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Platelet to Lymphocyte ratio: a novel marker for severity prediction in chronic kidney disease

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Background

Chronic kidney disease (CKD) is a progressive loss of kidney function with ongoing systemic inflammation that can be independently predicted by inflammatory markers like Platelet-Lymphocyte ratio (PLR), and proteinuria.

Objectives

The present study aimed to find the correlation between PLR with proteinuria in different stages of CKD patients.

Methods

After getting informed consent, blood and urine samples were collected from 85 randomly selected CKD patients and classified into stages 2 to 4 based on their estimated glomerular filtration rate (e-GFR) values. PLR was determined by values obtained from platelet count, white blood cell count, and differential white blood cell count. Proteinuria was determined using the urine protein creatinine ratio (UPCR) obtained from the measurement of urine protein and creatinine. Statistical analyses were performed using the statistical package for the social sciences version 16, and the p-value <0.05 was considered statistically significant.

Results

Amongst the 85 participants, males were predominant (58.8%), with a mean age of 58. Severity analysis based on the e-GFR revealed that 17.64%, 18.82%, 29.41%, and 34.11% of patients were in stages 2, 3A, 3B, and 4, respectively. Bivariate correlation analysis indicates a significant positive correlation ($r = 0.787$, $p < 0.0001$). Furthermore, stage-wise correlation analysis done by Spearman's rank correlation demonstrated that PLR had a statistically significant strong positive correlation with UPCR in stage IIIA ($r=0.854$, $p< 0.001$), IIIB ($r=0.800$, $p<0.001$) and IV ($r=0.661$, $p< 0.001$) albeit it showed a statistically insignificant negative correlation in stage II ($r=-0.479$, $P=0.071$).

Conclusions

The findings indicated that PLR has a strong positive correlation with proteinuria in stage IIIA, IIIB, and IV of CKD; therefore, it could be used as a novel predictive marker for identifying the

severity of CKD. However, further large-scale studies need to be performed to find the genetic and demographic variations.