

**Abstract Type : Oral**

**Abstract Submission No. : 1794**

**Dynamic nature and prognostic value of the neutrophil-to-lymphocyte ratio in critically ill patients with acute kidney injury on continuous renal replacement therapy: a multicenter cohort study**

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**Objectives:** Patients with acute kidney injury (AKI) receiving renal replacement therapy constitute the subgroup of AKI with the highest risk of mortality. Despite recent promising findings on the neutrophil-to-lymphocyte ratio (NLR) in AKI, studies have not yet addressed the clinical implication of the NLR in this population. Therefore, we aimed to examine the prognostic value of NLR in critically ill patients requiring continuous renal replacement therapy (CRRT), especially focusing on time-dependent changes in NLR.

**Methods:** We enrolled 1,494 patients with AKI who received CRRT in five university hospitals in Korea between 2006 and 2021. NLR fold changes were calculated as the NLR on each day divided by the NLR value on the first day. We performed a multivariable Cox proportional hazard analysis to assess the association between the NLR fold change and 30-day mortality.

**Results:** The NLR on day 1 did not differ between survivors and non-survivors; however, the NLR fold change on day 5 was significantly different. The highest quartile of NLR fold change during the first 5 days after CRRT initiation showed a significantly increased risk of death (hazard ratio [HR], 1.57; 95% confidence intervals (CI), 1.21–2.04) compared to the lowest quartile. NLR fold-change as a continuous variable was an independent predictor of 30-day mortality (HR, 1.12; 95% CI, 1.03–1.22).

**Conclusions:** In this study, we demonstrated an independent association between changes in NLR and mortality during the initial phase of CRRT in AKI patients receiving CRRT. Our findings provide evidence for the predictive role of changes in the NLR in this high-risk subgroup of AKI.

Dynamic change of neutrophil (A), lymphocyte (B), neutrophil-to-lymphocyte ratio (NLR) (C), and fold changes of NLR (D) during the first 5 days after CRRT initiation