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Prevalence of ocular symptoms in patients suffering from allergic rhinitis in an Indian suburb: A cross-sectional study

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ABSTRACT

Introduction: Allergic rhinitis (AR) also presents with multiple ocular symptoms such as itching, lacrimation, and bloodshot eyes which has an impact on patients' life in areas of sleep, learning ability and job.**Aim & Objective:** Evaluation of prevalence of ocular symptoms in patients with allergic rhinitis.**Materials and Methods:** A cross-sectional, observational study was conducted in a health centre in India's suburban area. Between August 2022 and July 2023, 140 patients with AR were recruited in a systematic manner. During registration, medical history and information about concomitant disease, such as allergic diseases, medication, AR duration, and the presence of ocular symptoms, was gathered through interviews and physical tests.**Result:** A total of 140 patients were included in the study who fulfilled the eligibility criteria. The average age was 27.3 years (+13.6 years), with men accounting for 63.7% (n=89). Comorbidities were seen in ten (7.14%) of the patients. Eye irritation, lacrimation, red eyes, and swollen eyelids were reported in 71 (50.70%), 37 (26.40%), 24 (17.14%), and 8 (5.71%) individuals, respectively (Table 2).**Conclusion:** Symptoms of eye irritation, lacrimation, red eyes and swollen eyelids were reported in 71 (50.70%), 37 (26.40%), 24 (17.14%), and 8 (5.71%) individuals, respectively. The ocular symptoms in patients with AR might have a major impact on their quality of life.This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.For reprints contact: reprint@ipinnovative.com

1. Introduction

Allergic rhinitis (AR), a common allergy condition that has a major impact on patients' quality of life in areas such as sleep, cognition and job. Sneezing, nasal discharge, nasal blockage, and nasal itching are common AR symptoms.¹ When there is an allergic inflammation of the nasal fossae, the mucosa of the sinuses, middle ear and the conjunctiva of the eye are all involved.² Patients suffering from allergic rhinitis and other respiratory allergies are frequently

affected by ocular allergy symptoms. AR is frequently associated with ocular symptoms such as itching, tearing and redness in eyes. Ocular symptoms are more obvious in seasonal AR (SAR) and less severe in perennial AR (PAR). In India, AR affects approximately 22% of teenagers.³ In this context, the purpose of this study is to assess the prevalence of various ocular symptoms in patients with AR who see an otolaryngologist. However, due to a lack of comprehensive epidemiological investigations in rural and suburban India, this figure may underestimate the true illness burden.

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2. Materials and Methods

This was a cross-sectional, observational study conducted in a health centre in India's suburban area. Between August 2022 and July 2023, 140 patients with AR were recruited in a systematic manner. They ranged in age from 18 to 60 years. Allergy symptoms such as rhinorrhea, sneezing, itching, or nasal blockage were used to diagnose AR. Patients with non-allergic rhinitis, other ocular disorders causing watery and/or red eyes, or other major medical conditions necessitating hospitalisation were barred from participating. During registration, medical history and information about concomitant disease, such as allergic diseases, medication, AR duration, and the presence of ocular symptoms, was gathered through interviews and physical tests. At last, the prevalence of ocular symptoms in AR patients was provided as a percentage.

This study was carried out in adhering to the Helsinki Declaration and the World Medical Association's statutes and regulations, and was authorised by the Institutional Review Boards of all institutions. The informed consent was signed by all of the patients.

3. Results

A total of 140 patients were included in the study who fulfilled the eligibility criteria. The average age was 27.3 years (+13.6 years), with men accounting for 63.7% (n=89). The average age upon diagnosis was 26.7 years (+7.71 years), and the average time spent with AR was 0.57 years (+1.04 years). Comorbidities were seen in ten (7.14%) of the patients. Asthma (n= 7) and atopic dermatitis (n= 3) were the most common allergic diseases among them. (Table 1)

Table 1: Demography

Age (years); N= 140	Mean (+ SD)	27.3 (7.99)
Gender	Male; n (%)	89 (63.7)
	Female; n (%)	51 (36.3)
Age at the time of diagnosis of AR	Mean (+ SD)	26.7 (7.71)
Number of years with history of AR	Mean (+ SD)	0.57 (1.04)
Comorbid allergic disease	Allergic dermatitis; n (%)	3 (2.14)
	Asthma; n (%)	7 (5)

Table 2: Ocular symptoms

Symptom	Number	Percentage
Itching	71	50.70
Watery eyes	37	26.40
Redness in eyes	24	17.14
Swollen eyelids	8	5.71

Eye irritation, lacrimation, red eyes, and swollen eyelids were reported in 71 (50.70%), 37 (26.40%), 24 (17.14%), and 8 (5.71%) individuals, respectively (Table 2).

4. Discussion

The ocular symptoms have a major effect on quality of life in patients with AR. A study conducted on 200 subjects diagnosed with allergic rhinitis also stated that approximately 90% of them also had ocular symptoms.⁴ A study conducted by Lee et al. in 2013 showed that the severity and duration of AR symptoms were correlated with the prevalence of ocular symptoms significantly.⁵

Ocular allergy is becoming more common in wealthy countries. According to reports, allergy accounts for 25% of all ocular surface illnesses.⁶ Ocular symptoms are often overlooked and frequently misdiagnosed in AR patients because nasal symptoms such as congestion and nasal discharge are more common complaints than ocular symptoms and are seen by an otolaryngologist rather than an ophthalmologist.

It is generally understood that conjunctiva exposed to allergen causes an allergic reaction. Mast cells and a localised capability for IgE production can be found in the tarsal and bulbar conjunctiva.⁷ Conjunctival biopsy showed increased numbers of mast cells, neutrophils, eosinophils, macrophages, and basophils in the specimens which demonstrated an allergic response in the conjunctiva.⁸ According to one study, 20% of AR sufferers exhibited ocular symptoms following nasal stimulation with grass pollen despite no direct exposure of conjunctiva to allergens.⁹ In one study, 19% of people had AR-related ocular symptoms.¹⁰ This incidence was commensurate with the 16-20% frequency of SAC in the general population described in the literature.¹¹

Itching (51.1%) and crying eyes (38.6%) were the most bothersome ocular indicators reported in the 2009 study by Stull et al. The occurrence of ocular symptoms in addition to nasal symptoms significantly reduces AR individuals' quality of life (QOL), including ocular pain, sleeping difficulties, activity impairment, and reduced vision, affecting work productivity and mental health.¹² Similarly, a study conducted in the United States on 2,065 AR patients who completed a work productivity questionnaire discovered that their capacity to engage in productive work was influenced by sleep quality, health-related QOL, particular symptoms (such as watery eyes and sneezes), and prescribed antihistamine use. Their findings show that ocular problems have a negative impact on a patient's life.¹³ Subjects with ocular symptoms are affected in their everyday activities, have hazy vision, sleep disturbance, lack efficacy at work, and are on sick leave, demonstrating a link between the ocular symptoms and their impact on daily activities.¹⁰ These findings underscore the importance of primary care physicians systematically

seeking ocular symptoms in AR participants, as well as querying respondents about their history of ocular symptoms and nasal symptomatology.

This highlights unmet medical attention for ocular symptoms in AR subjects, despite the fact that ocular symptoms are considered more troublesome than nasal symptoms by the majority of AR patients, implying that better diagnosis and treatment of ocular symptoms could benefit patients.

While the main risk factors for AR are environmental allergen exposures or genetic factors, various novel environmental, social and habitual risk factors have emerged, such as the presence of dumpsters near dwellings, vehicle traffic near homes, and poor sleep owing to a stressful lifestyle.¹⁴ Nonetheless, despite international norms, AR diagnosis and management in India are frequently inadequate. There are numerous causes for this, including a lack of specialised training in allergy and immunology among Indian practitioners, a lack of diagnostic facilities, and high pharmaceutical costs.¹⁵ It also emphasises the importance of developing a strategic approach to improving the quality of care for allergic diseases by improving healthcare professional education and training, spreading awareness among clinicians and patients, and involving policymakers in making treatments accessible and affordable to patients.

5. Conclusion

Ocular symptoms of irritation, tearing of eyes, redness in eyes and swollen eyelids were reported in 71 (50.70%), 37 (26.40%), 24 (17.14%), and 8 (5.71%) individuals, respectively. The ocular symptoms in patients with AR might have a major impact on their quality of life.

6. Ethical Review

Institutional ethics committee exempted the study as it was an observational study, written informed consent was obtained and the identity of the patient was not disclosed.

7. Source of Funding

None.

8. Conflict of Interest

None.

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