

ABSTRACT

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Thesis Title: **Monitoring of drug interactions and comorbidities in patients with severe asthma treated with biological therapy**

Introduction: Severe asthma is a serious chronic condition with a significant impact on patients' quality of life. In recent years, biological therapy targeting specific inflammatory pathways has become increasingly utilized and may significantly improve disease control. However, the effectiveness of this therapy can be influenced by various factors, including the presence of comorbidities and individual patient parameters such as BMI, FeNO levels, or absolute eosinophil count.

Aim: The aim of this thesis was to evaluate the effectiveness of biological therapy, to map the medication used, the presence of comorbidities, and the occurrence of drug interactions.

Methods: This retrospective analysis included 50 patients from the Department of Pulmonary Medicine and the Institute of Clinical Immunology and Allergology at the University Hospital in Hradec Králové, all diagnosed with severe asthma and undergoing biological treatment. Data were collected from medical records and structured telephone interviews followed by a questionnaire. For statistical analysis, MS Excel and GraphPad Prism were used to conduct chi-square tests and correlation analyses.

Results: The Asthma Control Test (ACT) results showed that 38 % of patients had uncontrolled asthma, 26 % had partially controlled asthma, and 36 % had well-controlled asthma. Despite ongoing biological therapy, 46 % of patients reported the

need for reliever medication several times a day. Every patient had at least one comorbidity, most frequently gastroesophageal reflux disease (50 %). Drug interactions were identified in 36 out of 50 patients, most commonly the combination of ipratropium and tiotropium. Among inhalation therapies, the most frequently used were combinations of inhaled corticosteroids (ICS) with β -agonists (88 %), while among oral medications, antihistamines dominated (88 %). The most frequently used biological agent was Xolair (38 %). No statistically significant association was found between the type of biological therapy and ACT scores, FEV₁ values, likelihood of corticosteroid withdrawal, or self-reported symptom improvement. Similarly, no statistically significant correlation was confirmed between ACT results and BMI, FeNO levels, eosinophil count, or the number of comorbidities.

Conclusion: Although many expected associations could not be confirmed, the results point to a continued burden on patients despite biological treatment. The study highlights the need for further research with a larger sample size. For future research, it would be appropriate to expand data collection to additional pulmonary departments in other hospitals, which would enable more robust statistical analyses and hypothesis testing.

Keywords: severe asthma, biological therapy, comorbidities, drug interactions