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Lean Body Mass as a Predictor of Mortality in Hemodialysis Patients: A Focus on Age-Related Variations

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Objectives : Lean body mass (LBM) serves as an indicator of muscle mass in body composition. Recently, studies have revealed increased mortality rates in dialysis patients with low LBM. However, studies analyzing the impact of age on LBM and mortality in dialysis patients remain limited.
Methods : This study analyzed data from 46,392 adult hemodialysis patients registered in the Korean society of nephrology (KSN) registry from 2001 to 2020. We used the lean body mass index (LBMI), standardized by the square of height, to normalize lean body mass. Patients were first categorized by age group (20-49, 50-69, and ≥70 years). Subsequently, patients were categorized into quartiles based on their LBMI (<15.49, 15.49≤LBMI<16.48, 16.48≤LBMI<17.57, and ≥17.57). Multivariate Cox regression analysis, incorporating various variables such as diabetes and hypertension, was used to analyze the impact of LBMI in different age groups.
Results : This study revealed that the lowest LBMI group (<15.49) was consistently associated with decreased survival across all age groups, with this trend being particularly prominent in the older age groups. The hazard ratios (HR) for the lowest LBMI group were 1.2, 1.28, and 1.36 for ages 20-49, 50-69, and those aged ≥70, respectively. In the multivariate analysis, diabetes emerged as the variable with the highest HR; however, a significant reversal of this trend was observed in the ≥70 age group. In the elderly group, a low LBMI (<15.49) had a significant impact on the mortality rates especially when compared to other variables such as diabetes.
Conclusions : In patients undergoing dialysis aged ≥70, LBM has a more significant impact on the mortality than other variables such as diabetes. Understanding the importance of LBM in older patients undergoing dialysis, particularly those aged ≥70, is crucial for improving their prognosis.

Figure 1. Survival graphs of age groups.jpg

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(A) All ages group (B) Age group of 20-49 years (C) Age group of 50-69 years (D) Age group of over 70 years

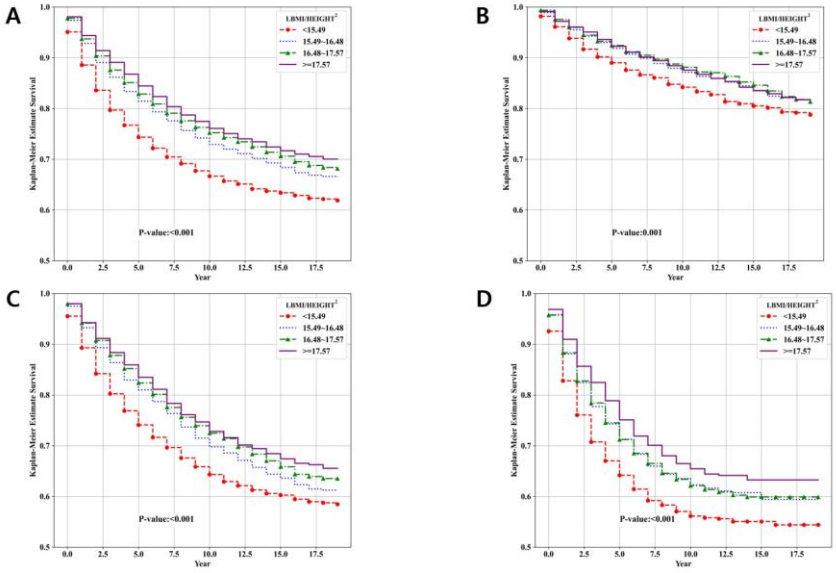

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Figure 2. Cox multivariate model for the hazard ratio of age groups
(A) All ages group (B) Age group of 20-49 years (C) Age group of 50-69 years (D) Age group of over 70 years