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The association of dialysis adequacy, body mass index, and mortality among hemodialysis patients

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Objectives: We examined whether the association of HD adequacy with mortality differs among hemodialysis (HD) patients with different body mass index (BMI).

Methods: We retrospectively extracted and examined patient data from the Korean Society of Nephrology registry, which is a nationwide dataset of the medical records of the HD patients, from January 2001 to June 2017. We included the patients who were ≥18 years old and received maintenance HD with twice- or thrice-weekly schedule. We excluded patients with missing data on baseline single-pool Kt/V_{urea} (spKt/V) and BMI. Patients were categorized into three groups according to baseline BMI (<20 (low), 20 to <23 (normal), and ≥23 (high) kg/m^2). Baseline spKt/V was divided into six categories.

Results: Among 18,242 patients on HD, the median follow-up duration was 5.2 (IQR, 1.9–8.9) years. In Cox regression analysis, compared to reference (spKt/V 1.2–1.4), lower and higher baseline spKt/V were associated with greater and lower risks for all-cause mortality, respectively. However, among patients with high BMI (n=5,588), the association between higher spKt/V and lower all-cause mortality was attenuated in all adjusted models (P-interaction<0.001). Compared to the patients with normal BMI and target range of spKt/V (1.2–1.4), those with low BMI had higher risk for all-cause mortality at all spKt/V range. However, the increase of spKt/V incrementally narrowed the gap in risk for mortality. Compared to the patients with normal BMI and target range of spKt/V, those with high BMI and spKt/V <1.2 did not have increased risk for mortality despite low dialysis adequacy. Moreover, the patients with high BMI and spKt/V ≥1.2 had lower risk for all-cause mortality compared to the reference group. However, for those patients, spKt/V ≥1.6 did not show additional survival benefit compared to spKt/V 1.4 to <1.6.

Conclusions: In conclusion, the association between spKt/V and mortality in HD patients may affect by BMI.