

## Tear film dysfunctions in psoriatic patients

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### Abstract

**Aim:** To evaluate the tear film changes in patients with psoriasis.

**Materials and Methods:** In this case control study, Schirmer<sup>1</sup> test and Tear film break up time were evaluated in 29 psoriasis patients and 12 healthy controls.

**Results:** McMonnies questionnaire showed no significant difference between patients and control. Total 89.7% patients showed Schirmer's value of more than 10mm. While 69% patients had tear film break up time value less than 10 seconds, which is statistically significant (p value < 0.001).

**Discussion:** The results of our study and similar results from other studies confirm that the decrease of tear BUT was more significant than Schirmer's test in psoriatic patients.

**Conclusion:** Tear film dysfunction is common in psoriasis patients, the decrease of tear film break up time is more significant than Schirmer's test.

### Introduction

Psoriasis is common chronic inflammatory skin disease characterised by scaling as a result of excessive proliferation of the epidermis. Although it does not usually involve the eyes, ocular signs occur in 10% of the psoriasis patients.<sup>(1)</sup> The eyelids are frequently involved and if the scaling process affect the base of the lashes an inflammatory ectropion with trichiasis, madarosis may develop. It is hypothesized that increase turnover of epithelial lining of meibomian gland in psoriasis patients, which might result from increased turnover of epithelial lining of meibomian gland duct may lead to tear film changes in psoriasis.<sup>(2)</sup>

### Materials and Methods

The study included 29 patients with psoriasis who had mean age of 35.90 years with male: female ratio of 1.9:1.0 and 12 healthy controls having mean age of 30.75 years with male: female ratio of 3:1.

The study was conducted at department of ophthalmology of a tertiary health center of north India in collaboration with department of pathology and department of dermatology and venerology for a period of two years [2006-2008]. Each study subject underwent detailed history taking including duration of disease, previous therapy and eye complaints and detailed ocular examination including slit lamp examination to identify any ocular surface abnormalities or external eye disease. The questions were asked according to McMonnie's questionnaire<sup>(3)</sup> and Ocular Surface Disease Index [OSDI]. The severity of psoriasis was determined by psoriasis area and severity index [PASI] in all patients.

**Schirmer's test I:** The patients were kept in a moderately lighted room. A piece of Whatman No. 41 filter paper, 5mm wide and 35 mm long was partially folded 5mm from one end. The folded short end was

placed on the lateral one third of lower tarsal conjunctiva and the patients were asked to fix their eyes on a object slightly above the direct line of gaze for 5 minutes. After 5 minutes the strip was gently removed and examined for witted exposed portion of the strips.

**Tear Film Break Up Time [BUT]:** A fluorescein strip was applied to the inferior bulbar conjunctiva and patients were instructed to blink several times to facilitate an even distribution of fluorescein. Fluorescein strip was gently removed and the tear film was scanned through a cobalt blue filtered light of slit lamp with a broad beam. The tear film was scanned while the patient was asked to stare directly ahead without blinking. The time interval between the last blink and the first appearance of a randomly distributed dry spot was recorded by a stop watch. Breakup time was measured three times in succession for each eye and the mean was taken. All the test were conducted in a quiet room with no ventilatory current.

### Results

The mean age of patients was 35.90 while in control it was 30.75, the male: female ratio was 1.9:1.0 and in control was 3:1, with no statistically significant difference (p > .05).

The mean score of McMonnies Questionnaire was 5.69 in patients and 4.08 in control (<10) i.e. within normal range, with no statistically significant differences between patients and control.

The mean Schirmer's I test score was 18.79mm in patients and 21.58mm in controls with no significant difference between patients and control.

There was a significant difference (p value < .001) in mean BUT score which was 8.95 seconds in patients and 12.50 seconds in controls. Out of 29 patients, 20 patients (69%) had BUT score <10 second while only

one control (8.3%) had value <10 second (p value <0.05).

**Table 1: Age wise distribution of patients and control group**

Group	Age (mean +/- SD)
Group 1	35.90 +/- 15.11
Group 2	30.75 +/- 17.06

t-value 0.956

p-value 0.345(NS)

**Table 2: Comparison of McMonnies score between patient and control group**

Group	Mcmonnies score (mean+/-SD)
Group 1 (n=29)	5.69+/-3.71
Group 2 (n=12)	4.08+/-3.17

t-value = 1.311

p-value= 0.198(NS)

**Table 3: Comparison of schrimers score between patient and control group**

Group	Schirmers-1 score (mean+/-SD)
Group 1 (n=29)	18.79+/-9.19
Group 2 (n=12)	21.58+/-8.01

t-value = 0.915

p-value= 0.366(NS)

**Table 4: Comparison of schrimers score between patient and control**

Schirmers-1 score (mm)	Patients	%	Control	%	Total
<5mm	1	3.4%	0	0%	1
5-10mm	2	6.9%	1	8.3%	3
>10mm	26	89.7%	11	91.7%	37
Total	29	100%	12	100%	41

**Table 5: Comparison of BUT between patient and control group**

Group	BUT score (mean+/-SD)
Group 1 (n=29)	8.95+/-2.51
Group 2 (n=12)	12.50+/-2.06

(P value <0.001)

BUT score	Patients	%	Control	%	Total
<10 sec	20	69	1	8.3%	21
>10sec	9	31%	11	91.7%	22
Total	29	100%	12	100%	41

## Discussion

Psoriasis is common chronic inflammatory skin disease characterised by scaling as a result of excessive proliferation of the epidermis. Although it does not usually involve the eyes, ocular signs occur

in 10% of the psoriasis patients.<sup>(1)</sup> It is hypothesized that increase turnover of epithelial lining of meibomian gland in psoriasis patients, which might result from increased turnover of epithelial lining of meibomian gland duct may lead to tear film changes in psoriasis.<sup>(2)</sup>

McMonnies questionnaire demonstrate fair reliability and validity as a patients reported instrument for use in a patients care and clinical studies of the patients with dry eye disease.<sup>(4)</sup> The mean score of McMonnies questionnaire was 5.69 in patients and 4.08 in controls, both the reading was in normal range less than 10. Thus it can be concluded that we cannot rely on the symptoms alone to arrive a diagnosis and treatment plan in psoriasis patients contrary to study done by Nichols et al.<sup>(4)</sup>

Both Schirmer 1 and Tear Film Break Up Time (BUT) was done in psoriasis patients and controls. The BUT is the test that assess the stability of the precorneal tear film compared with Schirmer's test which primarily measures aqueous tear secretion. Although in most patients with keratoconjunctivitis sicca, the Schirmer's test is abnormal, BUT is generally abnormal with mucin/lipid deficiency.<sup>(5)</sup>

The mean Schirmer's value was 18.79mm in patients compared to 21.58mm in controls with no statically evident difference in tear secretion between the two groups. In a similar study done by Karabulut AA et al,<sup>(6)</sup> the Schirmer test results showed that average value more that more than 10.1mm in patients and 12.6mm in control with no statistically significant difference. In similar study done by Zengin,<sup>(7)</sup> normal Schirmer's score was found in psoriasis patients.

The mean BUT in patients with psoriasis was 8.95 second as compared to control having mean score of 12.50 (p value <0.001), similarly in the other studies<sup>(6)</sup> the mean BUT was 7.8 second in psoriasis patients and 12.5 second in controls. Zengin N et al<sup>(7)</sup> also showed significant lowering of tear BUT, which was related by him to obstructive type of meibomian gland dysfunction in psoriasis patients which might results from increased turnover of epithelial lining of meibomian gland duct.

The results of our study and similar results from other studies<sup>(6,7,8)</sup> confirm that the decrease of tear BUT was more significant than Schirmer's test in psoriatic patients.

## Conclusion

Tear film dysfunction is common in psoriasis patients, the decrease of tear film break up time is more significant than Schirmer's test.

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