OCULAR MANIFESTATIONS AND ITS ASSOCIATED FACTORS IN PATIENTS WITH DERMATITIS AT A TERTIARY CARE HOSPITAL IN KATHMANDU

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ABSTRACT

Dermatitis also known as eczema, is inflammation of the skin, typically characterized by itchiness, redness and a rash. Dermatitis was estimated to affect 245 million people globally in 2015 or 3.34% of the world population. In Nepal, studies from different parts of the country have reported the prevalence of dermatitis between 15.9 to 39.2%. Severe dermatitis with repeated scratching and rubbing of the face predisposes the patient to various ocular complications. A hospital-based, cross-sectional, descriptive study was conducted to assess the overall frequency and type of ophthalmological complications among patients with dermatitis at a tertiary care hospital in Kathmandu. A total of 91 patients were enrolled for this study. The minimum age was 5 years and maximum was 78 years, with the mean of 30.48 with a standard deviation of ± 20.28. The upper and lower limits for estimated mean age were 34.63 years to 26.33 years at 95% confidence interval. Seventy-one (78.0%) of all patients had ocular manifestations, many of them had more than one manifestation. Females outnumbered the males (41.8%; 36.3%) with respect to the occurrence of ocular manifestations in dermatitis. The commonest ocular manifestations were blepharitis in 35 (38.5%) patients, followed by eyelid eczema in 13 (14.3%) patients, allergic conjunctivitis in 5 (5.5%) and patients with other manifestations. Based on professional classification, over one fourth of the participants were students accounting for 44.0%, followed by homemakers accounting for 23.1% and shopkeepers accounting for 11.1%, respectively. A statistically significant association was observed with the ocular manifestation in relation to gender (p value=0.03) and occupation (p value=0.03). However, no association was observed between ocular manifestation with duration of dermatitis (p value=0.65), type of dermatitis (p value=0.94), personal and family history of allergy/atopy (pvalues=0.26; 0.58, respectively).

KEYWORDS

Dermatitis, ocular manifestations, blepharitis, eyelid eczema, conjunctivitis

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INTRODUCTION

Dermatitis also known as eczema, is inflammation of the skin, typically characterized by itchiness, redness and a rash.[1] In cases of short duration, there may be small blisters, while in long-term cases the skin may become thickened.[1] The area of skin involved can vary from small to covering the entire body.[1,2]

Dermatitis includes atopic dermatitis, allergic contact dermatitis, irritant contact dermatitis and stasis dermatitis.[1,2] The type of dermatitis is generally determined by the person's history and the location of the rash.[1] For example, irritant dermatitis often occurs on the hands of those who frequently get them wet. Allergic contact dermatitis occurs upon exposure to an allergen, causing a hypersensitivity reaction in the skin. Atopic dermatitis is a pruritic, chronic, relapsing inflammatory disease of the skin that affects genetically predisposed individuals and may express itself either as the infantile, childhood or adult eczema, with changing morphology and localization.[3,4] The disease activity is often characterized by remissions and recurrences. It affects 15–20% of children and 1–3% of adults in developed countries.[5] The extent and severity of eczema is measured using the SCORAD (Severity Scoring of Atopic Dermatitis) index.[6]

Dermatitis was estimated to affect 245 million people globally in 2015 or 3.34% of the world population.[7] Atopic dermatitis is the most common type and generally starts in childhood.[3,4] In the United States, it affects about 10–30% of people. Contact dermatitis is twice as common in females as males. Allergic contact dermatitis affects about 7% of people at some point in their lives. Irritant contact dermatitis is common, especially among people with certain occupations; though the exact rates are still unclear. In Nepal, studies from different parts of the country have reported the prevalence of dermatitis between 15.9 to 39.2%.[8-12]

Severe dermatitis with repeated scratching and rubbing of the face predisposes the patient to various ocular complications. Ocular complications of dermatitis have been known for several years. These complications include blepharitis, keratoconjunctivitis, keratoconus, uveitis, anterior and posterior subcapsular cataract, retinal detachment and ocular herpes simplex.[13-23] The frequency of these disorders ranges from 25% to 64.4%.[14-19]

Although ocular manifestations of dermatitis have been reported globally, this to the best of our knowledge is the first study of this kind in Nepal. This study was conducted to assess the overall frequency and type of ophthalmological complications among patients with dermatitis. The association between age, gender, occupation, type and duration of dermatitis, personal and family history of allergy/atopy and the presence of ocular complications were also determined. The knowledge of the frequency and significance of these ocular complications will help in their early diagnosis and treatment, and thereby prevent visual impairment from these complications.

MATERIALS AND METHODS

This was a hospital- based, cross-sectional, descriptive study, carried out at the Department of Ophthalmology, of Nepal Medical College Teaching Hospital, from April to November 2021. All patients diagnosed as dermatitis and referred from the Department of Dermatology were included in the study. A total of 91 patients were enrolled for this study.

Ethical approval was taken from the Institutional Review Committee of Nepal Medical College (NMC-IRC). Informed and verbal consent of each participant was obtained before the study after informing the participants of the purpose of the study and confidentiality of results.

A detailed dermatological examination was carried out by a dermatologist. The type of dermatitis was confirmed by the dermatologist and the patient was referred to Eye OPD. Detailed demographic parameters, including symptoms, total disease duration, personal or family history of dermatitis/asthma, treatment history classified as: topical steroids, antihistamines, emollients, was recorded in the proforma. Patients on systemic corticosteroid therapy were excluded from the study.

All patients underwent a comprehensive eye examination. Snellen's chart was used to ascertain visual acuity. Anterior segment examination including a detailed examination of the lid, conjunctiva and cornea was done with a Takagi Slit lamp biomicroscope. The presence or absence of blepharitis, eyelids dermatitis, different types of conjunctivitis, and any evidence of cataract formation were noted. A dilated fundus examination was carried out with 90D slit lamp biomicroscopy and retinal findings if any were recorded.

The obtained data was entered in Microsoft Excel and analyzed with SPSS version 20. Chi square test was used for statistical analysis to

measure the association between dependent and independent variables. The level of statistical significance (p value) was set at 5%.

RESULTS

A total of 91 patients were enrolled for this study with 47 males and 44 females. The minimum age was 5 years and maximum was 78 years with a mean of 30.48 with a standard deviation of ± 20.28. The upper and lower limits for estimated mean age were 34.63 years to 26.33% years at 95% confidence interval. Slightly more than half (56.0%) of the participants were *Adhibashi-Janjatis* and one third were *Khas/ Aryans* (30.8%). *Dalits* and *Madhesis* had a participation 9.9% of 3.3% respectively. Based on professional classification, over one fourth of the participants were students accounting for 44.0%, followed by homemakers accounting for 23.1% (Table 1).

Seventy one (78.0%) of all patients had ocular manifestations, many of them had more than one manifestation and some of them had a unilateral eye involvement only. The commonest ocular manifestations were blepharitis in 35 (38.5.%) patients, followed by eyelid eczema in 13 (14.3%) patients, allergic conjunctivitis in 5 (5.5%) patients followed by other manifestations (Table 2). Refractive errors were seen in 3 patients, with all of them being children under 15 years. Other ocular features like keratoconus, corneal ulcers and cataracts were not reported in our study.

Females 37 (40.6%) outnumbered the males 34 (37.4%) with respect to the occurrence of ocular manifestations in dermatitis. Based on professional classification, over one fourth of the participants were students accounting for

Table 1: Socio demographic characteristics of the participants

Age	**n**	**%**
5-14	23	25.3
15-24	19	20.9
25-34	18	19.8
35-44	7	7.7
45- 54	5	5.5
55- 64	13	14.3
>65	6	6.6
Gender		
Males	47	51.6
Females	44	48.4
Ethnicity		
Khas /Aryan	28	30.8
Adhibashi-Janjati	51	56.0
Dalit	9	9.9
Madhesi	3	3.3
Occupation		
Student	40	44.0
House wife	21	23.1
Shopkeeper	10	11.1
Business person	6	6.6
Teacher	2	2.2
Others	12	13.2

Table 2: Ocular manifestations in dermatitis

Manifestation	**n**	**%**
Blepharitis	35	38.5
Eyelid eczema	13	14.3
Allergic conjunctivitis	5	5.5
Infective conjunctivitis	2	2.2
Keratoconjunctivitis	1	1.1
Superficial punctate keratitis	1	1.1
Refractive errors	3	3.3
Dry eye disease	9	9.9
Squint	1	1.1
Pinguecula	1	1.1
Total	71	78.0
No ocular features	20	22.0
Grand total	**91**	**100.0**

Table 3: Association between ocular manifestations and gender.

Ocular features	**Gender**		**Total**	**P Value**
	M	**F**		
No Ocular features	13	7	20	
Blepharitis	24	11	35	
Eyelid dermatitis	3	10	13	
Allergic conjunctivitis	3	2	5	
Infective conjunctivitis	1	1	2	
Keratoconjunctivitis	0	1	1	
Superficial punctate keratitis	0	1	1	0.03
Refractive errors	0	3	3	
Dry eye disease	2	7	9	
Squint	1	0	1	
Pinguecula	0	1	1	
Total with ocular features	34	37	71	
Grand total	**47**	**44**	**91**	

44.0%, followed by homemakers accounting for 23.1% and shopkeepers accounting for 11.1% respectively. A statistically significant association was observed with the ocular manifestation in relation to gender (p value=0.03) and occupation (p value=0.03) (Tables 3 and 4).

Table 4: Association between ocular manifestations and occupation

Ocular features	Student n %	Homemaker n %	Shopkeeper n %	Business n %	Teacher n %	Others n %	Total	P value
No Ocular features	5	4	5	2	1	3	20	
Blepharitis	25	6	2	1	0	2	36	
Eyelid dermatitis	5	4	1	1	0	2	13	
Allergic conjunctivitis	2	1	2	0	0	0	5	
Infective conjunctivitis	1	1	0	0	0	0	2	
Kerato conjunctivitis	0	1	0	0	0	0	1	0.03
Superficial punctate keratitis	0	0	0	1	0	0	1	
Refractive errors	3	0	0	0	0	0	3	
Dry eye disease	0	3	0	1	1	4	9	
Squint	0	0	0	0	0	1	1	
Pinguecula	0	0	0	0	1	0	1	
Total	**41**	**20**	**10**	**6**	**2**	**12**	**91**	

Table 5: Association between ocular manifestations and type of dermatitis.

Ocular features	Type of dermatitis				Total	P value
	Atopic	Allergic	Irritant	Contact		
No features	2	9	8	1	20	
Blepharitis	16	13	1	5	35	
Eyelid dermatitis	3	5	1	4	13	
Allergic conjunctivitis	2	3	0	0	5	
Infective conjunctivitis	1	0	0	1	2	
Keratoconjunctivitis	1	0	0	0	1	0.09
Superficial punctate keratitis	0	0	1	0	1	
Refractive errors	2	1	0	0	3	
Dry eye disease	1	4	1	3	9	
Squint	0	1	0	0	1	
Pinguecula	0	0	1	0	1	
Total	**28**	**36**	**13**	**14**	**91**	

Table 6: Characteristics of Dermatitis Patients with and without Ocular features

Characteristic	With Ocular Features		Without ocular features		P Value
	n	%	n	%	
Personal history of atopy	34	37.3	57	62.7	0.26
Family history of atopy	45	49.5	46	50.5	0.58
Duration of dermatitis					
<12 months	82	90.1	0	0	0.65
>12 months	9	9.9	0	0	

Fifty-three patients showed ocular abnormalities in the form of lid and conjunctival changes. Of these fifty-three patients, thirty-eight (71.7%) patients showed only lid involvement, seven (13.2%) only conjunctival involvement and both conjunctival and lid changes were seen in eight (15.1%) patients. Among 38 patients with lid involvement, 35 had isolated blepharitis. Conjunctival changes with mild to moderate papillary reaction and papillary hypertrophy was noted in 7 patients.

Allergic dermatitis in 27 patients (38.0%) was the most common type of dermatitis followed by atopic dermatitis in 26 patients (36.6%) and contact dermatitis in 13 patients (18.3%). There was no significant association between the different type of dermatitis and ocular manifestations (p value=0.94) (Table 5). Thirty four (37.3%) patients with ocular manifestations had history of atopy while forty five (49.5%) patients with ocular manifestations had family history of atopy, all these results were statistically not significant (p value=0.26; 0.58) (Table 6).

DISCUSSION

Dermatitis is a common skin disease that has an association with ocular manifestations. This study in Nepal, has attempted to observe the ocular manifestations in dermatitis patients at a tertiary care centre in Kathmandu.

A total of 91 patients were enrolled for this study, with the age of the patients ranging from 5-78 years, with the mean age of 30.48 years with a standard deviation of ±20.28. There was a slightly higher preponderance among females accounting for 40.6% than males accounting for 37.4%. This is similar to a study reported by Matloob NA[19] where a higher predominance was seen in females and different from studies reported by Kaujalgai *et al* [24] and Samikkshya *et al* [25] where there was a higher predominance in males.

Ocular manifestations in this study was observed in 78.0% of the patients and this is higher than various studies that showed an ocular involvement between 25 % and 64.4%.[14-19] Seventy-one (78.0%) of all patients had ocular manifestations, majority of them had more than one manifestation. The commonest ocular manifestations were blepharitis in 35 (38.5%) patients, followed by eyelid eczema in 13 (14.3%) patients, allergic conjunctivitis in 5 (5.5%) patients followed by other manifestations. The findings of our study concur with that of various similar studies performed in different parts of the world, where there was a predominance of blepharitis and different types of conjunctivitis.[18-25]

A study done by Carmi *et al*[18] showed that follicular conjunctivitis was the most common ocular feature in patients with dermatitis, followed by blepharitis and cataract. A study from Iraq reported blepharitis as the most common ocular manifestation in 58 (61.7%) patients, followed by keratoconjunctivitis in 22 (23.4%) patients and allergic conjunctivitis in 16 (17%).[19] Kaujalgai *et al*[24] reported that 43% of patients with dermatitis had ocular complications, with eyelid dermatitis, blepharitis and conjunctivitis being the most common.[24] Keratoconjunctivitis and blepharitis were the most common ocular manifestations reported from a study in Western India.[25]

Ocular manifestations seem to differ from country to country and this difference may be due to differences in the pathogenesis of dermatitis, the immunological aspects, the environmental conditions, the treatment modalities etc in the different countries. However, the predominance of blepharitis and different types of conjunctivitis were the main ocular manifestations. Refractive errors (3.3%) were also reported in our study as well as from studies reported from Iraq (2.2%) and Turkey.[19,22] Other ocular features like keratoconus, corneal ulcers and cataracts were not reported in our study.

Thirty-four (36.3%) patients with ocular manifestations had history of atopy while forty-five (49.5%) patients with ocular manifestations had family history of atopy, all these results were statistically insignificant. Duration of dermatitis, type of dermatitis, facial involvement, did not influence the incidence of ocular involvement in this study. A similar study from Iraq also reported that these complications were not associated with chronicity or severity of the disease.[19] However, Ohmachi *et al*[20] showed a significant relationship between severe facial involvement and ocular changes. The non-significant association between facial involvement and ocular changes in our study could be due to the minimal habitual rubbing of the face to relieve itching in our patients.

In conclusion, the present study is the first of its kind from Nepal to document an association between dermatitis and various ocular manifestations, such as: blepharitis, conjunctivitis, dry eye disease. Seventy-one (78.0%) of all patients had ocular manifestations, many of them had more than one manifestation. The commonest ocular manifestations were

blepharitis in 35 (38.5%) patients, followed by eyelid eczema in 13 (14.3%) patients, allergic conjunctivitis in 5 (5.5%) patients followed by other manifestations. A statistically significant association was observed with the ocular manifestation in relation to gender and occupation. The association of ocular manifestation with duration of dermatitis, type of dermatitis, personal and family history of allergy/atopy was not statistically significant. There was also no significant association between the presence of dermatitis lesions over the face and ocular manifestations.

Although eye examinations are not routinely performed in the care of dermatitis patients, this study stresses the need for routine eye examination due to a high prevalence of ocular manifestations (78.0%) in dermatitis as reported by this study. Early diagnosis and treatment of these ocular conditions can prevent vision loss in these patients. However, the ocular manifestations observed in our cohort were not associated with significant ocular morbidity or visual impairment possibly because of a less-severe disease in our population. Therefore, more long-term and community based studies would help to confirm our findings.

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