

# Sarcopenia in Outcome in Chronic Obstructive Pulmonary Disease: Is the Tip of the Iceberg?

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We read with much interest the article by Choi et al.<sup>1</sup>, who retrospectively reviewed the records of all patients with chronic obstructive pulmonary disease (COPD) in three hospitals for a 1-year period in Korea. In 24,502 patients with COPD, skeletal muscle mass was significantly correlated with the acute exacerbation of COPD. Cystatin C and truncal skeletal muscle mass index (TSMI) were significant risk factors for the acute exacerbation of COPD. We would like to add some issues for a better understanding of their study.

Two types of sarcopenia are known: primary (age-linked) sarcopenia and secondary sarcopenia (when clear causes other than aging are present). Sarcopenia can develop from systemic illness. In particular, it may be triggered by inflammatory processes, such as COPD, cancer, or organ failure. Malnutrition, physical inactivity, disability, or illness-related immobility also contribute to the development of sarcopenia<sup>2</sup>.

Malnutrition is common in COPD patients and causes decreased diaphragmatic mass, the deterioration of pulmonary status, and decreased exercise capacity, and is associated with higher mortality rates. Therefore, nutritional support is an important part of treating COPD patients. Oral nutritional supplements should be given together with dietary counseling to promote weight gain, increase total calorie intake, and improve anthropometric measurements, hand grip strength, and quality of life in COPD patients with a body mass index of  $<20 \text{ kg/m}^2$  at a high risk of malnutrition<sup>3</sup>. Nutritional intervention is most effective when combined with physical and pulmonary exercise programs. Knowing the nutritional support and exercise status of the patients participating in the study by Choi et al.<sup>1</sup> would have made the study more meaningful and detailed.

The study included 189 male patients and 64 female patients. Male patients with an appendicular skeletal muscle mass index (ASMI) lower than  $6.727 \text{ kg/m}^2$  had higher hospital mortality rates and more emergency room visits in the study period than male patients with an ASMI higher than  $7.407 \text{ kg/m}^2$ . TSMI, total skeletal muscle mass index, and ASMI were significantly correlated with the acute exacerbation of COPD in male patients. The difference in the number of male and female patients in the study and the low number of female patients may have statistically affected the results. Would the statistical results have been affected if the number of female patients was greater? Dementia is also higher in female patients, and nutritional status is adversely affected in patients with dementia.

The article by Choi et al.<sup>1</sup> had a retrospective design and was non-protocolized. They also stated that was a limitation for bioelectrical impedance analysis (BIA) for muscle mass measurements. BIA is a portable and cheap tool that can calculate fat-free mass and fat mass in patients with COPD. In contrast, BIA in patients with

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COPD often overestimates fat mass and fat-free mass at several degrees of Global Initiative for COPD severity<sup>4</sup>.

Body composition metrics were shown to vary significantly by age, sex, and race, in 12,128 outpatients used to create population reference curves<sup>5</sup>. The fact that the current study was conducted in a Korean patient population is valuable in terms of publishing regional data. Well-designed and protocolized trials on nutrition, rehabilitation, muscle mass, and the prognosis of COPD patients are needed to address these issues.

### Authors' Contributions

Methodology: Sungurtekin H. Formal analysis: Sungurtekin H. Data curation: Sungurtekin H. Software: Sungurtekin H. Validation: all authors. Investigation: Sungurtekin H. Writing - original draft preparation: Sungurtekin H. Writing - review and editing: all authors. Approval of final manuscript: all authors.

### Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

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