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Clinical impacts of sarcopenia on mortality based on psoas muscle mass in critically ill patients undergoing continuous renal replacement therapy

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Objectives: Sarcopenia is known to be an important risk factor for increased mortality in elderly patients. However, it is hard to evaluate functional aspects in critically ill patients to diagnose sarcopenia. We investigated the effect of sarcopenia for mortality in critically ill patients undergoing continuous renal replacement therapy (CRRT) based on muscle mass on computed tomography(CT) scan.

Methods: Among adult patients who were admitted to the intensive care unit (ICU) and underwent CRRT from 2015 to 2019 in Inje university Busan Paik hospital, ones with abdominal CT during 3 days before and after the ICU admission was included. Psoas muscle index (PMI) was calculated as psoas muscle area divided by the square of height, and sarcopenia was defined in case of the PMI lower than 5.45 cm^2/m^2 for men and 3.85 cm^2/m^2 for women. Mortality was compared according to the presence of sarcopenia, and hazard ratios (HR) for mortality were analyzed through Cox regression.

Results: Of a total of 140 patients, median PMI was 3.73 (interquartile range, 2.56, 7.87) cm^2/m^2, and 101 (72.1%) patients had sarcopenia. Twenty-eight-day mortality was 60.4% in sarcopenic patients and 66.7% in non-sarcopenic patients, and 1-year mortality was 84.2% in sarcopenic patients and 82.1% in non-sarcopenic patients. There were no significant differences in in-hospital mortality, 28-day mortality and 1-year mortality between patients with and without sarcopenia (Fig.1). The HR of sarcopenia for 28-day mortality was 0.735 (95% CI, 0.464-1.164, p=0.190) in univariate analysis and 0.643 (95% CI, 0.366-1.128, p=0.123) in multivariate analysis. The HR of sarcopenia for 1-year mortality was 0.897 (95% CI, 0.597-1.349, p=0.603) and 0.834 (95% CI 0.508-1.370, p=0.474) in univariate and multivariate analysis, respectively.

Conclusions: Sarcopenia based on psoas muscle mass measured in CT did not have a significant effect on the short-term and long-term mortality in critically ill patients undergoing CRRT.

Figure 1. Kaplan-Meier Survival curve for in-hospital mortality according to Sarcopenia by PMI