

Assess the prevalence of dry eye symptoms in different age groups in cases and controls patients of diabetes mellitus

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Abstract

Background & Method: This study included total 100 patients, 50 diabetics and 50 non-diabetics attending out-patient department or admitted in Gajara Raja Medical College, Gwalior, Madhya Pradesh from duration between Feb. 2015 to Aug 2016. **Result:** The distribution of cases and controls according to age and sex. In case group there are more males as compared to females, and in control group there is no much difference in case and control group. prevalence of dry eye symptoms are more in case as compared to controls. most frequent symptoms are watering (72%), itching (66%) and foreign body sensation (56%) in case and 18%, 20% & 22% respectively in control group. Frequency of dry eye symptoms is more in cases. **Conclusion:** From our study it is concluded, that diabetic patients suffer more from dry eye disease as compared to normal population. The incidence of dry eye disease also increases with duration of diabetes and also directly associated with severity of diabetic retinopathy. Diabetic patients show a higher prevalence of dry eye symptoms (72%) and dry eye disease (52%) which is clinically significant ($p < 0.001$). Dry eye symptoms specially itching, watering & foreign body sensations were more frequent as compared to other symptoms.

Keywords: Prevalence, Dry Eye, Diabetes Mellitus & Age.

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Introduction

Sight is one of the most important blessing of the Almighty to mankind. For proper functioning and optical integrity, sufficient and continuous moistening of eye is required. It is done by tear film[1]. Diabetes is one of the most common leading causes of blindness in 20–70 year old persons. Cataract and retinopathy are well-known as ocular complications of diabetes[2]. Recently, problems involving the ocular surface, dry eyes in particular, have been reported in diabetic patients[2]. Dry eye refers to disorder of tear film caused by deficiency or excessive tear evaporation which causes damage to the interpalpebral ocular surface (i.e. exposed ocular surface) and is associated with symptoms of ocular discomfort[3].

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Normal tears consist of following layers: an outer oil layer that prevents evaporation from the surface of the eye, a middle layer mostly made of water, and an inner mucus layer that allows the middle, watery layer to adhere to the naturally water repellent tissue on the eye's surface[4]. A quantitative shortage or qualitative abnormality in any of these three layers can result in symptoms of dry eye. Dry eye can lead to bacterial infection. Most cases of dry eye associated with diabetes are caused by insufficient production of tears due to "autonomic neuropathy" affecting the nerves that control the lacrimal gland[4].

Material & Method

This study included total 100 patients, 50 diabetics and 50 non-diabetics attending out-patient department or admitted in Gajara Raja Medical College, Gwalior, Madhya Pradesh from duration between Feb. 2015 to Aug 2016.

Selection Criteria

Case: Patients with DM of any duration from 30 to 60 years of age of both sexes.

Exclusion criteria: Subjects with, secondary diabetes and those who have other diseases (Sjogren's syndrome, rheumatoid arthritis, parkinsonism, lupus), conditions (cigarette smoking, pregnancy, contact lens users, LASIK, allergies), or patients on medications (antihistaminics, TCA, oral contraceptives, antihypertensive drugs, diuretics and etc.) that can affect the tear productions were excluded.

Controls: 30 to 60 years of age of both sexes with no history of DM.

Exclusion criteria: Those who have other diseases (Sjogren's syndrome, rheumatoid arthritis, parkinsonism, lupus), conditions (cigarette smoking, pregnancy, contact lens users, LASIK, allergies), or

patients on medications (antihistaminics, TCA, oral contraceptives, antihypertensive drugs, diuretics and etc.) that can affect the tear productions, were excluded.

Informed consent was taken from all subjects.

All patients were examined in a pre-designed proforma.

Demographic profile

History: Detailed history of each patient was taken and recorded. History regarding dry eye symptoms, other ocular complains, use of drug, duration of diabetes if diabetic, any systemic disease, any infectious disease, refractive error, any surgical history, personal history, family history, socioeconomic history.

General Examination: Weight, Height, Blood pressure, Pulse.

Results**Table 1: Distribution of cases and controls according to age and sex**

Age group (Years)	Cases		Controls	
	Male	Female	Male	Female
30-40	5	1	2	5
41-50	12	5	10	10
51-60	15	12	12	11

The above table shows the distribution of cases and controls according to age and sex. In case group there are more males as compared to females, and in control group there is no much difference in case and control group.

Table2: Distribution of cases and controls according to prevalence of dry eye symptoms

Age group (Years)	Cases		Prevalence	Controls		Prevalence
	Total	With symptoms		Total	With symptoms	
30-40	6	3	50%	7	1	14.3%
41-50	17	11	67.7%	20	5	25%
51-60	27	22	81.5%	23	9	39.1%
Total	50	36	72%	50	15	30%

The above table shows that prevalence of dry eye symptoms are more in case as compared to controls. Table also shows that there is increasing prevalence of dry eye symptoms as the age advances. There is significant difference between cases and controls. ($p < 0.001$)

Table 3: Frequency of dry eye symptoms in cases and controls

Symptom	Cases (n=50)	Prevalence	Control (n=50)	Prevalence
Dryness	19	38%	8	16%
Itching	33	66%	10	20%
Redness	21	42%	7	14%
Foreign body sensation	28	56%	11	22%
Watering	36	72%	9	18%

Fatigue	11	22%	6	12%
Stickiness	4	8%	4	8%
Crusting	5	10%	2	4%
Discomfort	9	18%	2	4%
Blurring of vision	11	22%	4	8%
Stinging	6	12%	3	6%

The table shows that most frequent symptoms are watering (72%), itching (66%) and foreign body sensation (56%) in case and 18%, 20% & 22% respectively in control group. Frequency of dry eye symptoms is more in cases.

Discussion

Dry eye symptoms are more common in diabetics as compared to normal population. There are various mechanisms, one of them is reduced corneal sensitivity which is due to autonomic neuropathy leading to reduced frequency of blinking[4,5]. This causes excessive tear evaporation thus dryness over the cornea and leads to typical symptoms of dry eye. Qualitative changes in tear film can also cause ocular discomfort. In this study 72% of diabetic patients complained of dry eye symptoms as compared to 30% non-diabetic group. In one study done by Seifart U. and Strepel I[6] 52.8% diabetic patient complained of dry eye symptoms as compared to only 9.3% of controls. According to study done by Masoud Reza et. al[7] 54.3% diabetic patients complained of dry eye symptoms. This difference is due to the environmental and different working conditions in this region[8].

Conclusion

From our study it is concluded, that diabetic patients suffer more from dry eye disease as compared to normal population. The incidence of dry eye disease also increases with duration of diabetes and also directly associated with severity of diabetic retinopathy. Diabetic patients show a higher prevalence

of dry eye symptoms (72%) and dry eye disease (52%) which is clinically significant ($p < 0.001$). Dry eye symptoms specially itching, watering & foreign body sensations were more frequent as compared to other symptoms.

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