Abstract

Background: Chronic kidney disease is a progressive disorder of the body with high morbidity. Hematological biomarkers canpredict CKD progression.Objective: This study examined the predictive role of hematological parameters among adult CKD patients.

Methods: The records of 120 adult patients with CKD were retrieved. CKD staging was according to KDIGO guidelines.Hematological parameters were hemoglobin, WBC, percentages of neutrophils and lymphocytes, NLR, platelet count, MCV, andRDW. Data were analyzed to assess associations between hematological markers and disease stage.

Results: Mean age was 56.4 ± 13.2 years, with 56.7% being male. Prevalence was 65.0% for hypertension and 38.3% for diabetes mellitus. There was a significant decrease in hemoglobin with CKD stage (13.4 ± 1.1 g/dL in Stage 1 to 8.5 ± 1.7 g/dL in Stage 5,$p < 0.001$), while NLR and RDW increased progressively with CKD stage (NLR: 1.55 ± 0.48 to 4.12 ± 1.02; RDW: $13.1\% \pm 0.8\%$ to$16.0\% \pm 1.6\%$, both $p < 0.001$). Anemia and raised NLR were more frequent in the advanced stages of CKD. Logistic regression analysis identified hemoglobin (OR = 0.69, 95% CI: 0.58–0.82, $p < 0.001$), RDW (OR = 1.78, 95% CI: 1.33–2.39, $p = 0.002$), and NLR (OR = 1.91, 95% CI: 1.35–2.72, $p = 0.001$) as independent predictors of advanced CKD. These simple and inexpensive biomarkers are particularly valuable in resource-limited settings.

Conclusion: Hematological biomarkers, especially hemoglobin, NLR, and RDW, were effectively used to predict the progressionof CKD