Ocular Manifestations in Atopic Dermatitis Patients and their relation to disease severity

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Abstract

Background: Atopic dermatitis is a common chronic relapsing skin disease that affects all ages and both sexes, ocular manifestations appear in patients with atopic dermatitis like cataract, blepharitis, keratoconjunctivitis and corneal ulcers and some of these changes are related to disease severity which is measured by many measures including SCORAD index which means scoring atopic dermatitis.

Objectives: To evaluate the ocular manifestations in Iraqi patients with atopic dermatitis and to see the relationship between these manifestations and the severity of atopic dermatitis.

Patients and Methods: One hundred forty six patients were included in this study, Eighty (54.8%) of them were females and 66 (45.2%) were males with ages between 3 months and 46 years and a mean age of 18.2 ± 8.4 years. The study was conducted from January 2005 till January 2007 in the Department of Dermatology of Al-Kadhymia teaching hospital in Baghdad. Full history, examination including dermatological as well as ophthalmological examinations was done for all patients and SCORAD index was measured for all patients.

Results: Ninety four (64.4%) of all patients had ocular manifestations and some of them had more than one manifestation, the commonest manifestations in those 94 patients were blepharitis in 58 (61.7%) patients, followed by keratoconjunctivitis in 22 (23.4%) patients then allergic conjunctivitis in 16 (17%) patients. The ocular manifestations in general were not related to chronicity, age and disease severity except cataract and retinal detachment.

Conclusion: Ocular manifestations seem to be common in Iraqi patients with atopic dermatitis including blepharitis, different types of conjunctivitis, corneal ulcers and many other manifestations and these complications (apart from cataract and retinal detachment) were unrelated to chronicity, age and disease severity.

Keywords: Atopic Dermatitis, Ocular, Severity

Introduction:

Atopic dermatitis is a common skin disease, it emphasizes the cutaneous manifestation of atopic diathesis (asthma, hay fever and eczema), it generally begins in childhood, but varying manifestations often persist into adulthood, it affects different areas of the skin depending on the age of the patient like the face, the trunk and the extremities.

Four major criteria are present to diagnose the disease and the presence of three of them is diagnostic, these criteria include: 1. Pruritis 2. Typical morphology (flexural lichenefication in adults and facial as well as extensor involvement in infants). 3. Chronic or chronically relapsing dermatitis. 4. Personal or family history of atopic diathesis. [1-5]

Ocular manifestations during atopic dermatitis have been known for several years, mainly in adult patients. These manifestations include blepharitis, kerato-conjunctivitis, keratoconus, uveitis, cataract, retinal detachment and many others, also many patients had a peri-orbital signs like Dennie–Morgan fold, peri-orbital darkening and eyelids dermatitis.

The frequency of these manifestations varies between 25% to 50% or even more.[6,7] Severity of atopic dermatitis is measured by many scores, one of these common scores is SCORAD index (which means scoring atopic dermatitis) which was developed by the European Task Force on atopic dermatitis in 1993. SCORAD index assesses the severity of atopic dermatitis.

The SCORAD index formula is: A/5 + 7B/2 + C. In this formula, (A) is defined as the extent (0–100), (B) is defined as the intensity (0–18) and (C) is defined as the subjective symptoms (0–20).

The maximum SCORAD score is 103. SCORAD index was classified into three ordered categories of severity (mild with SCORAD index 1-31; moderate with SCORAD index 32-62 and sever with SCORAD index 63-103). [8-10] This study was designed to evaluate the ocular manifestations in Iraqi patients with atopic dermatitis and to see the relationship between these manifestations and the severity of atopic dermatitis.

Patients & Methods:

One hundred forty six Iraqi patients were included in this study. The study was conducted from January 2005 till January 2007 in the Department of Dermatology of Al-Kadhymia teaching hospital in Baghdad. The diagnosis of AD was based on the Diagnostic Criteria for Atopic Dermatitis.(1,3)

All patients were examined by the same dermatologist. The patients were evaluated using a standard protocol including age, occupation, history of the disease, history of atopic diathesis in the patient (and his family members), age at onset of the disease, location and complications of AD and history of steroid use around the eyes and even the use of systemic steroids for diffuse and severe cases were

noted, a full examination as well as dermatological examination were performed for all patients. AD severity was evaluated by the SCORAD Index. A standard ophthalmological examination was performed for all patients by the same ophthalmologist (both eyes, even if normal, were examined).

The presence or absence of blepharitis, different types of conjunctivitis, ectropion, keratoconus, bilateral anterior subcapsular cataract, peri-orbital signs as Dennie-Morgan fold, peri-orbital darkening and eyelids dermatitis and many other ophthalmological signs were noted.

Continuous variables were expressed as mean and standard deviation. Categorical variables were expressed as percentages. Descriptive characteristics of patients with and without ocular manifestations were compared using $\chi 2$ tests with Yate's correction for continuity.

All database management and statistical analyses were performed with SPSS software (10th version). The level of significance was set at (P value < 0.05). All probability values were two-sided [(11)]. SCORAD index was measured for all patients to assess the severity of atopic dermatitis and the total SCORAD index is measured by the following equation: A/5 + 7B/2 + C. In this formula, (A) is defined as the extent depending on the percentage of the surface area (0–100), (B) is defined as the intensity (0–18) and the intensity part of the SCORAD index consists of six items: erythema, edema/papulation, excoriations, lichenefication, oozing/crusts and dryness. Each item can be graded on a scale 0–3, finally (C) is defined as the subjective symptoms (0–20) and the subjective items include daily pruritis and sleeplessness. Both subjective items can be graded on a 10-cm visual analogue scale.

The maximum subjective score is 20. The maximum SCORAD score is 103. SCORAD index was classified into three ordered categories of severity (mild with SCORAD index 1-31; moderate with SCORAD index 32-62 and severe with SCORAD index 63-103).

Results:

One hundred forty six Iraqi patients were included in this study, 80 (54.8%) of them were females and 66 (45.2%) were males with ages between 3 months and 46 years and a mean age of 18.2 ± 8.4 years **(Table 1).**

The history of AD in the patients ranges from 1 week to 30 years. Ninety four (64.4%) of all patients had ocular manifestations, 54 (57.4%) of them were females and 40 (42.6%) were males, many of them had more than one manifestation and some of them had a unilateral eye involvement only and the pupils were normal in all patients.

Thirty four (36.2%) patients with ocular manifestations had history of atopy while 64 (68.1%) patients with ocular manifestations had family history of atopy, also 38 (40.4%) patients with ocular manifestations had family history of atopic dermatitis and all these results were statistically significant in comparison with those who had no ocular manifestations as well as the presence of peri–orbital signs as eyelids dermatitis (in 18 affected patients), Dienne – Morgan fold (in 14 affected patients), peri–orbital darkening (in 10 affected patients) **(Table 2).**

Table 1: The age of the patients with atopic dermatitis with and without ocular changes

Age (Years)	Total Patients (No.=146)	%	Ocular changes patients (No.=94)	Rav %	Edomin %
0 - 9	34	23.3	18	52.9	19.1
10 - 19	74	50.7	50	67.6	53.2
20 - 29	20	13.7	14	70	14.9
30 - 39	12	8.2	8	66.7	8.5
40 - 49	6	4.1	4	66.7	4.3
Total	146	100	94	-	100

Table 2: Characteristics of AD patients with and without ocular manifestations

Characteristic	With ocular manifestations (n = 94)	Without ocular manifestations (n = 52)	Chi square	P –value
Personal history of atopy	34	8	6.081	*0.0137
Family history of atopy	64	14	21.173	*< 0.0001
Family history of AD	38	10	5.889	*0.0152
Peri-orbital signs	42	12	5.810	*0.0159
SCORAD index	42.6 ± 16.4	28.2 ± 14.8	3.657	0.0558

Twenty two (23.4%) patients with ocular manifestations had history of systemic steroid use while 50 (53.2%) patients with ocular manifestations had history of topical use of steroid (in or around the eyes).

The commonest ocular manifestations were blepharitis in 58 (61.7%) patients, followed by keratoconjunctivitis in 22 (23.4%) patients then allergic conjunctivitis in 16 (17%) patients followed by many other manifestations (**Table 3& 4).**

According to SCORAD index, 16 patients only had severe AD (12 of them only had ocular manifestations), 78 patients had moderate AD (52 of them had ocular manifestations) and 52 of them had mild AD (30 of them had ocular manifestations) **(Table 5).**

The acuteness or chronicity of the disease had no significant effect on the appearance of the ocular manifestations.

The ocular manifestations in general were not related to disease severity except cataract and retinal detachment which were seen only in adult patients with severe AD and the ocular manifestations affect all ages (there is no age predominance).

Table 3: The ocular manifestations in relation to all patients

Manifestation	No. (146)	%
Blepharitis	58	39.7
Keratoconjunctivitis	22	15.1
Allergic conjunctivitis	16	11
Punctuate epithelial erosions	10	6.8
Corneal ulcer	8	5.5
Uveitis	6	5.5
Trichiasis	4	4.12.7
Infective conjunctivitis	4	2.7
Keratoconus	3	2.1
Cataract	3	2.1
Retinal detachment	2	1.4
Refractory errors	2	1.4
Total	146	100

Table 4: The ocular manifestations in relation to patients with ocular changes

Manifestation	No. (94)	%
Blepharitis	58	61.7
Keratoconjunctivitis	22	23.4
Allergic conjunctivitis	16	17
Punctuate epithelial erosions	10	12.8
Corneal ulcer	8	10.6
Uveitis	6	8.5
Trichiasis	4	6.4
Infective conjunctivitis	4	4.3
Keratoconus	3	3.2
Cataract	3	3.2
Retinal detachment	2	2.1
Refractory errors	2	2.1
Total	94	100

Table 5: The SCORAD index

Status of AD	**With ocular manifestations (n=94)**	**SCORAD index Range**	**Without ocular manifestations (n=52)**	**SCORAD index Range**
Mild	30	14 – 31	22	12 - 27
Moderate	52	32 – 57	26	32 - 44
Severe	12	63 - 91	4	63 - 78

Discussion:

Atopic dermatitis (AD) is a common skin disease that associates in many occasions with ocular manifestations and to the best of our knowledge this is the first study in Iraq about this problem. Ocular involvement in this study appeared in 64.4% of the patient and this is nearly similar to many other studies that showed an involvement between 25 % and 55.8%. [6, 7, 12] The age of the patients had a role in some studies which showed that sever eye involvement like cataract and retinal detachment were seen in adults and not in children and this is in agree with this study [6], however, the presence of sever eye problems in severely involved AD patients that mentioned in this study had not been mentioned before.

Carmi E *et al* showed that personal and family histories of atopic manifestations and atopic dermatitis had statistically significant results in patients with ocular problems and this point is similar to the results of this study. (6) Ocular manifestations seem to differ from country to country and from area to area and this difference may be due to differences in the pathogenesis of AD, the immunological aspects, the environmental conditions, the treatment modalities…etc in the different countries, however, the predominance of blepharitis and different types of conjunctivitis in this study is in agree with many studies abroad. [6, 7, 13- 16] Sever eyes involvement by cataract due to the disease itself was seen in our study (3.2%), but this result differs, as the percentage in other studies like that in Japan which were done by Ohmachi N *et al* and Amemiya T *et al* was higher there (17.9% and 25% respectively) and this may be due to differences in treatments, in pathogenesis, in immune aspects….etc. [7, 12-14] Retinal detachment was seen in adults with sever AD (2.1%) and this coincides with the literature where the involvements of eyes by retinal detachment in adults were between 0.5% and 8%. [6, 13, 15, 16]

Refractory errors were also mentioned in our study (2.1%) as well as in Ertunc V *et al* study in Turkey. (15) Corneal involvement as corneal ulcers and keratoconus were mentioned in our study as well as other foreign studies. [11] Extra ocular (peri–orbital) manifestations in this study seem to simulate the studies abroad, however, in our study trichiasis and uveitis were seen but they did not mentioned previously in the literature. [6, 7] Acuteness and chronicity of AD as well as patient's age had no significant effects on the presence or the absence of ocular manifestations and this finding did not mentioned in the other studies. This study as well as other studies showed that the severity of AD (which was measured by SCORAD index) had no direct relation to eyes problems as mentioned by Carmi E *et al*, Garrity JA and Ertunc V etal. [6,12,15]

Our study showed that ocular manifestations seem to be common in Iraqi patients with atopic dermatitis and these include blepharitis, different types of conjunctivitis, corneal ulcers and many other manifestations, personal and family history of atopy and AD are important in relation to eyes problems, chronicity of AD as well as patient's age had no significant effect on the appearance of the ocular manifestations and finally ocular manifestations (apart from cataract and retinal detachment) were unrelated to disease severity. the early ocular problems especially the sever ones to avoid serious complications

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