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Prognostic Utilty of Monocyte-to-Lymphocyte Ratio for All-Cause Mortality in Patients with Chronic Kidney Disease on Maintenance Hemodialysis: A Single Retrospective Cohort Study From North Sumatera, Indonesia

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Objectives : Excessive cardiovascular disease (CVD) mortality in hemodialysis patients has been attributed. Systemic inflammation is one of the well-recognized nontraditional risk factors in the progression of CVD in hemodialysis patients. Recent studies have demonstrated that monocyte-to-lymphocyte ratio (MLR) has been identified as a marker of systemic inflammation and a prognostic marker for mortality in patients with hemodialysis. MLR can be easily calculated from full blood count (FBC) in a simple laboratory without incurring additional costs. The present study was designed to examine the prognostic utility of MLR for all-causes mortality in maintenance hemodialysis patients.
Methods : We measured FBC in 104 maintenance hemodialysis patients in July 2018. MLR was calculated by dividing the monocyte count by the lymphocyte count. A receiver operating characteristic (ROC) curve and Cox regression models were used to verify the association between MLR and survival rate. Survival curves were constructed and compared using the log-rank test. A two-sided value of $P < 0.05$ was considered statistically significant.
Results : The majority of the sample was male (62.5%), with a mean age at dialysis initiation of 48.37 ± 12.84 years. During 2 years of study follow-up, 23 deaths (22.1%) were recorded. Based on the ROC, the cut-off MLR was 0.23, with an area under the curve was 83.1 (95%CI:0,723– 0,940) ($p <0.001$), and the sensitivity and specificity values were 78.3% and 77.8%, respectively. In Cox regression, MLR <0.23 had a significant effect on all-cause mortality (hazard ratio [HR] 89.04; 95%CI: 17,74 - 446,98; $p < 0.001$). The group of patients with MLR <0.23 had a mean survival of 23,29 months (vs 20.96 months in the group of patients with MLR ≥0.23.
Conclusions : Higher MLR is associated with increased risks of all-cause mortality in hemodialysis patients. The prognostic utility of MLR for all-cause mortality in hemodialysis patients warrants more investigation.