ORIGINAL ARTICLE

PREVALENCE OF ALLERGEN SENSITIVITY IN NASOBRONCHIAL ALLERGY IN GUJARAT, INDIA

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ABSTRACT

Background: Respiratory allergy accounts for a significant burden of allergy all over the world. The prevalence of nasobronchial allergy is increasing globally. India has huge diversity in allergens in different region as it is a climatically diverse country.

Objective: To study skin reactivity to various allergens in patients of nasobronchial allergy.

Methods: Retrospective analysis was done of the patients of allergic rhinitis, bronchial asthma or both who underwent for skin prick test for all following three groups of allergens: pollens, dust and insects. Patients aged < 12 years of age were excluded from the analysis.

Results: Amongst all allergens studied, insect group of allergens were more predominant. Most predominant allergen was moth (41.67%) followed by yellow wasp (37.5%), housefly (37.5%) and mosquito (33.33%). Amongst pollen group of allergen, most predominant allergens were Cassia Siamea (29.17%) followed by Morus Alba (25%) and Ricinus Communis (25%). Amongst dust group of allergen, most predominant allergens were Grain dust wheat (20.83%) and house dust (20.83%).

Conclusion: In Gujarat insects allergens are most common in nasobronchial allergy and Moth being the commonest amongst insects.

Key words: skin prick test, pollen, dust, prevalence, insects

INTRODUCTION

It has been found that over 20% of the world population suffers from immunoglobulin E (IgE) mediated allergic diseases such as asthma, rhino conjunctivitis, eczema and anaphylaxis.[1] Airway allergy is now considered to be a disease not confined to a specific target organ but rather a disorder of the whole respiratory tract and there is a link between rhinitis and asthma leading to a definition of allergic rhinobronchitis[2] or united airways diseases (UAD)[3] and concept of 'one airway one disease'. Respiratory allergy accounts for a significant burden of allergy all over the world. The prevalence of nasobronchial allergy is increasing globally as well as in India possibly due to change in environment.

India has huge diversity in allergens in different region as it is a climatically diverse country. Allergens can cause both the allergic rhinitis and bronchial asthma. For efficient diagnosis and treatment it is beneficial to know the prevalence and seasonal variations of allergens of the region. There is very limited data available regarding prevalence of different allergens in Gujarat.

METHODS

In this retrospective analysis, we have included the patients of allergic rhinitis, bronchial asthma or both who underwent for skin prick test in Global Meridian Hospital, Vadodara, Gujarat from January 2010 to December 2010. Only those patients were included on whom the skin prick test (SPT) was done for all following three groups of allergens: pollens, dust and insects for better data analysis. Patients aged < 12 years of age were excluded from the analysis. Total 24 patients were included in this analysis.

Protocol of Skin Prick Testing in Hospital

Allergens were obtained from All Cure Pharma Pvt. Ltd., New Delhi. The antigens included 44 types of pollens, 11 types of dusts, 13 types of insects. Oral antihistaminic, tricyclic antidepressants and beta blocker were stopped 7 days prior to the skin prick test. If a patient was on oral steroids continuously for more than two weeks, the skin prick test was performed three weeks after stopping steroids.

Drop of each allergen was placed 2 to 2.5 cm apart and then pricked with 26 gauge needle. Buffered saline was used as negative control and histamine was used as positive control. Grading of results was done as grade +, grade ++, grade +++, grade ++++.[3]

RESULTS

The results of skin reactivity of different allergens are shown in table I and table II. Amongst all allergens studied, insect group of allergens were more predominant. Most predominant allergen was moth (41.67%) followed by yellow wasp (37.5%), housefly (37.5%) and mosquito (33.33%). Amongst pollen group of allergen, most predominant allergens were Cassia Siamea (29.17%) followed by Morus Alba (25%) and Ricinus Communis (25%). Amongst dust group of allergen, most predominant allergens were Grain dust wheat (20.83%) and house dust (20.83%).

Table 1: Results of skin prick test for pollens

Pollens	+	++	+++	++++	Significant positive ++ or more (%)
Accasia Arabica	4	1	0	0	1 (4.17%)
Adhatoda vasica	1	0	0	0	0
Ageratum conyzoides	2	1	0	0	1 (4.17%)
Ailanthus excels	2	0	0	0	0
Albizzia lebbeck	7	0	0	0	0
Amaranthus spinosus	6	3	0	0	3 (12.5%)
Argemone Mexicana	6	0	0	0	0
Artemisia scoparia	8	1	0	0	1 (4.17%)
Asphodelus tenuifolius	2	2	1	0	3 (12.5%)
Azadirachta indica	5	1	1	0	2 (8.33%)
Brassica campestris	5	3	0	0	3 (12.5%)
Broussonetia papyrifera	4	1	1	1	3 (12.5%)
Cannabis sativa	7	0	0	0	0
Cassia fistula	7	0	0	0	0
Cassia occidentalis	6	2	0	0	2 (8.33%)
Cassia siamea	4	3	4	0	7 (29.17%)
Cenchrus cillaris	8	2	0	0	2 (8.33%)
Chenopodium album	7	0	0	0	0
Chenopodium murale	3	0	0	0	0
Crataeva nurvala	4	1	1	0	2 (8.33%)
Cocos nucifera	1	0	0	0	0
Cynodon dactylon	6	0	0	0	0
Cyperus rotundus	3	0	0	0	0
Dodonea viscose	3	1	0	0	1 (4.17%)
Eucalyptus tereticornis	5	0	0	0	0
Gynandropsis gynandra	7	2	0	0	2 (8.33%)
Holoptelea integrifolia	7	1	1	0	2 (8.33%)
Ipomoea fistulosa	7	0	0	0	0
Kigelia pinnata	2	0	0	0	0
Law sonia enermis	4	0	1	0	1 (4.17%)
Maerua arenaria	6	1	1	0	2 (8.33%)
Melia azedarach	4	0	0	0	0
Morus alba	8	3	3	0	6 (25%)
Parthenium hysterophorus	6	1	1	0	2 (8.33%)
Prosopis juliflora	8	3	1	1	5 (20.83%)
Putranjiva roxburghii	5	4	0	0	4 (14.82%)
Ricinus communis	8	3	1	2	6 (25%)
Rumex dentatus	4	3	0	0	3 (12.5%)
Salvadora persica	12	0	1	0	1 (4.17%)
Sorghum vulgare	6	1	0	0	1 (4.17%)
Suaeda fruticosa	2	1	3	0	4 (14.82%)
Typha angustata	2	0	3	0	3 (12.5%)
Xanthium strumarium	7	1	0	0	1 (4.17%)
Zea mays	8	2	1	0	3 (12.5%)

Mosquito was the predominant allergen responsible for the severe reaction (++++). Seven (29.17%) patient were sensitive to five or more insects group of allergens while six (25%) were sensitive to five or more pollen group of allergen. None of the patient was sensitive to five or more allergen of dust group. Three patients were sensitive to only pollens while one was sensitive to insect group of allergens. Four patients were sensitive to pollen and insect group of allergens. Four patients were sensitive to pollen and dust group of allergens. One patient was sensitive to insect and dust group of allergens. Rest of the patients was sensitive to all groups of allergens (Pollen, dust, and insects).

Amongst pollen, Adhatoda vasica, Ailanthus excels, Albizzia lebbeck, Argemone Mexicana, Cannabis sativa, Cassia fistula, Chenopodium album, Cocos nucifera, Cynodon dactylon, Cyperus rotundus, Eucalyptus tereticornis, Ipomoea fistulosa, Kigelia pinnata and Melia azedarach did not showed clinically significant skin reactivity while amongst dust Grain dust soyabean and Thrashing dust wheat did not showed any clinical significant skin reactivity.

Table 2: Results of skin prick test for insects and dusts

	+	++	+++	++++	Significant positive ++ or more (%)
Insects					
Ant	5	2	1	0	3 (12.5)
Butter fly	8	2	3	0	5 (20.83)
Cockroach female	7	1	1	0	2 (8.33)
Cricket	6	1	1	0	2 (8.33)
Grass hopper	2	3	2	1	6 (25)
Honey bee	9	5	1	1	7 (29.17)
Hornet	7	2	4	0	6 (25)
Housefly	6	3	3	3	9 (37.5)
Locust female	5	2	3	0	5 (20.83)
Locust male	8	3	0	0	3 (12.5)
Mosquitoes	6	2	2	4	8 (33.33)
Moth	5	1	7	2	10 (41.67)
Yellow wasp	5	2	5	2	9 (37.5)
Dust					
Cotton mill dust	4	3	0	0	3 (12.5)
Grain dust bajra	7	1	3	0	4 (14.82)
Grain dust jowar	7	0	1	0	1 (4.17)
Grain dust rice	7	1	1	1	3 (12.5)
Grain dust wheat	4	3	2	0	5 (20.83)
Grain dust soyabean	4	0	0	0	0
Hay dust	4	1	0	0	1 (4.17)
House dust	3	2	2	1	5 (20.83)
Paper dust	3	2	0	0	2 (8.33)
Straw dust	3	1	0	0	1 (4.17)
Thrashing dust wheat	5	0	0	0	0

DISCUSSION

The predominant allergens found in this analysis were insects followed by pollen and dust. Prasad[4] et al found that in Lucknow, Uttar Pradesh common offending allergens were insects followed by dust and pollen. Donthi[5] et al found that in Hyderabad, Andhra Pradesh most common allergens were fungi followed by pollens and dust while in one early study Acharya[6] et al found that in Andhra Pradesh common allergens were insects followed by dusts and pollen. So, sensitivity pattern of different group of allergen was different.

Amongst dust group of allergen studied, most predominant allergens were Grain dust wheat and housedust. Dhonti[5] et al had found most common dust was grain dust rice followed by grain dust wheat and house dust. Prasad[4] et al had found house dust was most common followed by wheat dust and cotton dust.

In the present study it was found that in Gujarat most predominant insect allergen was moth followed by yellow wasp, housefly and mosquito while in Utter Pradesh most common insect allergen was female locust followed by male locust, grass hopper and cricket which was totally different from our study.

Amongst pollen in the present study, most predominant was Cassia Siamea followed by Morus Alba and Ricinus Communis in Gujarat while in Andhra Pradesh it was Law Sonia enermi followed by zea mays, gynandropsis gynandra, sorghum vulgare, cenchurus ciliairis and xanthium strumarium.[5] Prasad[4] et al found in their study that as compare to early study by Agnihotri[7] et al in Uttar Pradesh amaranthus spinosus was common pollen but argemone Mexicana, adhatoda vasica, ailanthus and cannabis were new pollens while in Gujarat these all pollens were of no clinical significance.

Pollen profile of different region was totally different and it also changes over a period of time. This difference in incidence may be due to different flora in different geographical areas and change of flora over a successive time period due to change in climatic factors.

CONCLUSION

In Gujarat insects allergens are most common in nasobronchial allergy. Adhatoda vasica, Ailanthus excels, Albizzia lebbeck, Argemone Mexicana, Cannabis sativa, Cassia fistula, Chenopodium album, Cocos nucifera, Cynodon dactylon, Cyperus rotundus, Eucalyptus tereticornis, Ipomoea fistulosa, Kigelia pinnata, Melia azedarach amongst the pollens and Grain dust soyabean, Thrashing dust wheat amongst the dust have no clinical significance in nasobronchial

allergy. There is difference in the prevalence of allergen sensitivity in different region it is very helpful to conduct such type of study to know the prevalence and seasonal variations of allergens in different region from time to time.

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