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Comparison of Eosinophilic and Non-eosinophilic Cases with Chronic Obstructive Pulmonary Disease (COPD) in Terms of Clinical Arrival, Exacerbations, Quality of Life and Response to Treatment: A Prospective Study

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Objectives: Chronic obstructive pulmonary disease (COPD) is a heterogeneous disease consisting of different clinical and pathophysiological components. Biomarkers are tried to be defined in order to evaluate the differences in response to pharmacological therapies. Peripheral blood eosinophil level is considered to be correlated with sputum eosinophil level. In COPD patients with peripheral eosinophilia, an increase in the number of eosinophils and response to inhaled and systemic corticosteroids and an increase in moderate to severe exacerbation rates were found. In this study; blood and sputum eosinophil levels in stable COPD patients; The aim of this study was to evaluate the annual number of exacerbations and inflammatory biomarkers (C-Reactive Protein, Fibrinogen) among groups with and without eosinophilia.

Methods: Pulmonary functions, symptoms [COPD Evaluation Questionnaire (CAT) and Modified Medical Research Council (mMRC)] were evaluated in patients with stable COPD who presented to our Chest Diseases outpatient clinic; inflammatory biomarkers (C-Reactive Protein, Fibrinogen) sputum and blood eosinophil levels were measured. Patients with sputum eosinophil level $\geq 3\%$, blood eosinophil level $\geq 2\%$ and $\geq 200/\mu\text{L}$ were considered to be eosinophilic. The patients were prospectively followed-up for a 1-year period and the rates of exacerbation and exacerbation were recorded.

Results: The mean age was 66.5 ± 9.2 years (78%, 82.4%), FEV1 $58 \pm 19.8\%$, CAT scores were 12.5 ± 7.2 , and mMRC was 1.8 ± 0.8 , and peripheral blood eosinophil percentage was 2%. The mean eosinophil count of 6 ± 2 peripheral blood was 237 ± 176 and the sputum eosinophil percentage was 7.2 ± 6.9 . High blood eosinophilia in 55.4%, sputum eosinophil level in 52 cases, high sputum eosinophilia in 77%, no correlation was found between blood and sputum eosinophil values ($p=0.129$). The number of exacerbations was found to be significantly higher according to blood eosinophil percentage and absolute value ($p=0.029$). Although sputum eosinophilia was associated with the number of exacerbations in the previous year and the number of exacerbations of follow-up, it was not found statistically significant. ($p=0.250$). There was no significant difference in CAT, mMRC, FEV1 variability and inflammatory biomarkers between the eosinophilic and non-eosinophilic groups.

Conclusion: There was no significant correlation between blood and sputum eosinophil values; The number and severity of exacerbations were higher in COPD patients with absolute value and percentage of blood eosinophils. Therefore, more frequent follow-up is required in cases with eosinophilic phenotype.

Keywords: COPD, eosinophil, exacerbation