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Muscle Mass Is A Major Prognostic Factor For Survival In Patients Starting Maintenance Hemodialysis

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Objectives: Previous studies demonstrated that body composition (BC) is associated with the prognosis of patients on maintenance hemodialysis (MHD). However, little is known about the effect of the initial BC parameters on clinical outcomes of ESRD patients on MHD. Here, we evaluated the prognostic value of BC parameters taken at the initiation of MHD on survival.

Methods: This was a single-center retrospective study. All patients diagnosed with ESRD and started MHD between January 2014 and December 2020 in Chungnam National University Hospital was primarily included. Bioimpedance analysis was performed within 7 days before or after the very first hemodialysis session. Baseline clinical parameters, laboratory variables and all-cause mortality of patients were evaluated.

Results: In 268 hemodialysis patients, the mean age was 63.14±13.56 years and 63.8% were male. 157 (58.6%) patients were obese and average BMI in obese and non-obese group were 28.00kg/m^2 and 21.74kg/m^2, respectively (P<0.001). Median follow-up period was 22.5 months and 47 (17.5%) patients died during follow-up. BMI showed positive correlations with overhydration, LTI (lean tissue index; lean tissue mass/squared height) and FTI (fat tissue index; fat tissue mass/squared height). However, the latter three were all independent. In Kaplan-Meier analysis, obesity (P=0.074) and higher LTI (50-100th percentile, P<0.001) showed better survival during follow up. Also, higher ECW/ICW ratio and higher dry weight were protective while overhydration or FTI did not significantly affect all-cause mortality. Higher LTI lowered risk for all-cause mortality in the adjusted model (adjusted hazard ratio: 0.856, P=0.002, 95% confidence interval: 0.774-0.946). Baseline nutritional markers (serum albumin, total cholesterol) and inflammatory markers (C-reactive protein, ferritin) showed no significant influence on survival rate.

Conclusions: Our study showed that muscle mass at the initiation of MHD is an important prognostic factor for survival than BMI or FTI. This suggests that patients starting MHD should be encouraged for increasing muscle mass.