

**CLINICAL FEATURES, TOTAL AND SPECIFIC IgE SERUM
CONCENTRATIONS OF PATIENTS WITH ATOPIC DERMATITIS AT
CAN THO HOSPITAL OF DERMATO-VENEREOLGY**

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ABSTRACT

Background: Atopic dermatitis is a common skin disease in children as well as in adults, with the important feature of being recurrent. Immune disorders (the role of Specific IgE serum) have a relation to the severity of the disease and the risk of allergy in patients. **Objectives:** 1). To describe the clinical features of patients with atopic dermatitis at Can Tho Hospital of Dermato-Venereology in 2021; 2). To determine the total and specific IgE serum concentration in patients with atopic dermatitis at Can Tho Hospital of Dermato-Venereology in 2021. **Materials and methods:** A cross-sectional descriptive study was carried out on 50 patients with atopic dermatitis hospitalized at Can Tho Hospital of Dermato-Venereology. **Results:** The rate of itching and types of eczematous lesions accounted for 100%, skin lesions with typical morphology and age-specific patterns were approximately 92%, chronic or relapsing history held 80%, xerosis rate was up to

82%, early age of onset made up 18%, the rate of increase in total and specific IgE serum level in patients with atopic dermatitis was 54% and 84%, respectively, the mean total IgE serum concentration was 210.01 ± 157.88 IU/mL, the lowest was 6.54 IU/mL and the highest was 741.23 IU/mL. *D. pteronyssinus* and *D. farina* accounted for the highest proportion of respiratory allergens (46%), cocoa beans accounted for the highest proportion of food allergens (28%). **Conclusions:** Atopic dermatitis in adult patients associated with pruritus, *D. pteronyssinus* and *D. farina* in respiratory allergens and cocoa beans in food allergens was the most common. Total and specific serum IgE concentrations are often elevated in patients with atopic dermatitis.

Keywords: Atopic dermatitis, Total IgE serum concentration, Specific IgE serum concentration.

I. INTRODUCTION

Atopic dermatitis is a common skin disease in children as well as in adults, with the important feature of being recurrent. About 60% of patients develops this disease in the first year of life, with typical symptoms of dermatitis and pruritus. The disease is often related to atopic factors, allergic history such as bronchial asthma, allergic rhinitis [7]. Atopic dermatitis has a complex pathogenesis. Recent studies show that atopic dermatitis is related to dysfunctional skin barrier, dysregulation of the immune system, increased hypersensitivity to allergens and infections [6]. Notable clinical findings include erythema, edema, xerosis, erosions/excoriations, oozing and crusting, and lichenification but these vary according to patients' age and chronicity of lesions. Pruritus is a hallmark of the condition that is responsible for much of the disease burden borne by patients and their families [2]. Immune disorders (the role of Specific IgE serum) have a relation to the severity of the disease and the risk of allergy in patients. Accurate identification of the allergen for each specific patient is very important in the treatment as well as in the prevention of recurrence of atopic dermatitis [4]. Therefore, we conducted the study "*Clinical features, total and specific IgE serum concentrations of patients with atopic dermatitis at Can Tho Hospital of Dermato-Venereology*", with two objectives: 1). To describe the clinical features of patients with atopic dermatitis at Can Tho Hospital of Dermato-Venereology in 2021; 2). To determine total and specific IgE serum concentration in patients with atopic dermatitis at Can Tho Hospital of Dermato-Venereology in 2021.

II. MATERIALS AND METHODS

2.1. Study population and setting

2.1.1. Study population

All atopic dermatitis patients came and treated at Can Tho Hospital of Dermato-Venereology from May 2021 to November 2021.

2.1.2. Inclusion criteria

Criteria for diagnosing of atopic dermatitis: according to the improved standard of Hanifin and Rajka according to AAD (2014) [2].

The patient consented to participate in the study, for children <18 years of age with parental consent.

2.1.3. Exclusion criteria

Patients suffering from malignancy (cancer), immunodeficiency (HIV/AIDS), serious medical diseases (heart failure, respiratory failure...) and other underlying skin diseases (scabies, seborrheic dermatitis, contact dermatitis, cutaneous T-cell lymphoma,

psoriasis, photosensitizing dermatitis, generalized erythema due to other causes) affect the analysis results of allergens.

The patient had received oral corticosteroids within 72 hours and antihistamines within 24 hours.

Pregnant or lactating patients.

2.2. Study methods

2.2.1. Study design

A cross-sectional descriptive study

2.2.2. Sample size and sampling methods

Sampling methods: convenience sampling

Sample size: the sample size is defined by:

$$n = \frac{Z_{1-\frac{\alpha}{2}}^2 p(1-p)}{d^2}$$

In which:

n: the smallest sample size

Z = 95%; $Z_{1-\alpha/2} = 1.96$

p: positive rate of specific IgE in patients with atopic dermatitis. According to Truong Tieu Vi et al. (2016) was 88.2%, choose $p=0.882$ [12].

d: the allowable error in study, $d = 0.09$

Thus $n = 50$. In fact, we studied on 50 patients

2.2.3. Study contents

Study clinical characteristics, determine total and specific IgE serum concentrations of patients with atopic dermatitis.

2.2.4. Statistical analysis

Data analysis with SPSS 18.0

2.2.5. Ethics Approval

The study was approved by the Scientific and Ethical Research Council of Can Tho University of Medicine and Pharmacy, Can Tho Hospital of Dermato-Venereology and University Hospital of Can Tho University of Medicine and Pharmacy.

Research subjects have been explained and have agreed to voluntarily participate in the study by taking informed consent. All patients' personal information and illnesses were kept confidential through computerized encryption to ensure the privacy of study participants.

Ensure fairness and objectivity during data collection and processing.

III. RESULTS

Table 1. Clinical features of patients with atopic dermatitis

Clinical features		n	%
Essential symptoms	Pruritus	50	100
	Types of eczematous lesions	50	100
	Typical morphology and age-specific patterns	46	92
	Chronic or relapsing history	40	80
Important symptoms	Early age of onset	9	18
	Personal or family history	35	70

Clinical features		n	%
	Xerosis	41	82
Associated symptoms	Atypical vascular responses (e.g., facial pallor, white dermographism, delayed blanch response)	6	12
	Keratosis pilaris/pityriasis alba/hyperlinear palms/ichthyosis	36	72
	Ocular/periorbital changes	18	36
	Other region findings (e.g., perioral changes/periauricular lesions)	9	18
	Perifollicular accentuation/lichenification/prurigo lesions	19	38

In essential symptoms, most patients with atopic dermatitis had pruritus, types of eczematous lesions, typical morphology and age-specific patterns and chronic or relapsing history. Among these symptoms, itching was 100%, the main symptom and one of the main criteria for the diagnosis of atopic dermatitis.

In important symptoms, xerosis accounted for 82%, personal or family history held 70% and early age of onset made up 18%.

In associated symptoms, keratosis pilaris/pityriasis alba/hyperlinear palms/ichthyosis accounted for the highest with 72%, followed by perifollicular accentuation/lichenification/prurigo lesions (38%), ocular/periorbital changes (36%), other region findings (18%), the lowest was atypical vascular responses (12%) (Table 1).

Table 2. Total IgE serum concentration of patients with atopic dermatitis

tIgE serum concentration	IU/mL
Lowest	6.54
Highest	741.23
Mean ± SD	210.01 ± 157.88

The mean total IgE serum concentration of patients with atopic dermatitis in our study was 210.01 ± 157.88 (from 6.54 IU/mL to 741.23 IU/mL) (Table 2).

Table 3. Ratio of increase in total IgE serum of patients with atopic dermatitis

Increase in tIgE serum	n	%
Yes	27	54
No	23	46

In our study, the ratio of increase in total IgE serum concentration in patients with atopic dermatitis was 54% (Table 3).

Table 4. Ratio of specific IgE serum for respiratory and food allergens of patients with atopic dermatitis

Allergen	n	%	Allergen	n	%
<i>D. pteronyssinus</i>	23	46	Blue mussel/Oyster	2	4
<i>D. farinae</i>	23	46	Chicken	2	4
Cat epithelium	21	42	Egg white	1	2
Housedust	20	40	Peanut	1	2
Cocoa	14	28	Wheat	1	2

Allergen	n	%	Allergen	n	%
Cockroach	12	24	Mackerel	1	2
Crab	7	14	Sesame	1	2
Beef	7	14	Codfish	1	2
Dog dander	4	8	Eel	1	2
Shrimp	4	8	Silkworm pupa	1	2
Walnuts	4	8	Pork	1	2
Milk	3	6	Rice	1	2
Peach	3	6	Citrus mix	1	2
Clam/Scallop	3	6			

Among respiratory allergens, *D. pteronyssinus* and *D. farina* accounted for the highest proportion (46%). Among food allergens, cacao and crab accounted for 28% and 14%, respectively (Table 4).

Table 5. Ratio of increase in specific IgE serum of patients with atopic dermatitis

Specific IgE (+)*	n	%
Respiration or food	Yes	42
	No	8
Respiration	Yes	37
	No	13
Food	Yes	26
	No	24
Respiration and food	Yes	21
	No	29

*Have at least 1 positive result

The ratio of increase in general specific IgE serum (respiration or food), specific IgE (respiration), specific IgE (food) and specific IgE (respiration and food) were 84%, 74%, 52% and 42%, respectively (Table 5).

IV. DISCUSSION

In our study, essential symptoms such as pruritus, typical morphology and age-specific patterns and chronic or relapsing history accounted for 100%, 92% and 80%, respectively. According to Truong Tieu Vi et al. (2018) and Tran Gia Hung (2020), the percentage of pruritus was 100% [5], [12]. The other results in the group of essential symptoms also showed similar results. Besides, in group of important symptoms, xerosis accounted for 82%, personal or family history held 70% and early age of onset made up 18%. According to Vu Thi Minh Nhat (2015), Donald Y.M Leung (2014), Truong Tieu Vi (2018) and Tran Gia Hung (2020), the percentage of xerosis accounted for 100%, 50-70%, 100% and 97.83%, respectively [5], [8], [10], [12]. In addition, in group of associated symptoms, keratosis pilaris/pityriasis alba/hyperlinear palms/ichtyosis accounted for the highest with 72%, followed by perifollicular accentuation/lichenification/prurigo lesions (38%), ocular/periorbital changes (36%), other region findings (18%) and the lowest was atypical vascular responses (12%). These are also common symptoms in patients with atopic dermatitis.

Total IgE serum concentration: in our study, the mean of total IgE serum concentration was $210,01 \pm 157,88$ IU/mL. Our results are lower than that of Truong Tieu Vi (2018) (538.46 ± 396.68 IU/mL), Zedan K (2015) (556 ± 198 IU/mL), and higher than that of Mittermann I (2016) (172 IU/mL) [9], [12], [13]. This difference may be due to the sample size and severity of the patients of each author. In addition, the ratio of increase in total IgE serum concentration in patients with atopic dermatitis in our study was 54%. According to Mittermann et al. (2016) and Vaneckova J. (2016), the ratio of increase in total IgE serum concentration in patients with atopic dermatitis accounted for 57% and 66%, respectively [9], [11]. Thus, the results of the above studies are similar to our study.

Specific IgE serum: in our study, 84% of patients were positive for specific IgE tests (with at least one positive result), which is consistent with the literature [3]. Among the patients, 74% were positive for respiratory allergens, 52% were positive for food allergens, and 42% were positive for both respiratory and food allergens. According to Truong Tieu Vi et al. (2018), the percentage of patients positive for specific IgE test was 88,2%. Particularly, 52,4% were positive for the respiratory allergens, 23,8% were positive for the food allergens and 23,8% were positive for both respiratory and food allergens [12]. The study of Mittermann I (2016) also showed that the rate of specific IgE serum was positive up to 82%. Thus, the results of the above studies are similar to our study.

In the group of allergens, the rate of allergy to antibodies of *D. pteronyssinus* and *D. farina* is higher than that of other allergens (46%), followed by cat epithelium (42%). This result is similar to the author Truong Tieu Vi (2018), whose study showed that the rate of *D. farina* was 47.05% and *D. pteronyssinus* was 41.17% [12]. For food allergens, cocoa accounted for the highest rate of 28%, followed by crab and beef (14%). The results of our study are different from those of Truong Tieu Vi (2018), Celakovská J. and Bukač J. (2014), who noted that common foods in patients with atopic dermatitis included cow's milk, eggs, and peanuts [1], [12].

V. CONCLUSIONS

The most common symptom in patients with atopic dermatitis is pruritus. The rates of increase in total and specific serum IgE were 54% and 84%, respectively. *D. pteronyssinus* and *D. farina* accounted for the highest percentage of respiratory allergens, and cocoa accounted for the highest percentage of food allergens.

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