**Relationship between Peripheral Blood Eosinophilia in COPD Patients with Severity and Outcome of Covid-19 Pneumonia**

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**Abstract**

**Introduction:** The emergence of Coronavirus disease 2019 (COVID-19) as a global health emergency necessitates continued investigation of disease progression. This study aimed to investigate peripheral blood eosinophilia in chronic obstructive pulmonary disease (COPD) patients with COVID-19 based on demographics, clinical features, and disease severity.

**Methods:** This cross-sectional study conducted on 73 COPD patients infected by COVID-19 in Afzalipour Hospital, Iran. Peripheral blood samples were collected for hematological parameter testing, including eosinophil counts using Giemsa staining. Eosinophilia was defined as ≥2% and eosinopenia as <2%. Various variables, such as age, gender, comorbidities, smoking, oxygen therapy, disease severity, laboratory parameters, chest CT scan findings, and discharge status, were analyzed. Statistical analyses were performed by using SPSS 26.

**Results:** The average age of patients was 67.90±13.71 years old. The most patients were male (54.8%). Eosinopenia in COPD patients was associated with more severe COVID-19 disease (P= 0.01) and lower oxygen saturation (P= 0.001). In addition, the study revealed a significant difference in the Chest CT Severity Score (CT-SS) between COPD patients with eosinophil counts <2% (9.76±0.7) and those with ≥2% (6.26±0.63) (P< 0.001). Although, COPD patients with eosinophil counts <2% had a higher mortality rate than those with eosinophil counts ≥2%, however, this difference was not statistically significant (P= 0.16).

**Conclusion:** Our study suggested that reduced peripheral blood eosinophil levels in COPD patients with COVID-19 correlate with unfavorable outcomes. Understanding this association can assist in identifying high-risk COPD patients and appropriate management strategies to improve prognosis.

**Keywords:** COPD, Eosinophils, COVID-19, Mortality, Iran