



## A STUDY ON OCULAR MANIFESTATIONS OF PSORIASIS

## Ophthalmology

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## ABSTRACT

**Purpose:** Psoriasis is a chronic inflammatory skin disorder, affects a significant portion of the global population, leading to substantial morbidity. Ocular involvement presents a notable complication, with reported incidence rates varying widely. Henceforth this study was aimed to investigate ocular manifestations in psoriasis patients and their correlation with demographic and clinical factors. **Materials And Methods:** A descriptive cross-sectional study was conducted on 60 psoriasis patients. Data collection included demographic details, disease characteristics, and ocular evaluations comprising visual acuity, tonometry, slit-lamp bio-microscopy and tear-film stability tests. **Results:** Most patients were aged 40-60 years, with a majority of males (53.33%). Psoriasis vulgaris (58.33%) was the predominant type, with diverse ocular symptoms reported. Meibomian gland dysfunction (25%) and blepharoconjunctivitis (20%) were the most prevalent ocular findings. Tear film stability tests indicated a high prevalence of dry eye. Ocular manifestations were more common with a PASI score of more than 10 [P-value 0.024] i.e., the greater the PASI score more the occurrence of ocular symptoms. **Conclusion:** Ocular manifestations in psoriasis patients, notably meibomian gland dysfunction and blepharoconjunctivitis underscore the importance of routine ocular examinations. Early identification and management of ocular symptoms, especially in patients with higher disease severity, are crucial.

## KEYWORDS

Psoriasis, Ocular Manifestations, Meibomian Gland Dysfunction, Blepharitis, Dry Eye, Tear Film Stability.

## INTRODUCTION

Psoriasis is a chronic inflammatory skin disorder characterized by abnormal immune system activity, resulting in rapid skin cell proliferation. Clinically, it presents as well-defined, inflamed, thick erythematous patches covered with silvery-white scales, predominantly affecting extensor surfaces such as the scalp, knees, elbows, trunk, palms, and soles of the feet.<sup>1</sup> Ocular manifestations are prevalent in 50-60% of patients with psoriasis, reflecting the close embryological relationship between the skin and eyes, both originating from the ectoderm<sup>2</sup>. Studies have shown that ocular complications often follow cutaneous lesions in psoriasis patients<sup>3,4</sup>. Given the systemic nature of psoriasis, understanding its ocular manifestations and their correlation with demographic and clinical factors is crucial. Therefore, this study aims to investigate ocular manifestations in psoriasis patients and their correlation with age, gender, disease duration, type of psoriasis, site of involvement, and disease severity assessed by the Psoriasis Area and Severity Index (PASI) score. Additionally, the frequency of ocular manifestations associated with psoriasis will be assessed. By comprehensively evaluating ocular involvement in psoriasis, we aim to improve understanding, early detection, and management of this significant complication.

## MATERIALS AND METHODS

This study was a descriptive, non-interventional, cross-sectional investigation conducted from September 2022 to February 2023, at the Department of Ophthalmology. Participants included patients with confirmed diagnoses of psoriasis who presented to the dermatology outpatient clinic and were willing to participate. Patients with concurrent conditions such as hypertension, diabetes mellitus, bronchial asthma, pre-existing ocular surface disorders, or those undergoing phototherapy treatment for psoriasis were excluded from the study. Initially, 75 patients were enrolled, but only 60 patients (120 eyes) attended the ocular evaluation due to various reasons, including the inability to contact patients, lack of interest in participation, or presence of exclusion criteria. Prior to participation, all patients were informed about the importance of ocular examination, and informed consent was obtained. Data collection involved obtaining a detailed history from each participant, including disease duration, site of involvement, clinical subtype of psoriasis, and disease severity assessed using the Psoriasis Area and Severity Index (PASI) score, which also included evaluating ocular symptoms. Ocular evaluations encompassed a comprehensive array of assessments, including examinations of best-corrected visual acuity, slit-lamp bio-microscopy, Goldmann applanation tonometry, and fundoscopy for

posterior segment evaluation. Additionally, tests for tear-film stability were conducted, specifically focusing on Tear-film Breakup Time (TBUT) and Schirmer's tests to evaluate dry eye conditions. Schirmer's test, utilizing sterile Whatmann no.41 filter paper, was employed to measure both basal and reflex tear secretion without topical anaesthesia. Results were evaluated after 5 minutes and graded accordingly: wetting >10mm was deemed normal and <10mm as abnormal. TBUT assessment involved the instillation of 2% fluorescein into the lower fornix, followed by blinking to spread the dye across the tear-film. Subsequently, the tear-film was examined using a slit lamp with a cobalt blue filter. TBUT was determined as the time interval between the last blink and the appearance of the first randomly appearing dry spots in the fluorescein-stained tear-film. A TBUT of less than 10 seconds suggested abnormalities in tear-film stability.

## Statistical Analysis:

The collected data were compiled into a master sheet using Microsoft Excel for organization and ease of access. Statistical analyses were conducted utilizing Statistical Package for the Social Sciences (SPSS) statistical software, version 20. Categorical data were presented as percentages to provide a clear representation of the findings.

## RESULTS

In our study involving a total of 60 patients, the majority fell within the age group of 40-60 years, with a mean age of 50.30 years. The gender distribution revealed 28 female patients (46.67%) and 32 male patients (53.33%). The disease duration among patients varied, with the highest proportion (48.33%) having a duration of less than 5 years. Psoriasis vulgaris emerged as the most prevalent type (58.33%). Symptomatology exhibited diversity among patients, with the majority (58.33%) being asymptomatic. However, a notable portion reported redness with irritation (23.33%), burning sensation (10%), diminution of vision with redness and pain (1.67%), and refractive errors leading to diminution of vision (6.67%) [Fig-1] Treatment modalities varied as well, with methotrexate being the most common (48.33%), followed by artificial tears (25%). [Table-1] On applanation tonometry, the mean value of intra-ocular pressure of these patients was found to be in the normal range [15±3mmhg]. None of the patients had glaucoma. The majority of patients in the study had a PASI score indicative of mild psoriasis (<10), comprising 71.67% of the sample. Moderate psoriasis (PASI score 10-15) was observed in 18.33% of patients, while severe psoriasis (PASI score >15) was present in 10% of patients. [Table-1] The slit-lamp evaluation revealed various ocular

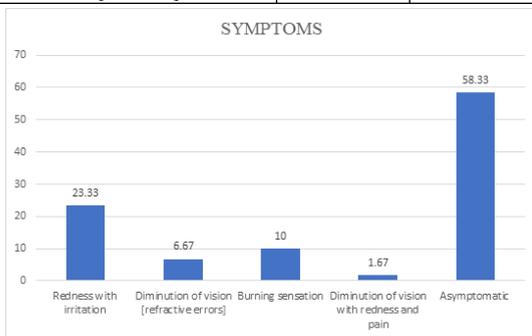
findings in psoriasis patients, with the most prevalent being Meibomian Gland Dysfunction (25%), followed by Blepharitis (20%) and Lens Involvement (15.84%). [Table-2; Fig-2] Notably, Corneal Involvement was absent in this cohort. Most of the patients were found to have reduced values of tear-film breakup time and Schirmers test leading to increased occurrence of dry eye. [Table-2; Fig-3]

**Table-1: Clinical Characteristics And Distribution Of Psoriasis Severity Based On Pasi Score:**

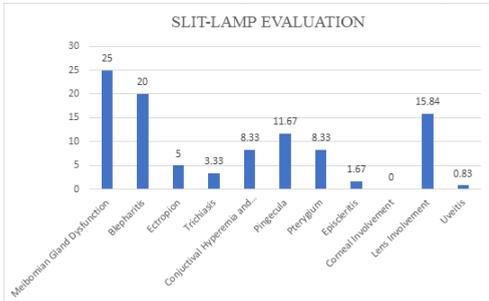
CHARACTERISTICS		No. OF PATIENTS	PERCENTAGE
Disease Duration	<5 years	29	48.33
	5 – 10 years	16	26.67
	>10 years	15	25
Type of Psoriasis	Psoriasis vulgaris	35	58.33
	Palmoplantar psoriasis	19	31.67
	Scalp psoriasis	6	10
Treatment History	Methotrexate	29	48.33
	Artificial tears	15	25
	Topical steroids for lesions	9	15
	Nil	7	11.67
PASI Score	<10 [mild]	43	71.67
	10-15 [moderate]	11	18.33
	>15 [severe]	6	10

**Table-2: Ocular Findings In Psoriasis Patients Based On Slit-lamp Evaluation Along Dry Eye Evaluation Tests:**

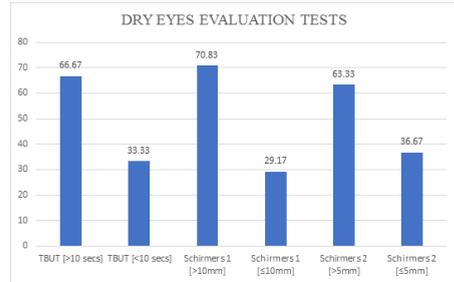
SLIT-LAMP EVALUATION	No OF EYES	PERCENTAGE
Meibomian Gland Dysfunction	30	25
Blepharitis	24	20
Ectropion	6	5
Trichiasis	4	3.33
Conjunctival Hyperaemia and Conjunctivitis	10	8.33
Pinguecula	14	11.67
Pterygium	10	8.33
Episcleritis	2	1.67
Corneal Involvement	0	0
Lens Involvement	19	15.84
Uveitis	1	0.83
TBUT >10 secs	80	66.67
TBUT <10 secs	40	33.33
Schirmers 1 >10mm	85	70.83
Schirmers 1 ≤10mm	35	29.17



**Figure-1: History of Various Symptoms Among the Participants**



**Figure-2: Ocular Findings in Psoriasis Patients Based on Slit-lamp Evaluation.**



**Figure-3: Evaluation of Dry Eyes Using Tear Film Stability and Schirmer's Tests.**

**DISCUSSION**

The study population exhibited a variation in age, with the highest number of patients falling within the 41–60-year age group (30 patients). Ten patients each belonged to the 21–30 year and 31–40-year age groups, while the remaining ten patients were over 60 years old. The average age of the participants was 50.30 years. Farber and Nall found that average age of onset was 28 years<sup>5</sup>. In our study, we noticed male preponderance with 53.33% compared to female patients at 46.67%. A German study done by Henseler T et al.<sup>6</sup> showed the similar results where the M:F ratio was 1.74:1. Our study couldn't link specific psoriasis types or severity with eye problems due to limited patients in each category. Although participants with longer disease (average 5 years) had more eye issues, the uneven spread of patients across disease duration groups prevented finding a statistically significant connection (p-value = 0.079). A study done by Okamoto F et al. also had similar results<sup>7</sup>. Among the screened population, pertaining to ocular complaints, 58.33% were asymptomatic and 41.67% were symptomatic. Our study identified a subset of psoriasis patients with subclinical ocular manifestations, highlighting the potential for asymptomatic presentations. This underscores the necessity for routine ophthalmic evaluations in this population to prevent detection failures. MGD emerged as the most prevalent ocular finding (25%), exhibiting a statistically significant positive correlation with disease duration (p-value = 0.015). Furthermore, we observed a link between MGD and tear-film instability, potentially contributing to evaporative dry eye. Additionally, a proportion of patients presented with eyelid pathologies (ectropion 5%, trichiasis 3.33%) and conjunctival involvement (hyperaemia 8.33%, conjunctivitis 8.33%). Notably, blepharitis (20%) frequently co-occurred with conjunctivitis (blepharoconjunctivitis 28.33%), representing the second most frequent finding (p-value = 0.032). Pinguecula (11.67%) and pterygia (8.33%) were observed with lower frequency. Presence of Corneal pathologies such as corneal vascularization, stromal involvement was noted according to various studies<sup>8,9</sup>. However in our study, there was no significant corneal involvement but secondary to involvement of lid or conjunctiva, dryness was noted. Our study identified cataracts (15.84%), primarily posterior subcapsular, in some patients. This finding was more frequent among those receiving long-term systemic steroids for psoriasis<sup>10</sup>. Our findings suggest the need for regular ophthalmic assessments in psoriatic patients due to the potential impact of various treatment modalities on cataract development. Notably, the majority of our participants exhibited mild psoriasis (PASI score <10, 71.67%), and this pattern held true for those with blepharitis. However, a statistically significant correlation (p-value = 0.024) emerged between higher PASI scores (>10) and a greater prevalence of ocular manifestations, suggesting a link between disease severity and ocular complications. This aligns with previous research highlighting a potential association between disease duration, PASI score, and the development of ocular symptoms in psoriasis patients<sup>9,11</sup>. In our research, we observed that only one patient (0.83%) reported experiencing a decrease in vision, accompanied by circum-ciliary congestion, pain, photophobia, and the presence of cells and flares in the anterior chamber, indicative of anterior uveitis. Conversely, the remaining 59 patients exhibited no significant activity in the anterior chamber. Fundus examination results were within normal ranges for all participants. Notably, the patient with uveitis did not exhibit any associated joint involvement. The occurrence of anterior uveitis in psoriasis patients has been reported in various studies, ranging from 7% to 25%.<sup>12,13,14</sup>. In our investigation, the prevalence was notably lower, with only 0.83% of psoriasis patients showing signs of uveitis. This finding contrasts with other studies, such as that conducted by Chandran N et al.<sup>15</sup>, where uveitis was observed in 2% of psoriasis patients. Upon further analysis, it was noted that the patients in our

study were already undergoing systemic therapy at the time of assessment, which may have contributed to the lower incidence of uveitis observed. Additionally, our research suggests that ocular manifestations, such as cataracts and uveitis, tend to manifest in older patients compared to other demographic groups. In the study by Shiu-Chung et al.<sup>17</sup>, it was highlighted that uveitis might occur in psoriasis patients even in the absence of joint involvement, emphasizing the importance of monitoring ocular health. In cases of psoriatic arthritis, uveitis can present with significant severity and recurrence, potentially leading to irreversible vision impairment if not promptly addressed<sup>18,19</sup>. Additionally, dry eye syndrome appears to be more prevalent among individuals with psoriasis, affecting tear-film stability and ocular surface integrity. Among 120 eyes examined, 36% exhibited symptoms of dry eyes. Our study revealed abnormal values in TUBT in 33.33% of cases and Schirmer-1 tests in 29.17% of cases, both demonstrating statistically significant results (p-value <0.001). The impact of age and gender on tear-film stability remains a topic of debate; however, our findings suggest a higher prevalence of changes in women compared to men. These observations align with previous research by Chandran N et al.<sup>15</sup>, which reported an increased incidence of dry eyes among psoriasis patients, followed by findings from Lambert J et al.<sup>16</sup>, who noted dry eye prevalence ranging from 15% to 22%.

## CONCLUSION

In conclusion, ocular findings in psoriasis patients present a significant yet often overlooked aspect of the disease, marked by vague and non-specific symptoms. Meibomian gland dysfunction and blepharconjunctivitis emerged as the most prevalent ocular manifestations in our study, highlighting the need for routine ocular examinations in psoriasis patients. Despite these ocular manifestations, the mean intraocular pressure remained within normal limits. Positive results in tear film stability tests such as TBUT and Schirmer1 underscored the importance of early identification and treatment of ocular symptoms, particularly in patients with higher PASI scores. However, a limitation of our study lies in its observational nature, warranting further prospective studies to establish causality. Hence, we recommend routine ocular examination for all psoriasis patients, irrespective of treatment regimen, to detect and manage ocular manifestations early. Additionally, raising awareness among patients about ocular complications associated with psoriasis and advocating for a multidisciplinary approach are essential steps in ensuring comprehensive care and prevention of irreversible ocular damage leading to blindness.

**Conflict Of Interest:** All authors declare no conflict of interest.

**Source Of Funding:** None

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