

Study of Predisposing Factor, Clinical Profile, and Complications of Allergic Rhinitis

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ABSTRACT

Introduction: Allergic rhinitis (AR) is a global health problem that significantly alters patients' social life and affects learning at school and work productivity.

Materials and methods: A total of 150 patients suggestive of a history of AR were included in this study. The patients underwent a thorough history, clinical examination, diagnostic nasal endoscopic evaluation, and radiological imaging.

Results: Out of 150 patients, 65% were male, whereas 35% were female ranging from age 14 to 70 years; 30% of both male and female were between 21 and 25 years; and 85% belonged to urban area, whereas 15% were rural inhabitants. The most significant complaints of patients were mainly paroxysmal sneezing, nasal obstruction, and watery nasal discharge. In the present study, 21% of patients had first-degree relatives with a complaint of AR; 72% of male patients and 75% of female patients had swollen turbinate; 59% of male patients and 62% of female patients had pale edematous nasal mucosa; 68% of male patients and 56% of female patients had granular pharyngitis; and 25% of male patients and 40% of female patients had complications of AR.

Conclusion: Allergic rhinitis is a disease of youth that affects mostly people in the age group of 21 to 25 years, and it is paroxysmal sneezing that concerns most of the patients and brings them to hospital. About 60% of the patients have a history of contact with the AR patients.

Clinical significance: Allergic rhinitis involves nearly 600 million people all over the world. Our study suggests three cardinal signs of AR, viz., swollen turbinate, pale and edematous nasal mucosa, and granular pharyngitis. This study also signifies female preponderance for complications of AR.

Keywords: Allergic rhinitis, Complication, First-degree relatives, Paroxysmal sneezing, Swollen turbinate.

How to cite this article: Agarwal VK, Goyal M, Bist SS. Study of Predisposing Factor, Clinical Profile, and Complications of Allergic Rhinitis. Clin Rhinol An Int J 2016;9(2):74-76.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

Allergic rhinitis (AR) is a global health problem and is increasing in prevalence, involving nearly 600 million people all over the world.¹ It is an immunoglobulin E (IgE)-mediated immunologic response of nasal mucosa to airborne allergen and is characterized by watery nasal discharge, nasal obstruction, sneezing, and itching in nose. The best risk factor for AR is a family history of allergy, especially of AR.² Allergic rhinitis significantly alters patients' social life and affects learning at school and work productivity.³ The aim and objective of this study were to study predisposing factors and clinical features of AR including complications.

MATERIALS AND METHODS

This study has been conducted in the otorhinolaryngology department of a tertiary care teaching institute over a period of 12 months. A total of 150 patients suggestive of a history of AR were included in this study. The patients underwent a thorough history, clinical examination, diagnostic nasal endoscopic evaluation, and radiological imaging. The data were recorded as per proforma after obtaining written informed consent. Statistical analysis was performed with Statistical Package for the Social Sciences (SPSS) version 19, and Fisher's exact test and chi-square test were used to calculate p values.

RESULTS

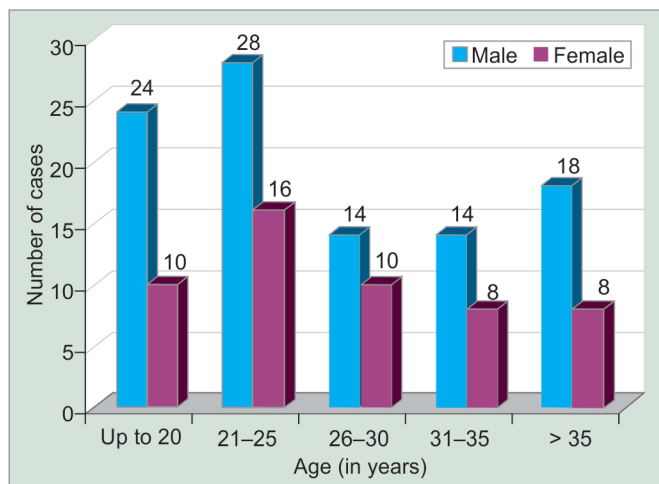
Out of 150 patients, 98 (65%) were male, whereas 52 (35%) were female. In the present study, patients included were from age 14 to 70 years. Maximum numbers of patients were between 21 and 25 years, which included 30% of both males and females followed by age group of <20 years which had 25% males and 20% females (Graph 1). Out of the total patients, 128 (85%) were from urban area, whereas 22 (15%) were rural inhabitants. Out of 52 female patients, 23% belonged to rural areas, whereas 90% of male patients belonged to urban areas. In the present study, the age of onset of symptoms suggestive of AR was between 1.5 and 64 years; 50% of male patients had an age of onset of symptoms suggestive of AR between

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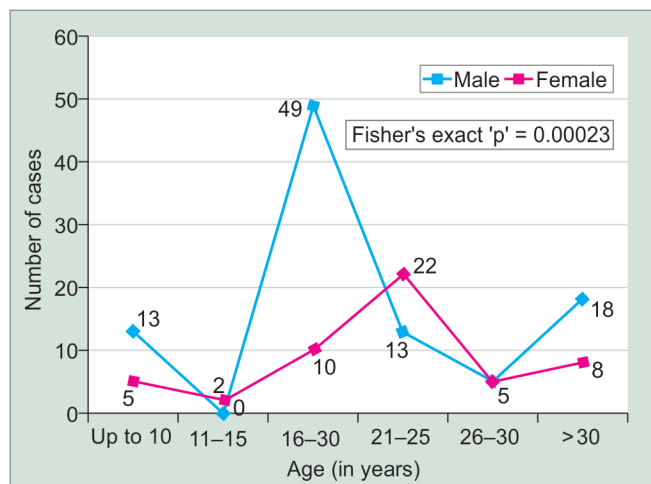
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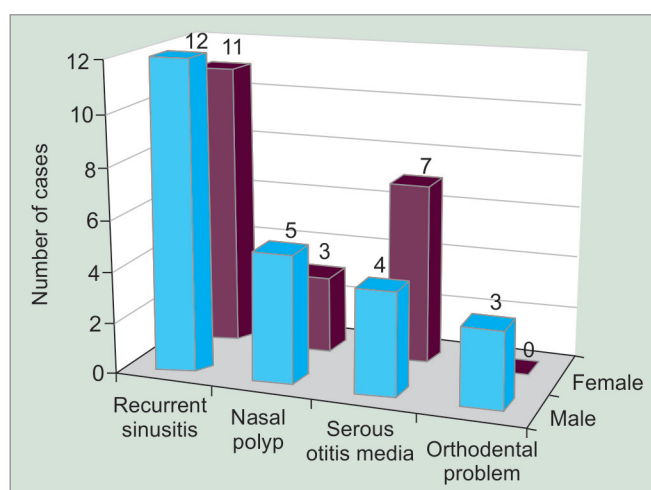


Graph 1: Distribution of patients according to age and gender



Graph 2: Age of onset of symptoms suggestive of AR

16 and 20 years, whereas 42% of female patients had an age of onset of symptoms suggestive of AR between 21 and 25 years (Graph 2). On statistical analysis, applying Fisher's exact test, a p-value of 0.00023 was significant. In the present study, the most significant complaints of patients were mainly paroxysmal sneezing, nasal obstruction, and watery nasal discharge; 33% of male patients and 30% of female patients were bothered most with paroxysmal sneezing, whereas 30% of male patients were bothered with nasal obstruction and 30% of male patients were concerned by watery nasal discharge (Table 1). On statistical analysis applying chi-square test, $p = 0.0057$, which is significant. In the present study, 21% of the patients had first-degree relatives with a complaint of AR, whereas 40% of the patients had a history of exposure to AR patients but no direct family history, and these patients started to have symptoms of AR after 2 to



Graph 3: Gender-wise distribution of complications of AR

Table 1: Most significant complaints among male and female patients

Most significant complaints	Male (%)	Female (%)	Total (%)
Paroxysmal sneezing	32 (32.7)	16 (30.8)	48 (32)
Nasal obstruction	29 (29.6)	08 (15.4)	37 (24.7)
Watery nasal discharge	29 (29.6)	13 (25)	42 (28)
Others	08 (8.1)	15 (28.8)	23 (15.3)
Total	98	52	150

Chi square = 12.55, degree of freedom = 3, $p = 0.0057$

Table 2: Distribution according to history of exposure to AR patients

History of contact	Male (%)	Female (%)	Total (%)
Family history	21 (21.4)	11 (21.2)	32 (21.3)
History of exposure	39 (39.8)	21 (40.4)	60 (40)
Neither a nor b	38 (38.8)	20 (38.4)	58 (38.7)
Total	98	52	150

Chi-square = 0.01, degree of freedom = 2, $p = 0.995$

3 years of regular contact with them, and 39% of the patients neither had a family history nor had a history of exposure to AR patients (Table 2). On statistical analysis applying chi-square test, the $p = 0.995$, which is not significant. In the present study, 72% of male patients and 75% of female patients had swollen turbinate, whereas 59% of male patients and 62% of female patients had pale edematous nasal mucosa, and 68% of male patients and 56% of female patients had granular pharyngitis. Retracted tympanic membrane and conjunctival congestion were present in 33% of the patients. In the present study, 25% of male patients and 40% of female patients had a complication of AR. Recurrent sinusitis is present in 12% of male patients and 21% of female patients. Nasal polyps are present in about 6% of male patients, and 13% of female patients had serous otitis media compared with 4% of male patients (Graph 3).

DISCUSSION

In our study, the most common age group presented was 21 to 25 years, both among males and females (30%). In the Tecumseh Michigan study (2000), the highest

prevalence of AR in males occurred in the age group of 16 to 24 years (16.3%) and in females in the age group of 23 to 34 years (15.3%).⁴ This has proved that AR occurs less in older age group as immunosuppression and atrophy of nasal mucosa occur, and the number of T cells in the blood decline with age, whereas these are higher in younger age group. This is also the age group in India when people start to move to a different location for their study or work and females move after marriage. It was observed in our study that AR is more common in males than in females, with a male-to-female ratio of 1.88:1.0. These observations were consistent with those of Ciprandi et al.⁵ The higher incidence of AR observed in males compared with females is possibly due to more exposure of males to workplace-related allergens and stress. Another factor that can be considered is the conservative nature of people in India, with females not showing up at hospital for their ailments. In our study urban patients were affected by AR 5.8 times more than rural patients. Nilsson et al reported that there was a higher prevalence of allergic diseases with urban residence than with rural residence.⁶ In the present study, the age of onset is 16 to 20 years in most male patients, whereas this is between 21 and 25 years in female patients. This might be due to the early movement of males compared to females in India from their native place for studies and work, and they come in contact with allergens to which they are not adapted. In this study, the most bothering complaint of patients with AR is paroxysmal sneezing, followed by nasal obstruction and watery nasal discharge. Yadav et al⁷ in their study on patients with AR concluded that sneezing was the most common symptom seen in about 100% of cases. Our study had one out of five patients with first-degree relatives of AR, whereas 40% have a history of regular exposure to AR patients and 39% of the patients may have no history of contact with AR patients. Dold et al⁸ conducted a study in Bavaria and found that AR was present in 16% of children with one allergic parent and 25% if both parents had allergy. Our study showed that the most frequent signs of AR are swollen turbinate, pale and edematous nasal mucosa, and granular pharyngitis. Other common signs are retracted tympanic membrane and conjunctival congestion. In our study, the common complications of AR were recurrent sinusitis, nasal polyps, serous otitis media, and orthodontal problems. Settupane⁹ in his study suggested that poorly controlled symptoms of AR may contribute to sleep loss, secondary daytime fatigue, learning impairment, decreased overall cognitive functioning, decreased long-term productivity, and decreased quality of life. Additionally, poorly controlled AR may also contribute to the development of other related disease processes, including acute and

chronic sinusitis, recurrence of nasal polyps, otitis media/otitis media with effusion, hearing impairment, abnormal craniofacial development, sleep apnea and related complications, aggravation of underlying asthma, and increased propensity to develop asthma.⁹

CONCLUSION

Allergic rhinitis is a multifactorial IgE-mediated type I hypersensitivity reaction involving the nasal mucosa. It is a disease of youth that affects mostly people in the age group of 21 to 25 years. The age of onset is earlier in males compared with females by 5 years. It is the paroxysmal sneezing that concerns most of the patients and brings them to hospital. About 60% of the patients have a history of contact with the AR patients. Our study suggests three cardinal signs of AR, viz., swollen turbinate, pale and edematous nasal mucosa, and granular pharyngitis. Our study also suggests that the complications of AR are more in females compared with males.

Clinical Significance

Allergic rhinitis is a disease of youth, and it affects social life, study performances, and work productivity, so this should be diagnosed and managed early to prevent its complications, as these complications are a result of long-term clinical sequelae of this disease.

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