Brief Communication

THE STUDY OF TYPE 1 ALLERGY PREVALENCE AMONG PEOPLE OF SOUTH-EAST OF IRAN BY SKIN PRICK TEST USING COMMON ALLERGENS

ABSTRACT

The prevalence of allergic disorders has increased markedly throughout the world over the past three decades. It seems probable that the increased prevalence is real because longitudinal studies have shown a rapid exponential increase in allergic disorders. In order to determine the prevalence of type 1 allergy in patients with allergic disorders in Sistan-Blouchestan province, in the Southeast of Iran, patients referred to Immunology and Allergy Medical Center of Khatam Hospital during a 7-year period were studied.

One thousand two hundred and eighty-six patients (554 males and 732 females), aged 2-79 years, had allergic disorders. The most frequent allergic disease was rhinitis, seen in 959 patients (74.57%). Also, 939 patients had a history of sinusitis (73.02%). Among the skin prick test(SPT)-positive patients, a positive prick test reaction to the house dust mites (89.74%), feathers (70.29%), and Aspergillus (65.08%) was most common, followed by Alternaria (57.39%), Cladosporium (47.12%), grasses (43.39%), trees (41.29%), Penicillium (39.19%), fruits (38.41%), and weeds (32.50%). Also, 30.33% of the subjects were sensitized to Hen's egg in the prick test, walnut (29.16%), cow's milk (21.46%), beef meat (19.21%), and hazel-nut (15.32%) accounting for other positive reactions.

The prevalence of SPT-positive to common allergens is high among Iranian patients with allergic disorders. So, it should be recognized in the diagnosis of allergic diseases as well as in allergen-reduction programs.

Keywords: Allergen, Skin-prick test, Allergic disorder, Iran

INTRODUCTION

There is little doubt that the prevalence of allergic disorders has increased markedly throughout the world over the past 40 years. There has been considerable controversy about the extent to which the increase is real, or attributable to increased awareness or better diagnosis. It seems probable that the increased prevalence is real because longitudinal studies have shown a rapid exponential increase in allergic disorders such as asthma. Since there is a marked difference in the occurrence of allergic disorders between Western and less developed countries, as well as between rural and urban areas, it is likely that environmental factors are etiologically involved.[1,2]

There are also considerable geographical differences in prevalence, as conclusively shown by large international studies in children and adults employing a standardized methodology. For an efficient diagnosis of the allergy and its effective treatment it is very important to know about the prevalence of allergens of the area.[1] In Iran, little information on allergens is available.[3-5] In order to determine the prevalence of type 1 allergy in patients with allergic disorders in Sistan-Blouchestan province, situated in the Southeast of Iran,

this study was done.

PATIENTS AND METHODS

The case records of 1286 patients (554 males and 732 females) referred to Immunology and Allergy Medical Center of Khatam Hospital in the Sistan-Blouchestan province, situated in the Southeast of Iran, were analyzed during a 7 year period (June 1996- July 2003). All patients had symptoms of allergic diseases and were referred for confirmation of allergen sensitisation, identification of possible allergen sources and requisite management. All subjects were residents of Iran. Consent was obtained from all participants and/or their guardians before testing. Each participant was examined and interviewed with a simple questionnaire to assess the presence of allergic disorders (allergic rhinitis, asthma, and urticaria).

Skin-prick tests (SPTs) to common allergens were performed in all patients and their reagents were purchased from Dome Holister Stier-Canada. The skin prick test was performed by the multiple prick technique. A drop of antigen was placed on the skin on the volar aspect of the forearm, after which the skin was pricked through the droplet with a disposable lancet. The skin test response was interpreted as the widest dimension of erythema and/or wheal at 30 min on the 0 to 4+ scale, based on the size of wheal, erythema, and the presence of pseudopodia, as described by Booth.[6] The skin prick test was performed with normal saline as a negative control and 1 mg/ml histamine as a positive control. Those who didn't have any responses to the negative control test and responded positive to histamine (wheal diameter over 5 mm) were tested with allergens. Wheal diameter over 3 mm and flare diameter more than 10 mm, were determined as positive tests (7). All subjects tested were asked to omit medication with antihistamines within 10 days of skin testing. None was on astemizole, steroid drugs, and other medications, which requires a longer time of withdrawal.

Analysis was done by the statistical package SPSS version 10.0 for Windows.

RESULTS

One thousand, two hundred and eighty-six patients (554 males and 732 females), aged 2-79 years, were reactive to at least one of the allergens and had allergic disorders. The most frequent allergic disease was rhinitis, seen in 959 (74.57%) patients (379 males and 580 females). The other common disorders were asthma in 215 patients (16.72%), and urticaria in 112 cases (8.71%). Nine hundred and thirty-nine patients had a history of sinusitis (73.02%). Also, 797 cases had a family history of allergy (61.98%).

Asthma and/or allergic rhinitis patients had been highly sensitized to the local dust-mite fauna. Among the SPT-positive patients, a positive prick test reaction to the house dust mites (89.74%), Feathers (70.29%), and Aspergillus (65.08%) were most common, followed by Alternaria (57.39%), Cladosporium (47.12%), grasses (43.39%), trees (41.29%), Penicillium (39.19%), fruits (38.41%), and weeds (32.50%). Also, 30.33% of the subjects were sensitized to Hen's egg in the prick test, walnut (29.16%), cow's milk (21.46%), beef meat (19.21%), and hazel-nut (15.32%) accounting for other positive reactions.

DISCUSSION

Allergic respiratory diseases such as asthma and rhinoconjunctivitis are common disorders.[8] There is worldwide variability in environmental allergies. There is little doubt that the prevalence of respiratory allergies has increased considerably, particularly in industrialized countries with market economies over the past 40 years. There are also considerable geographical differences in prevalence, as conclusively shown by large international studies in children and adults employing a standardized methodology.[1] In our study, among 1286 patients, rhinitis (74.57%) was the most common allergic disorder. In previous studies in Asia the prevalence of rhinitis is reported to be 44% among children[9] and 25-33% in adults.[10,11]

House dust mites are the predominant sensitizing allergens seen in 89.74% of our patients. House dust mites have been shown to play an important role in the pathogenesis of asthma and atopic diseases[12] In a previous study on house dust in the Caspian Sea region of Iran, asthma seemed closely related to house dust allergy and a high proportion of house dust sensitive patients appeared to be sensitive to house dust mites. Also, a high prevalence of SPT positive responses to dust mites was observed among individuals with atopic diseases (asthma and/or allergic rhinitis) in other Asian populations.[13-15]

Fungal species belonging to the Deuteromycotina (Aspergillus, Cladosporium, Penicillium, and Alternaria spp.) are important sources of allergens in Iran. These data are also in agreement with other studies in Asia.[13-16]

Although dust mites and fungal species are the predominant sensitizing allergens, pollens (grasses, weeds, and trees) are major sources of allergens in the Iranian environment. The association of these allergens with atopy suggests a role in the pathogenesis of allergic diseases in this area. Pollens are major sources of allergens, causing 10-20% of community allergic disease, the most common of which is rhinitis. The major allergenic pollens are derived from wind-pollinated (anemophilous) plants rather than from insect-pollinated

plants and the clinically important pollens vary according to location.[16] Also, airborne pollens and spore allergens have been implicated as one of the main causes of allergic respiratory problems in our neighbor countries.[14,16,18] The high prevalence of sensitization to inhalant allergens is an important risk factor for allergic disease in childhood. Avoidance of the indoor and outdoor aeroallergens is recommended for better management of respiratory allergy.

Allergic reactions to food affect up to 38% of patients with allergic disorders in our study. The true prevalence of adverse food reactions is unknown. A number of advances in the scientific knowledge concerning adverse food reactions have been made in the past few years.[19] Food allergies affect up to 2% of the population overall, with milk, egg, peanut and tree nuts accounting for most of the documented allergic responses.[20] In contrast to respiratory allergies, the epidemiology of food allergy has been little studied, and there is no strong evidence for an increasing incidence, either among infants and children or in adults. Studies of both the International Study of Asthma and Allergies in Children[21] and the European Respiratory Health Survey[22] have so far been limited to respiratory allergies, and similar studies have not been performed to define the prevalence of food allergies. Neither is there any study showing regional differences in prevalence.[1] More studies are required from different regions in order to identify similarities and differences in the patterns of food allergy. In particular, there is a need for properly conducted epidemiological studies in adults. Such studies should be interdisciplinary, as the cultural and social perceptions of food allergy and food intolerance would be expected to have a major impact on prevalence, perhaps even more than medical factors[1] In order to determine the prevalence of all food allergens in this region, further investigations are recommended. The question as to whether development of new diagnostic and therapeutic strategies (in the form of recombinant allergens/peptides) should include allergens requires additional characterization studies. It is thus possible that any regional differences are explained by cultural and social factors, rather than representing differences in the prevalence of disease.[1]

CONCLUSION

Numerous allergens were identified and characterized in the South-East of Iran. The prevalence of SPT-positive to common allergens is high among patients with allergic disorders in this region. Mite allergen is an important factor of sensitivity and should be considered in the diagnosis of allergic diseases as well as in allergen-reduction programmers. The relevant specialties of allergology and clinical immunology are not well developed in this region, and as a consequence, allergy has not been studied systematically. Further characterization of allergenic components is necessary for a better understanding of the allergens, and to assist in the standardization of allergenic extracts for diagnostic and therapeutic purposes.

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