ISSN (Print): 2617-0817 ISSN (Online): 2789-5912

Original Article

An Intradermal Examination Amongst Patients with Asthma, Allergic Rhinitis and Atopic Dermatitis

DOI: dx.doi.org

Islam N[1], Shakil MIH[2]

Received: 08 Aug 2022
Accepted: 13 Aug 2022
Published: 15 Aug 2022

Published by:
Sher-E-Bangla Medical College, Barishal

ABSTRACT

Introduction: *Allergies and asthma are a developing reason for worry in the current day and this could be credited to the ascent in urbanization and industrialization. Recognizable proof of allergens by intradermal test in patients with asthma, excessively touchy rhinitis, and dermatitis. Unfavorably susceptible rhinitis is a worldwide medical condition that causes significant disease and inability around the world. Patients from all nations, every single ethnic gathering, and of any age experience the ill effects of unfavorably susceptible rhinitis.* ***Methods:*** *This study was conducted from January 2018 to December 2021 at the Department of Dermatology and Venereology, Community Based Medical College & Hospital, Bangladesh. A sum of 188 allergens including 48 sorts of dust, 18 parasites, 15 bugs, 13 kinds of residue, 8 creature dander, 8 sorts of texture and plume, and 78 sorts of food varieties, dust vermin, and parthenium was tried.* ***Result:*** *In this audit, the huge allergens were dust (58.51) followed by food assortments (41.48%), bugs (7.97%), and cleaning (6.92%). Among dust allergens, Brassica campestris (8%) was a huge allergen followed by Ageratum conyzoides (7%) and Artemisia scoparia (6%) Cannabis sativa, Cynodon dactylon, and Maerua Arenaria (5%). Among the parasitic social affair, Alternaria tenuis, Aspergillus flavus, Aspergillus treats, Candida albicans, Penicillium sp., Rhizopus nigricans (3%), Fusarium solani (2%) were found. In the bug bundle, mosquito (7%), bug (6%), grasshopper (5%), scarab (male), moth, and house fly (4%) were the critical allergens. Among the buildup allergens, grain dust rice (3%), straw buildup, house buildup, and grain dust bajra (2%) were found. Among the food allergens, prawn (5%), almonds, Baker's yeast, Bengal gram (3%) and mushroom, mango prepared, rajma, cinnamon, chocolate, beans new, and areca nut (2%) were found.* ***Conclusion:*** *It can be said that the data could help with preparing allergens around here and help to treat patients by immunotherapy or avoidance framework.*

Keywords: *Allergens, Asthma, Dermatitis, Nasobronchial Awareness, Intradermal*

(The Planet 2022; 6(1): 199-207)

1. *Associate Professor, Department of Dermatology and Venereology, Community Based Medical College & Hospital, Mymensingh, Bangladesh*
2. *Orthopedic Consultant, Department of Orthopedics, Mymensingh Medical College & Hospital, Mymensingh, Bangladesh*

INTRODUCTION

Around the world, dermatitis influences 3%-20.5% of the populace, and hypersensitive rhinitis influences somewhere in the range of 10% and 30% of the populace, and refinement (IgE antibodies) to an unfamiliar protein in the climate are available in up to 40% of the population.[1] The ascent in the commonness of unfavorably susceptible illnesses has gone on in the industrialized world for over 50 years. Both open air and indoor aeroallergens sharpen and worsen unfavorably susceptible asthma.[2] In 1921, Kern noticed that a patient with asthma had a positive prick-cut skin test that she got from her mattress.[3] The patient's asthma receded after she encased the sleeping cushion in weighty pressing paper and completely tidied up the room. In 1925, Storm van Leeuwen effectively treated people with asthma by moving them to high heights or walling them in an allergen-proof chamber.[4] In India alone, roughly 20% of the populace experience the ill effects of unfavorably susceptible rhinitis, 6% from dermatitis, and 15% from bronchial asthma.[5] The commonness of atopic dermatitis (AD) has expanded over a few decades potentially because of progress in indoor and outside climates. Allergens are one of the many elements which can cause and set off nasobronchial sensitivity, AD, and bronchial asthma. There gives off an impression of being areas of strength between bio particulate matters in the environment and their impact on human wellbeing. The particulates generally liable for hypersensitive side effects are specks of dust, parasitic spores, bother flotsam and jetsam, family dust bug, creature danders, synthetic mixtures, and foodstuffs.[6]-[9] Aeroallergens have been found to play a significant part in hypersensitive problems. The current review was directed to track down the various kinds of allergens answerable for sensitivity nearby around Mymensing, Bangladesh, and the encompassing regions.

METHODS

This observational study was conducted at the Department of Dermatology and Venereology, Community Based Medical College & Hospital, Bangladesh. The study duration was 4 years, from January 2018 to December 2021. A sum of 110 patients going to the short-term division of Dermatology and Venereology, Community Based Medical College & Hospital. An educated assent from every patient was gotten before their support in the review. The patients taken were affirmed instances of unfavorably susceptible rhinitis, AD, and bronchial asthma.[10],[11] All the chosen subjects were told to stop fundamental steroids or different immunosuppressives basically for three days and antihistaminics essentially for 7 days preceding the intradermal test. Intradermal infusion of 188 allergens extricates was given to each of the 110 patients. The allergen extricate included 50 kinds of dust, 19 parasites, 17 bugs, 14 sorts of tidies, 6 kinds of creature dander, 7 kinds of texture and plumes, 82 kinds of food sources, dust vermin, and parthenium. Intradermal infusion has generally speaking higher responsiveness and is more reproducible than the skin prick test for testing with low power extracts.[12] The intradermal test expects around 1000-overlay less thought to extricate than those utilized for the skin prick test to accomplish a comparative response.[13] In this review, 188 allergens and positive control (receptor cushion) and negative control (saline cradle) closed a sum of 199 intradermal infusions given to a patient [Figure 1]. Every one of the allergens was given on the back with a 4 cm distance between them. Infusions were given utilizing a 26 check needle up to 0.5 mm profundity underneath the skin. The outcomes were deciphered by wheal delivered corresponding to the negative control. In light of the great rate of one or more responses in nonallergic people, this gathering was prohibited from the review, and just high up-sides were thought of and broken down [Figure 1] and

[Figure 2]. The skin responses were perused after 15-30 min and were reviewed by the measures as of now published.[14] Care was taken to avoid sensitivity testing in patients with dermatitis during an episode of fuel.

Figure 1: Skin intradermal sensitivity testing

Figure 2: Large size and pseudopodia reminiscent of 3+ response at the upper right corner in skin intradermal test

In this analysis, the significant allergens were dust (58.51) trailed by food varieties (41.48%), bugs (7.97%), organisms (8%), and tidies (6.92%). Among the different allergens tried, the residue vermin sensitivity was viewed in 4% of cases, not at all like western examinations where dust bug was the most predominant. Among dust allergens, Brassica campestris (8%) was found as a significant allergen followed by Ageratum conyzoides (7%) and Artemisia scoparia (6%) Cannabis sativa, Cynodon dactylon, and Maerua Arenaria (5%) [Table 1]. Among the contagious gathering, Alternaria tenuis, Aspergillus flavus, Aspergillus treats, Candida albicans, Penicillium sp., and Rhizopus nigricans (3%) were the significant allergens followed by Fusarium solani (2%) [Table 2]. In the bug bunch, mosquito (7%), subterranean insect (6%), grasshopper (5%), beetle (male), moth, and house fly (4%) were the significant allergens [Table 3]. Among the residue allergens, grain dust rice (3%), straw residue, house residue, and grain dust bajra (2%) were viewed [Table 4] as the significant specialists liable for hypersensitive responses. Among textures and plumes fleece blend was seen in 2% of cases [Table 5]. Among food allergens [Table 7], prawn (5%) was the significant allergen. Other food allergens were almonds, cook's yeast, Bengal gram (3%) and mushroom, mango ready, rajma, cinnamon, chocolate, beans new, and areca nut (2%).

RESULTS

Table 1: Results of intradermal test with dust allergen

Allergen extract	All Patient Tasted	Marked positive Reaction(2+/3+)	Percentage
Adhatoda vasica	100	2	2
Ageratum conyzoides	100	7	7
Aliantus excels	100	2	2
Albizzia lebbeck	100	3	3
Amaranthus hybridus	100	3	3
Amaranthus spinosus	100	2	2

Argemone Mexicana	100	3	3
Artemisa Scoparia	100	6	6
Asphodelus Tenuifolious	100	2	2
Azadirachta Indica	100	2	2
BrassicaCampestris	100	8	8
Broussonetia Papyrifera	100	3	3
Cannabis Sativa	100	5	5
Carica Papaya	100	1	1
Cassia Fistula	100	1	1
Cassia Occidentalis	100	2	2
Cassia Siamea	100	1	1
CenchrusCiliaris	100	0	
Chenopodiam Album	100	0	
Chenopodiam Murale	100	1	1
Clerodendrum phlomidis	100	3	3
Cocos Nucifera	100	0	
Crataeva Nurvala	100	3	3
Cyanodon Dactylon	100	5	5
Cyperus Rotundum	100	0	
Dodonea Viscose	100	1	1
Ehretia Laevis	100	2	2
Eucaluptus tereticornis	100	2	2
Gynandropsis Gynanda	100	4	4
Holoptelea Intrgrifolia	100	1	1
Imperata Cylindrica	100	1	1
IpomoeaFistulosa	100	0	
Kigelia Pinnata	100	0	
Lawsonia Enermis	100	0	
Maerua Aeanaria	100	5	5
Melia Azedarach	100	2	1
Morus Alba	100	1	1
Parthenium Hyterophorus	100	3	3
Pannisetum Typhoides	100	1	1
Prosopis Juliflora	100	2	2
Putranjiva Roxburghii	100	2	3
Ranunculus scleratus	100	3	2
Ricinus communis	100	2	2
Rumex Dentatus	100	2	2
Salvadora Persica	100	2	1
Sorghum Vulgare	100	1	
Suaeda Fruticosa	100	0	1
Typha Angusta	100	10	
anthium Strumarium	100	1	1
Zea mays	100	0	

Table 2: Results of intradermal test with fungal allergens

Allergen extract	All Patient Tasted	Marked positive Reaction(2+/3+)	Percentage
Acrotheciam sp.	1oo	0	3
Alternaria tenius	1oo	3	3
Aspergillus flavus	1oo	3	3
Aspergillus fumigates	1oo	3	1
Aspergillus niger	1oo	1	1
Aspergillus tamari	1oo	1	
Aspergillus versicolor	1oo	0	3
Candida albicans	1oo	3	1
Cladosporum Herbarum	1oo	1	
Curvularia lunata	1oo	0	2
Fusarium solani	1oo	2	
Helminthosporum sp.	1oo	0	
Murcoe Mucedo	1oo	0	
Neurospora sitophilia	1oo	0	
Nigrospora oryzae	1oo	1	1
Penicillium sp,	1oo	3	3
Phoma Betae	1oo	0	
Rhizopus nigricans	1oo	3	3
Trichoderma sp.	1oo	1	1

Table 3: Results of the intradermal test with insect allergen extract

Allergen extract	All Patient Tasted	Marked positive Reaction(2+/3+)	Percentage
Ant	1oo	6	6
Bumble Bee	1oo	2	2
Butterfly	1oo	3	3
Cantheroid Beetle	1oo	4	4
Cockroach Fm	1oo	5	5
Cockroach M	1oo	1	1
Cricket	1oo	1	1
Dragon Fly	1oo	3	3
Grass Hopper	1oo	5	5
Honey Bee	1oo	2	2
House Fly	1oo	4	4
Jassids	1oo	1	1
Locust Fm Locust M	1oo	2	2
Mosquito	1oo	4	4
moth	1oo	7	7
Rice Weevil	1oo	4	4

Table 4: Results of intradermal test with dust allergens

Allergen extract	All Patient Tasted	Marked positive Reaction(2+/3+)	Percentage
Cotton mill dust	**100**	**1**	**1**
Flax Fiber dust	**100**	**0**	
Grain dust bajra	**100**	**2**	**2**
Grain dust jowar	**100**	**1**	**1**
Grain dust rice	**100**	**3**	**3**
Grain Dust mix	**100**	**0**	
Grain dust wheat	**100**	**0**	
Hay dust	**100**	**1**	**2**
Paper Dust	**100**	**2**	**3**
Staw dust	**100**	**0**	
Tharashing dust wheat	**100**	**2**	**3**
Tharashing dust wheat	**100**	**1**	**1**
Mouldy hay	**100**	**0**	

Table 5: Results of intradermal test with dander allergens

Allergen extract	All Patient Tasted	Marked positive Reaction(2+/3+)	Percentage
Buffalo Dander	**100**	**1**	**1**
Cat Dander	**100**	**0**	**0**
Cow Dander	**100**	**0**	**0**
Dog Dander	**100**	**1**	**1**
Horse Dander	**100**	**0**	**0**
Human Dander	**100**	**0**	**0**

Table 6: Results of intradermal test with fabric and feathers allergen

Allergen extract	All Patient Tasted	Marked positive Reaction(2+/3+)	Percentage
Jute	**100**	**0**	
Wear clothes	**100**	**0**	
Silk	**100**	**0**	
Sheep	**100**	**0**	
Wool mix	**100**	**2**	**2**
Chicken feather/Pigeon feather	**100**	**0**	

Table 7: Results of intradermal test with food allergen extract

Allergen extract	All Patient Tasted	Marked positive Reaction(2+/3+)	Percentage
Areca nut	**100**	**2**	**2**
Apple	**100**	**0**	**0**
Almonds	**100**	**3**	**3**
Bakers yeast	**100**	**3**	**3**
Banana ripe	**100**	**1**	**1**
Beans Fresh	**100**	**2**	**2**
Bengal Gram	**100**	**3**	**3**
Bajra	**100**	**0**	**0**
Plack peeper	**100**	**1**	**1**
Cabbage	**100**	**1**	**1**
Cardamom	**100**	**1**	**1**
Chocolate	**100**	**2**	**2**
Cinnamon	**100**	**2**	**2**
Coconut	**100**	**1**	**1**
Coriander	**100**	**0**	**0**
Coffee beans	**100**	**0**	**0**
Cumin	**100**	**1**	**1**
Dal arhar	**100**	**2**	**2**
Dal masroor	**100**	**0**	**0**
Dal moong	**100**	**1**	**1**
Rajma	**100**	**2**	**2**
Raungi	**100**	**1**	**1**
Citrus	**100**	**1**	**1**
Ginger	**100**	**0**	**0**
Garlic	**100**	**1**	**1**
Citrus	**100**	**1**	**1**
Katha	**100**	**1**	**1**
Mango ripe	**100**	**2**	**2**
Milk Bukkelo	**100**	**1**	**1**
Mushroom	**100**	**2**	**2**
Orange	**100**	**1**	**1**
Pista	**100**	**1**	**1**
Saunf	**100**	**1**	**1**
Soybean Flower	**100**	**1**	**1**
Tamarind	**100**	**1**	**1**
Tea	**100**	**1**	**1**
Walnut	**100**	**1**	**1**
Prawn	**100**	**5**	**5**
Egg	**100**	**1**	**1**
Parthinam leaves	**100**	**3**	**3**

Teak wood	**100**	**1**	**1**
Yellow Wasp	**100**	**3**	**3**
Cobweb	**100**	**0**	**0**
Acacia Arabica	**100**	**2**	**2**

DISCUSSION

Aeroallergens are a significant reason for unfavorably susceptible respiratory infections around the world. In this review, the significant allergens were dust (58.51) trailed by food (25.53), bugs (7.97%), parasites (8%), and dust (6.92%). Shipuri tracked down Curvularia, Alternaria, A. treats, Phoma, Neurospora, Aspergillus tamari, Helminthosporium, Aspergillus niger, R. nigricans, Trichoderma, and Cladosporium, to be the most well-known allergens in patients with nasobronchial sensitivity.[8] Among the residue allergens, grain dust rice (3%), straw residue, house residue, and grain dust bajra (2%) were viewed as the significant specialists answerable for unfavorably susceptible responses. Acharya found house dust followed by wheat dust, cotton residue, and paper residue to be normal among patients with nasobronchial sensitivity.[15] Among textures and plumes, fleece blend was viewed in 2% of cases [Tabel 6]. Among food allergens [Table 7], prawn (5%) was the significant allergen despite the fact that Ambala is not even close to the ocean. Other food allergens were almond, bread cook's yeast, Bengal gram (3%) and mushroom, mango ready, rajma, cinnamon, chocolate, beans new, and areca nut (2%). Be that as it may, 82 antigens were negative in every one of the cases. All out sure responses were 255 contained by a sum of 115 antigens. Since non-AD is described by regrettable skin prick test, they were not a piece of the present study.[6] The variety in the pervasiveness of aeroallergen reactivities in an alternate locale is expected to various geo-climatic conditions and variation of explicit microbiological vegetation in a particular environment. The variety of skin reactivity may likewise be credited to change in the particular example of vegetation over a period because of the progressions in geo-climatic conditions. One of the administration conventions can be the aversion of normal aeroallergens predominant in that region of the planet in spite of the fact that it isn't the case simple. Allergen-explicit immunotherapy is a suitable choice for these patients.[16] It can be utilized in mix with ordinary treatment to expand the result and creators would say has demonstrated viable in numerous treatment-safe cases.

Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

The current review attempted to figure out the significant allergens liable for sensitivity in and around Ambala and Yamunanagar having different businesses such as metal and pressed wood industry. The distinction in the uniquely certain intradermal test results among different examinations might be ascribed to the distinction in the verdure of the different geological areas and the adjustment of vegetation over the long haul and climatic circumstances. The data from the review might be valuable to clinicians overseeing patients experiencing sensitivities and help in building the predominant allergenic antigens in this piece of India. The ID of most common and the full range of aeroallergens liable for respiratory sensitivities plays a vital part in the administration of these circumstances. The review might help in choosing the most unambiguous and most savvy board of aeroallergen antigens for the intradermal test as the fitting demonstrative test and

subsequently will help in tracking down the best definition of allergen-explicit immunotherapy as a powerful treatment.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. *Pawankar R, Canonica GW, Holgate ST, Lockey RF. White Book on Allergy 2011-2012. Executive Summary. Wisconsin: World Allergy Organisation; 2011.*
2. *Patel B, Lockey RF, Kaliner MA, Aljubran SA, Bush RK. Aeroallergens. Available From: link for AQ7: https://emedicine.medscape.com/article/137911-overview. [Last accessed on 2018 Apr 25].*
3. *Kern RA. Dust sensitization in bronchial asthma. Med Clin North Am 1921;5:751.*
4. *Storm van Leeuwen W. Allergic Diseases: Diagnosis and Treatment of Bronchial Asthma, Hay Fever and Other Allergic Diseases. Philadelphia Pa; J.B. Lippincott; 1925.*
5. *Shivpuri DN. Clinically important pollen, fungal and insect allergen in nasobronchial allergy in India. Aspects Allergy Appl Immunol 1980;13:19-23.*
6. *Simons FE. Allergic rhinobronchitis: The asthma-allergic rhinitis link. J Allergy Clin Immunol 1999;104:534-40.*
7. *Rożalski M, Rudnicka L, Samochocki Z. Atopic and non-atopic eczema. Acta Dermatovenerol Croat 2016;24:110-5.*
8. *Kang B, Jones J, Johnson J, Kang IJ. Analysis of indoor environment and atopic allergy in urban populations with bronchial asthma. Ann Allergy 1989;62:30-4.*
9. *Lacey J, Crook B. Fungal and actinomycete spores as pollutants of the workplace and occupational allergens. Ann Occup Hyg 1988;32:515-33.*
10. *Shivpuri DN. Comparative evaluation of the sensitivity of common methods of diagnostic antigen tests in patients of respiratory allergy. Indian J Chest Dis 1962;3:102-7*
11. *Acharya PJ. Skin test response to some inhalant allergens in patients of nasobronchial allergy from Andhra Pradesh. Aspects Allergy Appl Immunol 1980;8:34-6.*
12. *Handa S, Jain N, Narang T. Cost of care of atopic dermatitis in India. Indian J Dermatol 2015;60:213.*
13. *Haftenberger, M.; Laussmann, D.; Ellert, U.; Kalcklosch, M.; Langen, U.; Schlaud, M.; Schmitz, R.; Thamm, M. [Prevalence of sensitisation to aeraoallergens and food allergens: Results of the German Health Interview and Examination Survey for Adults (DEGS1)]. Bundesgesundheitsblatt Gesundh. Gesundh. 2013, 56, 687–697. [Google Scholar] [CrossRef]*
14. *Pastorello, E.A.; Incorvaia, C.; Pravettoni, V.; Marelli, A.; Farioli, L.; Ghezzi, M. Clinical evaluation of CAP System and RAST in the measurement of specific IgE. Allergy 1992, 47, 463–466. [Google Scholar] [CrossRef] [PubMed]*
15. *Pastorello, E.A.; Incorvaia, C.; Ortolani, C.; Bonini, S.; Canonica, G.W.; Romagnani, S.; Tursi, A.; Zanussi, C. Studies on the relationship between the level of specific IgE antibodies and the clinical expression of allergy: I. Definition of levels distinguishing patients with symptomatic from patients with asymptomatic allergy to common aeroallergens. J. Allergy Clin. Immunol. 1995, 96 Pt 1, 580–587. [Google Scholar] [CrossRef]*
16. *Oppenheimer, J.; Nelson, H.S. Skin testing. Ann. Allergy Asthma Immunol. 2006, 96, S6–S12. [Google Scholar] [CrossRef]*