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Identification of common allergens and their association with symptom severity in allergic conjunctivitis: a study of 21 patients

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Allergic conjunctivitis is a prevalent ocular condition characterized by inflammation of the conjunctiva, often triggered by hypersensitivity reactions to environmental allergens. This study aimed to identify common allergens responsible for allergic conjunctivitis and evaluate their association with symptom severity in a cohort of 21 patients. Demographic information, clinical assessments, allergy testing results, and detailed patient histories were collected. Pollen, dust mites, and pet dander emerged as the most prevalent allergens, affecting respectively 71.4%, 52.4%, and 38.1% of patients. Patients with moderate-severe symptoms reported higher exposure to pollen and dust mites compared to those with mild symptoms. Mold spores, cosmetics, and medications were also identified as triggers, albeit less frequently. These findings underscore the importance of allergen avoidance strategies and targeted interventions in managing allergic conjunctivitis effectively. Further research is warranted to validate these findings and explore additional factors influencing allergic conjunctivitis.

Keywords: allergic conjunctivitis, allergen, symptoms severity, environmental.

Introduction: Allergic conjunctivitis is an ocular condition characterized by inflammation of the conjunctiva by hypersensitivity reactions to various environmental allergens [1]. The symptoms of allergic conjunctivitis are: itching, redness, tearing, and swelling of the eyes, significantly impacting patients' quality of life [2]. Different epidemiological studies have reported the causes of allergic conjunctivitis and the prevalence rates which was seen to be different depending on geographical location and environmental factors [3]. Despite its high prevalence, the specific allergens responsible for allergic conjunctivitis and their association with symptom severity remain areas of ongoing investigation [4].

Environmental allergens implicated in allergic conjunctivitis include a wide array of sources, as pollen, dust mites, pet dander, mold spores, and some medications [5]. Exposure to these allergens triggers an immune response characterized by the release of histamine and other inflammatory mediators,

leading to the characteristic signs and symptoms of allergic conjunctivitis [6]. While previous research has provided valuable insights into the pathogenesis and management of allergic conjunctivitis, there remains a need for further elucidation of the specific triggers and their impact on symptomatology [7]. Understanding the causes of allergic conjunctivitis and their relationship with the severity of the symptom is very important for treatment modality and for patients improves outcomes. In this study, we aim to investigate the causes of allergic conjunctivitis in a cohort of 21 patients and evaluate the association between identified triggers and the severity of symptoms.

Methodology: This study is a cross-sectional study, which investigates the causes of allergic conjunctivitis in a cohort of 21 patients. Twenty-one patients diagnosed with allergic conjunctivitis were included in this study. Inclusion criteria included a confirmed diagnosis of allergic conjunctivitis by an ophthalmologist and improvement of the patients to participate in the study. Data collection took place from September 2023 to January 2024. The study was conducted at the Ophthalmology Study of Our Lady of Good Counsel in Tirana, Albania.

Data Collection included: Demographic Information (Age, gender, occupation, and relevant medical history were recorded for each participant); Clinical Assessment (a comprehensive eye examination was conducted to confirm the diagnosis of allergic conjunctivitis and assess the severity of symptoms); Allergy Testing (Allergy testing with blood tests (specific IgE), was performed to identify specific allergens triggering allergic conjunctivitis); History (Participants answered question about risk factors for allergic conjunctivitis, including exposure to pollen, dust mites, pet dander, mold spores, cosmetics, medications, and other allergens); Environmental Assessment (indoor and outdoor air quality, presence of pets, use of cosmetics and medications, and exposure to potential allergens in the workplace or home were evaluated).

Data were collected and analyzed. A descriptive analysis of

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demographic and clinical characteristics of the participants and statistical tests were used to assess the association between potential triggers and the presence or severity of allergic conjunctivitis symptoms.

Informed consent was obtained from all participants before enrollment in the study, ensuring their voluntary participation and confidentiality of their information.

Potential limitations of the study included the small sample size, selection bias; recall bias in patient-reported data, and generalizability of findings.

Results: The study population consisted of 21 patients with a mean age of 35.4 years (\pm SD 8.2). Gender distribution was nearly equal, with 11 (52.4%) male and 10 (47.6%) female participants. Various occupations were represented, with office workers comprising the largest proportion.

Pollen emerged as the most common allergen identified, with 15 patients (71.4%) showing sensitivity. Dust mites and pet dander were also prevalent triggers, affecting 11 (52.4%) and 8 (38.1%) patients, respectively. Mold spores, cosmetics, and medications were less commonly involved.

Patients with moderate-severe symptoms tended to have higher reported exposure to various triggers compared to those with mild symptoms. Pollen and dust mites showed the strongest association with symptom severity.

These tables provide a summary of the demographic characteristics of the study population, common allergens identified, and the association between triggers and the severity of allergic conjunctivitis symptoms.

Discussion: Allergic conjunctivitis is an ocular condition characterized by inflammation of the conjunctiva, primarily triggered by hypersensitivity reactions to environmental allergens [8]. The findings of our study contribute to the understanding of the specific allergens responsible for allergic conjunctivitis and their association with symptom severity. The identification of pollen, dust mites, and pet dander as the most common allergens in our study population, which is in aligns with other studies that identify the same allergens most common for conjunctivitis [2, 3]. These environmental allergens are ubiquitous and known to elicit immune responses

in susceptible individuals, leading to the characteristic signs and symptoms of allergic conjunctivitis [4, 5].

In our study we identify an association between certain allergens, such as pollen and dust mites, and the severity of allergic conjunctivitis symptoms. Patients with moderate-severe symptoms reported higher exposure to these allergens compared to those with mild symptoms [6]. These data are important to understand that we need interventions strategies to avoid or reduce the contact with allergen in management of conjunctivitis. The prevalence of mold spores, cosmetics, and medications as causes of allergic conjunctivitis in our study, shows diverse range of potential allergens implicated in this condition [9]. While less common, these allergens may still play a significant role in causing allergic reactions in susceptible individuals.

It is essential to acknowledge the limitations of our study, including its small sample size and reliance on patient-reported data, which may introduce biases. Additionally, the cross-sectional design limits our ability to establish causality between allergen exposure and symptom severity.

Further research is needed to validate our findings in larger, prospective studies and explore additional factors influencing allergic conjunctivitis [10, 11]. Some longitudinal studies have study the impact of avoiding allergen as measures of treatment on symptom control in allergic conjunctivitis. In conclusion, our study provides data about the allergen that causes allergic conjunctivitis and their association with symptom severity. By identify the common allergens contributing to allergic conjunctivitis and their impact on symptomatology, we aim to inform personalized management approaches and improve patient outcomes.

Biography

Marsida Krasniqi is a distinguished lecturer in the Department of Medical Science at Aleksandër Moisiu University of Durrës. With a strong commitment to advancing medical education and research, she has authored or co-authored the influential "Manual of Management of Refractive Errors" and contributed to over 35 publications in peer-reviewed journals. Her work spans regional, national, and international conferences, reflecting her dedication to sharing knowledge and fostering innovation in the medical field. Dr. Krasniqi's expertise and passion for teaching have established her as a respected figure in medical sciences, particularly in the management of refractive errors