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The Importance of Neutrophil-to-Lymphocyte and Platelet-to-Lymphocyte Ratio in Determining Severity of COPD

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Objectives: Chronic obstructive pulmonary disease (COPD) is a common disease characterized by progressive and irreversible airway obstruction, and chronic airway inflammation. neutrophil-to-lymphocyte ratio (NLR) and platelet-to-lymphocyte ratio (PLR) are a very useful, and economical inflammatory marker that can be easily derived from routine laboratory tests. In recent years, NLR and PLR had been shown to be particularly useful in detecting exacerbations of the disease. We aimed to assess the NLR and PLR to determine severity of COPD.

Methods: The laboratory results of 40 patients with stable COPD were analyzed. The patients were classified as Group-1 (FEV1>50%, n=17) and Group-2 (FEV1<50%, n=23). Pulmonary function tests, BODE index, erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), and complete blood count (CBC) were recorded. PLR and NLR was calculated from CBC.

Results: NLR was found to have a significant correlation in determining the severity of COPD (1.98 ± 0.91 vs 2.71 ± 1.24 , $p=0.04$). PLR values were significantly higher in Group-2 patients, but no statistical significance was found (103.8 ± 34.2 vs 120.1 ± 30.0 , $P=0.10$). In addition, ESR and CRP values were found to be higher in Group-2 without statistical significance. We found a significant correlation between the NLR and CRP ($r=0.63$, $P<0.004$) in COPD patients with FEV1<50%.

Conclusion: NLR could reflect the severity of COPD, and can be used as a potential useful marker. In order to better understand the clinical value of NLR, large-scale studies are needed in the future.

Keywords: COPD, neutrophil-to-lymphocyte ratio, platelet-to-lymphocyte ratio, severity