



**“THE PROPORTION AND PROVOCATING FACTORS OF ALLERGIC RHINITIS
AMONG PATIENTS IN A TERTIARY CARE CENTRE”**

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ABSTRACT

Allergic rhinitis is a common respiratory disorder which may prompt the patients to seek medical help. The aim of this study was to determine the proportion and risk factors of Allergic rhinitis. This is a hospital based prospective case control study done at a tertiary care hospital over a period of 6 months. About 150 AR patients were enrolled and analysed. In this study proportion of allergic rhinitis cases per the total population in the specified time period and the risk factors is determined using a specially designed proforma that were filled using patient case records and direct interview of the patient. From our observation it was found that 180 Allergic rhinitis cases came to the ENT outpatient department of a tertiary care hospital. Majority of the patients had all four classic symptoms of AR- sneezing (100%), nasal discharge (65.3%), nasal itching(52%), and nasal obstruction(62.6%). A large proportion of patients that consulted the physician had moderate-severe AR based on ARIA severity classification. We have also assessed the role of genetics in the development of Allergic rhinitis which shows positive correlation with 60.6% patients having first degree relatives with AR. The quality of life in allergic rhinitis patients were improved after effective counseling.

KEYWORDS

1. AR- Allergic Rhinitis
2. ARIA- Allergic Rhinitis And Its Impact On Asthma
3. ENT- Ear, Nose, Throat
4. IgE- Immunoglobulin E
5. IL- Interleukine
6. PAR- Perennial Allergic Rhinitis
7. Qol- Quality of Life
8. SAR- Seasonal Allergic Rhinitis
9. URT- Upper Respiratory Tract

INTRODUCTION

Allergic Rhinitis is a symptomatic disorder of the nose which is a type of inflammation in the nose which occurs when the immune system overreacts to allergens in the air. This acute response involves the release of inflammatory mediators and is characterized by sneezing, nasal itching, and watery rhinorrhea, often associated with nasal congestion, itching of the throat, eyes and ears.

It is of two types: seasonal allergic rhinitis and perennial (intermittent and persistent). Seasonal rhinitis occurs in response to specific allergens usually present at predictable times of the year, during plants blooming seasons (pollen, grass and weeds). It is very common and the patients have an impaired quality of life. Perennial rhinitis is a year long disease caused by non seasonal allergens, such as house dust mites, animal dander,

cigarette smoke, fumes, molds etc typically results in subtle chronic symptoms.

Allergic rhinitis is one of the most common medical disorders found in humans. It will limit their ability to carry out normal daily functions; causing higher levels of general fatigue, mental fatigue, anxiety, depressive disorders and learning disabilities are seen. The development of allergic rhinitis is determined by genetics, allergen exposure, and the presence of other risk factors. Family histories of allergic rhinitis, atopic dermatitis or asthma suggest that rhinitis is allergic. Other pre-disposing factors include an elevated serum IgE (>100 IU/ml) before the age of 6 years, eczema and heavy exposure to second-hand cigarette smoke.

MATERIALS AND METHOD

The proposed study is a prospective, observational study conducted for 6 months in 150 outpatients in the ENT

department of Cosmopolitan Hospital, Pattom, Trivandrum after getting clearance of institutional ethics committee.

A written informed consent was taken from all interested patients diagnosed with allergic rhinitis coming to the ENT departments of both genders below 65 years of age who gave consent for participating in the study. Patients aged above 65 years and pregnant and lactating women were excluded from the study. All information required for the study was collected from complete medical case records and by direct interview of the patients with consent from the medical staff. The required details including patient demographics, patient symptoms, current medications were documented in the proforma. The patients were also counseled and were given leaflets.

In this study proportion of allergic rhinitis cases per the total population in the specified time period and the risk factors is determined using a specially designed proforma that were filled using patient case records and direct interview of the patient.

Finally, the collected data were recorded in Microsoft Excel sheet and workload is entered as numeric code. The data was analyzed using suitable statistical methods with the assistance of a qualified statistician.

DISCUSSION AND RESULTS

Our study was conducted in ENT department for 6 months in a tertiary care multispecialty hospital. During our study period 150 cases of out-patients in ENT department were analyzed. The patient records and patient interviews were analyzed to reach our conclusion.

1. PROPORTION

In this study we conducted 6-month outpatient surveillance on Allergic rhinitis cases and during the study period 150 patients were enrolled in our study. We collaborated the results from specialist medical examination reports assess the disease burden in AR patients. Our study found that out of the 2,240 patients that attended the ENT outpatient department at Cosmopolitan Hospital, Trivandrum 180 patients (7%) were diagnosed with AR out of which 150 patients met our inclusion criteria and were enrolled in the study. The male to female ratio was found to be 1:1 which is consistent with a study by Said A Said *et al* "Allergic rhinitis and its associated co-morbidities at Bugando Medical Centre in Northwestern Tanzania; A prospective review of 190 cases".^[1]

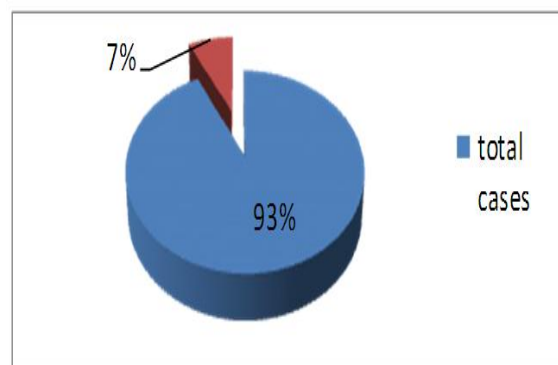


Figure 1: Proportion of AR cases in the ENT Department of a tertiary care hospital,

2. AGE DISTRIBUTION

The disease was more prevalent among the age group 25-65yrs with the mean age at 41.5yrs as this group had greater risk of exposure to outdoor pollutants while travelling and at work. This was in agreement with a study by Luigi Vimercati *et al* in Italy "Occupational Exposure to Urban Air Pollution and Allergic Diseases"^[2] which showed a greater proportion of AR in the mean age of 44yrs.

3. CLASSIFICATION

The ARIA guidelines grade Allergic rhinitis based on severity into mild and moderate-severe AR. It was seen that a large proportion of patients (84%) who consulted a specialist had moderate- severe allergic rhinitis with the symptoms leading to sleep disturbances, impairment of daily activities or impairment of school or work. This result is in confirmation with another conducted by Fengying Zhang *et al* in Beijing "The disease burden of patients with Allergic Rhinitis from a hospital surveillance in Beijing"^[3,4,5], which showed that all patients who consulted the physician had moderate-severe Allergic rhinitis.

It was also seen that the percentage of perennial rhinitis(62%) was more than that of seasonal rhinitis(15%) or perennial with seasonal exacerbations(23%). This results is similar to another study by Bonnie Sibald and Elizabeth Rink in London "Epidemiology of seasonal and perennial rhinitis: clinical presentation and medical history" whose aim was to compare the symptoms, atopic state, medical history of individuals with SAR and PAR. Their results showed 55% PAR patients, 11% SAR patients and 34% with both SAR and PAR.^[14]

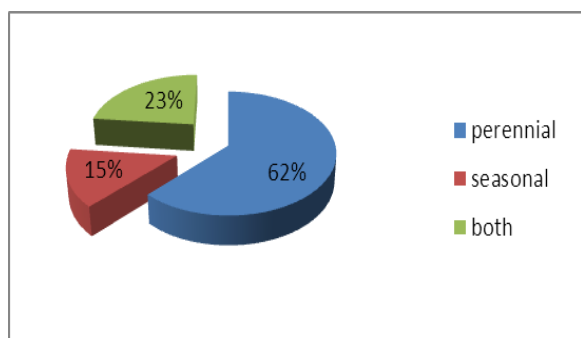


Figure 2: Percentage of types of AR.

4. SYMPTOMS

The most common symptoms of Allergic rhinitis are sneezing, clear nasal discharge, nasal obstruction and nasal itching. In terms of number of symptoms more than half of the patients(64.6%)had all four symptoms of AR, 25.3% had any two symptoms and only 10% had one symptom.^[3] The distribution of various symptoms of Allergic rhinitis among patients were as such; sneezing(100%), nasal discharge(65.3%), nasal itching(52%), and nasal obstruction(62.6%).

In patients with AR, the severity of symptom such as sneezing, blocked nose, and rhinorrhea tends to peak during the night and early morning. This might be related to a alteration in circadian fluctuations in inflammatory mediators i.e, increase in inflammation during night.^[6] The sleep quality was badly altered in 43.3% patients due to local symptoms such nasal obstruction and sinus congestion and systemic symptoms such as headache. Nasal congestion, which causes the upper airways to narrow, adversely impacts allergic rhinitis sufferers at night. This result is in agreement with a study by Michael Stewart etal “Epidemiology and burden of nasal congestion” which showed that Chronic nasal congestion can cause sleep-disordered breathing and sleep fragmentation, reducing sleep time and quality as well as promoting daytime sleepiness and fatigue resulting in difficulty doing daily activities and impaired learning abilities,^[7,8] Allergic rhinitis imposed a substantial burden on patients daily life and work performance which is consistent with other studies.^[9,10,11,12]

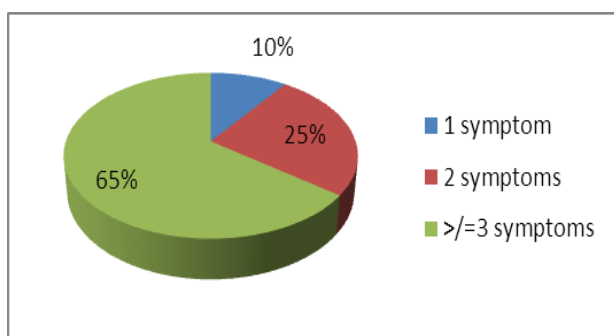


Figure 3: Frequency of symptoms in patients.

5. PHYSICAL FINDINGS

Physical findings may be observed in many patients with AR. Our study shows that 33% patients had eye-

swelling, 26% mouth breathing, 25% dark circles, 7% nasal crease and 9% other findings like reddened eyes and face, puffy face etc. This result agrees with that of a study by David P Skoner MD “Allergic rhinitis: Definition, epidemiology, pathophysiology, detection and diagnosis”.^[13]

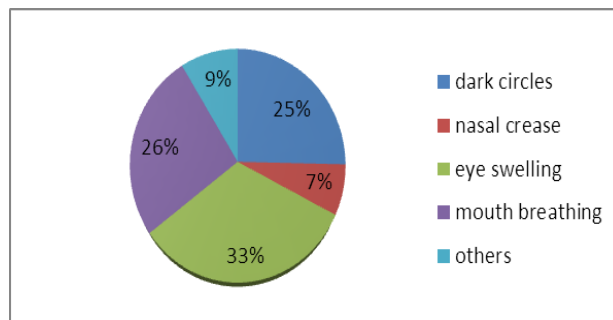


Figure 4: Various physical findings among patients.

6. GENETIC FACTORS

Our study also explores the role of genetic factors in the development of allergic rhinitis. It was observed that 91patients(60.6%) out of the 150 patients had a family history of allergic disorders in their first degree relatives, out of which 32.6% had a family history of asthma, 12% atopic dermatitis and 19.3% eczema.^[15,16,17] This result super imposes the findings of another study by Sigrid Doldetal “Genetic risk for asthma, allergic rhinitis and atopic dermatitis” whose result supports the hypothesis that asthma, allergic rhinitis and atopic dermatitis are multifactorial diseases brought about by various familial and environmental influences.^[18,19] This is due to the associations with variation in gene encoding the epithelial cell-derived cytokines, IL-33 and thymic stromal lymphoprotein and IL1RL1 gene encoding the IL-33 receptor, ST2 highlight the central role for innate immune response pathways that promote the activation and differentiation of T-helper cells in pathogenesis of asthma and allergic disorders.^[20]

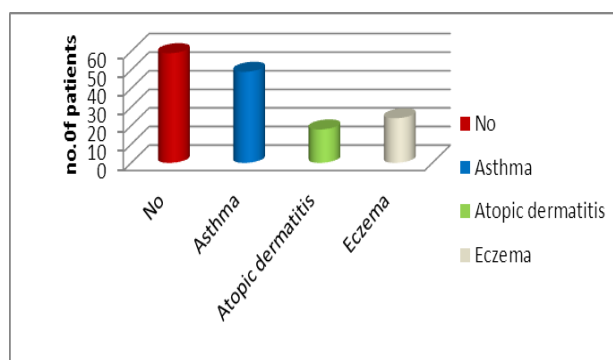


Fig 5: Proportion of patients with family history of allergic diseases.

7. RISK FACTORS

As per our study it was found that the predominant risk factors for allergic rhinitis in Trivandrum region are dust(36.6%), cold weather(27.3%), animal dander(22%), fumes(21.3%), foods(10%), perfumes(11.3%),

chemicals(5.3%) in which dust is the most predominant factor. This is consistent with a study by Said A. Said et al in Tanzania “Allergic rhinitis and its associated co-morbidities at Bugando Medical Centre in Northwestern Tanzania; A prospective review of 190 cases” according to which the major triggers were dust(39.5%), cold weather(27.9%), perfume(17.9%) and smoke(3.7%).^[1] This also in agreement with other studies conducted elsewhere.^[21,22] It may be due to the fact that dust is a heterogeneous mixture consisting of allergenic substances. In addition exposure to fumes and pollutants have also been considered as important contributing factors in both exacerbation and etiology of allergic airway diseases.^[23]

Table 1: Proportion of risk factors in patients.

Provocating factors	Frequency (n=150)	Percent
Dust	55	36.6%
Fumes	32	21.3%
Chemicals	8	5.3%
Foods	15	10%
Perfumes	17	11.3%
Cold	41	27.3%
Animal dander	33	22%
Others	6	4%

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CONCLUSION

This study concludes that allergic rhinitis imposes a large burden on the patients with this disease, with the symptoms affecting their social and physical well-being resulting in decreased productivity.

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