Abstract Type : Poster exhibition
Abstract Submission No.: A-0543
Abstract Topic : Acute Kidney Injury

Impact of Early Changes in Albumin on Long-Term Kidney and Mortality Outcomes in Patients with Acute Kidney Injury Undergoing Continuous Kidney Replacement Therapy

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Objectives : Albumin is an important prognostic factor in patients undergoing continuous kidney replacement therapy (CKRT), and hypoalbuminemia is associated with an increased risk of early mortality. However, the impact of early changes in albumin levels during CKRT on long-term patient outcomes remains unclear. This study investigated the relationship between early albumin changes during CKRT and the risk of long-term kidney and mortality outcomes.
Methods : We analyzed 1,087 patients with acute kidney injury requiring CKRT who survived at least 90 days after CKRT initiation from a multicenter retrospective LINKA cohort in Korea. Patients were classified into four groups based on albumin levels at CKRT initiation and on day 7 of CKRT: low to low, low to normal, normal to low, and normal to normal. The primary outcome was a composite of progression to end-stage kidney disease (ESKD) and all-cause mortality within 365 days after CKRT.
Results : The primary composite outcome occurred in 33.4% (363/1,087) of patients, with progression to ESKD in 19.0% (207/1,087), and all-cause mortality in 19.6% (213/1,087). All incidences were highest in the persistently low albumin group and lowest in the persistently normal albumin group. The risk of the composite outcome at 365 days was significantly higher in the three groups compared to the persistently normal albumin group (low to low: adjusted odds ratio [aOR], 2.69, 95% confidence interval [CI], 1.78-4.11, P<0.001; low to normal: aOR, 2.33, 95% CI, 1.42-3.84, P<0.001; normal to low: aOR 1.75, 95% CI, 1.10-2.78, P=0.018) (Figure 1). Similar trends were observed when progression to ESKD and all-cause mortality were analyzed separately.
Conclusions : Early changes in albumin levels during CKRT are associated with long-term risks of kidney failure and mortality. Persistently low albumin levels predict the worst outcomes, and even in patients with normal baseline albumin, an early decline in albumin is associated with a worse prognosis.

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THE KOREAN SOCIETY OF NEPHROLOGY
KSN SEOUL, KOREA 2025
June 19 (Thu) – 22 (Sun), 2025 Coex, Seoul, Korea
Beyond Challenges, Towards Healthier Kidney