



## A STUDY OF ASTHMA IN ALLERGIC RHINITIS AT TERTIARY CARE CENTRE

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**ABSTRACT**

**Introduction:** Approximately 10-30% of population suffers from allergic rhinitis during their lifetime. In India, 10% of the population is reported to have allergic disorder. Nasal symptoms are often demeaned. Rhinitis and asthma frequently co-exist [60-80%]. **Methods:** This study detect the prevalence of bronchial asthma in patients of allergic rhinitis with or without chest symptoms. Sample size -50. All patient having allergic rhinitis symptoms were included in study. Consent taken and record maintained in Govt Medical College Datia OPD in 2020 between January to March. Chest symptoms cough, chest tightness and wheeze were recorded. Asthma is confirmed by Spirometry test and reversibility test. **Results:** All Patient of allergic rhinitis belongs to the age group of 16 to 45 years. The maximum number of patients belonged to the age group between 16-25 yrs. 23(46%) where males were 46% and females were 54%. Minimum number of patients belonged to the age group between 36-45 yrs, where males were 08% and females were 04%. 28 patients with allergic rhinitis had chest symptoms in the form of cough, chest tightness and wheeze whereas 22 patients did not give history of chest symptoms. Among the patients with allergic rhinitis males had predominant chest symptoms (56.52%) compared to females (55.55%). Among the 38 (76%) patients who had asthma, the majority of the patients (74%) had significantly reversible small airways obstruction. In our study, 76% (n=38) had bronchial asthma where as 24 % (n=12) did not have asthma. **Conclusions:** 76% of patients with allergic rhinitis were found to have underlying asthma. The prevalence of asthma in AR patients with chest symptoms were found to be 50% (n=25) and without chest symptoms is 26% (n=13). Among the 38(76%) patients who had asthma, having significantly reversible small airways obstruction.

**KEYWORDS :** Asthma, Allergic Rhinitis, Spirometry, Chest Symptoms,

**INTRODUCTION**

The prevalence of allergic disorders is increasing worldwide. While genetic factors have probably not changed, environmental factors have altered markedly.

Allergic disorders are associated with learning disabilities, fatigue, and lack of concentration, sleep disturbances and loss days from school. The progressive development of allergy seen through childhood in the form of atopic dermatitis, food allergy, allergic rhinitis, childhood asthma, adult asthma is referred to as "The Allergy March". Total IgE, a marker of allergic diseases peaks in 2nd decade, after that it begins to decrease.<sup>(1,2)</sup>

Atopy is the inherited tendency to develop IgE mediated immune responses, which places a person at greater risk for developing certain allergic diseases such as allergic rhinitis, asthma, atopic dermatitis.<sup>(1,3)</sup> Histamine is a crucial mediator in the pathophysiology of early and late phase reactions of an allergic response, playing important roles in cytokine release and in the adhesion process.<sup>(4)</sup> In India, more than 10% of the population is reported to have one or other type of allergic disorder.

Two studies conducted in Bombay, concluded that incidence of atopy in the Indian population is as high as 25.3%.<sup>(5,6)</sup> The prevalence of allergic rhinitis is estimated to range from 10% to 20% in the USA and Europe.<sup>(7)</sup> Allergic rhinitis is defined as an allergen induced inflammation of the membranes lining the nose. It is characterized by nasal congestion, rhinorrhoea, sneezing, itching of nose and/or postnasal drainage.<sup>(8)</sup>

Based on the nature of symptoms Allergic Rhinitis and its Impact on Asthma working group has classified allergic rhinitis into intermittent, persistent, mild and moderate-severe types and recommended for assessment of asthma in patients with persistent rhinitis, assessment of rhinitis in patients with persistent asthma and appropriate therapeutic strategy to combine safe and effective management of the upper and lower airway.<sup>(9)</sup>

Multiple factors contribute to AR. There are no standard set of diagnostic criteria for allergic rhinitis. It constitutes approximately 55% of all allergies in India.<sup>(10)</sup> A recent survey in India shows that 20-30% of the population suffer from allergic rhinitis and that 15% develop asthma.<sup>(11,12)</sup> Approximately 10-30% of population suffers from allergic rhinitis during their life time.<sup>(13,14)</sup> Nasal symptoms are often demeaned; however, their prevalence and effect on the quality of

life justify an aggressive and rational approach. Rhinitis and asthma frequently co-exist [60-70%] with rhinitis appearing first in 45% of patients.<sup>(10)</sup>

In India, AR falls in the grey area between the otorhinolaryngologist and the pulmonologist resulting in lack of focus on research. The severity of rhinitis is directly related to asthma severity and develops before age of 20 years in 80% of cases with mean age of onset of 10 years and peak incidence of 13-19 years.<sup>(15)</sup>

**METHODS**

It was an observational study conducted in GMC Datia from Jan 2020 to March 2020. Allergic rhinitis patient were enrolled in our study. 50 allergic rhinitis patients were taken age group 16 to 45 years. Consent taken. Allergic rhinitis diagnosis was made by clinical history and physical examination. Symptoms of paroxysms of sneezing, nasal pruritus, rhinorrhoea and nasal blockage daily for the last two weeks were considered to have allergic rhinitis. Patients with history of fever, purulent nasal discharge or sputum, respiratory infection in the month prior to study, Patients with other ENT problems like DNS, polyps, smokers, patients with known heart disease, patients on treatment with steroids (intranasal/oral), patients on leukotriene modifiers were excluded from the study.

All the patients included in the study underwent for CBC with AEC, Chest Xray, Xray PNS and Spirometry.

**RESULT****Table-1**

AGE	MALE	FEMALE	TOTAL
16-25	10(20%)	13(26%)	23(46%)
26-35	09(18%)	12(24%)	21(42%)
36-45	04(08%)	02(04%)	06(12%)

The maximum number of patients belonged to the age group between 16-25 yrs. 23(46%) where males were 46% and females were 54%. Minimum number of patients belonged to the age group between 36-45 yrs., (10) where males were 08% and females were 04%.

**Table-2**

	Allergic rhinitis With out chest symptoms	Allergic rhinitis with chest symptoms	Total
Sex			

Female	12	15	27
Male	10	13	23
Total	22(44%)	28(56%)	50

Among the study group, 28 patients with allergic rhinitis had chest symptoms in the form of cough, chest tightness and wheeze whereas 22 patients did not give history of chest symptoms. Among the patients with allergic rhinitis males had predominant chest symptoms (56.52%) compared to females (55.55%).

Among the 38 (76%) patients who had asthma, the majority of the patients (74%) had significantly reversible small airways obstruction. Out of 50 patients who underwent spirometry assessment 22% (n=11) had normal baseline study, 24% (n=12) had restrictive pattern and 54% (n=27) had obstructive pattern. Among the patients with obstructive pattern, small airway obstruction was seen in majority (74%, n=37).

**Table-3**

	Asthma yes	Asthma No	
Allergic Rhinitis and with chest symptoms	25	03	28
Allergic Rhinitis and without chest symptoms	13	09	12
Total	38 (76%)	12 (24%)	50

In our study, 76% (n=38) had bronchial asthma where as 24 % (n=12) did not have asthma, according to the methods adopted. The prevalence of asthma in AR patients with chest symptoms were found to be 50% (n=25) and without chest symptoms is 26% (n=13). Among the 38(76%) patients who had asthma, having significantly reversible small airways obstruction.

## DISCUSSION-

In the present study, Allergic rhinitis was more common in the younger age group. This is in accordance with the published literature that allergic disorders predominate in the younger people with 16-45 year group and particularly the most productive years of life, constituting 80% of patients, resulting in a huge loss to the society. Among AR patients, studies show that there is an equal sex distribution or male predominance among children and equal sex distribution in adult. Most of our patients presented with classical symptoms of allergic rhinitis like paroxysms of sneezing, nasal discharge, nasal block, itching, cough and eye symptoms. Cough in allergic rhinitis patients could be due to postnasal drip, pharyngitis or lower airway obstruction. Patients with more severe AR have more severe airway dysfunction. Spirometric abnormalities were highest in the third decade when rhinitis symptoms were also peaking.

Grossman and Putnam performed pulmonary function tests on 32 patients with allergic rhinitis and found that, at baseline 13% of patients had obstruction at low lung volumes (maximum mid expiratory flow and maximum terminal flow).(16)

The prevalence of asthma in AR patients with chest symptoms were found to be 65.4% (n=51) and without chest symptoms is 34.6 % (n=27). From literature, the prevalence of asthma in patients with rhinitis ranges from 15% to 40%.<sup>15</sup> Our study had a higher prevalence (78%) of asthma (reversible airway disease) among the patients with allergic rhinitis. This could be due to the fact that small airways reversibility was considered as a parameter to diagnose asthma in the present study and the majority of our patients had small airways obstruction.

Recent research suggests that FEF 25-75% or FEF 25-50% may be a more sensitive parameter than FEV1 in the detection of obstructive small airway disease.(17,18)

## CONCLUSIONS

Patients with allergic rhinitis are at risk of developing asthma. Both allergic rhinitis, and asthma cause significant morbidity and loss of quality of life. It is essential to diagnose asthma early for disease modification and adequate therapy. 78% of patients with allergic rhinitis were found to have underlying asthma. Among the patients with allergic rhinitis, males had predominantly chest symptoms compared to females.

Pulmonary function test abnormalities are present even when patients do not complain of chest symptoms. Therefore, in allergic rhinitis patients, asthma should be carefully investigated to detect occult asthma

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