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Harmful effect of low skeletal muscle mass on the long term patient survival in the elderly acute kidney injury patients who underwent continuous renal replacement therapy

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Objectives : In patients with chronic kidney disease, survival has been shown to be better with increasing body mass. Recently, it is also reported to be true in patients with acute kidney injury (AKI). However, few studies were conducted to reveal which of the two body components, muscle or fat, was beneficial to the patient survival. The aim of this study is to evaluate the impacts of skeletal mass and fat mass on the long term patient survival in elderly AKI patients who underwent CRRT.

Methods : This study was a single center retrospective study of elderly patients who survived from AKI needed CRRT from January 2013 to December 2015. Patient's long term survival was verified in March 2016 by individual phone call. Skeletal muscle mass (SMM) and fat mass (FM) were measured using bioimpedance analysis method at the time of CRRT initiation. SMM and FM were adjusted with height squared. Multivariable cox regression analysis was adjusted to evaluate the significant factors associated with long term patient survival.

Results : A total of 170 patients were included in this study. The mean patient age was 73.77±5.68 years old, and 57.1% of the patients were male. The mean BMI was 22.94±3.27 kg/m2. During the median follow up period of 287.0 days, 40.0% (68/170) of the patients were dead. When we performed multivariable analysis to define factors associated with long term patient survival, lower SMM was associated with higher long term mortality (HR 0.830(0.697-0.988), p=0.036) along with older age (HR 1.062(1.105-1.110), p=0.009), history of sepsis (HR1.994(HR1.174-3.387), p=0.011) and prolonged prothrombin time (1.396, HR(1.155-1.688), P=0.001). However, lower FM was not associated with long term patient survival in this group.

Conclusions : In the elderly patients with AKI treated with CRRT, lower skeletal muscle mass rather than lower fat mass was associated with long term patient mortality.

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