



THE PREVALENCE OF ALLERGIC RHINITIS IN PATIENTS WITH BRONCHIAL ASTHMA IN A TERTIARY CARE CENTRE AND ITS EFFECT ON ASTHMA CONTROL.

General Medicine

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ABSTRACT

BACKGROUND: Asthma and Allergic rhinitis are co morbid conditions, with allergic rhinitis being a major risk factor for asthma which remains often untreated. This study assessed the prevalence of allergic rhinitis and its effect on asthma control.

AIMS: To study the prevalence of allergic rhinitis in patients with bronchial asthma in a tertiary care centre and its co-relation to body mass index and its effect on asthma control.

METHODS: This descriptive questionnaire-based study was done over 3 months on 100 confirmed bronchial asthma patients (high serum IgE and PFT) in the age group 18-45 years attending Outpatient Department and inpatients in a tertiary care centre, mangalore excluding smokers and COPD patients after taking an informed written consent and body mass index is calculated for the same.

RESULTS: The prevalence of allergic rhinitis in patients with bronchial asthma is 61 % in the study population, out of this 52% with intermittent rhinitis and 9% with persistent rhinitis. 57% asthmatics has significant family history (0.019). Severe obstructive PFT pattern was seen with persistent rhinitis patients ($p=0.042$) which is statistically significant showing poor asthma control. But no statistically significant association was found with body mass index.

CONCLUSIONS: All patients diagnosed with Bronchial asthma need to be screened by clinicians for allergic rhinitis thereby improving the quality of life of asthmatics by providing effective treatment.

KEYWORDS

Allergic rhinitis, Bronchial Asthma, Prevalence, Body mass index, Asthma control.

1. INTRODUCTION

Global Initiative for Asthma (GINA) and National Heart Lung and Blood Institute (NHLBI) defined asthma as a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role. The chronic inflammation causes recurrent episodes of wheezing, breathlessness, chest tightness and coughing, particularly at night and in the early morning. These episodes are usually associated with widespread but variable airflow obstruction that is often reversible either spontaneously or with treatment^{1,2}.

Allergic Rhinitis is clinically defined as a symptomatic disorder of the nose induced by immunoglobulin-E mediated inflammation of membranes of the nose following allergen exposure. Chronic or acute inflammation of mucus membrane of the nose due to allergens result in the generation of excess amounts of mucus and fluid, commonly producing runny nose, nasal congestion, nasal and soft palate itching and sneezing³.

Asthma and Allergic rhinitis are co morbid conditions, with allergic rhinitis being a major risk factor for asthma^{4,6,7}. Allergic Rhinitis and its Impact on Asthma (ARIA) initiative recommends that the presence of asthma must be considered in all patients with rhinitis, and that in planning treatment, both should be considered together⁴. The term *allergic rhinobronchitis* has been recently proposed to link allergic asthma and rhinitis⁵.

Though a large population in India suffers from allergic rhinitis and bronchial asthma, definite reference studies are not yet available. Hence an attempt is made to assess the frequency of allergic rhinitis among patients with bronchial asthma by means of this study.

2. REVIEW OF LITERATURE.

- Cirillo.I et al, evaluated a large group of subjects suffering from allergic rhinitis alone to investigate the presence of spirometric impairment and Bronchial Hyper Responsiveness (BHR) both during and outside the pollen season. They found that an impairment of spirometric parameters and BHR may be observed in patients with allergic rhinitis alone. Thus, careful evaluation of lower airways should be performed in patients with allergic rhinitis alone⁸.
- Desalu OO *et al*, conducted a cross sectional study in adult Nigerian population and found that of the individuals with allergic rhinitis, 31.8% (n=69) had asthma and of those with asthma, 63.9% (n=69) had allergic rhinitis⁹.
- In a review of five large studies done by Leynaert B et al, that included populations of children and adults, the prevalence of asthma ranged from 3.6% to 5% in subject without rhinitis versus 10.8% to 32% in subject with rhinitis¹⁰.
- In a study, Stefano Guerra et al, in Arizona Respiratory Center,

College of Medicine, Tucson, found that Rhinitis to be an independent risk factor for adult onset asthma, before as well as after, the age of 50 years¹¹.

3. OBJECTIVES OF THE STUDY:

- To study the prevalence of allergic rhinitis in patients with bronchial asthma and its effect on asthma control.

4. MATERIALS AND METHODS:

SOURCE OF DATA:

The source of data for the study are the confirmed cases of Bronchial Asthma (wheezing + high serum IgE + PFT) attending the Outpatient Department as well as admitted in a tertiary care centre, Mangalore.

METHOD OF COLLECTION OF DATA:

All patients attending Outpatient Department and inpatients satisfying the inclusion and exclusion criteria will be asked to answer a questionnaire (IRCS Criteria for allergic rhinitis-Runny nose, nasal Congestion, nasal and soft palate Itching and Sneezing) and those who are willing to participate are taken up.

INCLUSION CRITERIA:

Diagnosed cases of bronchial asthma (wheezing + high serum IgE + PFT) in the age group of 18 - 45 years.

EXCLUSION CRITERIA:

- Known smokers
- Critically ill patients
- Patients with other associated respiratory illness such as COPD
- Immunosuppressed states such as diabetes mellitus, HIV and patients on steroids.

Study design : Descriptive study.

Study period : 3 months

Sample size: $N = \frac{(z \alpha/2)^2 pq}{D^2}$

P = prevalence of asthmatic patients for allergic rhinitis (50%)⁹

Q = 1-p

$\alpha = 0.05 (1.96)$

D = Relative precision (20% of p)

N = 96

Analysis of data will be done with chi square test and ANOVA test.

5. RESULTS

The age of the participants in this study ranged from 19-45 Years.

The mean age was 34.69 ± 3.25 .

Table 1. Frequency distribution based on gender.

Gender	Frequency
Female	56
Male	44
Total	100

In the present study 44% study subjects are males and 56% were females.

Table 2. Frequency distribution based on BMI

BMI	Frequency	Percent
Normal	53	53.0
Over weight	28	28.0
Obese	19	19.0
Total	100	100.0

In the present study 53% have normal BMI, 28% were overweight and 19% were having obesity.

Table 3. Frequency distribution of intermittent rhinitis

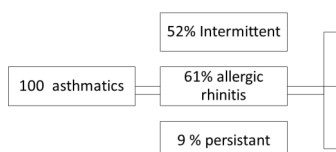
Intermittent rhinitis	Frequency
No	48
Yes	52
Total	100

In this study 52% participants have intermittent rhinitis.

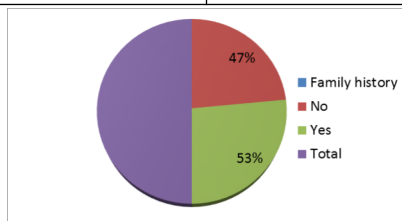
Table 4. Frequency distribution of persistant Rhinitis

Persistant Rhinitis	Frequency
No	91
Yes	9
Total	100

In the present study 9% study have Persistant Rhinitis.

**Table 5. Frequency of positive family history for allergic rhinitis**

Family history	Frequency
No	47
Yes	53
Total	100



In this study 53% have family history of allergic rhinitis.

Table 6. Severity of asthma

PFT	Frequency
mild obstructive	7
moderate obstructive	44
severe obstructive	49
Total	100

In the present study (49%) majority of them have severe obstructive, 44% have moderate obstructive and 7% have mild obstructive asthma.

Table 7. Age and PFT.

PFT	N	Mean age	Std. Deviation	ANOVA F value	P value
Mild	7	36.000	3.4157	0.261	0.771
Moderate	44	34.227	6.0227		
Sever	49	34.918	7.6780		
Total	100	34.690	6.7295		

Mean age of of PFT mild group was 36 ± 3.41 , Moderate group was 34.22 ± 6.02 and Severe group 34.69 ± 6.72 . There was no statistically significant difference in mean age in these different levels of PFT. so there is no relation between age and PFT level.

Table 8. Gender and PFT.

PFT	Sex		Total	Chi square test value	P value
	Female	Male			
Mild	5(71.4%)	2(28.6%)	7	0.860	0.651
Moderate	25(56.8%)	19(43.2%)	44		
Sever	26(53.1%)	23(46.9%)	49		
Total	56	44	100		

No significant difference was observed on comparing PFT level in Females and Males (P value>0.05).

Table 9. Seasonal rhinitis and PFT.

PFT	seasonal rhinitis		Total	Chi square test value	P value
	No	Yes			
Mild	1(14.3%)	6(85.7%)	7	3.692	0.158
Moderate	21(47.7%)	23(52.3%)	44		
Severe	26(53.1%)	23(46.9%)	49		
Total	48	52	100		

No significant difference was observed on comparing PFT level in Seasonal rhinitis positive and negative patients. (P value>0.05)

Table 10. Perennial rhinitis and PFT.

PFT	Perennial Rhinitis		Total	Chi square test value	P value
	No	Yes			
Mild	7(100%)	0	7	6.335	0.042
Moderate	43(97.7%)	1(2.3%)	44		
Severe	41(83.7%)	8(16.3%)	49		
Total	91	9	100		

In this study PFT level was significantly associated with incidence of Perennial Rhinitis(p=0.042)

Table 11. Family history and PFT.

PFT	family History		Total	Chi square test value	P value
	No	Yes			
Mild	6(85.7%)	1(14.3%)	7	7.878	0.019
Moderate	15(34.1%)	29(65.9%)	44		
Sever	26(53.1%)	23(46.9%)	49		
Total	47	53	100		

Family history was found to have a statistically significant association with Level of asthma.(p=0.019) More number of patients with positive family history having severe level of asthma when compared to negative family history.

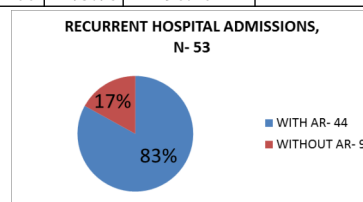
Table 12. PFT and BMI

PFT	BMI			Total	Chi square test value	P value
	Normal	Over weight	Obese			
Mild	4(57.1%)	2(28.6%)	1(14.3%)	7	1.882	0.757
Moderate	20(45.5%)	14(31.8%)	10(22.7%)	44		
Sever	29(59.2%)	12(24.5%)	8(16.3%)	49		
Total	53	28	19	100		

The result of the present study show that BMI of patients had no statistically significant association with PFT level.

Table 13. PFT and recurrent hospital admissions.

PFT	N	Mean	Std. Deviation	ANOVA F value	P value
Mild	7	1552.86	87.123	9.531	0.0001
Moderate	44	1243.14	192.402		
Severe	49	1265.47	168.467		
Total	100	1275.76	190.404		



Out of 100 patients with bronchial asthma , 53 patients were having recurrent hospital admissions. 44 patients out of this 53 has got symptoms of allergic rhinitis ie 83% which is statistically significant (p value<0.001).

6. CONCLUSION

There is evidence that having comorbid allergic rhinitis is a marker for the presence of more difficult to control asthma and therefore greater use of resources . There are also strong indications from observational data that treating comorbid allergic rhinitis may result in better asthma outcomes. So those who were not treated for allergic rhinitis have a significantly higher risk of subsequent asthma-related events (emergency department visits or hospitalizations) than those who were treated. There is no statistically significant association between asthma and BMI in our present study.

So our study recommends that the presence of rhinitis must be considered in all patients with asthma, and that in planning treatment, both should be considered together.

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