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Original Research Article

A Study of Clinical Pattern and Severity of Atopic Dermatitis and its Correlation with Serum IgE Levels

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Abstract:

Introduction: Atopic dermatitis is a non-contagious, intensely pruritic, inflammatory, chronic skin disorder having a course of exacerbation and remissions, occurring in infancy and childhood running in families with a history of atopy. It is frequently associated with an elevated immunoglobulin E level in serum. Serum IgE level in normal (non-ectopic) individual are only 0.05% of the IgE concentration. Although IgG is typically the least abundant isotype, it is capable of triggering the most powerful immune reaction increase serum level of IG has subsequently been reported in patients with asthma, hay fever, atopic dermatitis. And also, in patient infested with intestinal parasites in several studies the concentration of other immunoglobulin classes has been investigated in atopic subjects. Thus, in this study we have studied the clinical pattern where topic dermatitis and IgE level inpatient diagnosed with atopic dermatitis, and we have also studied the correlation between the severity of AD and serum IgE levels.

Material and Methodology: This cross-section type of descriptive study was conducted at Skin Institute and the School of Dermatology, Zamrudpur, Greater Kailash 1, New Delhi over a period from May 2010 till December 2011 instruct clinically diagnosed 100 cases of atopic dermatitis were included in the study. The diagnosis of AD was made on the basis of Hannifin and Rajka's diagnostic criteria and presence of at least three major and three minor criteria were needed to diagnose the patient.

Results: In this study 65% were males and 35% were female the male: female ratio was calculated to be 1.86: 1. Mean serum IgE levels among the study participants was found to be 1084.73± 776.27, medium value was 994.5. It was seen that in the study group out of 100 patients, 17 patients were in the age group of 1- 5 years, 31 patients in the age group of six to nine years, 50 patients in the age group of 10 to 15 years and only two patients are in the age group of above 15 years. On comparing the SASSAD score with serum IgE level of the study group it was found that severity score was higher in patient with raised IG E levels which mean that the patient with raised IE values have more severe disease.

Keywords: Atopic Dermatitis, Serum IgE Levels.

Introduction

Atopic dermatitis is a non-contagious, intensely pruritic, inflammatory, chronic skin disorder having a course of exacerbation and remissions, occurring in infancy and childhood running in families with a history of atopy. It is frequently associated with an elevated immunoglobulin E level in serum. This disease has an intricate immunological basis influenced by genetic or family predisposition, and certain environmental, lifestyle and dietary factors. Recent trends suggest a continuous rise in the prevalence of atopic dermatitis in developed nation and in countries undergoing rapid urbanization and industrialization.[1]

The clinical phenotype that characterized AD is the product of complex interaction among susceptibility genes. The host environment, defects in skin barrier function, and systemic and local immunological response immunoglobulin E discovered in 1966 by the Japanese scientist couple Teruka and Kimshige Ishizaka, play some important role in allergy and especially associated with type 1 hypersensitivity.[2,3,4]

Serum IgE level in normal (non-ectopic) individual are only 0.05% of the IG E concentration. [5] Although IgG is typically the least abundant isotype, It is capable of triggering the most powerful immune reaction increase serum level of IG has subsequently been reported in patients with asthma, hay fever, atopic dermatitis[7,8,9]. And also, in patient infested with intestinal parasites in several studies the concentration of other immunoglobulin classes have been investigated in atopic subjects. Although many Indian studies have been done but to the best of our knowledge there has been positive of data on serum IgE levels in children and atopic dermatitis and its story lesion with disease severity. Thus, in this study we have studied the clinical pattern where topic dermatitis and IgE level inpatient diagnosed with atopic dermatitis, and we have also studied the correlation between the severity of AD and serum IgE levels.

Material and Methods

This cross-section type of descriptive study was conducted at Skin Institute and the School of Dermatology, Zamrudpur, Greater Kailash 1, New Delhi over a period from May 2010 till December 2011 instruct clinically diagnosed 100 cases of atopic dermatitis were included in the study. The diagnosis of AD was made on the basis of Hannifin and Rajka's diagnostic criteria and presence of at least three major and three minor criteria were needed to diagnose the patient.

Major features

1. Pruritus
2. Typical morphology and distribution: flexural lichenification or linearity in adults, facial and extensive involvement in infant and children
3. Chronic or chronologically relapsing dermatitis
4. Personal or family history of atopy (asthma, allergic rhinitis, atopic dermatitis)

Minor features

Xerosis, ichthyosis/palmar hyperlinearuty/keratosis pilaris, type 1 skin test reactivity, elevated serum immunoglobulin E, early age at onset, tendency toward cutaneous infection, tendency toward non-specific hand or foot dermatitis, nipple eczema, cheilitis, recurrent conjunctivitis, Dannie Morgan infra orbital folds, keratoconus, anterior subcapsular cataract, orbital darkening, facial erythema, pityriasis Alba, anterior neck folds, each when sweating, intolerance to wool or lipid solvents, very follicular accentuation, food intolerance, course influenced by environmental/emotional factors, white dermographism/delayed blanching.

Method next slide detailed history was obtained from the patient or relatives and general physical examination and dermatological examination was carried out. The details were recorded in performer designed to gather the clinical dermatological information from the patients. Assessment of severity was done by SASSAD score which comprise assessment of 6 signs erythema, exudation, excoriation, dryness, cracking and lichenification at 6 sites- arm, hands, legs, feet, head and neck and trunk. Each on a scale of 0, one, two and three. The total range was therefore 0 to 108. Grades were divided as

0= Absent: the sign cannot be detected with certainty even after careful inspection
1= mild: the sign is certainly present but requires careful inspection to see it
2= moderate: the sign is immediately apparent
3= severe: the sign is very prominent

The study was carried out after taking written informed consent from the patient and after obtaining permission from institution Ethics Committee. Findings were recorded in a master chart and statistical analysis was done using SPSS version 17.

Results

Table 1: Age distribution of the study group

Age group	Frequency	Percentage
less than 2 years	5	5%
2 to 12 years	83	83%
13 to 18 years	11	11%
more than 18 years	1	1%
Total	100	100%

The mean age of the study participant was 3.63± 1.42. Eight distribution of the study group shows that 95% cases were above two years of age, among which maximum number of cases that is 83% were between age group of 2 to 12 years only 5% cases were less than two years and 11% cases between 13 to 18 years and above 18 years.

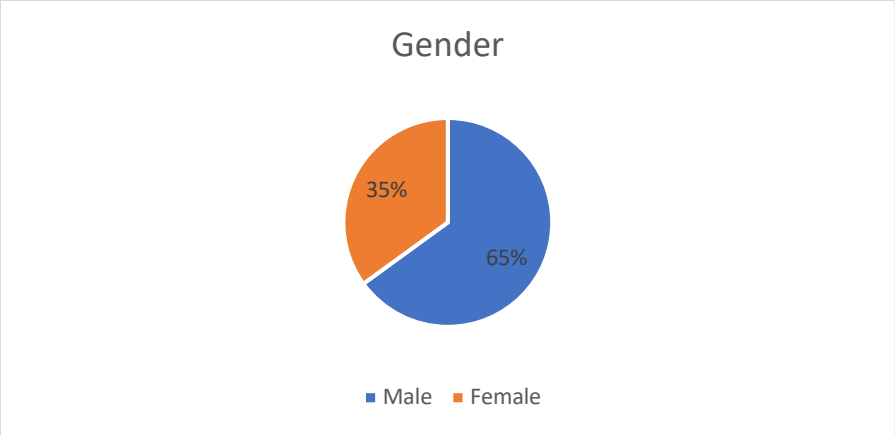

Figure 1: Gender distribution of the patients in study group

These study group consisted of 65% males and 35% female the male: female ratio was calculated to be 1.86: 1.

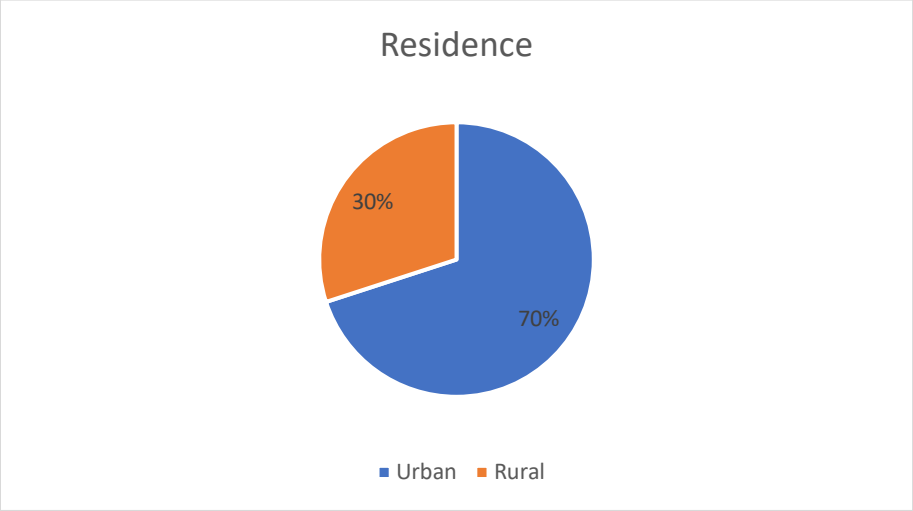

Figure 2: Residents of patients

Result shows that 70% were residing in urban area whereas only 30% were from rural area.

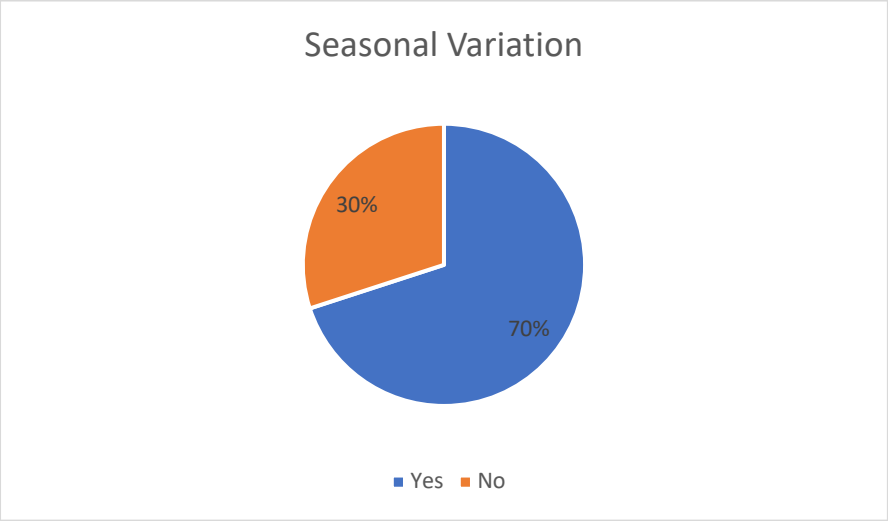

Figure 3: seasonal variation

On taking the history about the seasonal variation the disease it was seen that 70% patient has exacerbation of atopic dermatitis in winters while 30% had no such complaints.

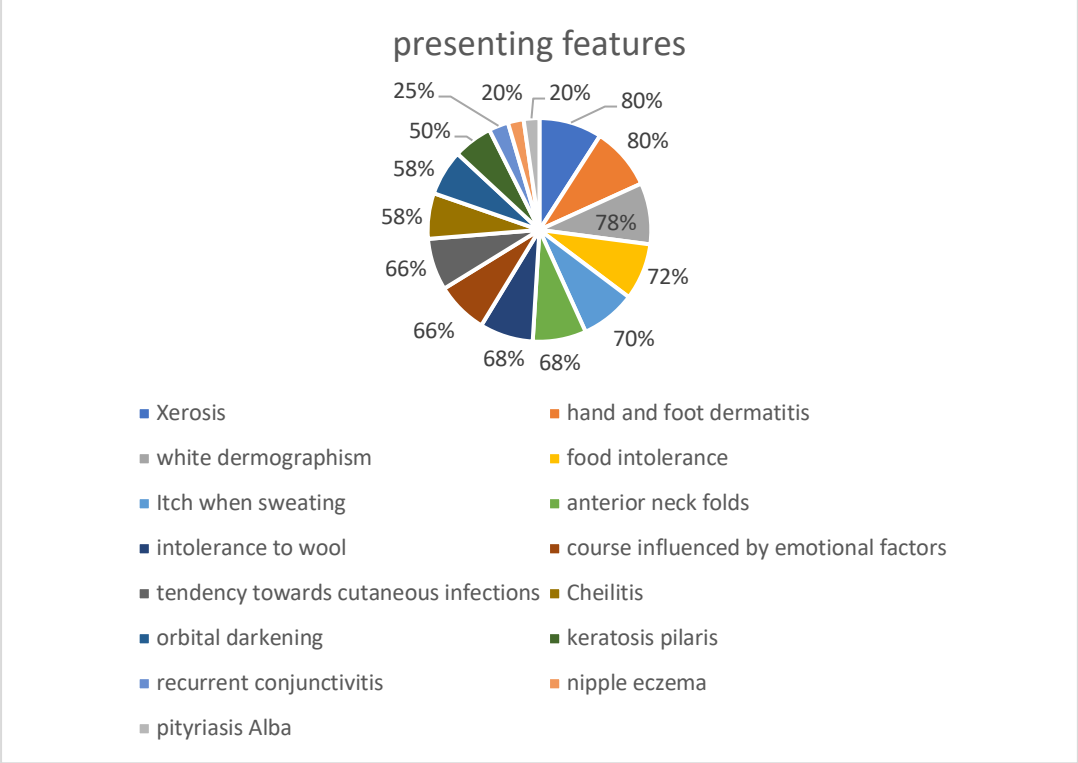

Figure 4: Other associated features seen in the study group

A detail history and examination was done regarding the minor feature associated in the study group. It was found that the roses and hand and foot dermatitis was present in 80% of patients while dermatographism in 78% of the patients. History of food intolerance was seen in 72% of the patient, each when sweating was complained by 70% patient, anterior neck fold was seen in 68% patient, history of tolerance to bull was present in 68%, history of influence of emotional stress on the course of the disease was seen in 66%, history of tendency toward cutaneous infection was present in 66%, cheilitis and orbital darkening was associated in 58% of patients, ichthylosis or keratosis pilaris Boss seen in 50%, the current conjunctivitis was complained by 25%, nipple eczema and pityriasis Alba was seen associated in 20% patient.

Table 2: Serum IgE levels in the study

	mean± standard deviation	Median	Min-max
serum IG E levels (IU/ML)	1084.73± 776.27	994.5	72- 3000

Table 3: Distribution of serum IG according to the age

Age groups	Number of patients	Normal value of serum IG E
1 to 5 years	17	<= 60
6 to 9 years	31	<= 90
10 to 15 years	50	<= 200
above 15 years	2	<= 100
Total	100	

Mean serum IgE levels among the study participants was found to be 1084.73± 776.27, medium value was 994.5. It was seen that in the study group out of 100 patients, 17 patients were in the age group of 1- 5 years, 31 patients in the age group of six to nine years, 50 patients in the age group of 10 to 15 years and only two patients are in the age group of above 15 years.

In the age group of one to five years, 17 patients (100%) were with higher value of serum IgE levels; in the age group of six to nine years, 28 patients (90%) with higher values while three patients (10%) where with the normal values; in the age group of 10 to 15 years 46 patients (92%) with higher values while four patients (8%) but with normal values and in the age group of above 15 years. One patient (50%) was with higher value while one patient (50%) was having normal value of serum IG E.

Table 4: SASSAD score in the study group

	mean± standard deviation	median	Min-max
Sassad score	38.46± 12.69	41.5	9-56

Table 5: Correlation between serum IG level and SASSAD score

		SASSAD score
serum igE levels (IU/ML)	correlation coefficient	0.964
	P value	0.000

Results shows that there was 96.4% correlation between the two variable which shows that the two variable had highly significant correlation between them (P value = 0.000).

Discussion

Atopic dermatitis is a logically relapsing inflammatory skin disease characterized by erythematous, scaly and oozing plaques associated with severe pruritus. It is frequently associated with elevated level of serum IgG. This is a study of 100 patients who were clinically diagnosed with atopic dermatitis according to the major and minor feature of Hannifin and Rajka's criteria. This study was conducted to understand the clinical pattern of atopic dermatitis and 2 correlate the serum IgE levels with the severity of the disease.

In our study, atopic dermatitis had a prevalence of about 0.98%. At topic dermatitis has been reported worldwide with diverse prevalence rate ranging from 0.7% to 26% [5,6]. Another Indian study done by Dhar et al reported a prevalence rate of 0.55%.

The mean age of the study participant was 3.63± 1.42. age distribution of the study group shows that 95% cases were above two years of age, among which maximum number of cases that is 83% were between age group of 2 to 12 years only 5% cases were less than two years and 11% cases between 13 to 18 years and above 18 years.

In a study carried by Dhar S, Kanvar AJ in 6-7 two children the mean age at onset was 4.1 years [7]. In another study conducted by Dhar and Mandel et al, mean age was 4.94 years [8].

Theis study consisted of 65% males and 35% female the male: female ratio was calculated to be 1.86: 1. It was seen that among 65% of male patients, 54 patients (83.1%) were in the age group of 2 to 12 years, 8 patients (12.3%) but in the group of 13 to 18 years, two patient (3.1%) but in the age group of < 2 years and remaining one patient was in the age group of above 18 years. 35% of female patient, 29 patients (82.9%) we're in the age group of 2 to 12 years, three patients (8.6%) were in the age group of less than two years and also in the age group of 13 to 18 years. Gender distribution in different age groups shows that the age group and the gender association was comparable and that there was no significant difference between the percentage of male and female patient in particular age group which mean that irrespective of the sex of the patient a majority of the cases were in the age 2 to 12 years (P value = 0.53). In a study done by Sarkar and Kanvaretal, The male and female ratio was 1.6: 1 [9]. In another study done by Dhar and Mandal et al male to female ratio was 1.3: 18.

Result shows that 70% were residing in urban area whereas only 30% were from rural area. In a study done by Sarkar and Kanvar et al.[9] it was found that 31.31 percentage of the study participant were from rural background while 68.68 percentage were from urban area. In another study done by Dhar and Kanvar et al. [7] it was found that urban area outnumbered rural area.

In the current study, mean duration of illness was 76 week with a standard deviation of 21.42 weeks. Similar results was also found in a study done by Dhar and Kanvar et al.[7] in which mean duration of the disease was 84 weeks.

All the patients of the study group were analyzed according to their symptoms and it was seen that itching was present in all the patients (100%). On taking the history about the seasonal variation the disease it was seen that 70% patient has exacerbation of atopic dermatitis in winters while 30% had no such complaints on taking the history about the seasonal variation the disease it was seen that 70% patient has exacerbation of atopic dermatitis in winters while 30% had no such complaints. It was found that 37% of the patient had associated asthma while 63% of the patient had no history of asthma. Results shows that 36% patient of the study group had history of atopy

in them while 64% the patient were not having any history of atopy. Out of 100 patients in the study group, 42% were having history of allergic rhinitis associated with atopic dermatitis while 58% were not having any features of associated rhinitis in them. Family history of atopic dermatitis was present in only 14% of the patient 86% of patients were not having any family history of atopic dermatitis. It was found that 57% of the patient had family history of asthma while 43% patient were not having any such history.

In a study done by, Sarkar and Kanwar et al.[9] it was found that itching were present in all the patient. Also showed that 62% of the patient had aggravation during winter.

Family history of atopic varied in different series. It was 70% in a study done by Hanifin and Rajka[10] A detail history and examination was done regarding the minor feature associated in the study group. It was found that the roses and hand and foot dermatitis was present in 80% of patients while dermatographism in 78% of the patients. History of food intolerance was seen in 72% of the patient, each when sweating was complained by 70% patient, anterior neck fold was seen in 68% patient, history of tolerance to bull was present in 68%, history of influence of emotional stress on the course of the disease was seen in 66%, history of tendency toward cutaneous infection was present in 66%, cheilitis and orbital darkening was associated in 58% of patients, ichthylosis or keratosis pilaris Boss seen in 50%, the current conjunctivitis was complained by 25%, nipple eczema and pityriasis Alba was seen associated in 20% patient.

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On comparing the SASSAD score with serum IgE level of the study group it was found that severity score was higher in patient with raised IgE levels which mean that the patient with raised IE values have more severe disease. In a study done by Ohman and Johansson, it was reported that serum IgE levels parallel the severity of dermatitis[11]. Conducted by Wuthrich et al, it was found that the serum IgG levels in atopic dermatitis correlated with disease severity [12]. Hence it may be inferred that the level of serum immunoglobulin E strongly correlated with the severity of atopic dermatitis.

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