



Original Research Article

Prevalence of dry eyes in patients with type 2 diabetes mellitus having meibomian gland dysfunction

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ABSTRACT

Purpose : The purpose of this study was to know the prevalence of dry eyes in patients with Type 2 Diabetes mellitus having meibomian gland dysfunction.**Materials and Methods :** The study was conducted in patients visiting tertiary care hospital. This study included a total of 200 patients presenting with ocular discomfort, with history of Type 2 Diabetes mellitus. The patients were assessed for Meibomian gland dysfunction by noting the symptoms under slit lamp examination. Dry eyes were suspected on the basis of history including ocular discomfort, redness, blurred vision, gritty eyes and other sensation that improved with blinking. The examination for the dry eye was done using schirmer's test and tear break up time.**Results :** A total of 130 out of 200 enrolled patients had meibomian gland dysfunction. The most common symptom being dryness(55%), foreign body sensation(30%), redness(10%), gritty sensation(5%).**Conclusion :** The above study shows that the incidence of dry eyes is more in patients with Type 2 diabetes mellitus having Meibomian gland dysfunction.

Meibomian glands are important contributors for maintenance of healthy ocular surface. Meibomian gland dysfunction can cause qualitative and quantitative alteration in meibum with negative impact on the ocular surface.

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1. Introduction

Diabetes mellitus has been identified as one of the leading systemic risk factors in dry eye syndrome.¹ Other common risk factor is female of post-menopausal age.²

Meibomian gland dysfunction is characterized by terminal duct obstruction and/or quantitative and qualitative changes in glandular secretion which leads to increased tear evaporation, thus causing dry eye. This is one of the leading causes of dry eye.³ Insulin and sex hormone plays important role in maintenance of normal meibomian glad function.²

2. Materials and Methods

A retrospective study was carried out in a total of 200 patients with ocular discomfort, with history of Type

2 diabetes mellitus attending the OPD, Department of ophthalmology in Dr. B.R. Ambedkar medical college over a period of 1 year.

The diabetic state was determined either by history of medication or abnormal random blood sugar >200mg/dl or HBA1C>6.5% or fasting blood sugar>126mg/dl.

2.1. Inclusion criteria

The age range of the subjects were between 40-65 years.

2.2. Exclusion criteria

1. Patients with thyroid eye disease
2. Patients on medications like antihistamines and antidepressants.
3. Post cataract surgery (within 6 months)

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The patients were assessed for Meibomian gland dysfunction under slit-lamp examination.

Meibomian gland dysfunction was assessed for volume and viscosity by expression of the meibomian duct.

Table 1: Meibomian gland expression scale for volume

Grade	Volume
1	Normal volume: Just covers orifices
2	Increased 2-3 times the normal volume
3	Increased more than 3 times the normal volume
4	Increased to 10 times the normal volume

Table 2: Meibomian gland expression scale for viscosity

Grade	Viscosity
1	Normal, Clear, may have few particles
2	Opaque with normal viscosity
3	Opaque with Increased viscosity
4	Severe thickening (tooth paste like)

The examination for the dry eye was done using schirmer's test and tear break up time



Fig. 1: Schirmer's test

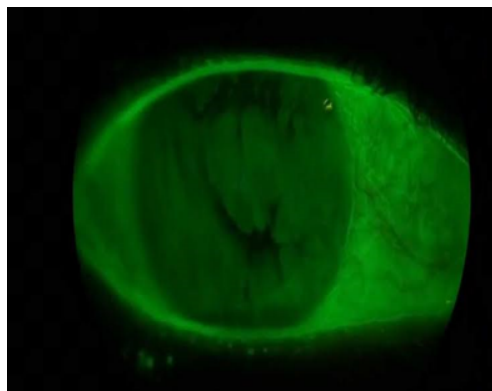


Fig. 2: Tear break up time

2.3. Statistical analysis

Mean, median, standard deviation, ranges were evaluated for continuous variables and for categorical variables, frequency and percentages were recorded. Chi-square test and ANOVA test were also used whenever necessary Independent t test was used to compare mean between the two group. P value of less than 0.05 within 95% CI was considered statistically significant

3. Results

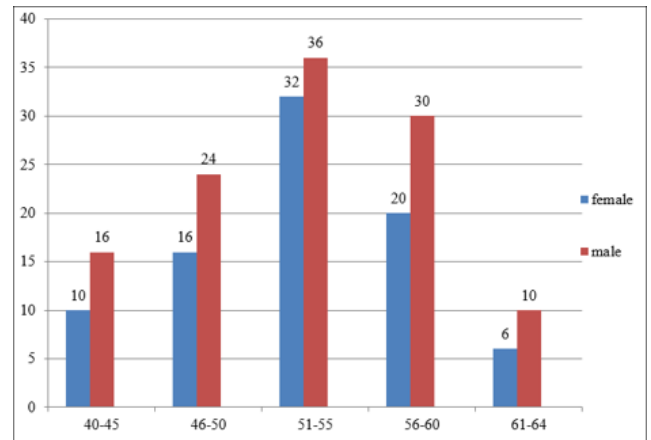


Fig. 3: Age and Gender distribution in diabetics

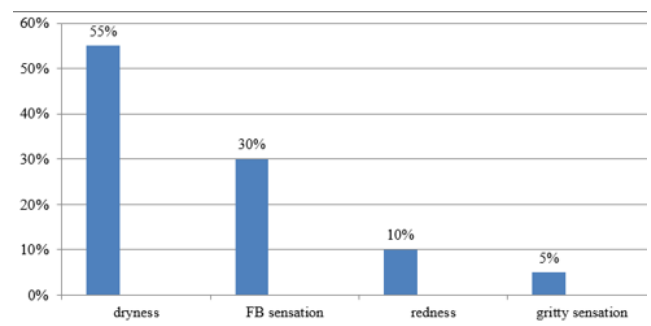


Fig. 4: Symptoms

Table 3: Meibomian gland expression scale for volume/viscosity

Grade	Diabetics (%)
Normal	168 (84%)
Abnormal	32 (16%)
Total	200 (100%)

4. Discussion

1. Studies by Seifart and Stempel concluded that 70% of type 2 diabetics have proven dry eye disease. They also

found that higher HBA1C values, greater the severity of dry eye disease.⁴

2. Ding et al. reported that in diabetic patients, hyperglycemia is one of the pathogenic factors causing common cause of dry eye.⁵
3. A study conducted by R.P. Shamsheer and Cynthia Arunachalam shows that the Meibomian gland dysfunction is an important cause of dry eye. This may be one of the causes for increased prevalence of dry eye in Diabetics.³
4. A study by Dr Jitendra kumar, Dr Preeti chaubey and Dr vijay Pratap concluded that the prevalence of Meibomian gland dysfunction in diabetic population was 56%, MGD is an important pre disposer for Dry eye.⁶
5. A study by Li et al,⁷ Kumar et al,⁶ Rathnakumar et al⁸ reported that the symptoms of MGD in type 2 Diabetes were highly significant especially burning and dryness.
6. A study by Igor Kaiserman MD,⁹ Sandrajohanna G¹⁰ and D.A Schaumberg¹¹ showed that patients with MGD shows meibum expressibility abnormality, found more significantly in patients with type 2 diabetes mellitus.

5. Conclusion

1. Our study revealed high correlation between type 2 diabetes mellitus and meibomian gland dysfunction with dry eye.
2. Meibomian gland dysfunction is an important cause of dry eye and the frequency of the more severe form is greater in diabetics.
3. This may be one of the causes for the increased prevalence of dry eye in diabetics.
4. It should be noted at an early stage and treated appropriately in order to prevent more severe eye complications.
5. Therefore, examination of the meibomian gland is necessary, especially in long-term cases of diabetes mellitus.

6. Conflicts of Interest

All contributing authors declare no conflicts of interest.

7. Source of Funding

None.

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