Original article:

Analysis of Prevalence of Dry Disease in Patients of Type 2 Diabetes Mellitus

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Date of Submission: 27 October 2009, Date of Acceptance: 18 December 2009

ABSTRACT

Background: To assess the prevalence of dry eyes in type 2 diabetic patients.

Materials & Methods: Data was collected from 100 Type II Diabetes Mellitus patients who were willing to participate in the study. The presence of any systemic disease, history of ocular surgeries, trauma or contact lens use and ocular medications was noted. Various ocular examination tests were carried out for evaluating the presence or absence of dry eyes. P- value of less than 0.05 will be taken as significant.

Results: The overall prevalence of dry eyes was found to be 55 percent of the type-2 diabetic patients. Mean duration of diabetes among patients with and without dry eyes was 16.8 years and 11.9 years respectively. Significantly higher proportion of dry eyes was seen among females.

Conclusion: Significant proportion of diabetic patients are affected with dry eyes.

Key words: Dry eyes, Diabetes.

INTRODUCTION

Dry eye syndrome (DES) represents a heterogeneous group of conditions that share inadequate lubrication of the ocular surface as their common denominator. DES is characterized by symptoms of ocular dryness and discomfort due to insufficient tear quantity or quality caused by low tear production and/or excessive tear evaporation. Symptoms can be debilitating 1 and, when severe, may affect psychological health and ability to work. No cure exists for DES, which is one of the leading causes of patient visits to ophthalmologists and optometrists in the United States.[1- 3] Dry eye disease results in deterioration of the ocular surface including dysfunction of the tear film, lacrimal system, eyelids, conjunctiva, and cornea. The healthy tear film serves to protect and lubricate the ocular surface by providing a physical, chemical, and immunological barrier to the environment. The tear film consists of an inner muco-aqueous layer and an outer lipid layer that combined contribute to a stable ocular surface in a normal eye. Aetiologically, DED is divided into aqueous deficient, evaporative, and mixed types. In DED, regardless of aetiology, ocular surface instability promotes a vicious circle of inflammation, exacerbating signs and symptoms of disease, and damage of the ocular surface. Breaking this vicious circle, plays an essential role in the treatment of DED.[4- 6] Hence; the present study was conducted for assessing the prevalence of dry eyes in type 2 diabetic patients.

MATERIALS & METHODS

The present study was conducted to assess the prevalence of dry eyes in type 2 diabetic patients. Data was collected from 100 Type II Diabetes Mellitus patients who were willing to participate in the study. Patient data was collected according to the proforma. Medical history and history of extra ocular surgery and contact lens use was noted. Informed consent was obtained from all the participants after explaining them the purpose of the study. Inclusion and exclusion criteria were confirmed, and assessment of the patient was done. 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. Various ocular examination tests were carried out for evaluating the presence or absence of dry eyes. Data was entered in excel and analysed using SPSS software. 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

46 percent of the patients belonged to the age group of 51 to 60 years. 32 percent of the patients belonged to the age group of 40 to 50 years. The mean age of the patients was 51.5 years. 60 percent of the patients were males while the remaining were females. Mean duration of diabetes was 13.5 years. In the present study, the overall prevalence of dry eyes was found to be 55 percent of the type-2 diabetic patients. Mean duration of diabetes among patients with and without dry eyes was 16.8 years and 11.9 years respectively. Significantly higher proportion of dry eyes was seen among females.

Table 1: Overall Prevalence of dry eyes

Dry eyes	Number of patients	Percentage of patients
Absent	45	45
Present	55	55

Table 2: Correlation of presence of dry eyes with duration of diabetes

Dry eyes	Mean duration of diabetes	SD	p- value
Absent	11.9	3.2	0.000 (Significant)
Present	16.8	5.8	

Table 3: Association of dry eyes with gender

Gender	Patients with dry eyes	Patients without dry eyes	p- value
Males	25	35	0.001 (Significant)
Females	30	10	
Total	55	45	

DISCUSSION

Dry eye disease is one of the most frequently encountered ocular morbidities, with as many as 4.3 million Americans older than age 65 with symptoms either often or all the time. The dry eye syndrome is composed of a number of diverse medical and ocular diseases that involve decreased tear production and/or increased tear evaporation. Because of the wide-ranging etiologies of dry eye and the great variability of clinical signs of the condition, it has been difficult to develop a consistent classification system for dry eye or reliable and valid measures of disease severity. This has complicated efforts to determine the incidence and prevalence of dry eye, to monitor disease progression and response to treatment, and to adequately quantify the impact that dry eye has on patients' quality of life.[1,2,7,8] Hence; the present study was conducted for assessing the prevalence of dry eyes in type 2 diabetic patients.

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Mean duration of diabetes among patients with and without dry eyes was 16.8 years and 11.9 years respectively. Significantly higher proportion of dry eyes was seen among females. Schaumberg DA et al surveyed 39,876 US women participating in the Women's Health Study about a history of diagnosed DES and dry eye symptoms. They defined DES as the presence of clinically diagnosed DES or severe symptoms (both dryness and irritation constantly or often). They calculated the age-specific prevalence of DES and adjusted the overall prevalence to the age distribution of women in the US population. The prevalence of DES increased with age, from 5.7% among women < 50 years old to 9.8% among women aged > or = 75 years old. The age-adjusted prevalence of DES was 7.8%, or 3.23 million women aged > or = 50 in the US. Compared with Whites, Hispanic and Asian women were more likely to report severe symptoms, but not clinically diagnosed DES. There were no significant differences by income, but more educated women were less likely to have DES. Women from the South had the highest prevalence of DES, though the magnitude of geographic differences was modest. Dry eye syndrome leading to a clinical diagnosis or severe symptoms is prevalent, affecting over 3.2 million American women middle-aged and older.[6] McCarty CA et al described the epidemiology of dry eye in the adult population. Participants were recruited by a household census from two of nine clusters of the Melbourne Visual Impairment Project, a population-based study of age-related eye disease in the 40 and older age group of Melbourne, Australia. Nine hundred and twenty-six (82.3% of eligible) people participated; 433 (46.8%) were male. They ranged in age from 40 to 97 years, with a mean of 59.2 years. Dry eye was diagnosed as follows: 10.8% by rose bengal, 16.3% by Schirmer's test, 8.6% by tear film breakup time, 1.5% by fluorescein staining,

7.4% with two or more signs, and 5.5% with any severe symptom not attributed to hay fever. Women were more likely to report severe symptoms of dry eye. Risk factors for two or more signs of dry eye include age, and self-report of arthritis. These results were not changed after excluding the 21 people (2.27%) who wore contact lenses. They concluded that the prevalence of dry eye varies by sign and symptom.[9]

CONCLUSION

A significant proportion of diabetic patients are affected with dry eyes.

REFERENCES

1. Schein OD, Muñoz B, Tielsch JM, Bandeen-Roche K, West S. Prevalence of dry eye among the elderly. Am J Ophthalmol, 1997; 124(6): p. 723-8
2. Moss, S.E., R. Klein, and B.E. Klein, Prevalence of and risk factors for dry eye syndrome. Arch Ophthalmol 2000; 118(9): p. 1264-8.
3. McCarty, C.A., et al., The epidemiology of dry eye in Melbourne, Australia Ophthalmology, 1998; 05(6): p. 1114-9
4. Schaumberg, O.A., et al. The epidemiology of dry eye syndrome. Cornea, 2000; 19 (Suppl): p. S120.
5. Doughty, MJ., et al., A patient questionnaire approach to estimating the prevalence of dry eye symptoms in patients presenting to optometric practices across Canada Optom Vis Sci, 1997; 74(8): p. 624-31.
6. Schaumberg, D.A., D.A. Sullivan, and M.R. Dana, The relationship of hormone replacement therapy with the prevalence of dry eye syndrome in a large cohort of women. Ophthalmology, 2000; 107 (Suppl.): p. 105.
7. Yazdani C, McLaughlin T, Smeeding JE, Walt J. Prevalence of treated dry eye disease in a managed care population. Clin Ther. 2001;23:1672–82.
8. Kaiserman I, Kaiserman N, Nakar S, Vinker S. Dry eye in Diabetic patients. AM J Opthalmol. 2005 Mar; 13993: 498-503.
9. McCarty CA, Bansal AK, Livingston PM, Stanislavsky YL, Taylor HR. The epidemiology of dry eye in Melbourne, Australia. Ophthalmology. 1998;105:1114–19.