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Sarcopenic obesity is the real problem in COVID-19 !

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Dear Editor,

We have read with great interest the recently published article by Molfino et al. (1). We congratulate the authors for drawing attention to the relationship between sarcopenia and the presence of at least one complication during intensive care unit stay of COVID-19 patients. Herewith, we would like to remark some issues pertaining to the analyses and interpretation of their data, as well as to the diagnosis of sarcopenia as below.

First of all, sarcopenia and obesity are two dependent components of body composition. While obesity is also an important public health problem in the general population, it significantly adds to the adverse clinical scenario in the presence of sarcopenia. In the aforementioned study, due to the small sample size, there are type II errors (false negative) regarding overweight and obesity, and other comorbidities (1). Therefore, the impact of obesity and comorbidities (e.g. hypertension and metabolic syndrome) - well-known risk factors for sarcopenia, frailty and severity/mortality of COVID-19 - could not be detected.

The authors found that non-survivors were significantly older than the survivors. Although statistically insignificant (due to the small sample size), all non-survivors were overweight or obese, and the prevalence of chronic comorbidities was about two times more common in the non-survivors. As sarcopenia is primarily an age- and renin angiotensin system-related disorder (like hypertension, obesity, diabetes mellitus, and metabolic syndrome) (2); having older ages and chronic disease(s) of non-survivors might have led to sarcopenic obesity and indeed to mortality in COVID-19 (3). Yet, it is known that obesity and sarcopenia act synergistically to increase the risk of disability (4), and sarcopenic obesity was found to be an independent risk factor for mortality in the intensive care unit (5).

Second, sarcopenia is defined as age-related loss of muscle mass and muscle function (6). Muscle strength or performance tests (i.e. handgrip, chair stand test and gait speed) are strong predictors of adverse outcomes (7). Herewith, there are still some problems concerning muscle mass measurements, and this makes the accurate diagnosis of sarcopenia difficult. As functional decline (muscle strength/power) occurs in sarcopenia, the authors should have used at least one functional test (e.g. grip strength) while diagnosing/assessing it. Likewise, a recent study

found that, together with the well-known risk factors of COVID-19, low grip strength appears to be an independent predictor for disease severity in COVID-19 (8).

Third, loss of type 2 muscle fibers and a shift from type 2 to type 1 muscle fibers ensue with aging (9). Of note, muscles rich in type 2 fibers (e.g. anterior thigh, abdominal and psoas major) undergo atrophy earlier, and muscles rich in type 1 fibers (e.g. paraspinal muscles) are relatively spared (10). As such, measuring the psoas major with(out) abdominal muscles would be another option for sarcopenia; however, in the above quoted study, the authors used the sum of psoas major, abdominal and paraspinal muscles. Nevertheless, all of their patients were diagnosed as sarcopenic based on previous cut-off values in critical care (1).

In conclusion, age-related loss of muscle mass with an increase in fat mass (i.e. sarcopenic obesity) has deleterious effects on various physiological systems resulting in comorbid diseases, functional loss and adverse outcomes, which are noteworthy during this pandemic. Needless to say, as a 'vital sign' of the neuromusculoskeletal system, grip strength can simply be used to predict muscle function and sarcopenia which can significantly affect the severity and mortality in COVID-19 (8).

Declarations of Competing Interest

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