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Changes in serum creatinine, RDW, PDW, Hb and NLR during one month period in ESRD patients undergoing hemodialysis at Nephrology Unit, University Hospital-General Sir John Kotelawala Defence University

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Patients with end stage renal disease (ESRD) encounter complications despite regular hemodialysis (HD). Literature reveals various hematological and biochemical parameters as the predictors of mortality in them. Investigating association between serum creatinine, and Red Cell Distribution Width (RDW), Platelet Distribution Width (PDW), Hemoglobin (Hb), and Neutrophil-to-Lymphocyte Ratio (NLR) to predict post dialysis target creatine would help clinical decision making. Accurately predicting post-dialysis serum creatinine levels is essential for setting therapeutic targets, guiding treatment adjustments, and optimizing patient outcomes. ESRD-HD patients at the Nephrology Unit, University Hospital-General Sir John Kotelawala Defence University (UH-KDU) were studied (n=47). Blood samples were collected at two phases: at a dialysis session conducted after three months from their initial dialysis (Sample_In) and after 5-6 HD sessions in one month (Sample_End). Full Blood Count (FBC) and serum creatinine levels were analyzed using automated analyzers. Statistical analysis was performed using Microsoft Excel IBM_SPSS_version_26. The correlation bivariate analysis was performed to find out possible correlations among the parameters between the two phases and, regression analysis was performed to develop equations to predict one parameter from the other. Moderate to weak significant positive correlations were obtained between parameters in two phases, notably a weak positive correlation between serum creatinine-Sample_End and PDW-Sample_In ($p < 0.05$; $r = 0.291$). Regression analysis produced a predictive equation for the serum creatinine after one month: $\text{Creatinine End} = 0.350 * (\text{PDW_In}) + 0.642 * (\text{Creatinine_In}) - 2.281$ ($R = 0.516$). The results show the potential for predicting target serum creatinine after 5-6 HD sessions by an equation using initial values of serum creatinine and PDW. This equation provides a straight forward and practical tool for clinical use, relying on readily available parameters. However, these findings need validation by further studies.

Keywords: *End Stage Renal Disease hemodialysis), Red Cell Distribution Width (RDW), Platelet Distribution Width (PDW), Neutrophil to Lymphocyte Ratio (NLR), serum creatinine.*