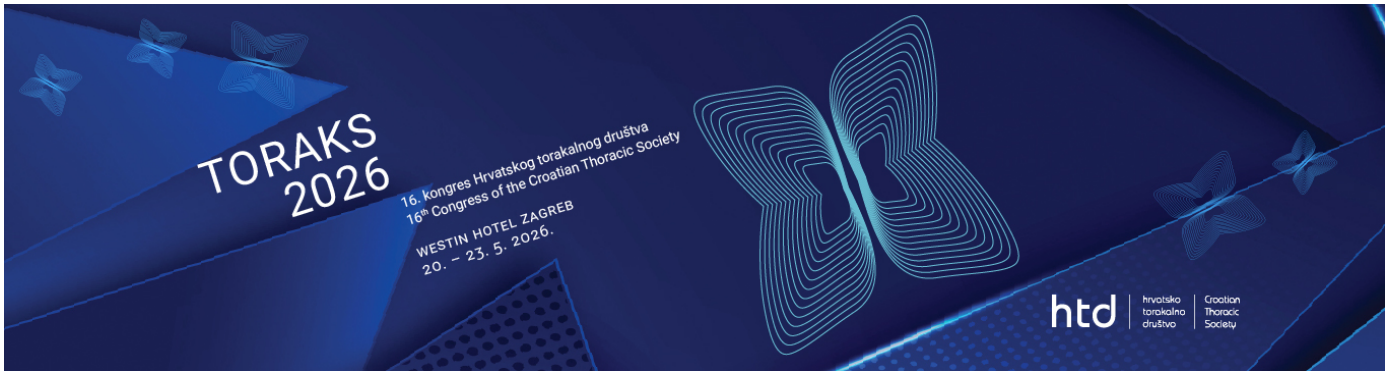


NEUTROPHILS AS A POTENTIAL PREDICTOR OF THERAPEUTIC RESPONSE TO BIOLOGICAL THERAPY IN PATIENTS WITH SEVERE ASTHMA

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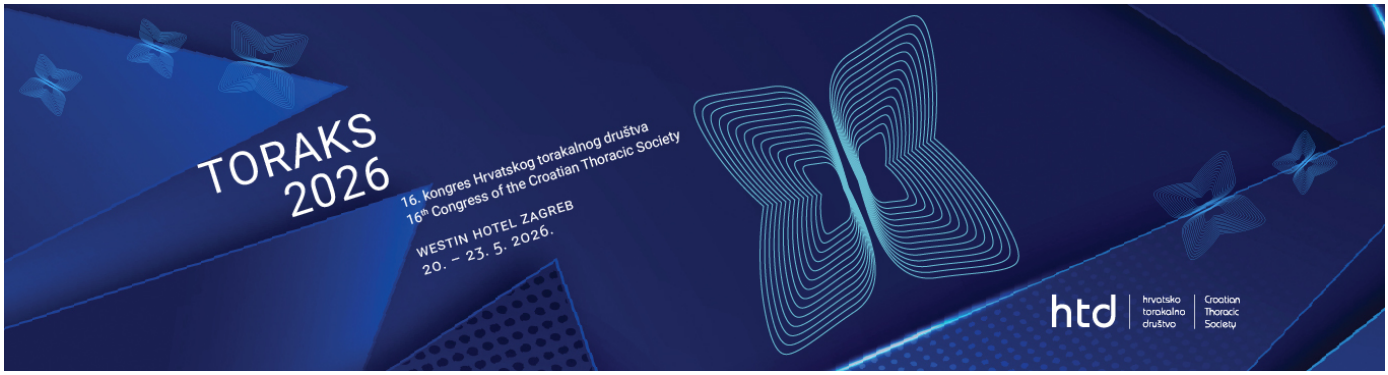
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Objective:

To examine the association of the absolute neutrophil count with clinical response to biological therapy in patients with severe asthma, including an analysis of its relationship with BMI, pulmonary function, inflammatory parameters, and the use of oral corticosteroids.



Methods:

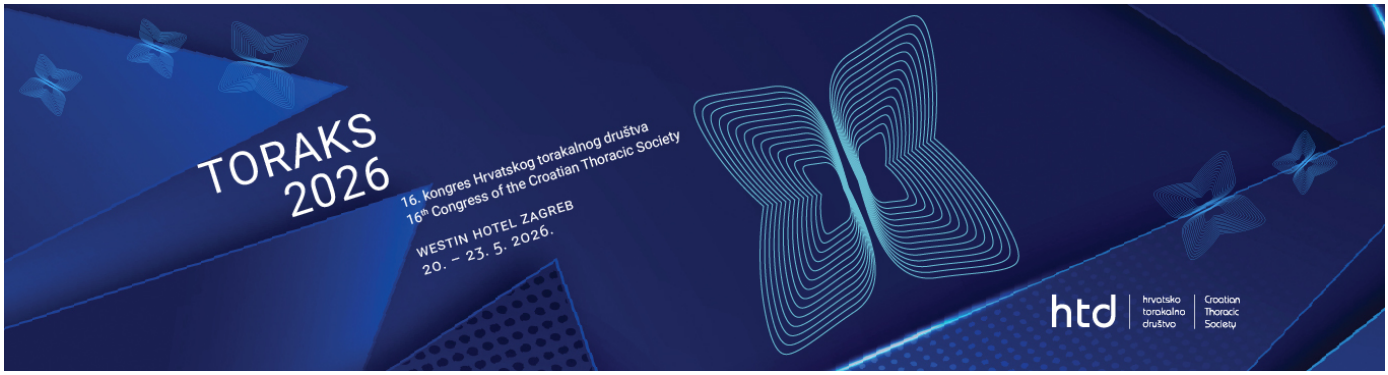
The study included 153 patients with severe asthma treated with biological therapy. The association between changes in neutrophil count and BMI was analyzed using Spearman's correlation. Patients were divided according to baseline neutrophil values (cut-off value 4.4 $x10^9$/L), and differences in changes of FEV1, ACT, and CRP were assessed using the Mann-Whitney U test. The influence of therapy and clinical variables on pulmonary function was analyzed using a linear mixed model. Changes in the use of oral corticosteroids were assessed using the chi-square test.

Result:

No significant correlation was found between the change in neutrophils and BMI (ρ = -0.039; p = 0.685). Likewise, there were no statistically significant differences in the improvement of FEV1, ACT, and CRP between groups with higher and lower baseline neutrophils ($p > 0.05$). However, the linear mixed model showed that the time of initiation of biological therapy was the most significant predictor of pulmonary function improvement, with an average increase in FEV1 of 7.65% ($p < 0.001$). The absolute neutrophil count was identified as a significant negative predictor of FEV1 values (B = -2.03; $p < 0.001$), while BMI did not show a significant effect (p = 0.396). After the initiation of therapy, a significant reduction in the need for oral corticosteroids was recorded (χ^2 = 34.95; $p < 0.001$), with 57.4% of patients achieving their complete discontinuation.

Conclusion:

Biological therapy significantly improves pulmonary function and reduces the need for oral corticosteroids in patients with severe asthma. Although neutrophils did not show an association with the dynamics of clinical response, their negative association with pulmonary



function suggests a potential role of neutrophilic inflammation as a limiting factor of therapeutic effect. These findings highlight the need for further research and the development of targeted therapies for the neutrophilic phenotype of asthma.