



Aeroallergen Sensitivity of Thai Patients with Allergic Rhinitis

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Allergic rhinitis is one of the most common diseases. However, its true prevalence in many places is unknown. Studies have shown that up to 10% of children and 20%-30% of adolescents have this problem.^{1,2,3,4} According to a World Health Organization (WHO) allergy survey in Thailand, the prevalence of allergic rhinitis is 20%.⁵ More than 72% of cases comprise perennial allergic rhinitis, while only 28% comprise seasonal allergic rhinitis.⁶

Generally, the definition of allergic rhinitis must consist of three components: First, inflammation of the mucous membranes, which are characterized by a period of nasal discharge, sneezing, and congestion, that persists for an average of at least 0.5-2 hours per day. Second, the individual's nasal reactions to certain stimuli differ fundamentally from that of others, with a tendency to be genetically predisposed. The third is associated with positive skin tests to specific aeroallergens present in the envi-

SUMMARY The aim of this study was to determine the aeroallergen sensitivity of allergic rhinitis patients. A total of 100 cases (female: 59, male: 41, aged between 10-59 years, mean age 27.9 years) who were diagnosed with allergic rhinitis by history and clinical presentation, underwent a prick skin test with 30 aeroallergens, and the important sensitizing allergens were assessed. Skin test reactivity showing ≥ 3 mm wheal with erythema as the positive skin test, was recorded. The results of patients with positive skin tests follow. TREES: acacia 19%, mango 16%, coconut 12%. GRASSES: bermuda 17%, johnson 21%, timothy 16%, bahia 16% orchard 18%. WEEDS: pigweed 16%, kochia 14%. MOLDS: alternaria 11%, cladosporium 11%, aspergillus 12%, penicillium 16%, helminthosporium 16%, botrytis 15%, rhodotorula 20%, fusarium 26%, curvularia 26%, smut mix 11%, rust 9%. EPIDERMALS: cat 29%, dog 28%, feathers 37%. INDOOR ALLERGENS: house dust 72%, *D. pteronyssinus* 76%, *D. farinae* 79%, American cockroach 60%, German cockroach 41%, kapok 30%. Eighty-five percent of patients sensitive to house dust mites were positive to both *D. pteronyssinus* and *D. farinae*, indicating substantial cross-reactivity. The study shows that the house dust mite and the cockroach are important aeroallergen sensitizers among the Thai population, since more than half the patients were skin-test positive to the house dust mite and the cockroach.

ronment during symptomatic periods. Moreover, for a better understanding of the pathogenesis of allergic rhinitis, the following four major factors should be known: 1) aeroallergens or antigens; 2) immunoglobulin E and its regulation; 3) mediator cells and mediator release; 4) mediators and their effects. The aim of the pre-

sent study was to determine the aeroallergen sensitivity of allergic rhinitis patients who attended the Allergy Clinic of the Otolaryngology Department of the Pramongkutklo Hospital in Bangkok, Thailand.

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MATERIALS AND METHODS

Subjects

This study was conducted in the Allergy Clinic of the Otolaryngology Department, Pramongkutklao Hospital, Bangkok. Inclusion criteria: 1) patient with a history of, and clinical presentation of, allergic rhinitis, diagnosed by an otolaryngologist; 2) positive prick skin test to common inhalant allergens (≥ 3 mm wheal with erythema). Exclusion criteria: 1) patient with a severe underlying disease; 2) an immuno-compromised patient; 3) prick skin test less than 3 mm wheal.

Procedures

All subjects were instructed to cease intake of antihistamine for 48 hours prior to prick skin test. Allergenic extracts were selected according to aeroallergens in Thailand.^{7,8,9,10} The allergenic extracts were 1:20 weight/volume for trees (coconut), grasses (bermuda, johnson, timothy, bahia, orchard), weeds (kochia), molds (alternaria, cladosporium, aspergillus, penicillium, helminthosporium, fusarium, smut mix), epidermals (dog, feathers), indoor allergens (house dust, American cockroach, German cockroach, kapok), 1:40 weight/volume for trees (acacia, mango), weeds (pigweed), molds (botrytis, rhodotorula, curvularia); 1:50 weight/volume for rust; 10,000 AU/ml for epidermals (cat), indoor allergens (*D. farinae*, *D. pteronyssinus*), by Greer Laboratories, Inc., USA. Histamine phosphate 1 mg/ml was used as positive control, and glycerine saline as negative control. The tests should be read in 20 minutes.¹¹

Statistical methods

Statistical analysis was by descriptive analysis and all values are expressed as percentages.

RESULTS

One hundred allergic rhinitis patients comprised 59 females and 41 males. Ages ranged between 10-59 years, with the mean age being 27.9 years. Associated diseases were sinusitis 21%, nasal

polyp 7%, asthma 2%. The allergen tested is followed by the percentage of patients with positive skin tests. TREES: acacia 19%, mango 16%, coconut 12%; GRASSES: bermuda 17%, johnson 21%, timothy 16%, bahia 16%, orchard 18%; WEEDS: pigweed 16%, kochia 14%; MOLDS: alternaria 11%, cladosporium 11%, aspergillus 12%, penicillium 16%, helminthosporium 16%, botrytis 15%, rhodotorula 20%, fusarium 26%, curvularia 26%, smut mix

Table 1. Frequency of positive reactions to allergens (N=100 patients)

Allergens	Patient (%)	
Trees	acacia	19
	mango	16
	coconut	12
Grasses	bermuda	17
	johnson	21
	timothy	16
	bahia	16
	orchard	18
Weeds	pigweed	16
	kochia	14
Molds	alternaria	11
	cladosporium	11
	aspergillus	12
	penicillium	16
	helminthosporium	16
	botrytis	15
	rhodotorula	20
	fusarium	26
	curvularia	26
	smut mix	11
rust	9	
Epidermals	cat	29
	dog	28
	feathers	37
Indoor allergens	house dust	72
	<i>D. pteronyssinus</i>	76
	<i>D. farinae</i>	79
	Cockroach, American	60
	Cockroach, German	41
	kapok	30

11%, rust 9%; EPIDERMALS: cat 29%, dog 28%, feathers 37%; INDOOR ALLERGENS: house dust 72%, *D. pteronyssinus* 76%, *D. farinae* 79%, American cockroach 60%, German cockroach 41%, kapok 30%, as presented in Table 1.

DISCUSSION

The skin prick test is recommended as the method of choice by the European Academy of Allergology and Clinical Immunology, because of its safety and reliability,^{12,13} and it is also recommended in the United States as the most convenient and inexpensive screening method for the diagnosis of IgE mediated allergic reaction,¹⁴ and therefore we applied this test in screening our patients for this study. The most important aeroallergens in this study group are the house dust mite, house dust, and the cockroach, as shown by the incidence of *D. farinae* 79%, *D. pteronyssinus* 76%, house dust 72%, American cockroach 60%, and German cockroach 41%. These were the indoor aeroallergens. Other groups of aeroallergens were: epidermals 28-37%, molds 9-26%, grasses 16-21%, trees 12-19%, and weeds 14-16%.

Thirteen patients out of 84 mite-allergic patients were sensitized to either *D. farinae* or *D. pteronyssinus*, but not to both. Eighty-five percent of mite-sensi-

tive patients were skin test positive to both species of *Dermatophagoides*, indicating substantial cross-reactivity. Associated diseases that were found in this group were sinusitis 21%, nasal polyps 7%, and asthma 2%. The most common associated disease in this group was sinusitis, followed by nasal polyp and asthma. This study shows that the house dust mite and the cockroach are the most important aeroallergen sensitizers in Thai allergic rhinitis patients, since more than half the patients were skin test positive to the house dust mite and the cockroach.

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