective Global Assessment (PG-SGA). Malnutrition was defined as PG-SGA Stage B or C. FFMi (kg/m^2) was estimated with bio-electrical impedance analysis BIA 101® (Akern), using the Rutten equation. Muscle thickness (mm) of the BB and the RF was measured with the handheld BodyMetrix® device (Intelametrix). Univariate and multivariate logistic regression analyses were performed to analyse associations between FFMi and muscle thickness for BB and RF, and malnutrition. Multivariate analysis corrected for sex, age, and GOLD-stage. Odds ratios (OR) and 95% confidence intervals (CI) were presented. A p-level of <0.05 was considered significant.

Results: In total, 27 COPD patients (age 64±8.1 years; female 60%, GOLD-stage 3, interquartile range=3-4, BMI 27±6.6 kg/m^2) were included in the analyses. In the univariate analysis, FFMi (p=0.014; OR=0.70, 95%CI: -0.12—0.15), RF thickness (p=0.021; OR=0.79, 95%CI: -0.09—0.01), and BB thickness (p=0.006; OR=0.83, 95%CI: -0.06—0.01) were all significantly associated with malnutrition. In the multivariate analysis, FFMi (p=0.031; OR=0.59, 95%CI: -0.18—0.01) and BB thickness (p=0.017; OR=0.73, 95%CI:-0.09—0.01) were significantly associated with malnutrition. None of the co-variables were significantly associated with malnutrition.

Conclusion: In this relatively small sample of patients with severe COPD, low FFMi and low BB muscle thickness were both robustly associated with increased odds of being malnourished. The results of this exploratory study suggest that upper body muscles may reflect nutritional status more closely than lower body muscles and BB muscle thickness measured with US may provide added value to the toolbox for nutritional assessment.

Disclosure of Interest: None Declared

Keywords: COPD, malnutrition, muscle thickness