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Diabetes and dry eye

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Abstract

Aim: To assess the prevalence of dry eye syndrome in type II diabetic patients and its correlation to the severity of diabetic retinopathy.

Materials and Methods: 191 subjects of both sexes, with the mean age of 56.18± 8.87years, diagnosed to have Type II Diabetes mellitus were included in the study.

Observation and Results: 99 out of 191 patients (51.8%) had dry eye syndrome and the prevalence was higher in elderly group, aged above 60 years and those with severe grades of diabetic retinopathy. A significant association was observed between the duration of diabetes and frequency of dry eye syndrome.

Conclusion: Since diabetic patients are found to have higher prevalence of dry eye syndrome, examination for dye eye should be an integral part of the assessment of diabetic eye disease.

Keywords: Diabetic Retinopathy, Dry eye, Type II Diabetes.

Introduction

Dry eye can lead to defective vision, infection, scarring and perforation of the cornea. If this syndrome is diagnosed at first stage and treated, corneal complications can be avoided. People with diabetes have a significantly increased risk for this disorder. Therefore, we evaluated the prevalence of dry eye syndrome among Type II diabetic patients.

Aims and Objectives

- To assess the prevalence of dry eye syndrome associated with Type II Diabetes.
- To correlate the dry eye syndrome with the duration of Type II Diabetes and to the severity of diabetic retinopathy.

Materials and Methods

Among the diabetic patients referred to the Ophthalmology Department, Vinayaka Mission's Medical College Hospital, Karaikal, Type II diabetic patients including new and review cases (diagnosed according to ADA criteria)[(1)] were recruited into the study for a period of 1 year. Clinical data of all patients which included age, sex and duration of diabetes were obtained from the medical records and direct patient interview.

Inclusion Criteria

- Patients diagnosed to have Type II diabetes Mellitus of all age groups and both sexes were included in the study.
- Informed consent was obtained from all patients.

Exclusion Criteria

- Subjects with secondary diabetes or with other diseases that can affect tear production were excluded from the study.
- Exclusion criteria included contact lens wearers, those who underwent LASIK surgery, those with history of allergy, Sjogren's syndrome, rheumatoid arthritis, Parkinson, lupus and those on some medications like anti histaminics, tricyclic anti depressants, oral contraceptives and diuretics.

Dry eyes were suspected on the basis of a history of ocular discomfort, gritty sensation, itching, redness, blurred vision that improves with blinking and excessive tearing. The condition was confirmed by doing Schirmer test I (value <15 mm in 5 min without the local anesthetics) and Tear film Break up Time (TBUT) (value <15sec), according to American Academy of Ophthalmology.[(1)] Diagnosis was made by positivity of one or other test. Anterior segment of the eye was examined by slit lamp biomicroscopy and retinal status was evaluated by indirect ophthalmoscopy after dilation with Tropicamide plus eye drop. Diabetic retinopathy was graded according to Early Treatment Diabetic Retinopathy(ETDRS)criteria.[(2)]

Statistical Methods: Statistical analysis was performed using Statistical Package for Social Sciences (SPSS version 12.0, Chicago IL). Chi square test and t-student test were used to compare discrete variables. P value < 0.05 was considered to be significant. Results were given with their 95% CIs and data were presented as means ± SD.

Results

In this study, 191 diabetic patients (105 men, 86 women) with the mean age of 56.18 ± 8.87 years were assessed. 99 out of 191patients (51.8%) had dry eye syndrome of which 38(38.4%) were female and 61(61.61%) were male. There was a weak association between sex and frequency of dry eye syndrome (P = 0.056) (Table 1, Fig. 1)

Frequency of dry eye syndrome was significantly high (49%) in age group >60years (Table 2, Fig. 2) and those with higher grades of DR. (Table 3, Fig. 3). The mean duration of diabetes was found to be 6.25 ± 4.26

years among those diagnosed to have dry eye syndrome. A significant association was observed between duration of diabetes and frequency of dry eye syndrome (P=0.000),(Table 4, Fig. 4)

Table 1: Sex Vs Dry Eye

Sex	% Dry Eye	% Total
Male	61.61	54.97
Female	38.38	45.03
P Value = 0.056		

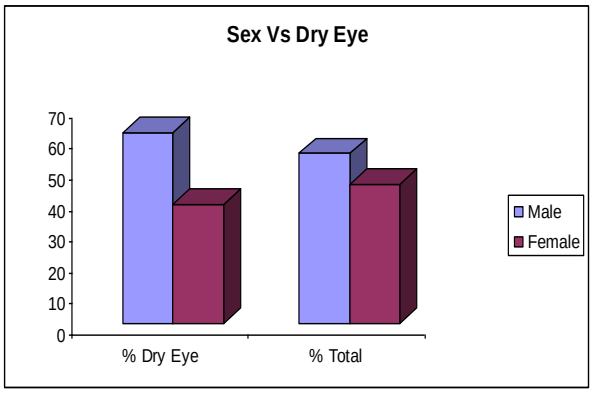


Fig. 1: Sex Vs Dry Eye

Table 2: Age Vs Dry Eye

Age (yrs)	% Dry Eye	% Total
> 60	49.49	28.80
46 - 60	47.47	60.21
35 - 45	3.03	10.99
P Value = 0.000		

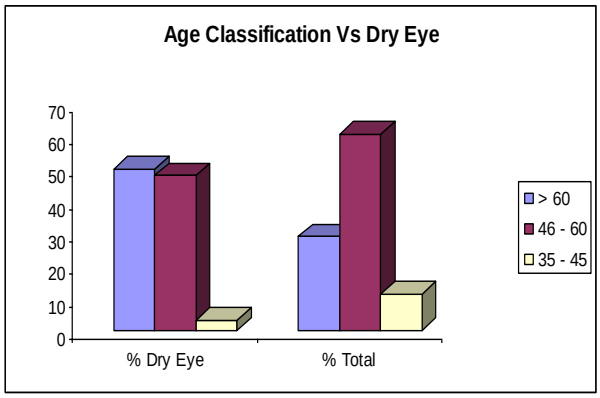


Fig. 2: Age Vs Dry Eye

Table 3: DR Status Vs Dry Eye

DR Status	% Dry Eye	% Total
No DR	5.05	21.99
Mild NPDR	11.16	25.27
Moderate NPDR	36.27	27.88
Severe NPDR	27.44	20.15
PDR	20.08	4.71
P Value = 0.05		

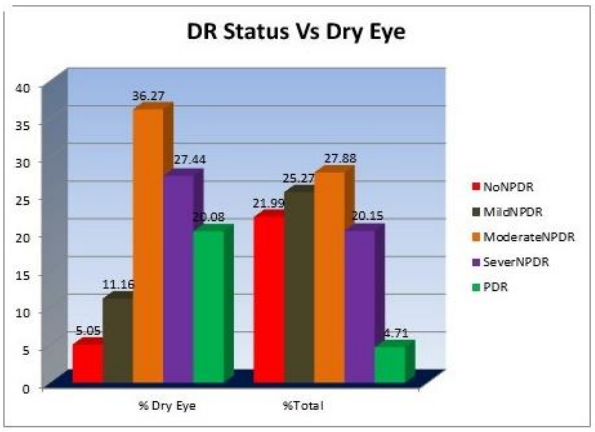
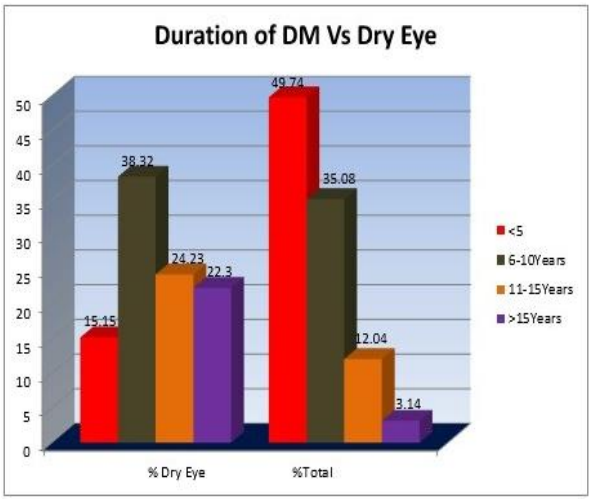


Table 4: Duration of DM Vs Dry Eye

Duration of DM	% Dry Eye	% Total
< 5 Years	15.15	49.74
6 - 10 Years	38.32	35.08
11 - 15 Years	24.23	12.04
> 15 Years	22.30	3.14
P Value = 0.05		



Discussion

In this study, 51.8% of the Type II Diabetic patients was found to have dry eye syndrome and prevalence was significantly higher with longer duration of diabetes and with severe diabetic retinopathy. Ramos-Remus C et al assessed one hundred patients with diabetes mellitus and observed low tear production related to the dysfunction of the autonomic nervous system.[6] Janjetovic Z et al conducted study on 100 individuals (50 healthy subjects in control group and 50 subjects with diabetes) aged between 50-70 years and found that among the diabetic patients, 37(74%) had lower values of tear secretion and 23(46%) of them had lower values of TBUT as against 28(56%) with lower values of tear secretion and 17(34%) with lower values of TBUT in the control group.[8] Jin J et al compared 100patients with type II

diabetes with 80 normal healthy controls and proved that TBUT was significantly lower in type 2 diabetic patients.[9] Lack of control group and glycemic parameters assessment especially HbA1C could be mentioned as the limitation of my study.

Conclusion

This study supports the impression that diabetic patients have an elevated prevalence of dry eye syndrome and the percentage of involvement is proportionately high with the severity of diabetic retinopathy. Further studies need to be undertaken to establish an etiologic relationship. However, examination for dry eyes should be an integral part of the assessment of diabetic eye disease.

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