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***Original Research***

# Clinical profiles of dry eyes in diabetic patients

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***ABSTRACT:***

**Background:** Diabetes mellitus is a group of metabolic diseases characterized by chronic hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The severity of symptoms is due to the type and duration of diabetes. Hence; the present study was conducted for assessing the clinical profiles of dry eyes in diabetic patients. **Materials & methods:** A total of 100 type II Diabetes Mellitus patients were enrolled. Patient data was collected according to the proforma. Medical history and history of extra ocular surgery and contact lens use was noted. A detailed history taking was done including age, sex, ocular symptoms, detailed history of diabetes with duration and treatment, history of allergy, drug intake, joint pain, chemical injury & Steven Johnson syndrome. The presence of any systemic disease, history of ocular surgeries, trauma or contact lens use and ocular medications was noted. Incidence and profile of dry eyes in diabetic patients was assessed. **Results:** The overall prevalence of dry eyes was found to be 63 percent of the type-2 diabetic patients. Significant results were obtained while correlating gender with presence of dry eyes. Feeling of dry eyes, gritty feeling, burning sensation, stickiness, watering, redness, itching sensation and ocular pain were the common ocular manifestations seen in patients with dry eyes. **Conclusion:** Diabetic patients are at increased risk of developing ocular surface complications. Hence clinical evaluation of dry eye should be an integral part of ocular examination in diabetic patients.

**Key words:** Diabetic, Dry eyes

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## INTRODUCTION

Diabetes mellitus is a group of metabolic diseases characterized by chronic hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The severity of symptoms is due to the type and duration of diabetes. Symptoms of marked hyperglycemia include polyuria, polydipsia, weight loss, sometimes with polyphagia, and blurred vision. Impairment of growth and susceptibility to certain infections may also accompany chronic hyperglycemia. Acute, life-threatening consequences of uncontrolled diabetes are hyperglycemia with ketoacidosis or the nonketotic hyperosmolar syndrome.[1- 3]

The cause is a combination of resistance to insulin action and an inadequate compensatory insulin secretory response. In the latter category, a degree of hyperglycemia sufficient to cause pathologic and functional changes in various target tissues, but without clinical symptoms, may be present for a long period of time before diabetes is detected.[4, 5]

Dry eye disease is a frequent cause of ocular irritation for which patients seek ophthalmic care. In recent years dry eye is considered as an extremely common condition that causes varying degrees of ocular discomfort and disability. Dry eye is defined as a multifactorial disease of tears and ocular surface that results in symptoms of discomfort, visual disturbance and tears film instability with potential damage to the ocular surface. It is accompanied by increased osmolality of tear film and inflammation of ocular surface.[5- 8] Hence; the present study was conducted for assessing the clinical profiles of dry eyes in diabetic patients.

## MATERIALS & METHODS

The present study was conducted for assessing the clinical profiles of dry eyes in diabetic patients. A total of 100 type II Diabetes Mellitus patients were enrolled. Patient data was collected according to the proforma. Medical history and history of extra ocular surgery and contact lens use was noted. A detailed history taking was done including age, sex, ocular symptoms, detailed history of diabetes with duration and treatment, history of allergy, drug intake, joint pain, chemical injury & Steven Johnson syndrome. The presence of any systemic disease, history of ocular surgeries, trauma or contact lens use and ocular medications was noted. Incidence and profile of dry eyes in diabetic patients was assessed. The data were collected from patients using a case report form. Data was entered in excel and analysed using SPSS version 20. Chi- square test and Mann Whitney test were used for assessment of level of significance. P- value of less than 0.05 will be taken as significant.

## RESULTS

Mean age of the patients was 58.6 years. 66 percent of the patients were males while the remaining were females. In 38 percent of the patients, the duration of diabetes was 1 to 5 years, while in 32 percent of the patients; the mean duration of diabetes was 10 to 20 years. In the present study, the overall prevalence of dry eyes was found to be 63 percent of the type-2 diabetic patients. Significant results were obtained while correlating gender with presence of dry eyes. Feeling of dry eyes, gritty feeling, burning sensation, stickiness, watering, redness, itching sensation and ocular pain were the common ocular manifestations seen in patients with dry eyes.

**Table 1: Overall Prevalence of dry eyes**

| Dry eyes | Number of patients | Percentage of patients |
|---|---|---|
| Absent | 37 | 37 |
| Present | 63 | 63 |

**Table 2: Association of dry eyes with gender**

| Gender | Patients with dry eyes | Patients without dry eyes | p- value |
|---|---|---|---|
| Males | 22 | 29 | 0.00 (Significant) |
| Females | 41 | 18 | |
| Total | 63 | 37 | |

**Table 3: Association of dry eyes with ocular manifestations**

| Ocular manifestation | Patients with dry eyes | Patients without dry eyes | p- value |
|---|---|---|---|
| Eye feel dry | 29 | 5 | 0.00 (Sig) |
| Gritty feeling | 28 | 3 | 0.01 (Sig) |
| Burning sensation | 57 | 4 | 0.02 (Sig) |
| Stickiness | 26 | 5 | 0.01 (Sig) |
| Watering | 25 | 6 | 0.03 (Sig) |
| Redness | 23 | 4 | 0.02 (Sig) |
| Crusting | 6 | 2 | 0.371 |
| Itching | 53 | 9 | 0.01 (Sig) |
| Temporary blurred vision | 5 | 3 | 0.46 |
| Ocular pain | 22 | 6 | 0.03 (Sig) |

## DISCUSSION

Long-term complications of diabetes include retinopathy with potential loss of vision; nephropathy leading to renal failure; peripheral neuropathy with risk of foot ulcers, amputations, and Charcot joints; and autonomic neuropathy causing gastrointestinal, genitourinary, and cardiovascular symptoms and sexual dysfunction. Patients with diabetes have an increased incidence of atherosclerotic cardiovascular, peripheral arterial, and cerebrovascular disease. Hypertension and abnormalities of lipoprotein metabolism are often found in people with diabetes. Type 2 diabetes is characterized by insulin resistance and, at least initially, a relative deficiency of insulin secretion. In absolute terms, the plasma insulin concentration (both fasting and meal-stimulated) usually is increased, although "relative" to the severity of insulin resistance, the plasma insulin concentration is insufficient to maintain normal glucose homeostasis. With time, however, there is progressive beta cell failure and worsening insulin deficiency ensues.[7- 10] Dry eye syndrome becomes increasingly prevalent with age and affects 5% of population during 4th decade of life, increasing to 10-15% adults over the age of 65. Dry eye tends to be ignored as a disease entity because of the vast array and non-specificity of symptoms. We come across many patients with ocular surface discomfort for whom most of the time empirical dry eye therapy is administered without confirming whether the

symptoms are attributable to a true dry eye condition. [8- 12] Hence; the present study was conducted for assessing the clinical profiles of dry eyes in diabetic patients.

In the present study, mean age of the patients was 58.6 years. 66 percent of the patients were males while the remaining were females. In 38 percent of the patients, the duration of diabetes was 1 to 5 years, while in 32 percent of the patients; the mean duration of diabetes was 10 to 20 years. Zou X et al evaluated the prevalence and clinical characteristics of dry eye disease (DED) in community-based type 2 diabetic patients and to identify the associated factors related with DED. A total of 1360 type 2 diabetic patients in the Beixinjing community were randomly selected. Of the 1360 subjects, 238 (17.5%) were diagnosed with DED. There was a significant association between the presence of DED and higher blood glucose as well as higher levels of glycosylated hemoglobin HbA1c. Corneal sensitivity was negatively correlated with the prevalence of DED. They concluded that the prevalence of DED in this community-based study was 17.5%, which was lower than that observed in hospital-based studies. Diabetic patients with poor metabolic control were more likely to present with DED. A dry eye examination should be added to the routine screening of diabetes.[13]

In the present study, the overall prevalence of dry eyes was found to be 63 percent of the type-2 diabetic patients. Significant results were obtained while correlating gender with presence of dry eyes. Feeling of dry eyes, gritty feeling, burning sensation, stickiness, watering, redness, itching sensation and ocular pain were the common ocular manifestations seen in patients with dry eyes. Ma A et al evaluated tear film stability and dry eye symptoms and their associations with systemic risk factors in Chinese patients with type 2 diabetes mellitus (T2DM). A total of 80 Chinese participants, aged 18 or above, with T2DM recruited from the specialist outpatient setting were included. The Oculus Keratograph 5M (Oculus Inc., Wetzlar, Germany) was used to measure the non-invasive tear break-up time (NITBUT). The age-adjusted prevalence of DES was 20% in the Chinese T2DM population. Their findings highlighted the importance of good glycaemic control as a modifiable risk factor for both dry eye symptoms and tear film instability in patients with T2DM.[14]

## CONCLUSION

Diabetic patients are at increased risk of developing ocular surface complications. Hence clinical evaluation of dry eye should be an integral part of ocular examination in diabetic patients.

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