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A study of Prevalence and Symptomatology of Meibomian Gland Dysfunction in Punjab in hospital based population

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Abstract: ***Background :*** *To study the prevalence and symptomatology of meibomian gland dysfunction in 50-80 years age group attending Ophthalmology outpatient department of Govt. Medical College, Patiala (Punjab).* ***Material and Methods:*** *Patients between 50-80 years of age attending out patients services of Ophthalmology Department, for defective vision or other symptoms were included in the study after applying exclusion criteria. After taking history the patients were examined on slit lamp. Meibomian gland dysfunction was labeled if any one eye showed clinical signs of lid margin features of Meibomian gland involvement i.e. plugging, vascularity, altered secretions, Meibomian gland drop out and displacement. Expressibility and Ocular Surface staining was also performed.* ***Results:*** *In the present study 200 persons of more than 50 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 total and symptomatic MGD was observed to be 28% and 14% respectively with slightly higher prevalence in males. MGD was graded depending on clinical signs and grade III and grade IV MGD in the present study was significantly symptomatic.* ***Conclusions:*** *Prevalence of Meibomian gland dysfunction (MGD) is quite high in patients attending OPD of ophthalmology. Grade I and Grade II MGD is largely asymptomatic and Grade-III and Grade-IV MGD is mostly symptomatic. MGD should be kept in mind while examining a patient in eye OPD so that Grade-I and Grade-II MGD patients are prevented from slipping into symptomatic MGD.*

Keywords: *Meibomian gland dysfunction grading, symptomatology, dry eye, Punjab*

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I. Introduction

The secretions of meibomian glands (meibum) consists of a complex mixture of various polar and nonpolar lipids. The meibum spreads onto the tear film and functions to slow evaporation of the aqueous component, preserve a clear optical surface, and form a barrier to protect the eye from microbial agents and organic matter such as dust and pollen. [1]

Meibomian gland dysfunction is caused primarily by terminal duct obstruction with thickened opaque meibum containing keratinized cell material. The obstruction, in turn, is due to hyperkeratinization of the ductal epithelium and increased meibum viscosity. The obstructive process is influenced by endogenous factors, such as age, sex, and hormonal disturbances, as well as by exogenous factors such as topical medication. The obstruction may lead to intraglandular cystic dilatation, meibocyte atrophy, gland dropout, and low secretion effects that do not typically involve inflammatory cells. The outcome of MGD is a reduced availability of meibum to the lid margin and tears film. The consequence of insufficient lipids may be increased evaporation, hyperosmolarity and instability of the tear film, increased bacterial growth on the lid margin, evaporative dry eye and ocular surface inflammation and damage. [1]

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, commonly characterized by terminal duct obstruction and/or qualitative/quantitative changes in the glandular secretion. It may result in alteration of the tear film, symptoms of eye irritation, clinically apparent inflammation, and ocular surface disease." [1]

In clinical practice diagnosis of dry eye disease is mostly made based on tests like Schirmer test, Tear film breakup time (TBUT) and tear osmolarity etc; which evaluate aqueous component of tear film. But evaluation of evaporative dry eye disease i.e. Meibomian gland dysfunction component is often missed in the 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.[3,4,6]

The aim of the present study is to find prevalence of MGD in different age and sex groups and to study symptomatology of meibomian gland dysfunction in relation to grading of MGD clinically.

II. Material and methods

After having consent; 200 patients between the ages of 50 to 80 years attending outpatient department of ophthalmology in Govt. Medical College, Patiala were enrolled who had come for defective vision & other symptoms between the months from July 2019 upto 25th of October 2019.

A detailed history of the patient was taken as per the following dry eye questionnaire:

1. Do your eyes ever feel dry?
2. Do you ever feel a gritty or sandy sensation in your eyes?
3. Do your eyes ever have a burning sensation?
4. Are your eyes ever red?
5. Do you notice much crusting on your lashes?
6. Do your eyelids ever get struck?
7. Has your blinking increased recently?

(Possible answers were "never", "rarely", "sometimes", "often", or "all the time" for question No. 1 to 6 and yes or no in question no.7)

Exclusion criteria : Persons with any history of systemic disease, any history of ophthalmic surgery, use of any systemic or local (ocular) medication, pterygium, trichiasis, entropion were not included in this study.

After recording visual acuity and refraction; the patient was examined on slit lamp at a magnification of 8X. Margins of upper and lower lids were examined and then upper and lower lids were pinched (compressed) between index finger and thumb to express meibum after explaining the procedure to the patient.

Meibum quality was assessed in each of eight glands of the central third of the lower lid on a scale of 0 to 3 for each gland; 0, clear; 1, cloudy; 2, cloudy with debris (granular); and 3, thick, like toothpaste. Expressibility is assessed on a scale of 0 to 3 in five glands in the lower or upper lid according to the number of glands expressible: 0, all glands; 1, three to four glands; 2. one to two glands and 3. no glands. Fluorescein stain was used to stain the ocular surface in the present study and MGD was graded clinically as follows quite in conformity with[1]:

Grade-I Minimally altered secretions.
Expressibility 1.
No ocular surface staining.
Grade-II Mildly altered secretions
Expressibility 1.
None to limited ocular surface staining.
Grade III: Plugging, vascularity,
Moderately altered secretions
Expressibility 2.
Mild to moderate conjunctival and peripheral corneal staining often inferior.
Grade IV: Dropout, displacement of gland orifice,
Severely altered secretions,
Expressibility 3
Increased conjunctival and corneal staining including central staining.

III. Results

The results of the present study are tabulated as follows :

Table no. I Meibomian Gland Dysfunction with grading in different age and sex groups

n=200	Male n = 100							Female n = 100						
				Gradewise distribution of MGD patients							Gradewise distribution of MGD patients			
Age (yrs.)	Total No. of patients	Normal patients (No evidence of MGD)	Total No. of patients with MGD n(%)	Gr-I	Gr-II	Gr-III	Gr-IV	Total No. of patients	Normal patients (No evidence of MGD)	Total No. of patients with MGD n(%)	Gr-I	Gr-II	Gr-III	Gr-IV
50-60	23	14	9	2	3	2	2	26	20	6	2	1	2	1
61-70	34	25	9	3	2	1	3	38	28	10	2	3	3	2
71-80	43	32	11	2	3	4	2	36	25	11	4	2	3	2
Total	100	71	29	7	8	7	7	100	73	27	8	6	8	5

Table no. II Relationship of symptomatic MGD with Grading of MGD in different age and sex groups

n=200	Male n = 100						Female n = 100					
			Gradewise distribution of symptomatic MGD patients						Gradewise distribution of symptomatic MGD patients			
Age (yrs.)	Total No. of patients with MGD n(%)	Total No. of symptomatic MGD patients	Gr-I	Gr-II	Gr-III	Gr-IV	Total No. of patients with MGD n(%)	Total No. of symptomatic MGD patients	Gr-I	Gr-II	Gr-III	Gr-IV
50-60	9	4	0	1	2	1	6	3	0	0	2	1
61-70	9	4	0	0	1	3	10	5	0	0	3	2
71-80	11	6	0	1	3	2	11	6	0	1	3	2
Total	**29**	**14**	**0**	**2**	**6**	**6**	**27**	**14**	**0**	**1**	**8**	**5**

1. Present study comprised 200 patients (100 males and 100 females) in the age group of 50 to 80 years attending Ophthalmology OPD after application of exclusion criteria.
2. A prevalence of 29% in males as compared to 27% in females is evident from table I; with an increase in prevalence with increasing age in males as well as in females.
3. 56 patients (28%) from both groups (i.e. male and females) were found to have signs of MGD as per table no. I.
4. Prevalence of symptomatic MGD was lower than asymptomatic MGD in all the age groups as per table no. II.
5. In males the total prevalence of MGD was 29% and symptomatic MGD was 14% whereas in females, the total prevalence of MGD was 27% and symptomatic MGD was 14% as per table no. II.
6. All the patients with grade III and grade IV MGD were symptomatic whereas MGD patients with grade I and grade II are mostly asymptomatic as seen in table no. II.

IV. Discussion

MGD often remains under-diagnosed and under-treated ophthalmic condition[2] which is well reflected by the present study as asymptomatic grade I and grade II cases of MGD. As observed in this study, which is evident from table II; these asymptomatic cases of grade I and grade II MGD may be slipping into symptomatic grade III and grade IV MGD with passage of time because of above mentioned under-diagnosis and consequent absence of preventive measures in the form of eyelid hot compresses and massage. Our overall prevalence of MGD i.e. 28% (29% in males & 27% in females) is comparable with the 31.7% prevalence observed in a study done on Indian population[5]. Higher prevalence of MGD in males than females and the increase of prevalence of MGD with increasing age; both are similar to the findings of the study done in Spanish populations.[6] Prevalence of symptomatic MGD in the total subjects examined was 14% each, both in male and female patients; which constitutes 48.27% and 51.85% of the total male and female MGD patients respectively in our study.

Admittedly the present sample survey is small and more studies are therefore needed in the general population as well as to know the relation of MGD with outdoor versus Indoor life of persons having MGD including the use of Air conditioners, computers and working in dry, dusty or sun exposure conditions.

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