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Discussion:

Atopic dermatitis is very common genetically determined disease which can be exacerbated by many factors as food and stress [14, 15, 16]. In this study male patients with AD represent 61.4% of total patients while females form 38.6%. This is agreement with many studies as Sandipan Dhar et al [17], Osman [18,19], Kuster et al [20] recorded male to female ratio 1:1.5. Al-saimary et al [21] found percentage of male 43.6% and female 56.4% of his study. There was no significant association between gender and severity of AD as seen in table 1. While Osman [18] reported a male predominance of atopic conditions before puberty and a female predominance after puberty. The severe cases of this study were eight. it forms 11.4% of total patients. This is in agreement with Stanley et al, Hvid et al, Kubo et al and [22,23,24], while Karta Samita et al [25] found (7%) of patients with severe AD in his study in Indonesia. it has been found that blood eosinophilia is slightly higher in moderate cases rather than mild cases and very high in severe cases (1222-3360/mm) especially in those with personal or family history of respiratory atopy. this indicate that blood eosinophilia is influenced by severity of AD but on the other hand it doesn't influenced by either the age or gender of patient. This is in agreement with D.

Jenerowicz et al [26] and Uehara et al [27].

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eosinophilia.

Forty four patients (63%) (28 males and 16 females) had either personal or family history of respiratory atopy (table 4).

Table 1. The age distribution for control and atopic dermatitis patients by severity according to gender.

Age(years)	Mild			Moderate			Severe			Control		
										11	6	17
0-2	7	4	11	2	2	4	2	-	2	11	6	38
2-12	18	11	29	4	-	4	2	3	5	24	14	38
>12	6	4	10	1	3	4	1	-	1	8	7	15
total	31	19	50	7	5	12	5	3	8	43	27	70
	$\chi^2=0.03$ $P=0.985(NS)$			$\chi^2=4.8$ $P=0.091(NS)$			$\chi^2=0.54$ $P=0.763(NS)$					

NS=Not significant

Table 2. Distribution of cases according to severity and association with respiratory atopy and eosinophilia.

	Respiratory atopy	No Respiratory atopy	Blood Eosinophilia	No blood Eosinophilia	Total
Mild	31	19	23	27	50(71.4%)
Moderate	7	5	7	5	12(17.2%)
Sever	6	2	8	-	8(11.4%)
Total	44	26	38	32	
	$\chi^2=0.83, P=0.731(NS)$		$\chi^2=61.84, P=0.03(S)$		

NS=not significant

S=Significant

Table 3. The mean eosinophilic counts by age and gender for the control and AD P - tients (M=male, F=female, T=total).

Age(year)		Control	Mild	Moderate	Severe
0-2	M	226.2±240.6	535.4±230.2	578.5±323.2	2611.0±1059.3
	F	386.3±299.1	505.5±137.5	410±410.1	-
	T	282.7±265.2	524.6±194.2	494.3±316.8	2611.0±1059.3
2-12	M	198.2±120.4	419.8±198.7	552.5±404.8	1637±533.2
	F	278.4±233.1	269.3±147.2	-	1207.3±240.4
	T	227.7±172.1	362.7±192.9	552.5±404.8	1379.2±394.1
Above 12	M	218.3±124.9	317.0±123.9	640	704
	F	166±121.9	372.0±292.2	519.3±231.8	-
	T	193.9±122.1	339.0±194.4	198.6198.4	704

Table 4. The age distribution according to respiratory atopy and gender

Age(years)	Mild			Moderate		Severe		Total
		M	F	M	F	M	F	
0-2	+	6	4	2	1	2	-	15
	-	1		-	1	-	-	
2-12	+	11	4	2	-	2	2	21
	-	7	7	2	-	-	1	
Above 12	+	3	3	-	2	-	-	8
	-	3	1	1	1	1	-	
Total		20	11	4	3	4	2	44

(+)=Respiratory Atopy, (-)=No Respiratory Atopy

patients with AD to find any possibility of considering blood eosinophilia as a marker of severity of AD.

Patients and Methods. This cross-sectional study was conducted in AL-Yarmouk teaching Hospital from October 2013 to May 2014. Seventy patients who were attended the Department of Dermatology and Venereology at this hospital for treatment were enrolled in this study and after taking ethical permission from each patient or his/her parents to participate in the study, each patient or his/her parents was submitted to a questionnaire (age, gender, personal or family history of respiratory atrophy, sleep disturbance, any parasitic disease, any other disease, duration of the disease). The clinically diagnosed cases of AD were introduced in the study. The severity of AD was assessed according to extension of lesion, presence of excoriation, irritability and sleep disturbance. Total eosinophils count were studied in all cases and also in 70 persons (age and gender matched), attending Al-Yarmouk hospital, who were not having AD, asthma,

allergic rhinitis, food allergy as control. Any patient with parasitic infestation (diagnosed by history and stool examination) was excluded from the study. Two ml of blood was taken from each patient, put one drop on each slide and one drop of Leishman stain,

wait 2 min., then washed and read with HPF microscope to calculate the number of eosinophil cells from a total of 100 WBCs. Also 0.02 ml of blood was taken with pipette and added to 0.4 ml of glacial acetic acid, then put one drop of this mixture on Neubauer chamber and read on low power to calculate WBC counts. We multiply the eosinophil percentage by total WBC counts to deduce the

total eosinophil count. Statistical analysis was done using descriptive measure (frequency, percentage, mean, median, SD) and analytic test (χ^2 , t-test and F-test) when needed.

Results.

The total number of affected males was 43 (61.4%) while the total number of affected females was 27 (38.6%). So male: female ratio was 1.6:1. The mean age of patients was 6.5 years. The youngest patient was 9 months old while oldest one was 30 years old. Table 1 show the age distribution of all patients.

The number of severe cases was 8 patients (5 males and 3 females) which represent 11.4% of all cases. All of them had respiratory atopy as shown in table 2.

The median value for eosinophil count was 550/mm (range 42-3360/mm). 38 patients (26 males and 12 females) had blood eosinophilia which represent 54% of all cases. The distribution of cases according to mean eosinophil count is shown in table 3 and Fig1. Only 10% of control (7 persons) had blood

وهناك 6 من هذه الحالات اظهرت زياده شديده جدا للخلايا الحمضيه للدم (1222-3366 / مل) وكلهم لديهم تاريخ شخصي او عائلي لحالات التأتبه التنفسيه .

Keywords: Eosinophil count, atopic dermatiti

Introduction:

Atopic dermatitis (AD) (also called atopic eczema) is a chronic relapsing, eczematous condition of the skin, it is a pruritic disease causing emotional distress and sleep disturbances 1 of unknown etiology. It is usually started in early infancy; through an adult onset variant is recognized 2 . It is the first disease to present in a series of allergic diseases including food allergy, asthma and allergic rhinitis that has given rise to the "atopic march" theory, which suggest that AD is a part of a progression that may lead to subsequent allergic disease at other epithelial barrier surfaces 2,3 . Atopic dermatitis affects 10% of children and 1% to 3% of adult 4 . Hypothesis on the cause of AD must now include epidermal barrier defect since loss of function of gene encoding filagrin (FLG) has been discovered, as well as this regulation of both innate and adaptive immune system 5 . The most prominent symptom of AD is itching (pruritus). In the consequent scratching and rubbing lead to

lichenification most typically in the antecubital and popliteal flexural areas with dryness of the skin which may persist throughout life 6 . Atopic dermatitis may be presented in 3 phases:

a- Infantile phase which occur at age of 2-6 months in majority of cases. The lesion most frequently starts on the face then involving the chest, scalp, neck and extensor extremities with erythematous, papulovesicular and oozing rash 6 .

b- Childhood phase: The eczema becomes dry and it is affecting mainly the elbow, knee, wrist and ankle.

c- Adolescent and adult phase: The lesions are primarily dry, lichenified, hyper pigmented plaques in flexor areas and about the eyes 7 . Eosinophils appear to be modified neutrophils that have evolved special properties and functions, possibly related to mast-cell/basophils activities.

Eosinophils are mobile and phagocytic and they are granular cells, they have special function in killing parasites and increased amount of IgE 8 . Eosinophils levels roughly correlate with disease severity, very much eosinophil counts are common with severe cases of AD 9,10 . The normal total white blood cells count is $40-400/\text{mm}^3$.

11 . Total eosinophil count have been shown to be a good reflectors of severity in AD 12,13,14 . The present study focuses on the total blood eosinophil count in Iraqi

Blood Eosinophil Count in Atopic Dermatitis

تعداد الخلايا الحمضية في الدم لمرضى التهاب الجلد التأتبي

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Abstract:

Atopic dermatitis is a common dermatological disease all over the world. Eosinophils may play a role in atopic dermatitis, since eosinophil granulocytes are deposited in the skin lesions of atopic dermatitis. This study includes 70 patients with atopic dermatitis and 70 persons who had no atopic dermatitis, asthma or allergic rhinitis as a control. Thirty eight patients (54%) had blood eosinophilia, while only 7 controls (10%) had blood eosinophilia. The severe cases of atopic dermatitis, although they had very high count of blood eosinophil, but we can not use their eosinophilia as indicator for severity of this disease because the number of severe cases was only 8 cases (5 males and 3 females) which is statistically low, they form 11.4%

of the total patients, and 6 of them had very high count of blood eosinophil (1222-3366/mm) and they had personal or family history of respiratory atopy.

الخلاصة:

التهاب الجلد التأتبي مرض جلدي شائع في كافة انحاء العالم. زيادة حمضيات الدم قد تلعب دورا في هذا المرض لان الخلايا الحمضية الحبيبية تودع في افات التهاب الجلد التأتبي. هذه الدراسة شملت 70 مريضا مصابا بالتهاب الجلد التأتبي وكذلك 70 شخصا غير مصابين بالتهاب الجلد التأتبي او الربو القصبي او التهاب الانف التحسسي كعينة مسيطره. ثمانية وثلاثون مريضا (54%) اظهرت وجود زيادة الخلايا الحمضية في الدوره الدمويه المحيطيه، بينما اظهرت 7 حالات فقط في العينه المسيطره (10%) زيادة الخلايا الحمضية في الدوره الدمويه المحيطيه. ان الحالات الشديده لمرض التهاب الجلد التأتبي بالرغم من كونها اعطت زياده عاليه للخلايا الحمضيه لكننا لانستطيع ان نجعلها مؤشرا لشده المرض قليله احصائيا وهي 8 فقط (5 ذكور و 3 أناث) وهي تؤلف 11.4% في عامه المرضى