



A Cross Sectional Study of the Prevalence of Allergic Conjunctivitis in Allergic Rhinitis

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ABSTRACT

Allergic rhinitis (AR) is common condition affecting 20-30% of the population. This condition affects not only the nose but also the sinuses, ear and eyes in many ways. Though Allergic conjunctivitis (AC) is highly prevalent in patients with AR, it is under reported, under diagnosed and under treated condition because most patients (40% according to a study) felt these symptoms as normal and hence did not report. Not many studies can be found in the literature on the prevalence of allergic conjunctivitis in allergic rhinitis.

Aim: The aim of the study is to calculate the prevalence of AC in patients with AR and to study the impact of the duration and severity of AR on the prevalence of AC.

Methods: This is a cross sectional study including 167 patients attending the ENT OPD of this institute diagnosed as having AR. Patients were grouped based on the presence or absence of allergic conjunctivitis and the impact of the duration and severity of AR on the prevalence of AC analyzed. Statistical analysis of the results were done using Mann Whitney U test (SPSS ver15).

Results and Conclusion: The prevalence rate of AC in patients with AR was found to be 59.88%. Statistical analysis showed no statistically significant impact of the duration of AR on the presence of AC ($p > 0.05$). However there is significant correlation between the severity of AR and prevalence of AC ($p < 0.05$). It is suggested that all patients with AR should be evaluated for AC and treatment instituted in time.

Keywords: Allergic rhinitis, Allergic conjunctivitis, Symptom score, Intra nasal steroids, Cobble stone appearance, Polyps.

INTRODUCTION

Allergic rhinitis (AR) is a widely studied disease in otolaryngological practice. Allergic conjuncti-

vitis is highly prevalent and has a close epidemiologic relationship with allergic rhinitis. But allergic conjunctivitis (AC) is an under

reported, under diagnosed and under treated condition in patients with AR. Approximately 40% of AR patients felt their ocular symptoms represented as normal^[1].

Most children with allergic conjunctivitis have allergic rhinitis. Older population studies estimate a prevalence of 15–20% of allergic conjunctivitis, but more recent studies implicate rates as high as 40%. Ocular symptoms are common and contribute to the burden of allergic rhinitis and lower the quality of life. Ocular allergies rank a very close second and at times may overcome the primary complaints of nasal congestion in rhinoconjunctivitis patients^[2].

Under-recognition of allergic conjunctivitis may be due to patients and physicians paying more attention to allergic co morbidities such as AR or rhinitis or the under-appreciation of the variability of eye symptoms in patients with AC^[3-5]. Specific questioning regarding indirect symptoms increased the incidence of AC in patients with AR to 94.7%.according to a study^[6].

Both conditions exhibit similar pathophysiologic mechanisms. Pathways of communication are thought to increase the likelihood of an inflammatory reaction at both sites following allergen exposure of nasal or ocular tissue. Proposed pathophysiologic interactions between allergic rhinitis and ocular allergy underscore the need for therapies with efficacy in both symptom sets^[7].

Studies have shown improvement of ocular symptoms with intranasal steroids^[8]. Though many studies have highlighted the co existence of AC with AR, the increase in the disease burden of AR due to coexisting AC and reduction in the quality of life due these symptoms, there are a few studies on the prevalence of AC in patients with AR from India.

AIM

- To study the prevalence of AC in patients with AR.
- To study the impact of the duration and severity of AR on the prevalence of AC.

METHODS

This is a cross sectional study including 167 patients attending the ENT OPD of this institute diagnosed as having AR.

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The diagnosis of allergic rhinitis was done based on the following criteria in this study.

Presence of the following symptoms-

- Bouts of sneezing
- Nasal block
- Rhinorrhea
- Nasal itching
- Hyposmia / anosmia
- Itching and watering/redness of eyes
- Itching of palate following or associated with sneezing
- Presence of specific trigger factors like dust, smoke, pollen etc for the above symptoms as noted from history
- Pale bluish gray, boggy nasal mucosa on anterior rhinoscopy and diagnostic nasal endoscopy
- And /or nasal discharge (mucoïd / serous), turbinate hypertrophy, polyps or polypoidal mucosa on anterior rhinoscopy and diagnostic nasal endoscopy.
- Improvement in the nasal symptoms after 2 weeks therapy of intranasal steroids.

Exclusion Criteria

- All patients with history of any previous eye or nasal surgery.
- All patients with history of infective conjunctivitis in the past one week.
- All patients diagnosed as having non allergic rhinitis.

Each symptom was scored as shown in Table-1.

Table 1 Symptom score of AR

S No	Symptom	Scores		
		02(Yes)	01(No)	03(Eye & nose itching)
	Itching	02(Yes)	01(No)	03(Eye & nose itching)
	Sneezing in bouts on exposure to specific allergen	02(Yes)	01(No)	
	Rhinorrhoea	02(Yes)	01(No)	
	Nose block	02 (Yes)	01(No)	
	Disturbed smell sensation	02 (Yes)	01(No)	
	Seasonal / Perennial	01(Seasonal)	02(Perennial)	
	Turbinate hypertrophy	02 (Yes)	01(No)	
	Nasal mucosa	01(Normal)	02(Pale)	03(Edematous)
	Polyp	02 (Yes)	01 (No)	

Based on the sum of the scores patients were divided into 3 groups.

Mild :9-12

Moderate: 13-16

Severe : 17-20

The patients were divided into three groups depending on the duration of allergic rhinitis as follows:

< 06 months

07-12 months

> 12 months.

All patients included in the study based on the above criteria were referred to the department of ophthalmology to evaluate the presence or absence of allergic conjunctivitis. Following were the criteria used in this study for diagnosing allergic conjunctivitis.

Typical symptoms and signs included are:

- Watery eyes
- Itchiness
- Sensitivity to light
- Redness
- Grittiness
- Eyelid swelling
- Typically appear shortly after exposure to specific allergen.
- These symptoms occurring along with allergic nasal symptoms.
- Present in both eyes.
- Bilateral conjunctival injection, chemosis, watery discharge, and mild mucous discharge.

- Giant papillary hypertrophy of only the superior tarsal conjunctiva, resembling “cobblestones”.
- Specific findings like limbal (Horner-Trantas) dots which are small white-yellow chalky concretions around the corneal limbus, corneal vernal plaques and shield (Togby’s) shaped ulcers of the cornea, eczematoid belpharitis, conjunctival scarring, corneal neovascularization, ulcers or scars and punctate epithelial keratitis .

All patients were given intranasal steroids for 2 weeks and called for review. Only patients who had shown improvement in nasal symptoms were included in the study.

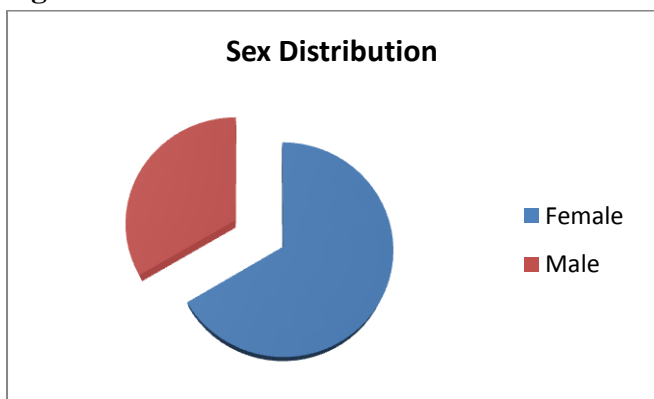
The patients included in the study were divided into two groups based on the presence or absence of allergic conjunctivitis. The severity and duration of allergic rhinitis were compared individually between these two groups to see if any of these two factors had any significant association with the presence of allergic conjunctivitis.

Statistical analysis was done using SPSS Ver 15 Mann Whitney U test. Presence or absence of allergic conjunctivitis was used as grouping variable and the severity and duration was used as test variable.

RESULTS

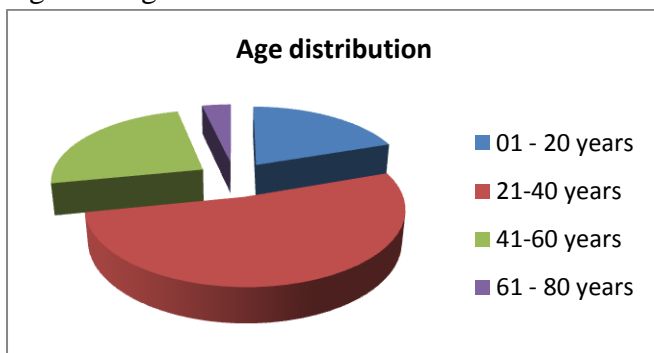
Among the total 167 patients, 111 were females and 56 were males. The sex distribution is shown in Figure – 1

Figure 1 - Sex Distribution



The youngest patient in this study was 8 years old and the oldest was 76 years old. Age distribution is shown in Figure - 2

Figure 2 Age Distribution



The prevalence rate of AC in patients with AR was calculated using the following formula:

$$\frac{\text{Number of cases (new and preexisting) diagnosed to have AC during the study period}}{\text{Total number of patients included in the study}} \times 100$$

Hence the prevalence rate of AC in patients with AR was found to be 59.88% in this study.

Based on the period of symptoms, duration of disease was calculated as follows:

Table 2 Duration of AR symptoms

S No	Duration of Symptoms of AR	Number Of Patients		
		AC present	AC absent	Total
1.	< 06 months	09	08	17
2.	06 – 12 months	13	06	19
3.	>12 months	78	53	131

The number of patients in each of these groups was compared for the presence or absence of allergic conjunctivitis to assess the impact of duration of AR on the presence of AC. Statistical analysis showed no statistically significant impact of the duration of AR on the presence of AC ($p > 0.05$).

Based on the sum of the scores for each symptom as shown in Table -1 the three groups viz. Mild, Moderate, Severe were defined. Table 3 shows the number of patients with AC in each group.

Table 3 Severity of Symptoms of AR

S No	Severity of Symptoms of AR	Number Of Patients		
		AC present	AC absent	Total
	Mild	01	01	02
	Moderate	25	33	58
	Severe	74	33	107

Each of these groups was compared for the presence or absence of allergic conjunctivitis to assess the impact of severity of AR on the presence of AC. Statistical analysis revealed a significant correlation between the severity of AR and AC ($p < 0.05$).

DISCUSSION AND CONCLUSIONS

It can be noted from the results that among the patients included, the number of females are more in this study. This denotes the number of patients diagnosed to have AR and does not reflect the number of patients with allergic conjunctivitis. An earlier study conducted in this institute also showed similar results with more number of females reporting with AR [9]. This may be explained by the fact that the proportion of female patients reporting to this OPD is more compared to the male patients. More analysis of this aspect was beyond the scope of this study.

The prevalence of AC in patients with AR is noted to be 59.88% in this study. In a study conducted in Brazil by Geraldini M et al, the prevalence of AC was 20.7%, affecting more females than males (56.1% versus 45.9%; $p = 0.01$) [10]. This study was conducted among adolescents and was not specific to patients with AR. In another study by

Daniel c et al, AC was found to be a frequent comorbid condition occurring in 95% of patients with AR. Only 55% of these patients were able to identify that they had AC based on standard screening questions. Additional specific questioning and a therapeutic challenge in suspected patients can help identify patients who may benefit from treatment of AC^[6].

From this study it can be noted that the duration of symptoms of AR does not significantly affect the presence or absence of AC. At the same time the severity of AR symptoms impacts the presence or absence of AC in a statistically significant manner. It is well established that the pathophysiology of AR and AC is same and shared pathways may increase the likelihood of an inflammatory reaction at both sites following allergen exposure of nasal or ocular tissue. In the conjunctival epithelium, an early, type-1 hypersensitivity reaction occurs after direct allergen exposure. Progression to late-phase response, with recurrence of symptoms and infiltration of inflammatory cells, may occur 4 to 8 hours later and appears to be dose-related. Alteration of nasal ocular reflex pathways may also contribute to ocular symptoms in allergic rhinitis^[11].

The symptoms of AR may not be persistent at all times and this may be the reason for the duration of symptoms not significantly influencing the prevalence of AC. However the significant influence of severity of AR symptoms on prevalence of AC maybe due to the fact that many patients did not consider mild ocular symptoms as disturbing and hence did not report these symptoms. In the study by Daniel c et al, approximately 40% of AR patients felt their symptoms represented as normal. However specific questioning regarding indirect symptoms increased the incidence of AC in patients with AR to 94.7%^[6]. But when the symptoms were severe, over the counter treatment of AC will be less. This may increase the chances of reporting of symptoms, diagnosis and hence prevalence of AC in patients with severe AR.

From this study it can be concluded that AC should be considered in each patient with AR and thorough questioning and examination by ophthalmologist of all patients with AR will lead to more diagnosis and hence prompt treatment of AC in these patients. The more severe the symptoms of AR more are the chances of detection of AC.

Limitations of this study are that the diagnosis of AR and AC are based on clinical evidence and no investigative methodology was used. However the fact that AR is basically a clinical diagnosis and the therapeutic trial of intranasal steroid before inclusion in the study validates the diagnosis.

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