

A STUDY OF PREVALENCE OF MEIBOMIAN GLAND DYSFUNCTION IN NORTH INDIAN ADULTS IN HOSPITAL BASED POPULATION

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Received:17/03/2018

Revised:20/05/2018

Accepted:15/06/2018

ABSTRACT

Background: To study prevalence of meibomian gland dysfunction in adults attending Ophthalmology outpatient department. **Methods and Materials:** Patients between 40 to 70 years of age attending outpatient services of Ophthalmology department for defective vision or other symptoms were included in the study after applying exclusion criteria. After taking a thorough history the patients were examined on slit lamp. Meibomian gland dysfunction (MGD) was labeled if any one eye showed capping, stenosis, and occlusion of meibomian gland orifices, telangiectasias of posterior lid margin and or increased volume and turbidity of meibum on expression by digital pressure. **Results:** In the present study 200 persons of 40 or more years of age (100 males and 100 females) attending outpatient department were examined clinically for presence or absence of meibomian gland dysfunction (MGD). The prevalence of MGD was found to be increased with advancement of age. The prevalence of total and symptomatic MGD was observed to be 29 % and 12.5% respectively with higher prevalence in males. **Conclusions:** Prevalence of MGD is significantly high in patients attending outpatient departments of Ophthalmology and may be responsible for their symptoms, hence should be kept in consideration while examining a patient.

KeyWords: Indian, meibomian gland dysfunction, dry eye

INTRODUCTION

The pre corneal tear film is composed of mucous, aqueous and lipid components and optimum quality and quantity of all the three components play an important role in keeping the ocular surface healthy. The lipid component secreted by meibomian glands prevents evaporation of tears hence a deficiency in volume or viscosity of this will cause dry eye and discomfort with resultant compromise in quality of life in persons suffering from meibomian gland dysfunction. Meibomian gland dysfunction (MGD) has been defined by the International workshop on

MGD in the year 2011 as “a chronic, diffuse abnormality of the meibomian glands (MG), commonly characterized by terminal duct obstruction and/or qualitative/quantitative changes in the glandular secretion resulting in alteration of tear film, inflammation, ocular surface disease and symptoms of eye irritation.” (1, 2) In MGD the openings of the glands are stenosed or closed and meibomian gland ducts may get narrowed with retention of the secretions, the lack of which leads to unstable tear film due to enhanced evaporation of tears. The

retention of secretions in meibomian gland leads to bacterial colonization of the glands causing change in lipid secretions and inflammation of the glands. (3) In clinical practice diagnosis of dry eye disease is often based on tests which evaluate aqueous component of tear film like Schirmer test, Tear film breakup time (TBUT) and tear osmolarity etc. But evaluation of evaporative part of the etiology of dry eye disease, thereby efficiency of meibomian gland function is often missed in the diagnostic workup of the patient. It has been found that 45%–65 % persons experiencing dry eye symptoms have MGD and many people with MGD may remain asymptomatic. (4, 5, 6)

The aim of this study was to find prevalence of MGD in different age and sex groups with or without presence of symptoms of dry eye disease.

MATERIAL AND METHODS

In the present study 200 persons between the ages of 40 to 70 years attending outpatient department of Ophthalmology were enrolled following ethical guidelines of declarations of Helsinki 2008 and after obtaining informed consent. A detailed history was obtained about presence of symptoms such as ocular irritation, grittiness, foreign body sensation, dryness, burning, watering, itching, blurring of vision and pain in the eyes.

Exclusion criteria – Persons with following conditions were not included in the study – any history of systemic disease, any history of ophthalmic surgery, use of any systemic or local (ocular) medication, pterygium, trichiasis, entropion, ectropion and application of kohl (kajal).

After measuring visual acuity and doing refraction if required, the patient was examined on slit lamp at a magnification of 8X. Margins of upper and lower lids were examined to study orifices of the meibomian glands for evidence of capping, stenosis,

occlusion and presence of telangiectasias. Then upper and lower lids were pinched (compressed) between index finger and thumb to express meibum after explaining the procedure to the patient and about the possibility of discomfort. Volume and viscosity of the expressed meibum was noted for assessment of meibomian gland function. Simplified and combined criteria suggested in earlier studies were used to classify presence or absence of MGD. (7, 8, 9)

The following criteria were used for presence or absence of MGD –

Normal meibomian gland function –

1. No stenosis, occlusion or capping of gland orifices
2. Expressed meibum was clear or with few particles (normal viscosity) and just covering the orifice of the gland (normal volume)

Meibomian gland dysfunction –

1. Presence of stenosis, occlusion or capping of gland openings
2. Telangiectasias (increased vascularisation) of posterior lid margin
3. Increased volume of meibum which appeared opaque and thickened

RESULTS

In the present study 200 persons (100 males and 100 females) in the age group of 40 to 70 years attending outpatient department of Ophthalmology were included after applying exclusion criteria. Table 1 shows distribution of persons in different age and sex groups and prevalence of MGD. A prevalence of 31% was observed in males as compared to 27% in females, with an increase in prevalence with increasing age in both the gender groups.

Table1. Meibomian Gland Dysfunction (MGD) in different age and sex groups

n = 200		Male n = 100		Female n = 100		
Age years	Total	Normal	MGD n (%)	Total	Normal	MGD n (%)
40 - 50	33	25	8 (24.24)	26	20	6 (23.07)
51 - 60	35	24	11 (31.42)	44	33	11 (25.00)
61 - 70	32	20	12 (37.50)	30	20	10 (33.33)
Total	100	69	31 (31.00)	100	73	27 (27.00)

A total of 58 (29%) persons from both groups were found to show signs of MGD, of which 25 (12.5%) were symptomatic, table 2. The prevalence of symptomatic MGD was lower than asymptomatic

MGD in all the age groups. A prevalence of total MGD of 31% with symptomatic group comprising of 14% in males and prevalence of 27% and 11% total and symptomatic MGD respectively was found in females.

Table2. Prevalence of total and symptomatic MGD in different age and sex groups

Age Group	Males		Females	
	Total n (%)	Symptomatic n (%)	Total n (%)	Symptomatic n (%)
40 - 50	8 (24.24)	3 (9.09)	6 (23.07)	2 (7.69)
51 - 60	11 (31.42)	5 (14.28)	11 (25.00)	4 (9.09)
61 - 70	12 (37.50)	6 (18.75)	10 (33.33)	5 (16.66)
Total	31 (31.00)	14 (14.00)	27 (27.00)	11 (11.00)

DISCUSSION

The present study was undertaken to find out prevalence of meibomian gland dysfunction in hospital based population as MGD remains often under-diagnosed and undertreated ophthalmic condition. (10) Besides contributing to evaporative part of dry eye disease MGD as a primary pathology may be responsible for symptoms of ocular discomfort in many patients due to poor amount and quality of meibum, and associated ocular surface inflammation. In this study the total prevalence of

MGD in combined population of both genders was observed to be 29% with slightly higher prevalence (31%) in males than Females (27%), these results are comparable with the 31.7% prevalence observed in a study done on Indian population. (11) However a very low prevalence of MGD (5.26%) has been reported from an Indian study, the reason for which can be due to using different criteria for diagnosing MGD. (12) Higher prevalence of MGD in males in this study is in agreement with results of the study done in Spain and Singapore (5, 13) but not in agreement with the results of a Japanese study. (14)

The prevalence of symptomatic MGD in the total subjects examined was 14% in male and 11% in female patients, which constitute 45.16% and 40.74% of the total male and female MGD patients respectively. In the present study the prevalence of MGD was observed to increase with increasing age, which is similar to the findings of the study done in Spanish population. **(5)** The prevalence of total MGD has been reported to be 30.5%, 47.5% and 56.3% along with a prevalence of symptomatic MGD of 8.6% to 18% in various earlier studies done in different countries. **(5, 11, 13)**

Limitations of this study are

(1) Schirmer test and tear film break up time were not performed to study if there is any correlation between MGD and dry eye due to decreased aqueous component of tears; (2) grading of MGD was not done; (3) history of symptoms was preferred than symptom questionnaire (because many patients were not literate)

CONCLUSIONS

A large percentage of people suffer from MGD, both symptomatic and asymptomatic and may be responsible for their symptoms hence MGD should be considered while evaluating a patient.

Acknowledgements

1. Author is thankful to the Principal and management of Pacific Medical College and Hospital for allowing the study to be conducted.
2. Author is thankful to the subjects who were included in this study.
3. Author acknowledges the help received from all the scholars and publishers of the articles cited in this manuscript.

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