

A TWO YEAR STUDY OF BRONCHIAL ASTHMA AEROBIOLOGY AT HAJIPUR, BIHAR (INDIA)

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Key words Air sampling, clinical investigation, bronchial asthma, aeromycology, antigens.

& Phrases : Airborne fungal spores have proved to be potential agents of human allergic diseases like bronchial asthma and several others. A comprehensive aeromycological study was undertaken at Hajipur using Tilak Air Sampler (Tilak and Kulkarni, 1970). Based on the aeromycological data, clinical investigations were conducted on 85 patients of bronchial asthma of Hajipur region using antigenic extracts of 18 fungal spores. Out of 85 cases tested comprising 55 males and 30 females, highest incidence was observed in the 3rd decade of life (21-30 years) followed by the 4th decade (31-40 years). Higher incidence of the disease was observed in males (64.71%) than in females (35.20%).

INTRODUCTION

A knowledge of the airspora is a prerequisite for any clinical study on allergy. A comprehensive aeromycological study was undertaken at Hajipur for a period of two years using continuous electrometric operated Tilak Air Sampler (Tilak and Kulkarni, 1970) at Hajipur the headquarters of Vaishali district of Bihar and Hajipur occupies an interior location in the middle of the Gangetic plains north to the foot of the Annapurna range and south to the Doon valley. The climate is semi-arid and the vegetation is dry deciduous. The air quality is poor due to the presence of air pollution. The present investigation is a clinical study on patients suffering from bronchial asthma was conducted at the regional allergy clinic of Hajipur. The patients from Hajipur region attending the clinic were included in this study.

MATERIALS AND METHODS

Air sampling was carried out for two years using electrometric operated Tilak Air Sampler (Tilak and Kulkarni, 1970). Slides were prepared following standard methods as described by Tilak (1970). Staining of slides was done using a 0.1% methylene blue solution under a binocular microscope. Identification of spores was done using reference slides, standard keys, spore characters and standard literature.

A perfect clinical diagnosis of bronchial asthma was made on the basis of good medical and allergic history of patients recorded by the allergologist through well planned questionnaire, complete physical examination of the patients by the clinician and clinical immunological tests to identify the offending allergens and/or aggravating factors.

The intradermal tests with antigenic extracts prepared from the known prevalent fungal allergens of the regional atmosphere were conducted on patients suffering from bronchial asthma. The grading system of the test responses as proposed by Hiipuri (1968) and modified by Hiipuri (1970) was followed.

Antigenic extracts of fungal spores were used in this clinical investigation on the hosen allergic disease. Antigens were prepared from the culture for identification. The host institute is the University of Bihar and the author is from the Department of Botany, Bihar University, Bihar (India).

RESULT AND DISCUSSION

Antigens of fungal spores were tested through intradermal sensitivity tests on allergy patients of bronchial asthma. The distribution data of patients showed a higher incidence of the disease in males & than in females. The overall higher frequency of the disease was recorded in the third decade of life (21-30 years) followed by the fourth decade (31-40 years). The prevalence of the disease in males and its early onset might have been due to frequent exposure of male individuals to various aeroallergens due to their occupational requirements.

Out of a total of intradermal tests conducted was found positive and negative degree of positive response was in the order of 100%, 75%, 50%, and 25%. The moderate response was in 100% and 75% patients respectively. The recorded history of the patients indicated that in 100% of cases symptoms were perennial in 75% seasonal in 50% perennial plus seasonal and in 25% irregular. The seasonal manifestation of the disease was also followed by the perennial condition. The list of fungal antigens used have been presented in the table. The distribution of allergy patients degree of severity and positive response age and the distribution of patients and percentage of frequency of occurrence of the disease over the year have been presented in the table. The age, sex and the response respectively.

Monitoring and census of the air quality of flora with the serological parameters of meteorological variables is the significant part of this investigation which opens avenues for the evaluation of allergenic potentials of various aero-fungal components.

Airborne spores have been proved to be potential agents of human allergic manifestations. Diversity in vegetation and changing meteorological parameters led to enormous fluctuations in the quality and quantity of fungal spores. Studies on the correlation of atmospheric spore incidence with clinical data have been adequately reported by Oldahl *et al.* (1968) from Central India, Harpin *et al.* (1970) from the European continent, and Hiipuri and Singh (1968) and Hiipuri and Singh (1970) from India. The present study has been made on the similar lines to establish a correlation between atmospheric fungal spore content and the clinical data obtained on bronchial asthma.

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TABLE - 1. Fungal antigens used based on predominant aeromycoflora

Sl. No.	Fungal antigens	Sl. No.	Fungal antigens
	<i>Rhizopus</i>		<i>Penicillium</i>
	<i>Aspergillus</i>		<i>Didymosphaeria</i>
	<i>Alternaria</i>		<i>Pleospora</i>
	<i>Cladosporium</i>		<i>Sordaria</i>
	<i>Curvularia</i>		<i>Cercospora</i>
&	<i>Fusarium</i>		<i>Deightoniella</i>
	<i>Helminthosporium</i>	&	<i>Heterosporium</i>
	<i>Epicoccum</i>		<i>Nigrospora</i>
	<i>Chaetomium</i>		<i>Fusariella</i>

TABLE -2 : Sexwise distribution of allergy patients of Bronchial Asthma

No. of Cases	Total Males	%-age of Males	Total Females	%-age of Females
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TABLE -3 : Degree of severity and positive response

Total No. of Patients	Male	Female	Total No. Tests	Total -ve	Total +ve	Severe	Mild	Moderate	Degree of response				
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TABLE -4 : Age and Sex distribution of 85 cases of Bronchial asthma

Disease	1-10 years		11-20 years		21-30 years		31-40 years		41-50 years		Above 51 years		Total	G. Total
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asth a		/								&				

TABLE -5 : Percentage of different types of occurrence of Bronchial asthma

Perennial	% -age	Seasonal	%-age	Perennial plus seasonal	%-age	Irregular	%-age
		&		&			