

Sarcopenia Index Is Associated With Psoas Muscle Volume In Patients With Fragility Fractures

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INTRODUCTION: Sarcopenia is a age-related syndrome characterized by loss of muscle strength and mass. Meanwhile, the sarcopenia index (SI) is a useful indicator for the assessment of the whole body, which is calculated using the renal function markers creatinine and cystatin C. Since patients with sarcopenia often exhibit the muscle weakness, increased susceptibility to falls, and fragility fractures, in the present study, we investigated the correlation between the psoas muscle index (PMI), bone mineral density (BMD), and SI in patients with fragility fractures.

METHODS: We retrospectively reviewed elderly patients with fragility fractures in our hospital from 2021 to 2023. A total of 208 patients (56 men and 152 women, mean age 82.8 ± 7.5 years) were included. PMI, BMD, and SI were calculated and examined during the admission examination; PMI was calculated using the psoas muscle area at the L3 level in the axial CT images. BMD was measured at the forearm bone. SI was calculated by measuring serum creatinine and cystatin C.

RESULTS SECTION: The mean PMI was 414.1 ± 98.3 mm²/m² (227-813 mm²/m²), BMD was 0.461 ± 0.123 g/cm² (0.220-0.809 g/cm²), and SI was 61.6 ± 13.6 (33.9-142.5). SI was significantly correlated with PMI ($r=.631$, $p<.001$) and BMD ($r=.369$, $p<.001$). SI was significantly higher in males (71.5 ± 16.1 (48.1~142.5)) than in females (58.0 ± 10.4 (34.0~81.8)) ($P<.001$).

DISCUSSION: In cases of increased suspicion of sarcopenia, choosing a clinically relevant screening index is essential to maintain the elder people's condition. In this study, SI showed a significant correlation with PMI and BMD, and especially a strong correlation with PMI. SI can be calculated by blood sampling, which is cheaper and safer than CT. A low SI value is suspected of reduced skeletal muscle mass, therefore, SI could promote early detection and treatment of sarcopenia, leading to the reduced risk of falls and fractures.

SIGNIFICANCE/CLINICAL RELEVANCE: The study highlights the strong correlation between psoas muscle index, bone mineral density, and sarcopenia index in the patients with fragility fractures. The results would support the potential utility of sarcopenia index in the management of elderly patients.

