

A Study of Ocular manifestation in Dermatological disorders

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Abstract

Aim: To determine the magnitude and pattern of ocular diseases and pathologies in patients with various dermatological disorders as found in patients who were referred to the Ophthalmology department from dermatological department at our tertiary care institute.

Material and Methods: A total of 110 patients with ocular manifestations of all age groups who were referred from dermatology department during the period of May 2023 to January 2024 were examined which include visual acuity testing using Snellen's chart, refraction, slit lamp biomicroscopy.

Results: Out of 110 patients, maximum cases were found in between 21-30 years age males were more commonly affected. Atopic dermatitis was the most common (20.90%) disorder, followed by herpes zoster ophthalmicus (15.4%) and psoriasis (14.50%). Contact dermatitis cases and leprosy cases were documented. The investigation also found cases of neurofibromatosis and vitiligo, representing 8.18% and 8.10% of the total cases. Steven Johnson Syndrome (2.70%), pemphigus (3.60%), molluscum contagiosum, Ota nevus, ichthyosis, albinism, and epidermolysis bullosa were all observed. The results indicated that many skin disorders may influence the eyes, emphasizing the need for collaboration to treat both.

Conclusion: Atopic dermatitis was the most frequent dermatological condition, followed by herpes zoster ophthalmicus and psoriasis. Herpes zoster ophthalmicus caused most sight-threatening ocular disorders in the research population. Consistent eye examinations are crucial for prompt identification and intervention, which can aid in minimizing complications.

Keywords: Slit lamp biomicroscopy; Atopic dermatitis; Herpes zoster ophthalmicus; Psoriasis

1. Introduction

Dermatology disorders can present a variety of eye-related symptoms. Common skin conditions can present with varying degrees of eye-related symptoms, which may lead to eye damage and, in some cases, result in loss of vision.

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While the mortality rate associated with skin conditions is not substantial, their impact on the overall quality of life and psychological well-being of individuals is considerable.^[1-3]

Patients in dermatology often receive long-term treatments such as steroids, hydroxychloroquine, retinoic acid, and immunosuppressive agents. These medications can lead to indirect ocular side effects and are among the primary contributors to eye-related issues in individuals receiving dermatological care. Comprehensive evaluation, referral to ophthalmology, and ongoing monitoring of dermatology patients are critically important. The timely identification of the clinical connection between eye-related symptoms and skin disorders is crucial for effective patient management, as numerous skin conditions may first present with ocular signs.^[4]

The skin, mucous membranes, and corneal epithelium originate from a shared embryologic source.^[5] Specifically, the surface epithelium arises from surface ectoderm, while the underlying connective tissues and vascular elements are derived from mesoderm. Numerous skin conditions can exhibit ocular symptoms, potentially leading to significant visual impairment. The rising prevalence of certain skin diseases within the population indicates that dermatologic conditions are linked to ocular complications more often than is typically acknowledged.^[6]

Involvement of the eyes in dermatological conditions is frequently observed and may result in a range of ocular complications. Consequently, additional investigation is essential to enhance our comprehension of the connection between skin conditions and eye-related symptoms.

There is a scarcity of studies regarding the ocular manifestations observed in dermatological disorders, and therefore the present study focuses on the examination of ocular manifestations associated with dermatological conditions within our tertiary care facility.

2. Material and methods

It was a hospital based cross sectional study done on the patients who were referred to the Department of ophthalmology from the department of dermatology and venereology conducted at Sri Siddhartha Medical College, Hospital & Research Centre from May 2023 to January 2024. Approval from the institutional ethics committee was secured prior to the enrolment of patients for the study. Informed and written consent was obtained from all patients over the age of 18 years, and from parents for those under 18 years.

Sample size was calculated using the formula:

$$n = Z^2(1-\alpha/2) pq/d^2$$

Where,

n = sample size

p = prevalence rate

p = Taking the Prevalence of 50% Ocular manifestation in patients with skin disorder.

q = 100 - p = 50

Precision(d) = 10% absolute error

Adding 10% non-response rate, n = 110 patients were selected through non probability purposive sampling. Patients who declined to provide consent were excluded from the study, whereas all eligible patients were included in the study. An in-depth examination of the demographic attributes of the patient, encompassing age, gender, and the duration of the illness was carried out for each participant. An initial ophthalmic examination was conducted using oblique illumination and a slit lamp to evaluate the involvement of the eyes. External deformities and involvement of the adnexa were observed. All patients underwent an assessment of extraocular movements, which was subsequently followed by a thorough examination utilizing a slit lamp. The assessment included an evaluation of the anterior segment, vitreous, and posterior segment. All patients underwent indirect ophthalmoscopy and biomicroscopy to assess for retinal involvement. Intraocular pressure was measured using the Goldmann applanation tonometer. Additional assessments, such as corneal staining and gonioscopy, were conducted as necessary based on the circumstances. Photographs of the fundus were captured in cases where there was evidence of retinal involvement. It was recommended that patients with ocular involvement receive conservative medical management. Conservative management encompassed the use of topical cycloplegics, topical steroids, topical antibiotics, artificial tears, and the application of lid taping. The data was entered into an Excel spreadsheet using Microsoft Office Version 2021. A comprehensive statistical analysis was conducted for quantitative variables, along with the calculation of frequency and percentages for categorical variables.

3. Results

Table 1 Distribution of Age among the patients presenting with ocular manifestations with dermatological disorders

Age group (years)	Patients with ocular manifestation (Frequency)	Proportion (%)
<10	2	1.82
11-20	16	14.55
21-30	24	21.82
31-40	18	16.36
41-50	20	18.18
51-60	16	14.55
>60	14	12.73
Gender distribution		
Male	67	60.90
Female	43	39.10

The investigation examined ocular manifestations among various age demographics and both genders. The age group with the most notable occurrence of ocular manifestations was individuals aged 21-30 years, comprising 24 patients or 21.82%. This was succeeded by the 31-40 years age group, which included 18 patients, accounting for 16.36%, and the 41-50 years group, with 20 patients representing 18.18%. The lowest occurrence was noted among children under 10 years of age, with 2 patients representing 1.82% of the total. Individuals within the age range of 51 to 60 years represented 14.55% (16 individuals), while those over 60 years constituted 12.73% (14 individuals). In terms of gender distribution, a greater percentage of ocular manifestations were observed in males, accounting for 67 cases (60.90%), whereas females represented 43 cases (39.10%).

Table 2 Dermatological disorders with ocular manifestations observed in the study participants

Dermatological disorders	Frequency	Proportion (%)
Herpes Zoster ophthalmicus	17	15.4
Atopic Dermatitis	23	20.90
Neurofibromatosis	9	8.18
Vitiligo	9	8.10
Psoriasis	16	14.50
Leprosy	10	9.09
Contact Dermatitis	11	10
Pemphigus	4	3.60
Steven Johnson Syndrome	3	2.70
Molluscum Contagiosum	2	1.80
Nevus Of Ota	2	1.80
Ichthyosis	2	1.80
Albinism	1	0.9
Epidermolysis Bullosa	1	0.9

The study explored a range of skin conditions linked to eye-related symptoms in the subjects involved. Atopic dermatitis emerged as the most commonly observed condition, impacting 23 patients (20.90%). Subsequently, herpes zoster ophthalmicus was observed in 17 individuals (15.4%), while psoriasis was identified in 16 cases (14.50%). There were 11 cases of contact dermatitis, representing 10%, and 10 cases of leprosy, accounting for 9.09%. In the study, neurofibromatosis and vitiligo were identified in 9 patients each, representing 8.18% and 8.10% of the total cases, respectively. Pemphigus was observed in 4 instances (3.60%), whereas Steven Johnson Syndrome was recorded in 3 instances (2.70%). Two patients (1.80%) were identified with molluscum contagiosum, nevus of Ota, and ichthyosis. Albinism and epidermolysis bullosa were the rarest disorders noted, with each impacting only one patient (0.9%). The findings underscored the variety of skin conditions that can affect the eyes, stressing the importance of a collaborative approach to manage both skin and eye-related issues effectively.

Table 3 Frequency of participants with sight threatening dermatological disorders in the study participants

Dermatological disorders	Frequency	Proportion (%)
Herpes Zoster ophthalmicus	12	70.59
Atopic Dermatitis	11	47.83
Neurofibromatosis	6	66.66
Vitiligo	0	0
Psoriasis	0	0
Leprosy	4	40
Contact Dermatitis	3	27.27
Pemphigus	2	50
Steven Johnson Syndrome	2	66.66
Molluscum Contagiosum	0	0
Nevus Of Ota	0	0
Ichthyosis	2	100
Albinism	1	100
Epidermolysis Bullosa	1	100

The investigation assessed how often sight-threatening ocular manifestations were linked to different dermatological disorders in the participants. The most commonly observed sight-threatening condition was herpes zoster ophthalmicus, which impacted 12 patients (70.59%). Atopic dermatitis emerged as a notable factor, with 11 instances (47.83%) displaying complications that posed a threat to vision. Neurofibromatosis and Steven Johnson Syndrome exhibited a significant prevalence of sight-threatening manifestations, impacting 6 (66.66%) and 2 (66.66%) patients, respectively. Pemphigus was linked to sight-threatening ocular involvement in 2 instances (50%), whereas leprosy and contact dermatitis were responsible for 4 (40%) and 3 (27.27%) cases, respectively. It is important to highlight that ichthyosis, albinism, and epidermolysis bullosa demonstrated a complete incidence of sight-threatening complications, although these were recorded in 2 (100%), 1 (100%), and 1 (100%) patient(s), respectively. Conversely, there were no instances of sight-threatening ocular involvement associated with vitiligo, psoriasis, molluscum contagiosum, or nevus of Ota. The results emphasized the considerable risk of visual impairment linked to certain skin conditions, stressing the importance of prompt identification and collaborative care to avert serious eye-related issues.

4. Discussion

The present study was conducted among 110 dermatological cases to determine the incidence of ocular manifestations. A study conducted in a comparable environment in Ahmedabad by Damor V M et al. [4] included 500 participants. However, an investigation led by Dr. N. Jeyanthi et al. [7] was performed involving 100 dermatological cases to examine the occurrence of ocular manifestations. A higher proportion of ocular manifestations was noted in males (60.90%) compared to females in the present study. In the investigation conducted by Dr. N. Jeyanthi et al. [7] found that, males represented 45% while females accounted for 55% of the participants. The investigation carried out by Damor V M et

al. [4] included 500 participants revealed that 312 individuals (62.4%) were male, while 188 individuals (37.6%) were female.

In the present study, the most common disease was atopic dermatitis (20.90%). Herpes zoster ophthalmicus was found in 17 (15.4%) and psoriasis in 16 (14.50%). 11 contact dermatitis cases (10%) and 10 leprosy cases (9.09%) were reported. The investigation found 9 instances of neurofibromatosis and vitiligo, representing 8.18% and 8.10% of the total cases. Steven Johnson Syndrome was seen in 3 cases (2.70%) and pemphigus in 4 (3.60%). Two patients (1.80%) had molluscum contagiosum, Ota nevus, and ichthyosis. One patient (0.9%) had albinism and epidermolysis bullosa, the rarest conditions. The study carried out by Dr. N. Jeyanthi et al. [7] revealed that the predominant dermatological condition was herpes zoster ophthalmicus, accounting for 24%, followed by leprosy at 22%, pemphigus at 9%, and Stevens Johnson syndrome at 7%.

Herpes Zoster Ophthalmicus, which affected 12 individuals (70.59%), was the most prevalent sight-threatening disease. Atopic dermatitis was a factor, with 11 cases (47.83%) threatening eyesight. Neurofibromatosis and Steven Johnson Syndrome had sight-threatening symptoms in 6 (66.66%) and 2 (66.66%) individuals, respectively. Leprosy caused 4 (40%) and contact dermatitis 3 (27.27%) sight-threatening ocular involvement, respectively. Pemphigus caused 2 (50%). Ichthyosis, albinism, and epidermolysis bullosa all had sight-threatening consequences, however only 2 (100%), 1 (100%), and 1 (100%) patient had them. The study carried out by Damor V M et al. [4] established correlations between ophthalmological findings and specific dermatological diseases. It was observed that one hundred and eleven (22.2%) patients were diagnosed with HZO, 60 (12%) with HSV, 57 (11.4%) with acne, 55 (11%) with NF, 49 (9.8%) with leprosy, and 35 (7%) with psoriasis. The investigation conducted by Dr. N. Jeyanthi and colleagues [7] reveals that the occurrence of herpes zoster ophthalmicus stands at 24% (24 cases). Among the 24 instances examined, 19 (79.2%) were identified in adults, while 5 (20.8%) were observed in the pediatric age group. In relation to ocular findings, 16 cases were observed with conjunctivitis and 2 cases with keratitis. Lid features were identified in 23 instances. The predominant characteristic observed in the eyelids was the presence of edema and vesicles across the 12 cases examined. In a total of six cases, only vesicles were identified. Additional characteristics included vesicles on the eyebrows and crusted erosions.

In study carried out by Chowdary S et al. [8] involving 12 patients diagnosed with Neurofibromatosis type-1, we observed that 1 patient (8.3%) presented with plexiform neurofibroma, while nodular lesions were identified in 11 patients (91.7%). Nonetheless, research carried out by ALO and Massobrio indicated that 20% of the patients presented with plexiform neurofibromas. [9] This is consistent with the observations made by Reddy GN and Reddy GA et al. [10] who highlighted that neurofibromatosis may result in considerable ocular issues, such as ectropion and corneal ulcers. The current investigation revealed a comparable pattern, suggesting that it may result in mechanical ptosis and ectropion, highlighting the necessity for careful ocular observation in these individuals.

Catsaru-Catsari identified that blepharoconjunctivitis and keratoconjunctivitis sicca were the predominant ocular manifestations associated with psoriasis. [11] In their study, offers et al identified that uveitis and blepharitis represent the most prevalent ocular manifestations associated with psoriasis. Yamamoto et al discovered in their investigation that uveitis and blepharitis are the predominant ocular manifestations associated with psoriasis, followed by dry eye. [12] Kharolia et al. [13] reported that 12.5% of individuals with moderate-to-severe psoriasis showed ocular manifestations, with tarsal hyperemia and anterior blepharitis being the most common findings. The findings of my study support this notion, indicating that individuals with psoriasis frequently experience blepharitis, a condition that may frequently be neglected in dermatological assessments.

The investigation conducted by Kompella [14] revealed that all patients with Stevens Johnson syndrome exhibited bilateral involvement, with the majority presenting bilaterally and symmetrically. Additionally, a study by Wilkins J and Morrison L corroborated these findings. [15] In the investigation conducted by Kompella, lid abnormalities were noted in 87 cases (91.51%), conjunctival abnormalities in 92 cases (6.84%), and corneal complications in 93 cases (97.89%). [13]



Figure 1 Herpes Zoster Ophthalmicus (Left)



Figure 2 Nevus of Ota (Left)



Figure 3 Neurofibromatosis



Figure 4 Iris Lisch Nodules



Figure 5 Neurofibromatosis with Ptosis of Right Eye



Figure 6 Erosion seen over medial side of right eye in Pemphigus Vulgaris

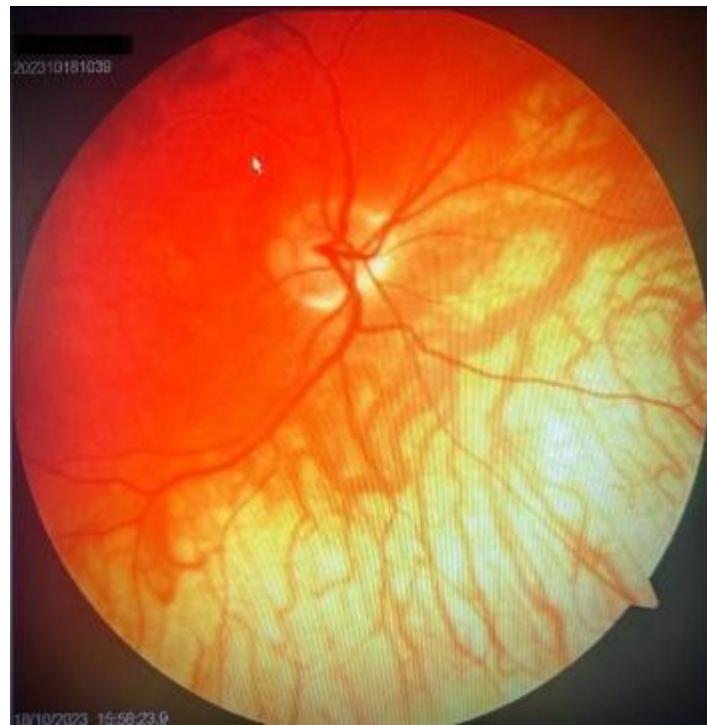


Figure 7 Hypopigmented fundus (Albinism)

5. Conclusion

The present study concluded that the most common dermatological ailment was atopic dermatitis, followed by herpes zoster ophthalmicus and psoriasis. Neurofibromatosis, vitiligo, and leprosy also contributed. Herpes zoster ophthalmicus was the major reason of sight-threatening ocular problems in the study population. Pemphigus, Steven Johnson Syndrome, and neurofibromatosis also have several sight-threatening instances. Despite their low prevalence, ichthyosis, albinism, and epidermolysis bullosa had 100% sight-threatening consequences.

Ocular involvement in dermatological conditions is a frequent characteristic. This investigation underscores the significance of collaborative efforts between dermatology and ophthalmology to guarantee holistic patient care. The extent of lesions may vary from mild to those that pose a risk to vision. Consistent eye examinations are crucial for prompt identification and intervention, which can aid in minimizing complications. The varied ocular hazards associated with dermatological disorders emphasize the need for early identification, multidisciplinary teamwork, and appropriate management to reduce vision-related consequences.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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