

## Original Research

### Evaluation of correlation of Acne vulgaris with ocular dryness

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#### ABSTRACT:

**Background:** Acne vulgaris is a chronic inflammatory disease of pilosebaceous units in different skin areas, especially the face. The most common adverse reactions observed during systemic acne treatment are mucocutaneous and ophthalmological. The frequent side effects of systemic and topical acne treatment on the eye have led researchers to focus on ocular adverse reactions associated with drugs used in acne treatment. Hence; under the light of above-mentioned data, the present study was conducted to assess Acne vulgaris and its association with ocular dryness. **Materials & Methods:** The present study comprised of 50 patients with acne vulgaris and ocular dryness of both genders. All were informed regarding the study and their written consent was obtained. Complete demographic and clinical data was recorded. All underwent assessment of Schirmer's test, tear film breakup time (TBUT), tear film height, presence of conjunctival injection, punctate epithelial erosions (PEE), and meibomian gland dysfunction (MGD). Microsoft excel sheet was used for evaluation of results. **Results:** Watering and burning of eyes were seen in 50 percent of the patients. Foreign body sensation was seen in 18 percent of the patients while itching and redness were seen in 22 percent and 8 percent of the patients. On off vision blurring was seen in 3 percent of the patients. Lusterless corneal findings was seen in 60 percent of the patients while clear cornea was seen in 10 percent of the patients. **Conclusion:** Acne vulgaris patients have significant prevalence of ocular findings.

**Key words:** Acne vulgaris, Burning eyes, Ocular dryness

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#### INTRODUCTION

Acne vulgaris is a chronic inflammatory disease of pilosebaceous units in different skin areas, especially the face. The disease often occurs in adolescents, but it can also be seen in adults. The disease, which is seen in 85% of individuals between the ages of 12-24 years, is the most common dermatosis in the young population. Moderate and severe acne vulgaris is observed in 15-20% of individuals in this population and significantly affects their quality of life by disrupting individuals' social interactions. Sebaceous gland hyperplasia accompanied by hyperseborrhea, blockade of sebaceous ducts developing after abnormal follicular keratinisation, and the proliferation of Propionibacterium acnes are the main factors involved in pathophysiology. As a result of the interaction of these factors, the sebaceous microenvironment changes and inflammatory reactions leading to the progression of the acne lesion occur. Propionic acid secreted by P. acnes causes the

formation of irregular morphology in keratinocytes and the development of inflammatory lesions.<sup>6</sup> Also, increasing systemic androgen level with puberty causes the proliferation of sebaceous glands and keratinocytes.<sup>1-3</sup>

The most common adverse reactions observed during systemic acne treatment are mucocutaneous and ophthalmological. The frequent side effects of systemic and topical acne treatment on the eye have led researchers to focus on ocular adverse reactions associated with drugs used in acne treatment. Therefore, although the changes occurring on the ocular surface with acne vulgaris treatment have been evaluated in detail in the literature, to the best of our knowledge, those occurring in the ocular surface and meibomian glands in treatment-naive acne vulgaris cases have not been evaluated before. Since severe ocular side effects can be observed in patients with acne vulgaris under systemic therapy (isotretinoin), it is of great importance to determine whether the

ocular findings of patients with acne vulgaris who have not started systemic therapy differ from the healthy population.<sup>4</sup> Hence; under the light of above-mentioned data, the present study was conducted to assess Acne vulgaris and its association with ocular dryness.

**MATERIALS & METHODS**

The present study comprised of 50 patients with acne vulgaris and ocular dryness of both genders. All were informed regarding the study and their written consent was obtained. Complete demographic and clinical data was recorded. All underwent assessment of Schirmer's test, tear film breakup time (TBUT), tear film height, presence of conjunctival injection, punctate epithelial erosions (PEE), and meibomian

gland dysfunction (MGD). Microsoft excel sheet was used for evaluation of results. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

**RESULTS**

Mean age of the subjects was 35.6 years. Majority proportion of subjects were males. Watering and burning of eyes were seen in 50 percent of the patients. Foreign body sensation was seen in 18 percent of the patients while itching and redness were seen in 22 percent and 8 percent of the patients. On off vision blurring was seen in 3 percent of the patients. Lusterless corneal findings was seen in 60 percent of the patients while clear cornea was seen in 10 percent of the patients.

**Table 1: Complaints of patients**

Complaints	Number (%)	P value
Watering & burning eyes	25 (50%)	0.00 (Significant)
Foreign body sensation	9 (18%)	
Itching	11 (22%)	
Redness	4 (8%)	
On off vision blurring	3 (6%)	

**Table 2: Assessment of corneal findings**

Corneal findings	Number (%)	P value
Lustreless	30 (60%)	0.001 (Significant)
Clear cornea	5 (10%)	
Punctate lesions & Lustreless cornea	5 (10%)	

**DISCUSSION**

Acne vulgaris is a common skin disease with prevalence reaching up to 80% during adolescence. It has a complex aetiology, involving abnormal keratinisation, hormonal function, bacterial growth, and immune hypersensitivity of pilosebaceous follicles of the head and upper trunk. The primary acne lesion is the “blackhead”, an impaction and distension of the follicle with improperly desquamated keratinocytes and sebum.<sup>5</sup> At puberty, when androgens stimulate the production of sebum, pre-existing comedones become filled with lipid and may enlarge to become visible. Meibomian glands are modified sebaceous gland that keep the ocular surface clean, healthy and well-lubricated. Increase in gland activity accompanying puberty are attributed due to increase in androgen production. Inflammation of the meibomian glands causes the glands to be obstructed by thick waxy secretions leading to tear film instability and increased evaporation. The aetiology of meibomian gland dysfunction is unknown and may be due to any one of a variety of conditions, including bacterial infection, hormonal imbalance, autoimmune disease and inflammation.<sup>7-10</sup> Hence; under the light of above-mentioned data, the present study was conducted to assess Acne vulgaris and its association with ocular dryness. Mean age of the subjects was 35.6 years. Majority proportion of subjects were males. Watering and

burning of eyes were seen in 50 percent of the patients. Foreign body sensation was seen in 18 percent of the patients while itching and redness were seen in 22 percent and 8 percent of the patients. Minhas S et al assessed the prevalence of ocular dryness in patients with acne vulgaris. A total of 100 patients with confirmed diagnosis of acne vulgaris (both inflammatory and non-inflammatory) complaining of eye irritation, foreign body sensation, watering or redness were enrolled. Screening of all the patients was done for dry eyes. Schirmer's test, tear film breakup time (TBUT), tear film height, presence of conjunctival injection, punctate epithelial erosions (PEE), and meibomian gland dysfunction (MGD) were used to diagnose dry eye. Complete demographic and clinical details of all the subjects were obtained. A Performa was made and clinical details of all the subjects were recorded simultaneously. Burning sensation/watering and foreign body sensation were the presenting complaint in 69 percent and 22 percent of the subjects respectively. Frequent redness and blurring of vision were the presenting complaints in 6 percent and 12 percent of the subjects respectively. Clear cornea was seen in 13 percent of the subjects while lusterless was seen in 79 percent of the subjects. Fluorescein staining was positive in 56 percent of the subjects while Schirmer’s test was positive in 39 percent of the subjects. Overall, dry eyes were seen in 43

percent of the subjects. Conclusion: Androgenic hormones affect both acne vulgaris and meibomian glands. Hence; a strong correlation exists between acne vulgaris and ocular dryness.<sup>11</sup>

In the present study, on off vision blurring was seen in 3 percent of the patients. Lusterless corneal findings was seen in 60 percent of the patients while clear cornea was seen in 10 percent of the patients. Seray Aslan Bayhan et al assessed the ocular side effects during topical retinoid-antibiotic combination treatment in patients with facial acne vulgaris. Forty-three patients applying topical isotretinoin+erythromycin combination (isotrexin gel, GlaxoSmithKline) once daily for the treatment of acne vulgaris were enrolled. Full ophthalmologic examination, Schirmer test (with topical anesthesia), fluorescein break-up time (BUT), corneal fluorescein staining and tear osmolarity measurement with the TearLab system (TearLab Corporation) were carried out before and at the end of the first month of the treatment. For evaluation of symptoms participants completed the ocular surface disease index (OSDI) questionnaire at each visit. The mean age of the patients was 23.16±3.03 (18-30) years. Mean tear osmolarity increased significantly from 282.09±8.95 mOsm/L at baseline to 300.39±16.65 mOsm/L after the treatment (p<0.001). BUT decreased from an average of 11.93±1.12s at baseline to 6.65±3.03s at the end of the first month (p<0.001). The OSDI score worsened significantly (5.41±3.65 vs 21.53±12.95, p<0.001) and punctate epitheliopathy was seen in 51% of eyes after the treatment. The average Schirmer values were 13.09±1.90 and 12.41±2.44mm/5min before and at the end of the first month of the treatment, respectively (p=0.117). The findings of this study indicate that topical retinoid-antibiotic combination treatment causes significant signs and symptoms of dry eye.<sup>12</sup>

## CONCLUSION

From the above results, the authors conclude that acne vulgaris patients have significant prevalence of ocular findings.

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