EDITORIAL

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Reassessing the role of the neutrophil-to-lymphocyte ratio in chronic kidney disease patients

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Chronic kidney disease (CKD) is characterized by an irreversible decline in kidney function and affects more than 10% of the general population worldwide [1]. Identifying patients at risk for rapid CKD progression is crucial as residual kidney function is an independent predictor of cardiovascular and all-cause mortality [2]. Among the various pathophysiological factors related to CKD, inflammation plays crucial roles in disease initiation and progression. Recently, the neutrophil-to-lymphocyte ratio (NLR) in peripheral blood has emerged as a promising prognostic indicator for various medical conditions, including infection, cardiovascular diseases, and malignancy [3-5]. It reflects the balance between acute and chronic inflammation and adaptive immunity. A high NLR indicates a heightened systemic inflammatory response and high risk for adverse clinical outcomes. By reflecting the balance between inflammation and the immune response, NLR predicts disease progression and severity, thereby facilitating treatment selection. As a result, NLR has become a valuable tool for CKD management and prognostication.

As reported in the current issue of the *Korean Journal of Internal Medicine*, Kim et al. [6] retrospectively investigated the clinical relevance of NLR in 141 patients with non-dialysis-dependent CKD. They found that patients in the third NLR tercile had lower estimated glomerular filtration rates (eGFRs) and greater proteinuria compared to those in the first tercile, in line with a previous study [7]. Importantly, the risk for composite kidney events, defined as a decline in the eGFR of ≥ 50% or the initiation of renal replacement therapy, was significantly higher in patients with the highest NLR than in those with the lowest NLR, even after adjusting for possible confounders, including baseline serum levels creatinine and proteinuria (adjusted hazard ratio = 3.33, 95% confidence interval = 1.43–7.76). Overall, these findings suggest that high NLR values are not only associated with reduced baseline kidney function but also independent indicators of sustained kidney injury and rapid CKD progression.

The association between NLR and high-sensitivity C-reactive protein (hs-CRP) level is important. Previous studies have found that hs-CRP levels are a useful indicator of systemic inflammation and adverse clinical outcomes in both the general population and CKD patients [8,9]. In Kim et al. [6], the hs-CRP levels were elevated in patients in the second and third NLR tercile. However, linear regression analysis showed no significant association between NLR values and hs-CRP levels, suggesting that the increased NLR values may not be solely due to systemic inflammation in CKD patients. In line with this, NLR values can be used to independently stratify risk among patients with heart disease, regardless of hs-CRP levels [10,11].

Kim et al. [6] also demonstrated an association between NLR terciles and rapid kidney function decline but not all-cause mortality, which does not align with the findings of a meta-analysis that showed that NLR predicted the risk of death in CKD patients [12]. This discrepancy can be attributed to several factors in their study, such as the retrospective study design, limited sample size, different cut-off values, and patient heterogeneity. Nonetheless, it is important to note that the cumulative incidence of all-cause mortality was elevated in patients in the second and third NLR terciles compared to those in the first NLR tercile. These discrepancies underscore the need for further well-designed studies with larger sample sizes.

In conclusion, the results of Kim et al. [6] emphasize the clinical significance of NLR in risk stratification and the selection of personalized treatment for progressive kidney dysfunction in CKD patients. NLR is a simple and cost-effective

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indicator, making its use suitable for routine clinical practice. It can help improve patient outcomes and optimize CKD management. Further research is needed to verify its clinical usefulness for CKD management and to ensure its reliability as an independent prognostic marker for CKD.

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