

LETTER TO THE EDITOR

Allergen sensitivity pattern in Kuwaiti children with atopic dermatitis

Editor

Atopic dermatitis (AD) is the most common dermatosis seen in paediatric age group in Kuwait.¹ There are increasing reports of role of allergens in children with AD.^{2–5} But the allergen sensitivity pattern in Kuwaiti children has never been studied. Hence, we decided to study the prevalence and pattern of sensitization to different allergens in Kuwaiti children with atopic dermatitis.

This cross-sectional study comprised of 213 new atopic dermatitis patients, age ≤18 years seen at Farwaniya hospital, Kuwait from January 2007 to December 2010. The diagnosis and the assessment of clinical severity were based on the criteria of Hanifin and Rajka.⁶ It was graded as mild (localized with <10% BSA involved), moderate (disseminated lesions over trunk and extremities) and severe forms (e.g. more generalized eczema). Patients with any other dermatological and systemic problems were excluded. A detailed history including family history was taken. Long-acting antihistamines and systemic or local corticosteroids were discontinued 2 weeks before entering the study.

All the patients were checked for the total serum IgE, and various specific serum IgE antibodies by using the multiple antigen simultaneous testing chemiluminescent assay (MAST-CLA) system (MAST Immunosystems, Mountain View, CA, USA). Furthermore, all these children were then subjected to skin patch testing with 25 most common food allergens. The test was considered to be slightly positive if there was mild erythema or oedema, and strongly positive if there was pronounced erythema, oedema or vesiculation. The occlusion time was 48 h, and the results were read 15 min after removal of the cups and then again at 72 h. All patients were tested at the time of remission of the disease. The statistical analysis was done using SPSS Version 14.0, and association between the variables was calculated using chi-square test and Fisher's exact test. $P < 0.05$ was considered as statistically significant.

One hundred and seven patients (50.23%) showed specific IgE against food allergen, aeroallergens or both (Table 1). Fifty-three patients (24.88%) showed specific IgE against at least one food allergen, 74 (34.74%) patients showed specific IgE against aeroallergens. Fifteen patients had specific IgE against both aeroallergens and food allergens. Seventy-four patients (69.16%) of the 107 patients with specific IgE showed high levels of total serum IgE. In general, the most common allergens and the highest levels of IgE

antibodies were detected in patients sensitized to house dust mite extracts (Table 2).

House dust mites *Dermatophagoides pteronyssinus* (Dp) and *Dermatophagoides farinae* (Df), House dust, grass pollen and feathers showed the highest incidence in the 8 to 12-year-old group. While milk, egg white and peanut showed the highest significant incidence in the 6 months to 8 years old group. These results suggest that the incidence of sensitivity to allergens detected varies among different age groups. Presence of specific IgE was significantly higher (59.6%) in patients with positive personal and/or family history ($P < 0.05$).

Table 1 The pattern of allergen positivity by the MAST-CLA technique

Allergen	Number	Percent	Allergen	Number	Percent
House dust	89	42	Egg, White	41	19
Derm. farinae	90	42	Egg, Whole	17	8
Derm. pterony	103	48	Milk (cow)	47	22
Cockroach mix	4	2	Rice	18	8
Grass pollen	76	36	Wheat	36	17
Feather mix	71	33	Peanut	38	18
Cat	57	27	Vegetable mix	7	3
Yeast	74	35	Ragweed pollen	4	2
<i>Aspergillus</i>	68	32	Tuna	5	2
<i>Cladosporium</i>	55	26	Birch pollen	5	2
<i>Penicillium</i>	62	29	Mulberry mix	3	1
<i>Alternaria</i>	66	31	Barley grain	8	4
<i>Timothygrass</i>	40	19	Corn	8	4
Chicken	22	10	Crab	3	1
Soybean	25	12	Shellfish mix	4	2
Cod fish	12	6	Shrimp	9	4
Beef	23	11	Cheese	3	1
Peach	2	1			

Table 2 Results of the total IgE and skin patch test according to the age of atopic dermatitis (AD) patients

Age (years)	No. of AD cases	Raised total serum IgE level	Positive patch test result
		No. (%)	No. (%)
0.5–8	125 (59%)	79 (54)	53 (59)
8–12	67 (31%)	49 (34)	24 (27)
12–18	21 (10%)	18 (12)	13 (14)
Total	213 (100%)	146 (100)	90 (100)

There were 90 positive patches in 79 (37.1%) patients to the 25 most commonly implicated food allergens. Peanuts, cow milk and Soy were the three most common food allergens responsible for delayed reaction in our study (Table 3).

More than two-third (68.3%) of our patients had raised IgE, but the levels of IgE did not correlate to the severity of atopic dermatitis ($P > 0.05$). However, all the patients with positive history of asthma had high levels of IgE. Morris *et al.*⁷ have reported that elevated total serum IgE is non-specific, and is of minimal value in identifying a specific allergy.

Based on this study, we can only say that large proportions of Kuwaiti children with atopic dermatitis are sensitized to the common allergens. And, the pattern of sensitivity is more or less similar to as reported in the western literature. But to say, if they were allergic to them or not (especially food allergens), would require

our results to be validated by a food elimination diet followed by controlled oral food challenge. It could be presumed that food items were probably not involved, at least in the patients who did not show presence of specific IgE antibodies or positive skin patch test reaction to the food item. Hence, the empiric food elimination diets suggested by many paediatricians for all the infants with AD may not be correct. However, if a specific food item is proven to be triggering AD by diagnostic elimination test, the avoidance of the causal agents could result in improvement of AD and even maintenance of remission. Measurement of specific antibodies in isolation may therefore be an important tool in finding the negative cases, and avoiding unnecessary dietary restriction. The major role of skin patch test with food items seems to be in detecting delayed type of food allergy, which otherwise is difficult to diagnose and is easily missed clinically.^{8,9}

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Table 3 The results of skin patch test to food allergens

Food allergen	Positive results	
	Number	Percent
Cow milk	22	25
Peanut	29	34
Egg white	5	5
Egg yolk	5	4
Wheat	4	3
Barley	3	3
Beef	3	2
Chicken	2	2
Corn	2	1
Rice	1	1
Cheese	0	0
Shrimp	0	0
Rye	0	0
Carrot	1	1
Potato	2	2
Cod	0	0
Honey	0	0
Banana	0	0
Orange	0	0
Oat	0	0
Peach	0	0
Soy	17	19
Brinjal	0	0
Fish	0	0
Camel milk	0	0
Total	90	

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