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Sherif Abdel Mohesen.

Clinical and laboratory data of patients.

NO	Age	Sex	F.H. father	F.H. moth	Obj. SCO	SCORAD	SSS	IgE IU/ml	CTACK	Hb gm/dl
1	5.5	m.	(-)	(+)	24.7	32.7	55	125	340	12
2	1.2	f.	(+)	(+)	23	33	67	75	500	12.5
3	4	f.	(+)	(+)	29.9	35.9	60	95	360	14.5
4	6	f.	(-)	(+)	64.3	80.3	69	600	750	10.2
5	2	f.	(-)	(+)	26	34	57	105	370	10
6	6	m.	(-)	(+)	26.4	32.4	41	115	320	13
7	4.5	f.	(+)	(+)	53.7	67.7	68	25	700	11.8
8	3.5	m.	(+)	(+)	24	28	39	80	300	15
9	13	f.	(-)	(+)	67	83	84	10	1100	10.7
10	4	f.	(-)	(+)	25.6	31.6	45	20	350	14
11	4	f.	(+)	(+)	21.2	29.2	62	8	600	10.8
12	5	m.	(+)	(+)	23.8	31.8	53	35	370	14.1
13	5	m.	(+)	(+)	25.6	36.6	42	30	750	13.2
14	3.5	m.	(-)	(+)	28.2	32.3	47	90	340	13.4
15	4.5	f.	(-)	(+)	19.4	23.4	36	85	340	15.2
16	5.5	m.	(+)	(+)	20.4	26.4	41	110	370	14
17	5	f.	(-)	(+)	21.1	29.1	44	40	380	13.9
18	5	f.	(+)	(+)	23.8	29.8	39	80	300	13.9
19	3.5	m.	(-)	(+)	23.7	31.7	42	45	350	13.3
20	3	m.	(+)	(+)	25.7	33.7	50	70	340	13.1
minimum	1.5				19.4	23.4	36	8	300	10
maximum	13				67	83	84	600	1100	15
mean	4.7				29.875	38.13	52.05	92.15	461.5	12.93
SD	2.296				14.118	17.236	12.92	124.98	211.49	1.55

Descriptive data:

NO : number **F.H. father : family history of atopy, paternal side**
m : male **F.H. mother: family H. of atopy, maternal side**
f : female **Obj SCO : Objective SCORAD**
Hb : haemoglobin **SSS : Simple Scoring System**
(+) : positive **SD : Standard Deviation**
(-) : negative **age : age in years**
CTACK : Cutaneous T cell-attracting chemokine (pg/ml)

Clinical and laboratory data of patients (continues).

NO	platelet	WBC	N%	N absolute	E%	E absolute	L %	L absolute
1	390	6.7	49	3283	7	469	41	2747
2	364	13.3	47	6251	3	399	43	5719
3	290	7.1	57	4047	7	497	33	2343
4	367	28.9	73	21097	13	3757	12	3468
5	550	10.3	21	2163	4	412	75	7725
6	275	7.9	56	4424	7	553	35	2765
7	322	8.7	38	3306	5	435	55	4785
8	380	7.4	64	4736	5	370	27	1998
9	243	13.3	65	8645	10	1330	23	3059
10	310	8	53	4240	8	460	35	2800
11	463	6.4	36	2304	5	320	47	3008
12	365	9	53	4770	5	450	39	3510
13	315	8.6	50	4300	6	516	41	3526
14	365	8.1	47	3807	6	486	43	3483
15	280	9.1	48	4368	7	637	43	3913
16	420	6.5	57	3705	6	390	34	2210
17	410	8.7	58	5046	8	696	32	2784
18	340	8.7	58	5046	6	522	34	2958
19	240	8.5	52	4420	6	510	38	3230
20	390	7.7	52	4004	7	539	37	2849
minimum	240	6.4	21	2163	3	320	12	1998
maximum	550	28.9	73	21097	13	3757	75	7725
mean	353.95	9.6	51.7	5198.1	6.55	696.4	39.35	3444
SD	75.18	4.9	11.2	3984.03	2.16	750.25	12.49	1320.51

E% : eosinophils percentage **N% :** percentage of neutrophils
E absolute : absolute count of eosinophils
L% : lymphocytes percentage **N absolute :** absolute count of neutrophils
L absolute : absolute count of lymphocytes
WBC : White blood corpuscles **NO : number**

Clinical and laboratory data of control subjects.

NO	age	Sex	CTACK	Hist of atopy
1	6	f	240	(-)
2	8	f	50	(-)
3	5	f	150	(-)
4	3	f	48	(-)
5	9	f	120	(-)
6	4	f	130	(-)
7	4.5	f	120	(-)
8	7	m	46	(-)
9	5	f	48	(-)
10	3.5	f	60	(-)
11	6	f	250	(-)
12	5	f	180	(-)
13	4	f	245	(-)
14	3	m	270	(-)
15	7	f	240	(-)
16	4	f	245	(-)
17	3.5	m	260	(-)
18	6	m	240	(-)
19	4.5	f	50	(-)
20	5	f	250	(-)
minimum	3		46	
maximum	9		270	
mean	5.15		162.1	
SD	1.647		88.48	

No : number
CTACK : Cutaneous T cell-attracting chemokine(pg/ml)
Hist of atopy :History of atopy
f : female
m : male
(-) : negative

List of Abbreviation

AD : Atopic dermatitis

ACD : Allergic contact dermatitis

AEDS : Atopic eczema/dermatitis syndrome

APC : Antigen- presenting cell

actT : Activated T cell

actTh1 : Activated Th1 cell

C5a : Complement 5active

CAM : Cell adhesion molecules

CCL27 : = CTACK

CCR : Cysteine/ cysteine chemokine receptor

CCR3 : Receptor for eotaxin

CCR10 : = GPR-2= receptor of CTACK

CD4 : Cluster of differentiation antigen no. 4

CK : Chemokine

CLA : Cutaneous lymphocyte antigen

CTACK : Cutaneous Tcell-Attracting Chemokine

DNA : Deoxyribonucleic acid

DTH : Delayed type hypersensitivity

EC : Endothelial cell

ECM : Extra-cellular matrix

ECP : Eosinophil cationic protien

ELISA : Enzyme linked immunosorbant assay

Fk-506 : Tacrolimus, a calcineurin inhibitor

GPR-2 : **Orphan G protein-coupled receptor-2**

ICAM-1 : Intercellular adhesion molecule-1

IFN-γ : Interferon-gamma

IgE : Immunoglobulin E

IL : Interleukin

KC : Keratinocytes

LC : Langerhans cells

MDC : Macrophage-derived chemokine

MHC : Major histocompatibility complex

mRNA : Messenger RNA

n : Number

N : Neutrophil

NS : Not significant

Obj. SCORAD : Objective SCORAD

PGE2 : Prostaglandin E2

rstT : Resting T cell

S : Significant

SCORAD : Scoring Atopic Dermatitis

SSS : Simple Scoring System

TARC : Thymus and activation-regulated chemokine

Th0 : T helper type 0 cell

Th1 : T helper type 1 cell

Th2 : T helper type 2 cell

TNF-α : Tumor necrosis factor-alfa

VCAM-1 : Vascular cell adhesion molecule-1

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INTRODUCTION AND AIM OF THE WORK

Introduction:

There are at least 13 scoring systems and indices for the assessment of disease severity in children with atopic dermatitis (AD) ***(Chrman and William, 2000).***

Problems with inter- and intrapersonal variability become an unavoidable issue when using these subjective clinical indices. Thus, it would be useful for clinicians to have an objective laboratory marker that correlate with the various clinical aspects of AD, especially the inflammatory intensity of the disease. The T-helper lymphocyte type 2 (Th2)-related cytokines have been implicated in the pathogenesis of AD, and there is tremendous research activity in assessing the usefulness of these cytokines as markers of disease severity ***(Leung et al., 2003)***.

It was recently documented that serum concentrations of macrophage derived chemokine (MDC) and thymus and activation-regulated chemokine (TARC) correlated well with the intensity of AD ***(Leung et al., 2002).*** Nonetheless, MDC and TARC are not skin specific and serum MDC and TARC concentration may be altered by other

concurrent atopic disorders such as asthma and allergic rhinitis **(*Sugawara et al., 2002).***

The cutaneous T cell-attracting chemokine (CTACK) was shown to be useful in assessing severity of AD in adults ***(Kakinuma et al., 2003).***

CTACK functions by providing a skin-specific signal involved in localization of cutaneous lymphocyte-associated antigen (CLA) memory T cells to skin and provides a potential target to regulate cutaneous T Cell trafficking ***(Morales et al., 1999).***

CTACK may therefore be a useful marker for eczema severity even in patients with coexisting atopy ***(Kakinuma et al., 2003).***

Aim of the Work:

The aim of this study was to compare serum CTACK concentration between children with AD and healthy controls, and to assess the correlation between this inflammatory marker with various clinical parameters of AD in these children.

ATOPIC DERMATITIS

DEFINITION:

Atopic dermatitis (AD) is a chronic relapsing inflammatory skin disease in which T cells play a prominent modulating role ***(Herz et al., 1998).***

EPIDEMIOLOGY:

There is increasing evidence that the frequency of atopic diseases has increased worldwide over the last few decades with prevalence rates ranging between 10-20% **(*Leung and Bieber, 2003).***

CLASSIFICATION:

Recent studies have found that the frequency of non allergic AD ranges from 16% to 45%, depending on the country and the criteria for definition ***(Novak and Bieber, 2003).***

The progression into other forms of allergy such as respiratory allergy is termed the allergic march ***(Bjorksten., 1995).***

ETIOLOGY:

Allergic diseases have a multi-factorial origin and result from complex interaction between genetic host factors and environmental influences ***(Kjellman., 1994).***

1. Genetic predisposition:

The high concordance rate of 77% in monozygotic twins (15% in dizygotic twins) and obvious familial occurrence support genetic predisposition ***(Dahl et al., 1995).***

The strongest risk factor is a parental history of atopy. Maternal atopy is considered a great risk for atopic disorders in offspring than paternal atopy ***(Schultz., 2000).***

2. Environmental and other major provocation factors:

There is increasing evidence that T cell response to environmental allergens is important in pathogenesis of AD ***(Werfel and kapp, 1998).***

The recognized triggers of itch for AD are listed in table (1) ***(Beltrani and Boguneiwicz, 2003):***

Table (1): Spectrum of triggers of itch in AD.

(Not all patients will be triggered by each stimulus.)

▪Xerosis.

▪Irritants:

-Soaps , detergents.

-Disinfectants (e.g. chlorine).

-Contact with:

▫Juices from fresh fruits, meats, vegetables, etc.

▫Occupational: chemicals, fumes, etc.

▪Contact-/Aero-allergens:

-House dust mites (contact > aeroallergens).

-Pets (Cats > dogs >birds).

-Molds.

-Human dander (dandruff).

▪Microbial agents:

-Staph.Aureus (as a pathogen or ‹superantigen›).

-Viral infection (esp.URIs).

-Mycologic:

▫Pityrosporum.

▫Candida (rarely).

▫Dermatophytes (rarely).

▪Others:

-Temperature /Climate.

-Food (as contact irritant >vasodilator> allergen).

-Psyche.

-Hormones.

● ***Xerosis:***

Xersis is considered to be the most common dermatosis of atopic individuals ***(Tanaka et al., 1998).***

The xerotic epidermis with its resulting barrier abnormality provokes and sustains inflammation by activation of an epidermis-initiated cytokine cascade ***(Effendy et al., 2000).***

The impaired barrier function of atopic skin allows greater absorption of irritant agents and contact allergens. Further, easier access for bacteria, viruses, and dermatophytes has been demonstrated, and each of these can trigger the release of pruritogenic, proinflammatory mediators ***(Elias et al., 1999).***

● ***Contact and aero-allergens:***

With the exception of animal dander and dust mites, aero-allergens are rare cause of excacerbation of AD ***(Clark and Adinoff, 1989).***

Contact with dust mites is most often a cause in individuals whose eczema involves the face, head, neck, and hands (areas that come in direct contact with fomites ***(Darsow et al., 1996).***