Research Article

Ocular Manifestation in Psoriasis

Ajay K. Murthy (MS) 1, Subashini Kaliaperumal (MS, DNB, FRCS (Glasg), MNAMS, FIMSA) 2*, Sandip Sarkar (MS) 2, Rashmi Kumari (MS) 2

1 Department of Orbit and Oculoplasty, Narayana Nethralaya, Bommasandra, Bangalore, Karnataka, India.
2 Jawaharlal Institute of Post Graduate Medical Education and Research, An Institution of National Importance, Government of India, Puducherry, India.

Abstract

Purpose: Psoriasis is a chronic autoimmune and systemic disease characterized by red and scaly plaques, affecting about 1% of the global population. Ocular involvement is becoming increasingly recognized as a complication of the disease. This study aims to evaluate ocular manifestations' prevalence in psoriasis patients.

Methods: We conducted a prospective observational study of patients attending the outpatient department of dermatology in a multidisciplinary tertiary care hospital in South India. A total of 78 patients were enrolled in this study. Ocular symptoms, Schirmer’s test, tear breakup time, and intraocular pressure were assessed. The study used the psoriasis area and severity index (PASI) score to quantify the severity of lesions based on the area involved and the appearance of the plaque.

Results: The mean age of the patients was 48.5 ± 12.87 years. The mean duration of psoriasis was 4.8 ± 4.6 years. Ocular manifestations were more common in patients with PASI score >10 when compared to patients with PASI score ≤10. Among the patients with PASI score >10, 55 (70%) had ophthalmic manifestations such as cataracts, dryness, blepharitis, and tear breakup time. There was a statistically significant association between the PASI score and the prevalence of dry eye and blepharitis (p-value is 0.007 by Fischer exact test). There was no statistical significance in relation to the duration of disease and ophthalmic manifestations in our study population.

Conclusions: Symptoms of dry eye are a significant part of the clinical manifestations of the disease. Moreover, uveitis is a potentially serious complication in patients presenting with psoriatic arthritis.

Keywords: Psoriasis, Dry eye, Uveitis, Ocular manifestations, Severity.

INTRODUCTION

Psoriasis is a chronic autoimmune and systemic disease characterized by well-defined red and scaly plaques involving almost 1–3% of the population worldwide. 1 The pathophysiology has been regarded as a TH1-mediated cellular dysfunction, which causes systemic inflammation and increased cytokine production. Ocular involvement is being increasingly recognized as a complication of psoriasis, affecting 10% of total cases. 2–4 The ocular involvement can be caused by the direct involvement of psoriatic lesions to the ocular tissue or complication of psoriasis treatment. 5 Various ocular structure involvement has been reported in psoriasis. The commonest ocular manifestations are dry eye and blepharitis. Others include uveitis, keratoconjunctivitis sicca, keratitis, corneal abscess, cataract, orbital myositis, symblepharon, Brown’s syndrome, trichiasis, cicatrical ectropion, and madarosis. Uveitis is most commonly associated with psoriatic arthritis. 3–5

Since the ocular manifestations of psoriasis are subtle, they can be easily overlooked without a proper, systematic and dedicated ocular examination. The ocular manifestations also appear much later than the skin manifestations. Surveys into the quality of life implications of psoriasis mostly do not give importance to ocular symptoms. 2 Ophthalmic examinations carried out at regular intervals will help detect early eye changes. Since there are not many studies demonstrating ocular manifestations in psoriasis, we undertake the study to evaluate the prevalence of ocular manifestations in patients with psoriasis and to determine the relationship.

Address for correspondence: Subashini Kaliaperumal, Jawaharlal Institute of Post Graduate Medical Education and Research, An Institution of National Importance, Government of India, Puducherry, India.
E-mail: subadoc@gmail.com

© UPJO, 2023 Open Access. This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article’s Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article’s Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit https://creativecommons.org/licenses/by‑nc‑sa/4.0/.

How to cite this article: Murthy AK, Kaliaperumal S, Sarkar S, Kumari R. Ocular Manifestation in Psoriasis. UP Journal of Ophthalmology. 2023;11(3): 69–73.
Received: 18-10-2023, Accepted: 04-11-23, Published: 22-11-2023
MATERIALS AND METHODS
We conducted a prospective, descriptive, cross-sectional study with patients attending the outpatient Department of Dermatology in a Multidisciplinary Tertiary Care Hospital in South India. The study approval was obtained from the Institutional Ethics Committee (IEC) and followed tenets of the Declaration of Helsinki. Informed written content was taken from all the participants. The sample size was estimated by using the standard formula for estimating the proportion with absolute precision. Patients less than 18 years, associated with diabetes mellitus, renal disorder, hepatic disorder and other diagnosed skin diseases were excluded from the study. Detailed examination, including medical history, systemic examination and ocular examination, was done for every patient. Patient characteristics, such as age, sex, duration of disease, type of psoriasis, area of skin involvement, and treatment history, was noted.

The psoriasis area and severity index (PASI) score is a scale for quantifying the severity of lesions based on the area involved and the appearance of the plaque. The body is divided into head, arms, trunk, and legs. Every section is scored by itself, and four scores are combined to calculate the final PASI. The percentage area of skin involved for every section is estimated and converted into a grade 0 to 6. Three clinical signs estimate the severity within each area: erythema, induration and desquamation. The above 3 severity parameters are summed up for each section of skin, multiplied by area score and by weight of the section of the body (0.1 for head, 0.2 for arms, 0.3 for body and 0.4 for legs).

A complete ophthalmic examination including uncorrected visual acuity (UCVA), best-corrected visual acuity (BCVA), slit lamp examination to assess the anterior segment to rule out blepharitis, lid abnormalities, conjunctival xerosis, corneal pathologies including superficial punctate keratitis, corneal melting, opacities, acute anterior uveitis, cataract. The cataract examination was done based on the lens opacities Classification System III. Intraocular pressure was measured by Goldman applanation tonometry (GAT) and dilated fundus examination was done with indirect ophthalmoscope to find out any posterior segment pathology.

Dry eye evaluation was done based on (1) OSDI; (2) Tear film break up time (TBUT), (3) Schirmer I & II test, (4) Tear meniscus height (TMH), (5) Corneal fluorescein staining (CFS). The ocular surface disease index (OSDI) was used to assess ocular symptoms of dry eye and it works on a 5-point scale, such as: never, 0; sometimes, 1; half the time, 2; most of the time, 3; all the time, 4. The 12 questions are sub-scaled into 3 categories: vision-related function (6 questions), ocular symptoms (3 questions), and environmental triggers (3 questions). The stability of the tear film (TBUT) over the conjunctiva and cornea was assessed using slit lamp with a cobalt blue filter and sodium fluorescein. A drop of 2% sodium fluorescein was applied to the eye, and the patient was asked to blink five times to form a film over the eye.

<table>
<thead>
<tr>
<th>Table 1: Baseline demographics of all the patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter</td>
</tr>
<tr>
<td>Gender (Male/Female)</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Range</td>
</tr>
<tr>
<td>Age distribution</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Duration of disease (in years)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Type of psoriasis</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Type of Treatment</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Ocular Manifestations in Psoriasis

Table 2: Distribution of psoriasis with ocular manifestations based on the PASI score

<table>
<thead>
<tr>
<th>PASI SCORE</th>
<th>Total no psoriasis patients (n)</th>
<th>Patients with ocular manifestations (n)</th>
<th>Patients with dry eye (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5</td>
<td>8</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>5-10</td>
<td>41</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>&gt;10</td>
<td>29</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>78</td>
<td>55</td>
<td>30</td>
</tr>
</tbody>
</table>

Figure 1: Distribution of patients with various ocular manifestations
cornea and bulbar conjunctiva. The interval between the last blink
and the first randomly distributed dry spot was taken
as the tear breakup time. A value of less than 10 seconds
was taken as abnormal.5 The Schirmer I test was performed
without anesthesia by applying a 35 x 5 mm Whatman No. 41
filter paper strip to the lower temporal lid margin; less than
10 mm in 5 minutes was considered abnormal. Schirmer
II was performed similarly with topical anesthesia (1%
Proparacaine) instilled in the lower fornix 1-minute before
the procedure and values less than 5 mm were considered
significant. Tear meniscus height (TMH) was measured by
modifying the vertical length of slit beam on the tear meniscus
at the centre of the lower lid and the readings were noted from
the slit lamp scale. CFS was conducted to assess ocular surface
damage with sterile standard strips and the intensity of the
zones of conjunctiva and cornea (central, superior, temporal,
inferior, and nasal) was graded from 0 (none) to 4 (severe),
according to the Oxford Scheme for ocular surface staining.10
Diagnosis of dry eye was considered in case of OSDI score ≥33,
ST-I ≤10 mm, TBUT ≤10 secs, TMH ≤0.3 mm and CFS
score ≥3. Data were analyzed using the software statistical
package for social science (version 20; SPSS Inc., Chicago,
Illinois, USA). A frequency distribution with its percentage
and descriptive statistics with mean and SD were calculated.
χ²-Test, unpaired t-test, and correlations were performed
whenever needed.

RESULTS

A total of 78 patients based on the inclusion and exclusion
criteria attending the psoriasis clinic in our hospital were
included in the study. Patient characteristics such as age,
gender and disease characteristics such as duration of disease,
type of psoriasis, type of treatment are given in Table 1. The
mean age of the patients was 48.5 ± 12.87 years, ranging from
21 to 75 years. Majority of the patients in the study were in
the age group of 41-60 years. The mean duration of psoriasis
in our study population was 4.8 ± 4.6 years. Majority of
patients had disease duration of less than 5 years. There was
no statistical significance between duration of disease and
ocular manifestations of psoriasis (p=0.18). The distribution
of psoriasis with ocular manifestations based on the PASI
score is given in Table 2. The frequency of various ocular
manifestations among psoriasis patients are given in Figure
1. Ocular manifestations were more common in patients with
PASI score >10 when compared to patients with PASI score
≤10 and this difference was statistically significant (p-value
is 0.007 by Fischer exact test) (Table 3).

DISCUSSION

Psoriasis is a chronic inflammatory disorder that commonly
manifests with various extra-cutaneous manifestations, of
which eye involvement is important. Ocular manifestations,
such as blepharitis, keratoconjunctivitis sicca, conjunctivitis,
kartitis, cataracts and uveitis have been observed in about
30% of patients with psoriasis.3 We screened the psoriasis
patients attending the outpatient Department of Dermatology
for associated ocular manifestations. Out of 78 patients
studied, 55 (70%) had ocular manifestations such as cataract
(n = 33), dryness (n = 30), blepharitis (n = 18), conjunctivitis (n
= 7) and uveitis (n = 3). Studies done by Chandran et al.2 and
Erbagci et al.11 in Turkey had found the prevalence of ocular
manifestations in psoriasis to be 67 and 65%, respectively,
which were in congruence with the present study, which
showed a prevalence of 70%. The duration of psoriasis in our
study did not play a role in ocular manifestations of psoriasis.
There was an increase in the proportion of patients with ocular
manifestations with increase in the duration of disease but
was of no statistical significance in relation to the duration
of disease and ocular manifestations.

Cataract has been reported to be the most important
cause of visual impairment in psoriasis patients.1 Chatterjee
et al.12 in their Punjab study, the prevalence of cataracts was
1% in age group 30 to 49 years and Nirmalan et al.13 in their
study showed 15.7% had cataracts among age group 40 to 49
years. Wanscher et al.14 in their study of 266 psoriasis patients
with mean age of 24.7 years, found that the incidence of
cataract among psoriasis patients does not exceed the normal
population; hence concluded saying routine eye examinations
for cataract are not necessary for such patients. In our study, in
the age group less than 40 years, 10% of patients with psoriasis

| Table 3: Dry eye parameter values with respect to the severity of psoriasis (PASI SCORE) |
|----------------------|----------------------|----------------------|----------------------|
| PASI SCORE | Schirmer I | Schirmer II | TBUT |
| <5         | 17 ± 7.6    | 11.3 ± 4.53 | 9.75 ± 1.13 |
| 5-10       | 11.43 ± 4.57 | 8.7 ± 4.40 | 7.45 ± 2.39 |
| >10        | 10.3 ± 4.01 | 7.9 ± 3.94 | 7.45 ± 2.39 |

© My Research Journals
Ocular Manifestations in Psoriasis

had cataracts. In the age group 41 to 60 years, 38% of psoriasis patients had cataracts. Hence it is essential to examine every patient with psoriasis with history of diminution of vision for the presence of cataracts.

In their study, Lima et al. found abnormal Schirmer test in 50% of psoriasis patients along with 67% abnormality in tear breakup time. Het et al. have showed a higher tear film instability and significant degeneration on the ocular surface in patients with psoriasis. Lambert et al. in a study of patients with psoriatic arthritis, noted ocular inflammation in 30% of cases. Kılıc et al. noted Schirmer test and tear break-up time values to be statistically lower in the patient group than those in the control group. Karabulut et al. demonstrated a higher incidence of neutrophil clumping, squamous metaplasia and nuclear chromatin changes in patients with psoriasis. However, in our study the prevalence rate was 36% and this maybe under-estimation because of rigid diagnostic criteria to classify dry eye (Schirmer I <15 and Schirmer II <10). In addition, there is a poor relationship between the signs and symptoms of dry eye. Therefore, there could be a greater number of cases of dry eye which have been unnoticed.

Blepharitis usually presents with itching and burning sensation associated with red swollen lids and crusty and flaky scales covering the lashes. It is one of the most common ocular manifestations in psoriasis. Erbagci et al. showed 63% prevalence of blepharitis in psoriasis patients, whereas in our study, it was found only in 23% of cases. Campanati et al. observed that the ocular symptoms, Schirmer’s test and tear breakup-time improved after 12 weeks of immunosuppressant drugs. Hence the lesser prevalence of blepharitis (23%) in the present study may be attributed to the immunosuppressant drugs, methotrexate and cyclosporine. In our study, 69 out of 78 patients received or received methotrexate or cyclosporine as primary treatment for psoriasis.

Usually, ocular symptoms can present as chronic non-specific conjunctivitis, secondary to dry eyes, blepharitis and can lead to xerosis, trichiasis and symblepharon formation etc. Kaldeck et al. reported 11 cases of conjunctivitis out of 90 psoriasis patients, whereas Ingram et al. stated that conjunctivitis and psoriasis was fortuitous. In our study, we found the prevalence of conjunctivitis to be more than the prevalence in the general population. The manifestations in cornea in psoriasis patients range from punctate keratitis to filaments, epithelial thickening, recurrent erosions, vascularization, ulceration, melting and scarring. None of the patients in the present study had corneal manifestations except for arcus senilis, which is age-related change.

Uveitis is a potentially serious complication in patients with psoriasis. It is the most common ocular manifestation along with psoriatic arthritis with a prevalence rate of 20%. Wollina et al. in their study observed that anterior uveitis is temporarily seen in about one-quarter of psoriatic arthritis patient. Villani et al. described that 7% patients with psoriatic arthritis have anterior uveitis. Twenty-six episodes of irido-cyclitis were recorded at diagnosis in 22 out of 242 patients with psoriatic arthritis by Niccoli et al. and they concluded that uveitis has been frequently underdiagnosed. In addition, Villani et al. inferred that up to 29% of patients with psoriasis have undiagnosed psoriatic arthritis. In our study, 3 patients had uveitis, out of which one had psoriatic arthritis. Hence, patients even without symptoms of joint pain or known cases of psoriatic arthritis should be examined for uveitis and in psoriasis patients with uveitis, investigations for psoriatic arthritis may be necessary.

The cause of increase in intraocular pressure in patients with psoriasis is due to the use of topical corticosteroids for psoriasis lesions, especially for facial and eyelid lesions. The mechanism of action of raised IOP is by membrane stabilizing action causing accumulation of glycosaminoglycans in the trabecular meshwork resulting in outflow resistance. Intraocular pressure was in our study’s normal range (16 ± 3 mm of Hg). The use of topical corticosteroids had not resulted in increase in intraocular pressure nor development of glaucoma. In a study by Chandran et al., three eyes (2% prevalence) had glaucomatous optic neuropathy unrelated to the previous treatment and were comparable with the expected population frequency. The mean intraocular pressures in psoriasis patients were normal in the study done by Lima et al. also.

Okamoto et al. showed that the flare value was higher in patients with PASI scores greater than 10 and those older than 40 years. In another study conducted in by Okamoto et al. in Japan, it was found that the aqueous flare value was higher in patients with longer duration of disease and higher in patients with severe psoriasis (PASI score > 10). However, in our study, we had not assessed the aqueous flare value, but we had observed that the ocular manifestations were more likely to occur among patients with higher disease severity. An increase in the prevalence of dry eyes was noted in patients with higher PASI score.

**Conclusion**

Ocular manifestations are a significant part of the psoriasis manifestations. Dry eye and blepharitis are the most common ocular manifestations. There was a significant association between the PASI score and ocular manifestations. The greater the score, more common and severe are the ocular manifestations.

**References**

3. Lambert JR, Wright V. Eye inflammation in psoriatic arthritis.


