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Original Research

Correlation of Meiboscale with symptom score index and meibomian gland dysfunction sign score

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ABSTRACT:

Background: Terminal duct obstruction and alterations in glandular output are hallmarks of meibomian gland disease, also known as meibomian gland dysfunction (MGD), a chronic, widespread disorder of the meibomian glands. The present study was conducted to assess correlation of Meiboscale with symptom score and meibomian gland dysfunction sign score. **Materials & Methods:** 54 patients of meibomian gland dysfunction of both genders were recruited for the study. The Meiboscale-based correlation between the OSDI, sign, and MGL scores was computed. **Results:** Out of 54 patients, 24 were males and 30 were females. The mean Meiboscale MGL score was 1.87, Meibomian gland dysfunction (MGD) was 7.81 and ocular surface disease index (OSDI) was 41.5. There was strong correlation of MGL score with MGD sign score ($P< 0.05$). There was no correlation between MGL and OSDI and OSDI with MGD sign score ($P> 0.05$). **Conclusion:** The Meiboscale has clinical value comparable to the total of the six MGD sign scores and can be used for accurate MGD assessment and grading.

Keywords: Meiboscale, disuse acinar atrophy, duct obstruction

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INTRODUCTION

Terminal duct obstruction and alterations in glandular output are hallmarks of meibomian gland disease, also known as meibomian gland dysfunction (MGD), a chronic, widespread disorder of the meibomian glands.[1] Up to 86% of individuals have it, making it the most prevalent cause of dry eye illness, but it is frequently asymptomatic and undiagnosed. Patients who are asymptomatic must be identified early in order to receive treatment.The low delivery state, which is typified by gland blockage, is the most prevalent mechanism for MGD.[2] According to reports, the underlying pathophysiology is epithelial hyperkeratinization, which causes meibum stasis, cystic dilatation, duct obstruction, and ultimately disuse acinar atrophy and gland dropout. This paradigm has been expanded upon by more recent research, which identifies meibocyte anomalies as a contributory factor in MGD.[3] Pathophysiologic studies assessing the effects of extrinsic (such as environmental stress) and intrinsic (such as aging) MGD risk factors on meibocyte differentiation and renewal provide evidence for the meibocyte's involvement in MGD.MGD is evaluated using the six MGD sign scores, the enhanced Meiboscale, and the Ocular Surface Disease Index (OSDI) evaluation (symptom score). A thorough literature assessment found no evidence of a correlation between the three methods, despite the fact that they can aid with MGD grading.[4]The present study was conducted to assess correlation of Meiboscale with symptom score and meibomian gland dysfunction sign score.

MATERIALS & METHODS

The present study comprised of 54 patients of meibomian gland dysfunction of both genders.

All were informed regarding the study gave their written consent for the participation in the study.

Data such as name, age, gender etc. was recorded. Everybody had a thorough eye checkup. The total of six grading systems was used to determine the MGD sign score in both eyes. They had their top and lower eyelids imaged using a specular microscope. The Meiboscale photographic card was used to visually evaluate and grade the meibomian gland loss (MGL) area. The Meiboscale-based correlation between the

OSDI, sign, and MGL scores was computed. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 54		
Gender	**Males**	**Females**
Number	24	30

Table I shows that out of 54 patients, 24 were males and 30 were females.

Table II Assessment of parameters

Parameters	Mean	SD
Meiboscale MGL score	1.87	0.92
Meibomian gland dysfunction (MGD)	7.81	1.6
Ocular surface disease index (OSDI)	41.5	7.4

Table II, graph I shows that mean Meiboscale MGL score was 1.87, Meibomian gland dysfunction (MGD) was 7.81 and ocular surface disease index (OSDI) was 41.5.

Graph I Assessment of parameters

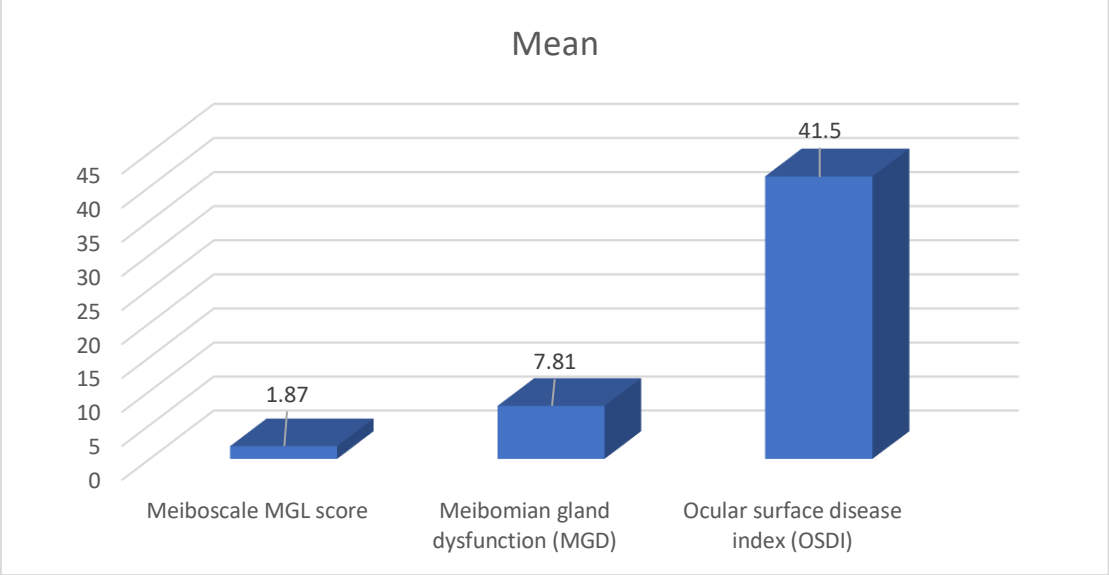

Table III Correlation of OSDI, sign score, and MGL score

Comparison		Spearman's rho	P value
MGL score	MGD sign score	0.84	0.05
	OSDI	0.31	0.07
OSDI	MGD sign score	0.47	0.21

Table III shows that there was strong correlation of MGL score with MGD sign score (P< 0.05). There was no correlation between MGL and OSDI and OSDI with MGD sign score (P> 0.05).

DISCUSSION

As the theory that meibocyte dysfunction causes MGD develops, it becomes clear that meibocytes can also be impacted by other variables that were previously linked to MGD, including as hormones, topical and systemic medicines, diet, and the ocular microbiota.6 In addition to being reduced, absent, or replaced in a variety of congenital illnesses, meibomian glands can also be changed by extrinsic causes like contact lens wear.[5]Ocular surface damage results from a wide variety of interplaying factors, such as increased tear evaporation, hyperosmolarity, proinflammatory mediators in the tears, and decreased lubrication between the lids and globe[12]. These may result in irritative symptoms of the ocular surface and eyelids. Many of these ocular signs and symptoms overlap with dry eye disease, and MGD is thought to be a key contributor to evaporative dry eye.[6]The present study was conducted to assess correlation of Meiboscale with symptom score and meibomian gland dysfunction sign score.

We found that out of 54 patients, 24 were males and 30 were females. Arita et al[7]examined the morphologic changes in meibomian glands associated with aging and gender using a novel meibography system and to assess their relation with slit-lamp

findings regarding eyelid and tear film function in a normal population.Two hundred thirty-six healthy volunteers (114 men, 122 women; mean age+/- standard deviation, 41.2+/-23.1 years; range, 4-98 years) were selected. The upper and lower eyelids were turned over and the meibomian glands were observed using the noncontact meibography system, which consisted of a slit lamp equipped with an infrared charge-coupled device video camera and an infrared transmitting filter. A transilluminating light probe was not necessary. Partial or complete loss of the meibomian glands was scored for each eyelid from grade 0 (no loss of meibomian glands) through grade 3 (the lost area was more than two thirds of the total meibomian gland area). The tear film break-up time (BUT) was measured and tear film production was evaluated by Schirmer test.Using the meibography system, clear images of the meibomian glands were obtained in all subjects, including children. There were significant positive correlations between age and meiboscore in the entire subject population (R = 0.428; P<0.0001), as well as in males (R = 0.462; P<0.0001) and females (R = 0.418; P<0.0001). There were significant negative correlations between age and tear film BUT (R = -0.153; P = 0.019) and the Schirmer test value (R = -0.289; P<0.0001). The meiboscore was significantly positively correlated with the lid margin abnormality score (R = 0.359; P<0.0001).

We observed that mean Meiboscale MGL score was 1.87, Meibomian gland dysfunction (MGD) was 7.81 and ocular surface disease index (OSDI) was 41.5.Changes in eyelid morphology, abnormal secretions, and gland dropout are among the many clinical symptoms of MGD. Meibomian orifice plugging, eyelid margin foaminess, hyperemia/telangiectasias, and modifications in orifice location with regard to the muco-cutaneous junction are among the morphological changes that are evaluated by slit lamp inspection. By applying pressure to the edges of the eyelids and grading the meibum's expressibility and texture, meibomian gland secretions are evaluated.[8] In MGD, meibum takes on a more opaque, viscous form that is challenging to express, whereas normal meibum is transparent and easily articulated. Transillumination through everted eyelids or, more precisely, infrared photography are used to detect meibomian gland dropout. Not every person possesses every clinical trait; in fact, they are frequently different. For instance, black people are just as likely as white people to have changed meibum consistency, but they are less likely to have noticeable eyelid edge telangiectasias.[9]

We observed that there was strong correlation of MGL score with MGD sign score (P< 0.05). There was no correlation between MGL and OSDI and OSDI with MGD sign score (P> 0.05).Den et al[10]studied changes in the lid margin and meibomian glands and their association with aging, sex, and tear function. They examined 354 eyes in 177 subjects (76 men and 101 women; 21-93 years; mean age, 63.0 +/- 14.3 years) with no ocular symptoms or ocular surface disorders. Anatomic changes in the lid margin were studied using slit-lamp biomicroscopy. Meibomian gland function and morphology were evaluated on the basis of meibum expression and meibography, respectively. Tear function and ocular surface epithelium were assessed with the Schirmer test, by tear film break-up time, and with a fluorescein staining test.Eyes with abnormal lid margin anatomy, hyposecretion of meibum, and meibomian gland dropout were seen in 26 (7.3%), 46 (12.4%), and 68 eyes (18.6%), respectively, with a significant association between each finding and aging (P = <0.0001, 0.0498, and <0.0001, respectively). In patients < or =69 years of age, no significant association was found between meibomian gland-related findings and sex. However, a high incidence of abnormal lid margin and gland dropout was noted in men > or =70 years of age compared with women. No significant association was found between changes in the lid margin and meibomian glands and tear function in patients > or =40 years of age.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that the Meiboscale has clinical value comparable to the total of the six MGD sign scores and can be used for accurate MGD assessment and grading.

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