

Research Article

A Cross-Sectional Research in the Students of Schools, Colleges and Universities for the Quantification and Description about Asthma, Common Allergens and Allergic Rhinitis Co-Occurrence

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ABSTRACT

Objective: Research was aimed at the quantification and description of the Allergic Rhinitis co-existence including the level of serum of Eosinophils and IgE in the Asthma patients, it also aims at the specific description of the common allergens those are observed in the Asthma patients and the patients of Allergic Rhinitis in Lahore.

Method: Research was descriptive in nature and it was held in a hospital of Lahore from June – July, 2015 at the tertiary level of the healthcare in the private sector, research diagnosed the patients above twelve years of age with Allergic Rhinitis and Asthma in the guidelines of the GINA and ARIA respectively Global Initiative for Asthma and Allergic Rhinitis including their effect on the Asthma in the case of Serum IgE, Skin Allergy Test and count of Eosinophils, which was taken after the informed consent from the participants.

Results: 70% of the patients were observed with the incidence of Allergic Rhinitis and Asthma. The level of IgE Serum had a significant relation with the +ve skin allergy test; whereas, there was no association of the serum Eosinophil counts. Cat fur, Dust mite, Cockroach, Bermuda grass, Date palm and Russian thistle were observed as the common most allergens.

Conclusion: It is suggested through the higher rate of co-existence Allergic Rhinitis and Asthma prevalence that majority of the general population is residing this part of the country and they have the potential to represent the total population of the country. Awareness about the casual allergens prevention in the patients can be helpful for the overall disease management.

Keywords: Asthma, Allergen and Allergic Rhinitis.

IRB: Ethical committee of the hospital has approved her consent about the conduct of the research.

INTRODUCTION

Asthma is counted as an inflammatory and chronic airways disorder and in the individuals those are suspected about this inflammation face the wheezing episodes, breathlessness, coughing and chest tightness, specifically in the early morning and before going to bed. The association of these episodes is with the obstruction of the airflow that is at times reversible, either with the treatment or at times with spontaneously [1]. There

is another association of the disease with the increased hyper-responsiveness in the bronchial to numerous stimuli. Rhinitis is also considered an inflammation which has an association with the nasal mucosa that is also characterized through the blockage, nasal discharge, itching and sneezing including more than one symptoms which occur for >1 hour in most of the days. Further classification of the intermittency that is

(occurrence of the symptoms on less than four days on weekly basis or at least four weeks in the time of one year) or with a persistence of (the occurrence of the symptoms on at least four out of seven days or more than four weeks in the whole year. It is a common practice that there is a co-existence of the Allergic Rhinitis and Asthma. However, there is a variation in the prevalence in the various settings of the countries but at the same time the allergens causative may have variation. There is a postulation of the numerous reasons in the co-existence of the both including Type-I hypersensitivity and the involvement of numerous similar mediators [2]. The physiological processes also show the same trend of communicate through the signaling of the cells from nasal mucosa to bronchial epithelium and in the reverse direction [3, 4, 5]. It is observed in numerous research studies that at the molecular levels and longitudinal populations, it is suggested that the Allergic Rhinitis may have a role to play as an independent Asthma risk factor [9 – 6, 7].

In the literature that is worldwide published there is a co-existence in these conditions; whereas, in the data of Lahore and in the nearby countries there is a limitation in the co-existence. It is also proved that till the identification and treatment as this effect in terms of treatment may be sub-optimal [8]. Our research also describes the repeated allergens observed and diagnosed in the patients that they had an incidence of Asthma including Allergic Rhinitis without the incidence of Allergic Rhinitis.

Our research was aimed at the quantification and description of the Allergic Rhinitis co-existence including the level of serum of Eosinophils and IgE in the Asthma patients, it also aims at the specific description of the common allergens those are observed in the Asthma patients and the patients of Allergic Rhinitis in the city of Lahore. The levels of IgE serum and Eosinophils were also taken in to account in the number of research studies for the Asthma and allergy quantification;

however, the significance of the involved markers also remained variable.

Patients and Methods

Research was descriptive in nature and it was held in a hospital of Lahore from June – July, 2015 at the tertiary level of the healthcare in the private sector, research diagnosed the patients above twelve years of age with Allergic Rhinitis and Asthma in the guidelines of the GINA and ARIA respectively Global Initiative for Asthma and Allergic Rhinitis including their effect on the Asthma in the case of Serum IgE, Skin Allergy Test and count of Eosinophils, which was taken after the informed consent from the participants. Random selection of the patients was made for the continuation of the research and also calculated the sample proportion with the motive to address the scarcity of the literature and about risk factor and pattern and the variance was (0.05). Wald's method was used for the sample size calculation for confidence level and binomial distribution, level of confidence was (> 95%) [17], calculated size of the sample was 397, including Allergic rhinitis or Asthma patients; co-existing or alone recording of the diagnosis was made. List of the level of IgE serum, count of Eosinophils and positive allergens was documented for every patient and also tabulated respectively in terms of their age groups as 12 – 30, 31 – 50 and above 50 years.

All the cases diagnosed with Allergic Rhinitis or Asthma (according to the clinical assessment made through present guidelines) were taken into account to the allergy of the skin test and the levels of serum IgE including the count of Eosinophils after the informed consent by the participants. Research included the male and female cases according to the set inclusion criteria in the age of twelve years and more than twelve years having clinically diagnosed Allergic Rhinitis or Asthma. All the patients included in the research who presented an active disease of the skin or any intake of antihistamines in previous three days were not included in the research. R statistical package and SPSS-14 were used for the data entry and analysis as it is taken as gold standard worldwide for the calculation of

the size of the research sample, results were shown in the form of percentage and numbers.

RESULTS

Our research studies a sample of the 397 patients including male and female with respective proportion as 129 males (32%) and 268 females (68%). In the overall research a total of 283 patients (71%) were observed with Allergic Rhinitis and Asthma. The age group was 12 – 30 years and Allergic Rhinitis and Asthma was in the 74 percent sample in combination and the respective proportion of the 31 – 50 and above 50-year age group were respectively 75% & 61%. The outcomes of negative and positive test of the skin allergy in the patients of Allergic rhinitis, coexisting Asthma, Asthma and Allergic Rhinitis as reflected in Table I & II. 12 – 30 years’ age group reflected common allergens, 31 – 50 and above 50 years. Level of Eosinophils and Serum IgE in respect of negative and positive skin allergy test as reflected in Table-III.

DISCUSSION

It is a unique research in itself in the present available literature and awareness about the co-existence of the Allergic Rhinitis and Asthma. According to the Shirina and colleagues [9] and Lisha with colleagues [10], conducted a cross-sectional research in the children of the schools and universities for the incidence of the Allergic Rhinitis and Asthma back in 2008; however, their research was not carried out in the clinical background, it mainly based on the strategy of questionnaire. According to the outcomes of their research the coexisting

Allergic Rhinitis and Asthma prevalence was significantly low. In the light of the worldwide available data the coexistence of 2 conditions is observed very high which ranged from 70 – 80 percent [7]. International and our research are on the same page in terms of outcomes. In the presence of the varied environmental factors in our regions of the world there is a high co-existence probability of about these medical conditions that more likely share pathophysiological grounds. In the perspective of international data, pollens, house dust mite and animal dander are very common allergens that pose implications of the incidence of Allergic Rhinitis and Asthma [10]. However, there is no published material available in the past in our setting. A panel of allergen for skin allergy test was used in our research that comprised of local factors such as dust mite, birds, plants and common animals as observed in our region. Our research also considered another side of the research that is markers of the serum such as levels of serum IgE and serum Eosinophilia. There is a variable role of these markers in Allergic Rhinitis and Asthma. There is a positive association of serum IgE and positive skin allergy test as reflected in our research outcomes in Asthma patients having an incidence of Allergic Rhinitis or without an incidence of Allergic Rhinitis in comparison of the levels of Eosinophil. Levels of Serum IgE and levels of Eosinophilia are also utilized for the Allergic Rhinitis and Asthma quantification due to the markers that have the quantification and classification of these 2 incidences.

Table-I. Outcomes of Negative and Positive skin allergy test in the incidence of Allergic Rhinitis, Asthma and coexisting Allergic Rhinitis and Asthma

Age Group	Clinical Conditions									Allergens						
	Asthma Dust		Asthma and Allergic		Allergic		Rhinitis		Cat fur		Russian Thistle		Bermuda grass		Cockroach	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
12 - 30	9	5.39	121	72.45	35	20.95	33	19.76	38	22.75	38	22.75	33	19.76	25	14.97
31 - 50	12	7.18	129	73.30	34	19.31	45	25.565	39	22.15	41	23.29	23	13.06	28	15.9
Above 50	7	4.19	33	61.11	17	3.48	13	24.07	12	22.22	11	20.37	9	16.65	9	16.65

Table-II. Negative and Positive skin allergy test in Asthma Allergic Rhinitis, Asthma and Allergic Rhinitis alone patients

Clinical Condition	Skin Allergy Test Positive		Negative		Statistic α	P-Value
	Number	Percentage	Number	Percentage		
Asthma (28)	19	67	9	33	6.88	0.032
Allergic Rhinitis and Asthma (283)	240	84.8	43	15		
Allergic Rhinitis (86)	76	88.3	10	11.6		

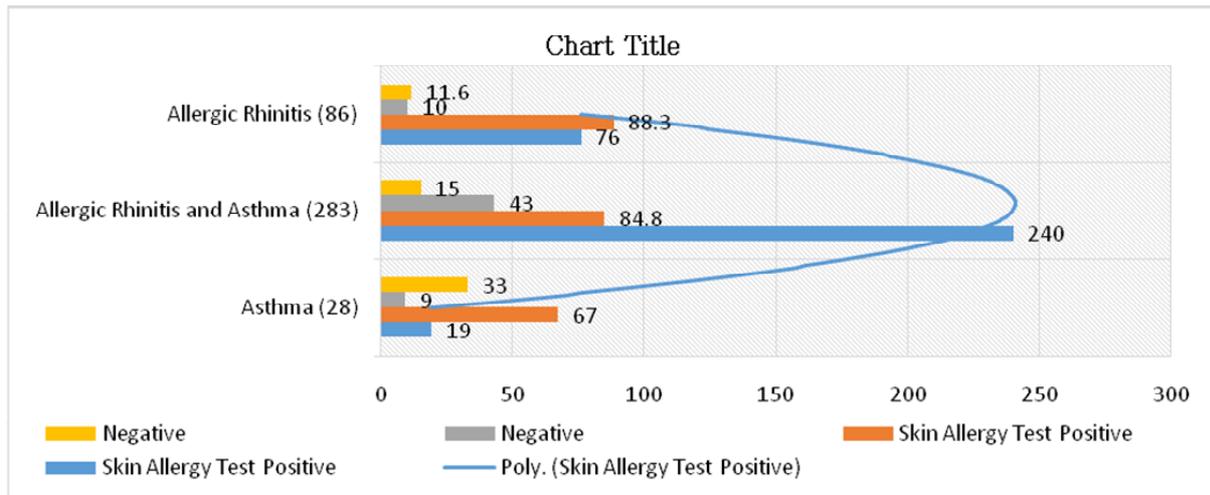
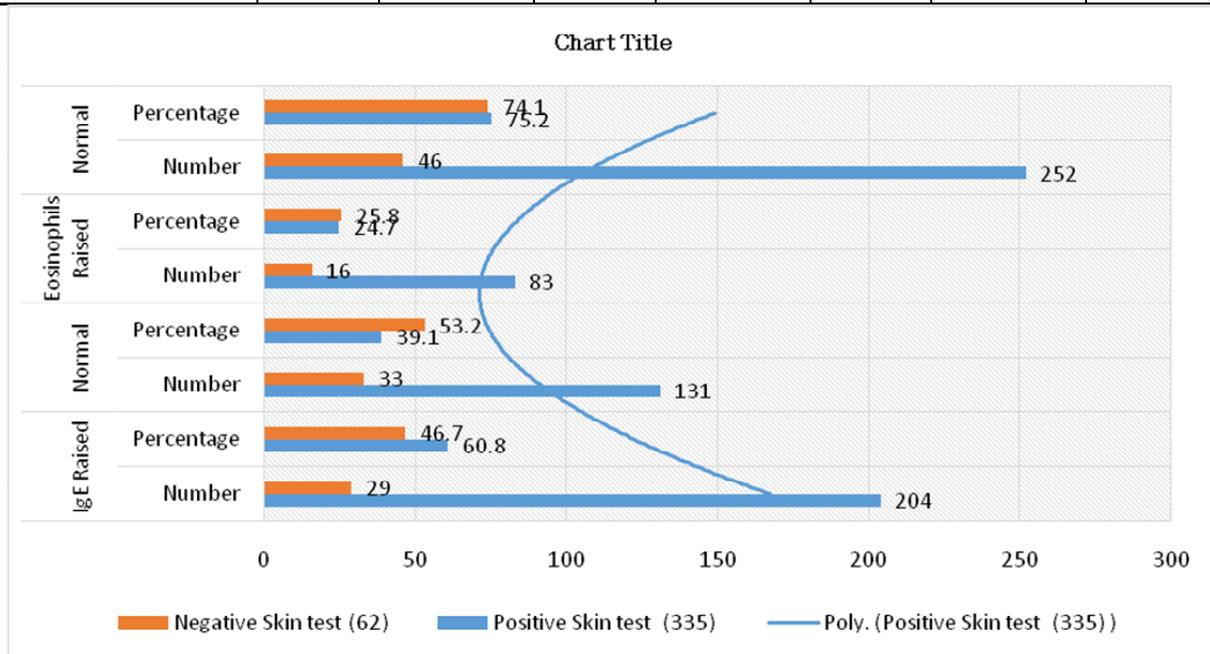


Table-III. Negative and Positive skin allergy tests in Eosinophils and IgE patients

Skin Allergy Test	IgE Raised		Normal		Eosinophils Raised		Normal	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Positive Skin test (335)	204	60.8	131	39.1	83	24.7	252	75.2
Negative Skin test (62)	29	46.7	33	53.2	16	25.8	46	74.1



There are few limitations that can be expected from this cross-sectional research such as Allergens pattern variation from year to year purely based on the conditions of the environment and true representativeness of the patients. Hence, more research work is required including a meta-analysis this research study has formed the base of the other multi-dimensional research's with the provided high prevalence of 2 conditions and high co-existence probability is observed this cross-sectional research.

CONCLUSION

It is suggested through the higher rate of co-existence Allergic Rhinitis and Asthma prevalence that majority of the general population is residing this part of the country and they have the potential to represent the total population of the country. Awareness about the casual allergens prevention in the patients can be helpful for the overall disease management.

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