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Incidence of allergic conjunctivitis in patients with allergic rhinitis: A randomized observational study

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Abstract

Background: Although nasal allergy has been prominent in allergy research, ocular allergy is increasingly recognized as a distinct symptom complex that imposes its own disease burden and reduction in patients' quality of life. In the past year, knowledge of the relationships between allergic conjunctivitis (AC) and allergic rhinitis (AR) has increased. AC is commonly manifesting as itchy or watering or red eye, comprising the symptoms of the total ocular symptom scores (TOSS). Allergic conjunctivitis is highly prevalent and has a close epidemiologic relationship with allergic rhinitis. Both conditions also exhibit similar pathophysiologic mechanisms. Therefore, the objective of the present study was to identify the incidence of AC in patients with AR.

Methods: This randomized observational study was conducted on 150 patients for a 6 month period from June to November 2021, having diagnosed AR and attending the outpatient clinic of our department. The patients were directly questioned if they had AC, clarified by using standard screening questions of red, itchy and watery eyes and quantified by TOSS and were asked about indirect symptoms that may be attributable to AC.

Results: Among the 150 patients, 54.66% of patients identified AC on direct questioning; additional symptoms were squint at 41.33% and blinking at 52.66%. Olopatadine, significantly reduced TOSS scores within 5 minutes of treatment and 82.66% showed improvement, which identified 44.66% silent sufferers of AC. A total of 94% AC subjects were identified through TOSS symptoms and totally 96.66%, detecting additional symptoms.

Conclusions: The screening questions could identify only about 54.66% of the patients with AC. Additional specific questioning and a therapeutic challenge in suspected patients can help identify patients who may benefit from treatment of AC.

Keywords: Allergic conjunctivitis, allergic rhinitis, olopatadine

Introduction

Allergic rhinitis (AR) is a chronic inflammatory disorder of the nasal mucosa caused by IgE-mediated early- and late-phase hypersensitivity responses [1]. AR symptoms include rhinorrhea, nasal obstruction and blockage, nasal itching, and repetitive sneezing. It is also often accompanied by allergic conjunctivitis (AC) with symptoms that can include itchy, red, watery, and/or swollen eyes [2].

Because of the non-life-threatening nature of symptoms, AR and AC have, in the past, been considered trivial diseases but are increasingly recognized as having a major effect on quality of life (QOL), emotional well-being, sleep, daily activities, and productivity when poorly controlled [3].

According to the classification of ocular allergy proposed in 2006 by the International Ocular Inflammation Society (IOIS), based on immunopathological mechanisms, allergic conjunctivitis (AC) is a type of ocular allergy which in turn can be subdivided into seasonal allergic conjunctivitis (SAC) and perennial allergic conjunctivitis (PAC) [4].

Under-recognition of AR is common, with the proportion of undiagnosed AR patients ranging from 25-60%. Clinically, AC patients have heightened sensitivity and rubbing of eyelids can contribute to dermatitis, making patients focusing more on the dermatitis than conjunctival symptoms [5].

Therefore, this study took place among pediatrics and adults within a rural population. The prime objective of the present study was to identify the incidence of AC in patients with AR, which were quite reliable to ascertain AC severity and we aimed to investigate the interrelationship between the two conditions, further.

Methods

A randomized observational study was conducted on 150 patients both children and adults, for a 6 month period from February to July 2019, which included the pollen season, having diagnosed AR and attending the outpatient clinic in our department. The patients were directly questioned if they had AC, clarified by using standard screening questions of red, itchy and watery eyes and quantified by TOSS, scored as a percentage from 0 to 100. Patients were asked about indirect symptoms that may be attributable to AC: eyelid dermatitis, frequent blinking, eye sensitivity and frontal headache.

Patients were prospectively diagnosed with AR based on clinical history, examination and skin prick testing by an allergy specialist. They were given a drop of olopatadine in each eye to help identify silent disease. Olopatadine hydrochloride 0.1% was selected for its efficacy in AC, providing negligible side effect profile and rapid onset of action, evident from five minutes post administration [6, 7]. Fifty healthy controls, without a clinical history of AR or AC or SAC were also treated with olopatadine drops to determine if there was a non-specific lubricating effect of olopatadine hydrochloride and included in the study.

Exclusion criteria: Patients on antihistamines or refusing to reply to questionnaire or having history of other kinds of allergies or not consenting to participate in the study were excluded.

Ethical approval was obtained from institutional ethics committee. Data was analyzed using Microsoft excel 2010 software using a paired t test. A Pearson correlation coefficient was used to compare relationship between TOSS positivity and presence of additional symptoms.

Results

Among the 150 patients, 85 were females and 65 males, with average age 34 ± 6.83 years old. 82 (54.66%) of patients identified themselves as having AC on direct questioning and upon enquiring about specific TOSS symptoms. Additionally, symptoms shown by patients like squint 62 (41.33%), blinking 79 (52.66%), eyelid dermatitis 68 (45.33%) and frontal headache 69 (46%) were possible symptoms attributable to AC. Administration of antihistamine, olopatadine, significantly reduced TOSS scores within 5 minutes of treatment. 124 (82.66%) subjects showed improvement as against 26 (17.33%) of those who showed no change in ocular symptoms. Based on a negative history of AC and baseline TOSS of 0, therapeutic challenge of olopatadine identified 67 (44.66%) silent sufferers of AC, whereas no effect on TOSS was observed in 30 healthy controls treated with olopatadine. 99 (90%) AC subjects were identified through TOSS symptoms. Plausible indirect AC symptoms detected 141 (94%) subjects. However, combining standard TOSS and additional questions detected 145 (96.66%) AC subjects.

Discussion

Interest in allergic conjunctivitis (AC), isolated or associated to allergic rhinitis (AR), has increased in recent years due to its high and growing prevalence, the important healthcare costs generated by the disease, and its impact upon patient quality of life. Previous studies have linked Allergic Rhinitis (AR) to be co-existed with another form of allergic disorders including Allergic Conjunctivitis (AC), Atopic dermatitis and Allergic Asthma [8, 9]. Most of the

study showed the prevalence of AC was 30% to 40% to be associated with rhinitis, while 30% had eczema and 24% had asthma [10, 11]. In our study AC was identified in 54.66% of patients with AR using direct questioning in relation to history of AC.

On 50 healthy, non-atopic controls, olopatadine therapeutic challenge was performed to ensure against the nonspecific lubricating effect of the eye drop as a lubricant could have improved symptoms. There was no specific improvement in controls that were given this lubricant effect and hence TOSS improvement can be easily attributed to olopatadine. The co-existence of AC was well recognized in patients with AR although coreporting frequency may be as low as 40% [12].

Specific questioning regarding indirect symptoms increased the incidence of AC in patients with AR to 96.66%. Under recognition of allergic conjunctivitis may be due to patients and physicians paying more attention to allergic comorbidities such as AR or rhinitis [13].

Limitations of this study include; it was an open clinical audit and direct survey questions were used. Questions of children were occasionally influenced by their parent's answers or prompting.

Conclusion

This research was conducted to correlate the features of allergic rhinitis with those of conjunctivitis. The standard AC screening questions identified just over half of the patients with AC. As suggested by others, the absence of a history does not negate the value of examining the conjunctiva. Additionally we suggest that symptoms of blinking, squinting, eyelid dermatitis and frontal headache and use of olopatadine hydrochloride eye drops can help identify patients with "silent" symptoms.

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