

## Clinical Study on Ocular Manifestations in Patients with Psoriasis, in Chennai, India

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### ABSTRACT

#### BACKGROUND

We wanted to determine the prevalence of ocular manifestations assess the frequency and distribution of potential sight threatening complications in patients with psoriasis.

#### METHODS

This is a non interventional, observational hospital based study conducted at a tertiary health care centre which included 105 patients with psoriasis. A background history was taken regarding the duration of psoriasis and treatment taken. The prevalence of ocular manifestations were assessed by detailed ocular examination which involved the best corrected visual acuity using Snellen's chart, examination of the anterior chamber using slit lamp, examination of the fundus, intraocular pressure measurement, dry eye evaluation including Schirmer's test, tear film break up time test, and Rose Bengal stain test.

#### RESULTS

In total 105 patients with psoriasis were enrolled in this study. Among the 105 patients whose 210 eyes were examined, 77 % had psoriasis vulgaris, 14 % had scalp psoriasis, and 9 % had palmoplantar psoriasis. Among the 105 patients, 38 patients had symptomatic ocular manifestations. Out of the 38 % patients with symptomatic ocular manifestations, we found that 28 %, 25 %, 17 %, 2 % of the patients manifested with evaporative dry eye, blepharoconjunctivitis, redness and episcleritis respectively.

#### CONCLUSIONS

In our study, ocular manifestations were even seen among the asymptomatic patients. Hence a multi-disciplinary approach including effective screening and early detection of ocular manifestations followed by prompt treatment is essential to reduce the morbidity in patients with psoriasis.

#### KEY WORDS

Psoriasis, Dry Eye, Uveitis

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## BACKGROUND

Psoriasis, a common chronic immune mediated inflammatory skin disorder usually characterized by plaques with silver scales and erythematous papules, associated with significant morbidity and is a substantial economic burden to both patients and the healthcare system. It affects 1 - 3 % of the general population of all ages and genders, with incidence peaking in between the ages of 15 and 30 years.<sup>1</sup> The prevalence of psoriasis varies from 0.44 % to 2.8 %.<sup>2</sup> It ranges from 0.91 % to 8.5 % in adults, and from 0 - 2.1 % in children.

Genetic factors play an important role in susceptibility of psoriasis. The psoriasis susceptibility (PSORS1) locus within the major histocompatibility complex (MHC) on chromosome 6p21 is considered as the major genetic determinant of this disease. It is caused by an appropriate activation of cellular immune system. There is infiltration of the skin with activated T cells, these elaborate cytokines and growth factors which stimulate the keratinocytes and cause hyper proliferation. It is a series of linked cellular changes in the skin characterized by hyperplasia of epidermal keratinocytes, vascular hyperplasia, ectasia and formation of inflammatory infiltrate. Although genetic predisposition plays a role, certain environmental and behavioral factors frequently affect the course of the disease like smoking, alcohol, drugs and infection. Psoriasis tends to be concordant among monozygotic twins more commonly than dizygotic twins.<sup>3,4</sup> The HLA has the characteristic association with different types of psoriasis. 40 % of patients with psoriasis have a familial predisposition in first degree relatives.<sup>5</sup> Seasonal variations, pregnancy and obesity are known to exacerbate the disease.

The spectrum of presentation in the eye is varied, which includes blepharitis, conjunctivitis, episcleritis, dry eyes, and uveitis. The incidence of the ocular inflammation is known for many years but is not well investigated and diagnosed due to its subtle presentation. The eye manifestation in psoriatic patients are recently coming to light by the effective early ophthalmic screening<sup>6,7</sup> in which conjunctival involvement seems to be the most common finding with an incidence of 64.5 %.<sup>8</sup> The conjunctival inflammation presents as "cobblestone" appearance in the upper palpebral conjunctiva. Various forms of eyelid involvement includes anterior blepharitis, hyperkeratotic plaques and meibomian gland dysfunction which leads to posterior blepharitis.<sup>9</sup> Trichiasis, ectropion, and entropion are seen in long standing blepharitis. Untreated blepharitis can lead to evaporative dry eye.<sup>10</sup> Symblepharon is also reported. Severe dry eyes or blepharoconjunctivitis can cause corneal involvement. Patients presenting with episcleritis have a sectorial or diffused congestion, symptoms of discomfort associated with pain and watering.<sup>11</sup> Tear film instability is seen in the psoriatic patients due to a disturbance in the ocular surface. It is accompanied by increased inflammation of the ocular surface and osmolarity of tear film (DEWS 2007).<sup>2</sup> Sight threatening corneal complication can occur due to keratoconjunctivitis sicca if untreated.<sup>12</sup> Drugs used in treatment of psoriasis such as retinoid, PUVA therapy, and systemic drugs like methotrexate are associated with worsening of the dry eye.<sup>13</sup> Uveitis is an alarming ocular problem that may occur in 7 - 20 % of the patients suffering from psoriasis. Chandran et al. did a cross sectional study in which it was found that there was a prevalence of uveitis in 2

% of patients with psoriasis regardless of the severity of the lesion.<sup>14</sup> A correlation between uveitis and chronic plaque psoriasis has also been found which shows uveitis to be bilateral, prolonged and more severe in these patients.<sup>15</sup> Anterior uveitis has a greater association psoriatic arthropathy than the other types of psoriasis.<sup>14,16</sup> In 1976, Lambert and Wright explained association between psoriatic arthritis and anterior uveitis by a study involving 112 patients in which 7.1 % were found to have anterior uveitis.<sup>8</sup> Psoriatic patients have an increased damage to the blood aqueous barrier which can cause subclinical inflammation, and in turn can manifest as flare even when ocular symptoms are absent.<sup>17</sup> There is an interrelation between HLA - B27, early onset of psoriasis and psoriatic arthritis.<sup>8</sup> There is a lifetime risk of 1 - 2 % for developing uveitis in patients with HLA - B27, which increases to 7 % in patients with psoriatic arthritis. The factors associated with severity of uveitis in psoriasis are males, HLA - B27, pustular psoriasis, psoriatic arthropathy, axial arthropathy, and late onset psoriasis. Screening and timely detection of such manifestations are predominant in preventing the serious vision threatening complications. Hence in this study we intended to identify the prevalence of these ocular manifestations and assess the frequency and distribution of potential sight threatening complications in patients with psoriasis.

## METHODS

It is a Cross sectional study conducted in a Tertiary health care centre from August 2013 to August 2014 and the study included one hundred and five patients (60 males and 45 females) as participants who were diagnosed with psoriasis from the Outpatient department of Dermatology during the above period. This study was approved by the Institutional Ethics Committee

### Inclusion Criteria

Patients of all the age groups and both the genders, who were diagnosed with psoriasis.

### Exclusion Criteria

Patients with pre-existing ocular surface disorders, with corneal dystrophies or degenerations, on PUVA therapy, and symptomatic patients but not willing for the study.

The importance of ocular examination was explained to the patients. A background history was taken regarding the duration of psoriasis and treatment taken, site and type of lesion, comorbidities such as diabetes, hypertension, tuberculosis, and bronchial asthma. All the patients underwent an ocular examination which involved best corrected visual acuity using Snellen's chart, fundus examination, intraocular pressure measurement, slit lamp examination of the anterior chamber, and dry eye evaluation. Schirmer's test was performed by making the patient sit in a relatively darker room and fan switched off. A sterile whatman no 41 strip was folded at the tip premarked area along 90 degree angle.

The patients were asked to look upwards and test paper was inserted in the lower cul de sac, at the junction of medial two third and lateral one third, ensuring it did not touch the cornea to avoid tearing of reflex.

The amount of wetting of the strip from the folded area was taken in mm. Measurements of < 10 mm were considered to be positive for dry eye and readings > 10 mm were considered as normal.<sup>18</sup> Tear film break up time was calculated by touching a fluorescein strip to the inferior fornix with the patient looking up. The cornea was examined under a slit lamp using cobalt blue light. The patient was instructed to blink once or twice and then stare straight ahead without blinking in between. The appearance of the first dry spot from the last blink was taken. Values of < 10 seconds were taken positive for dry eye.<sup>12</sup>

Rose Bengal test is the assessment of ocular damage. Here one drop of antibiotic was placed on the rose Bengal strip and allowed to roll into the lower cul de sac of each eye. After 15 seconds the eye was examined for staining on cornea and conjunctiva. The amount of staining in six areas of eyes were documented and categorized based on a modified Van Bijsterveld Rose Bengal grading map. It stains the conjunctiva more intensely than the cornea, in severe cases also stains the cornea. A quantitative scale of zero to three was used in each area of the conjunctiva of each eye. An additive score of > 4 in the conjunctival region constituted a positive test. Asymptomatic patients with clinical findings were also considered in the diagnosis.

**Statistical Analysis**

The data was analyzed descriptively using percentages.

**RESULTS**

A total of one hundred and five patients who were in the age group of 40 – 60 years, with the mean age of 50.30 years were

screened and analyzed to identify the prevalence of ocular manifestations and to assess the frequency and distribution of potential sight threatening complications in patients with psoriasis. The study consisted of 77 % patients having psoriasis vulgaris, 14 % with scalp psoriasis, and 8 % having palmoplantar psoriasis. In the total group, 56 % patients had the duration of psoriasis for 1 - 4 years, followed by 29 % patients with 5 - 9 years, 10 % from 10 - 14 years, 3 % with 15 - 20 years and 1 patient with duration of > 20 years. The participants in our study had ocular manifestations with an average duration of 4 years and 85.7 % of the participants were acquired by the defects for less than 10 years. There were 42 patients (40 %) under topical steroids, 10 patients (16 %) under emollients, 36 patients (34 %) using both steroids and emollients while 10 patients (10 %) using methotrexate. In our study population there were 12 patients (11 %) with joint involvement. With regards to ocular complaints 38 patients were symptomatic while the rest 67 patients were asymptomatic. In the 38 symptomatic patients, redness was the most common symptom seen in 18 patients (17 %), while 10 patients (10 %) had defective vision and the rest 10 patients (10 %) had irritation associated with burning sensation.

Among the total 210 eyes that were screened, blepharitis was present in 46 eyes (22 %). Of these 46 eyes, unilateral presentation was seen in 28 eyes (69 %) and bilateral presentation was seen in 18 eyes (39 %). Of the total screened eyes, 17 eyes (8 %) were found to have direct involvement of lid margin while the majority of 147 eyes (70 %) did not have any lid involvement. Further, conjunctivitis was present in 52 eyes (25 %) and 5 eyes (2 %) were found to have episcleritis. Pterygium and Pinguecula were seen in 6 eyes (3 %) and 16 eyes (8 %), respectively. Only 3 patients (3 %) presented with cells and flares in the anterior chamber suggestive of anterior uveitis, while the rest 102 patients (97 %) were found to have quiet anterior chambers. Immature cataract was present in 52 patients (25 %) and mature cataract was found in 4 patients (2 %), while majority of them i.e., 124 (59 %) had clear lenses, and 30 of the patients (14 %) had pseudophakia.

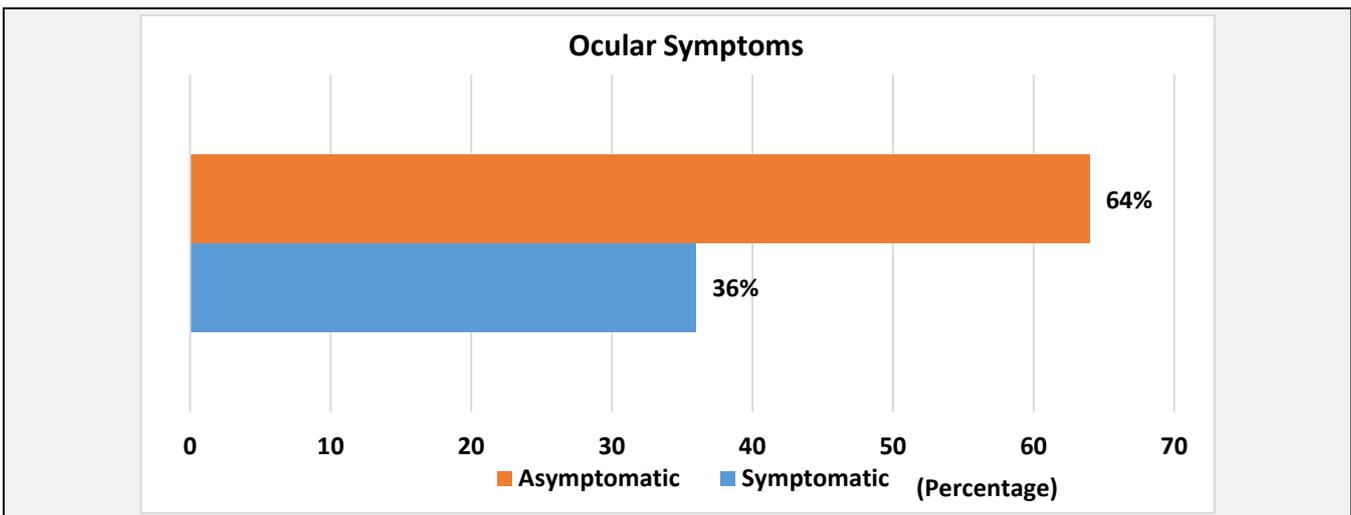


Figure 1. Percentage of Patients Asymptomatic (64 %) and Symptomatic (36 %)

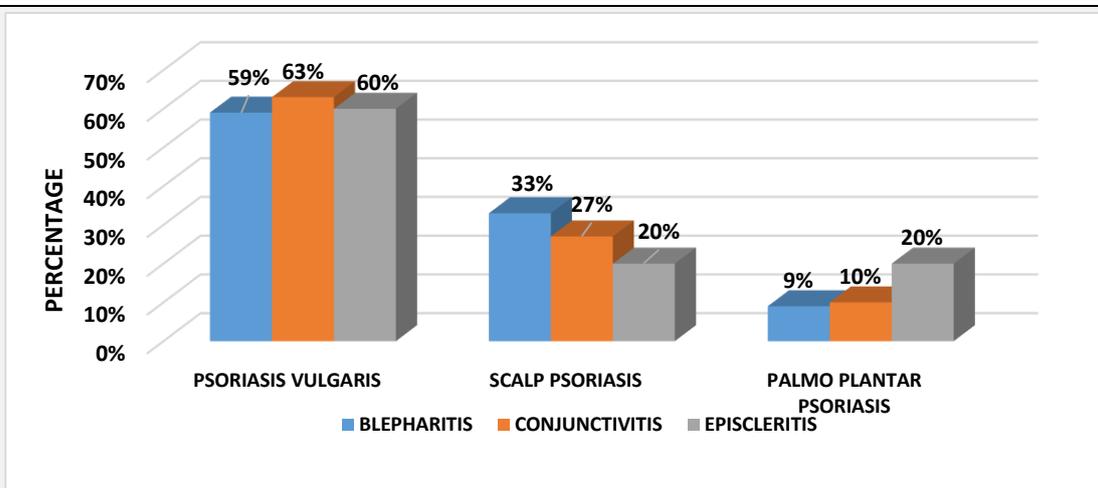


Figure 2. Comparison of Percentages of Blepharitis, Conjunctivitis and Episcleritis in Patients with Psoriasis Vulgaris, Scalp Psoriasis, and Palmo Plantar Psoriasis

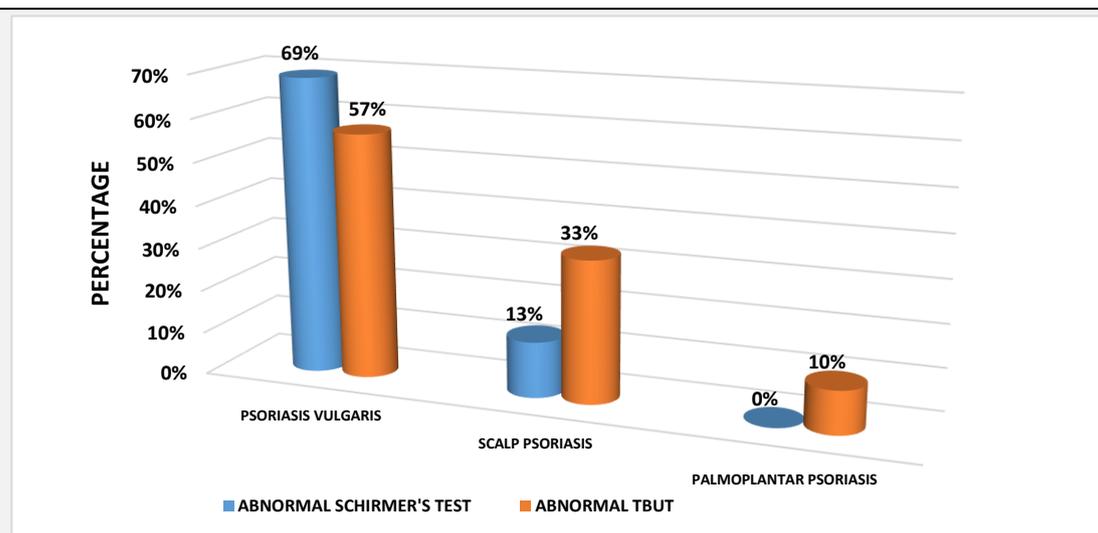


Figure 3. Comparison of Results of Schirmer's Test in Psoriasis Vulgaris, Scalp Psoriasis, and Palmoplantar Psoriasis

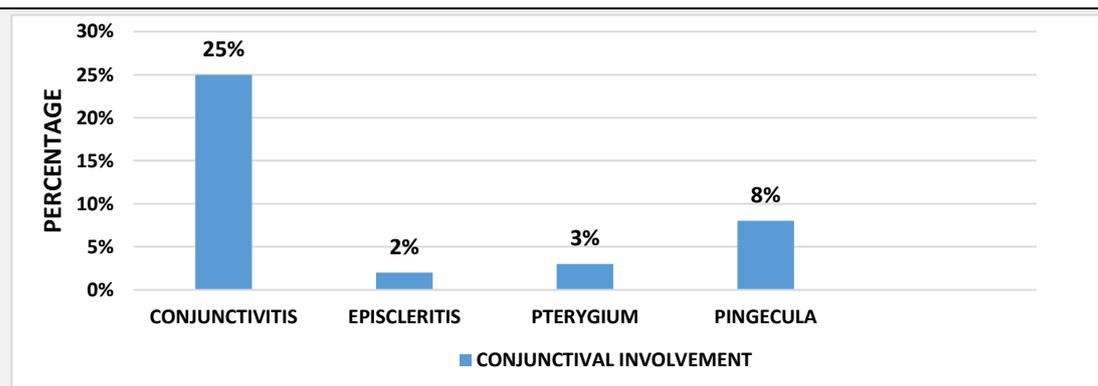


Figure 4. Percentage of People Manifesting Conjunctivitis, Episcleritis, Pterygium, and Pingecula in Total

Of the total 210 screened eyes, 39 eyes (19 %) had tear deficient dry eyes and 171 eyes (81 %) were found to have normal Schirmer's test. Abnormal tear film break up time was seen in 60 eyes of the total 210 eyes with 34 of them being right eyes and 26 were left eyes. Rose bengal test did not show ocular surface staining in any of the patients.

Of the total study population, the highest number of ocular manifestation with ocular surface disorder was seen in 67

patients diagnosed with psoriasis vulgaris, while 12 patients with palmo plantar psoriasis.

### DISCUSSION

A total of 105 patients were studied in the Department of Ophthalmology over a period of one year. In our study, 45

patients were of the age group 41 - 60 years, 30 patients above 60 years of age, 28 patients were between 21 and 40 years and, there were only 2 patients of the age group 1 - 20 years. Farber EM and Nall ML<sup>19</sup> found that the average age of onset was 28 years.

In our study we noticed a male preponderance with 57 % as opposed to 43 % of female patients. This finding was found to be in concordance with a German study done by Henseler J et al.<sup>20</sup> where the ratio was 1.74:1. The results of our study were similar to a German study conducted by Henseler J et al.<sup>20</sup> which reported the ratio of male to female as 1.74:1. The age wise distribution of the patients among both the genders was almost equal. In our total population, a maximum of 59 patients (56 %) had the duration of the disease from 1 - 4 years, followed by 31 patients (29 %) with 5 - 9 years duration, and 11 patients (10 %) had 10 - 14 years and only 1 patient (1 %) had the duration of disease for more than 20 years. Though patients were not equally distributed with regard to duration of the ocular manifestations seen, there was no significant correlation between disease and the duration of the disease. Similar results were shown by Okamoto and Umebayasi, by proving the association between the increased presence of flare in patients with uveitis with onset of age and severity of disease.<sup>21</sup> In our study of 105 patients, 67 patients (64 %) were having psoriasis vulgaris. Predominantly joint involvement was seen in 12 of patients (11 %). In the total study population, majority of our patients (N - 42) were under the treatment with topical steroids. A total of 67 patients in our study population were asymptomatic. Amongst the asymptomatic patients the ocular manifestations of the disease were noted in 23 eyes which included Blepharitis, Conjunctivitis, Episcleritis, Uveitis, and Ocular surface disorders. The presence of these sight threatening complications amongst the asymptomatic patients who usually presented at a later stage were a cause of concern and a strong indicator that screening was essential in patients, highlighting the importance of this study.

Amongst the 38 symptomatic patients, the most common symptom was redness (N - 18). In our study we found blepharitis in 24 patients (23 %), which was similar to other studies that have reported increased incidence of both anterior and posterior blepharitis among the psoriasis patients.<sup>8</sup> Ibrahim Erbagei et al. explained the incidence of blepharoconjunctivitis in a Turkish population to be 64.5 %.<sup>8</sup> Limba FB<sup>22</sup> found that 12.5 % of patients with psoriasis had conjunctivitis. J R Lambert<sup>8</sup> also observed conjunctivitis in 19.6 % of the patients. This is in concordance with our study in which conjunctivitis was noted in 25 % of patients. Catsarou - Catsari A found that blepharoconjunctivitis and keratoconjunctivitis sicca were the most common ocular manifestations.<sup>23</sup>

The occurrence of Pterygium and Pinguecula is not significantly associated with psoriasis and there is no increased incidence of its occurrence in psoriatic patients. Peter Eustac and Dermot Pierse<sup>24</sup> reported two cases of peripheral ulcerative keratitis with vascularisation in psoriatic patients, Moadel K et al.<sup>25</sup> reported a case of corneal abscess without epithelial involvement in a psoriatic patient. In our study there was no significant corneal involvement. Out of 105 patients in our study population, only 3 % patients (N - 3) had uveitis.

All three patients had associated joint involvement in the form of arthritis with insidious onset of bilateral, chronic

uveitis which is the characteristic of uveitis in psoriatic arthritis. Posterior segment involvement in uveitis is less well recognised than the anterior uveitis in psoriasis. According to Chandra NS et al.<sup>14</sup> it was found that 2 % of patients with psoriasis had uveitis. J R Lambert et al.<sup>8</sup> observed that 7.1 % of psoriatic patients had uveitis. In contrast to the previous studies, Ruben Queiro et al.<sup>26</sup> reported the presence of uveitis in psoriatic patients to be 18 %.

The characteristic joint involvement and uveitis in psoriatic patients was reported by Eduardo S Paiva et al. in the *Annals of Rheumatic diseases*,<sup>27</sup> which reported uveitis and axial arthritis to be found 100 % in males. Our study also reported that there was male predominance in association with joint involvement and uveitis. In addition, Eduardo S Paiva et al. in his study has mentioned 37.5 % of patients had bilateral involvement and posterior segment manifestation of uveitis in 44 % of the patients.<sup>27</sup> On the contrary, our study had only 3 % of patients with bilateral involvement and there was no posterior segment manifestation. The incidence of uveitis in our study was slightly lesser compared to other studies probably due to the immunosuppressive treatment taken by our patients for their skin lesions.

Increased incidence of dry eye was seen in patients with psoriasis. J R Lambert et al.<sup>8</sup> found that the patients with psoriasis had 2.7 % of dry eye. In our study, reduced Schirmer's values were noted in 18 % of the patients and abnormal Tear break up time was noted in 28 % of the patients. Similar results were reported by Her Y et al.<sup>26</sup> in 2013 which included the tear film function, ocular surface changes in 60 patients as a case control study and found no significant change in the Schirmer's result whereas they noted reduction in Tear break up time and alternation in Conjunctival cytology with reduced goblet cells.

Later a study conducted among the Brazilian patients reported keratoconjunctivitis sicca as the commonest ocular manifestation in patients with psoriatic arthritis.<sup>14</sup> In our study, decreased tear break up time was noted in 60 patients (28 %). This was found to be in concordance with study done by Ibrahim Erbagei et al.<sup>17</sup> where there was an increased incidence of tear breakup time.

## CONCLUSIONS

Ocular manifestations are seen even in asymptomatic patients. There was no significant association between the duration of the disease and ocular manifestations. Psoriasis vulgaris was seen in majority of the patients. Blepharoconjunctivitis was the most common manifestation followed by keratoconjunctivitis and chronic uveitis. Uveitis is a potential vision threatening complication, hence must be detected early and treated promptly to prevent irreversible vision loss. Lid hygiene has to be explained to prevent lid associated complications.

Data sharing statement provided by the authors is available with the full text of this article at jemds.com.

Financial or other competing interests: None.

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