A study prevalence ocular comorbidity among diabetes patients as per the glycemic control at tertiary health care center

Manish Pendse[1], Priyadarshini Cholera[2*]

[1,2]Associate Professor, Department of Medicine, D Y Patil Medical College, Nerul Navi Mumbai, Maharashtra, INDIA.
Email: drmanishpendse@gmail.com

Abstract
Background: Globally, type 2 diabetes mellitus (T2DM) has become one of the most important chronic public health problems. **Aims and Objective :** To study prevalence ocular comorbidities among dibetes patients as per the glycemic control at tertiary health care center **Methodology:** This was a cross-sectional study carried out in the department of the Ophthalmology during the one year period i.e. June 2018 to June 2019 in the one year period there were 122 patients with various ocular co-morbidity were included into the study by taking the written and explained consent. All details of the patients like age, sex noted. The statistical analysis was done Chi-square test and analysed by SPSS software. **Result:** Majority of the patients were in the age group of >70 were 27.87%, followed by 60-70 were 23.77%, 50-60 were 19.67%, 40-50 were 15.57%, 30-40 were 9.84%, 20-30 were 3.28%. The majority of the patients were Male i.e. 56.56% and female were 43.44%. The prevalence of Various Ocular morbidities like co-morbidity like Diabetic retinopathy, Refractive errors, Cataract, Corneal ulcers , Uveitis (Iriodocyclitis) Diminished vision , Stye(Infection of Eyelid) were significantly higher and significantly lesser No. of patients with No any Ocular morbidity were found the patients with Glycemic control Excellent (HbA1C <6) this was statistically significant (X^2=83.55,df=14,p<0.0001). **Conclusion:** It can be concluded from our study that prevalence various ocular co-morbidities were significantly higher among the patients with poor Glycemic control and lesser among with Glycemic control Excellent and Good.
Key words: ocular comorbidities, glycemic control, HbA1C, type-II DM.

*Address for Correspondence:
Dr Priyadarshini cholera, Associate Professor, Department of Ophthalmology, D Y Patil Medical College, Nerul, Navi Mumbai, Maharashtra, INDIA.
 Email: drmanishpendse@gmail.com

Access this article online	
Quick Response Code:	**Website:** www.medpulse.in
	Accessed Date: 01 May 2020

INTRODUCTION

Globally, type 2 diabetes mellitus (T2DM) has become one of the most important chronic public health problems[1]. T2DM is a growing cause of disability and premature death, mainly through cardiovascular disease and other chronic complications[1-3]. It is estimated that the global number of adults suffering from any form of diabetes will reach 285 million in 2010 and further increase to 439 million in 2030, most of them T2DM cases[4,5,6]. Data from prospective and cross-sectional studies consistently point to the fact that diabetic patients are more likely to develop micro- as well as macro-vascular conditions[7-9]. Diabetes mellitus is a chronic disorder that may cause acute or chronic long-term complications if it is not well controlled. One of the most common chronic microvascular complications is diabetic retinopathy (DR) [10] or other ocular morbidity so we have studied prevalence ocular comorbidities among dibetes patients as per the glycemic control at tertiary health care center

METHODOLOGY

This was a cross-sectional study carried out in the department of the Ophthalmology during the one year period i.e. June 2018 to June 2019 in the one year period

there were 122 patients with various ocular co-morbidity were included into the study by taking the written and explained consent. All details of the patients like age, sex noted. All the patients undergone HbA1C testing it was considered Glycemic control Excellent if HbA1C <6, Glycemic control Good if HbA1C 6-7, Glycemic control poor if HbA1C >8. All the patients thoroughly underwent all ophthalmic examination and co-morbidity like Diabetic retinopathy , Refractive errors , Cataract, Corneal ulcers , Uveitis (Iriodocyclitis) Diminished vision , Stye(Infection of Eyelid) if any were noted . The statistical analysis was done Chi-square test and analysed by SPSS software.

RESULT

Table 1: Distribution of the patients as per the age

Age	No.	Percentage (%)
20-30	4	3.28
30-40	12	9.84
40-50	19	15.57
50-60	24	19.67
60-70	29	23.77
>70	34	27.87
Total	122	100.00

Majority of the patients were in the age group of >70 were 27.87%, followed by 60-70 were 23.77%, 50-60 were 19.67%, 40-50 were 15.57%, 30-40 were 9.84%, 20-30 were 3.28%.

Table 2: Distribution of the patients as per the sex

Sex	No.	Percentage (%)
Male	69	56.56
Female	53	43.44
Total	122	100.00

The majority of the patients were Male i.e. 56.56% and female were 43.44%

Table 3: Distribution of the patients as per the HbA1C level and Ocular morbidity

Ocular morbidity*	Glycemic control Excellent (HbA1C <6) (n=65)	Glycemic control Good (HbA1C 6-7) (n=33)	Glycemic control poor (HbA1C >8) (n=24)
Diabetic retinopathy	0	3	9
Refractive errors	5	7	11
Cataract	5	9	10
Corneal ulcers	1	5	13
Uveitis (Iriodocyclitis)	0	2	7
Diminished vision	1	4	9
Stye	2	6	12
Patients with No any Ocular morbidity	51	29	5

*(More than one Ocular morbidity found in the one patients hence total may more in respective column) (X^2=83.55,df=14,p<0.0001)

The prevalence of Various Ocular morbidities like co-morbidity like Diabetic retinopathy , Refractive errors , Cataract, Corneal ulcers , Uveitis (Iriodocyclitis) Diminished vision , Stye(Infection of Eyelid) were significantly higher and significantly lesser No. of patients with No any Ocular morbidity were found the patients with Glycemic control Excellent (HbA1C <6) this was statistically significant (X^2=83.55,df=14,p<0.0001).

DISCUSSION

Diabetic retinopathy is classified into four stages, which are mild non-proliferative (NPDR), moderate NPDR, severe NPDR, and proliferative diabetic retinopathy (PDR). Most of Type 1 Diabetes Mellitus (T1DM) and Type 2 Diabetes Mellitus (T2DM) patients will develop DR after 20 years [11]. The Malaysian Diabetes Eye Registry in 2007 reported 37% prevalence of DR in Malaysia[12]. Factors associated with the progression of diabetic retinopathy in T2DM patients includes A1C level, co-morbidities, duration of DM diagnosed, age and gender [13]. In another study involving Chinese patients with DR and T2DM, positive correlations were found between DR and duration of diabetes, systolic blood pressure (SBP), diastolic blood pressure, glycated hemoglobin, glycated albumin, 24 hurinary albumin excretion, peripheral atherosclerosis (PA), diabetes nephropathy (DN), diabetic peripheral neuropathy and anemia.[14] Good glycemic

control is associated in risk reduction in the progression of diabetic retinopathy. A1C is a useful monitoring tool to evaluate the effectiveness of a therapeutic management plan for diabetes patients.[15] Study showed intensive glycemic control with A1C value <6.5% has significantly (p<0.003) reduced the progression of retinopathy. In a meta-analysis study, an intensive glycemic control reduced the risks of retinal photocoagulation or vitrectomy (OR 0.86; 95 % CI 0.75-0.98), macular edema (OR 0.65; 95 % CI 0.43-0.99) and progression of retinopathy (OR 0.69; 95 % CI 0.55-0.87)[16]. Thus, good glycemic control has proven to retard the progression of diabetic retinopathy in T2DM patients. Excellent glycemic control is not only important in Diabetic retinopathy but in other ocular morbidities in our study we have found that Majority of the patients were in the age group of >70 were 27.87%, followed by 60-70 were 23.77%, 50-60 were 19.67%, 40-50 were 15.57%, 30-40 were 9.84%, 20-30 were 3.28%. The majority of the patients were Male i.e. 56.56% and female were 43.44% The prevalence of Various Ocular morbidities like co-morbidity like Diabetic retinopathy , Refractive errors , Cataract, Corneal ulcers, Uveitis (Iriodocyclitis) Diminished vision, Stye(Infection of Eyelid) were significantly higher and significantly lesser No. of patients with No any Ocular morbidity were found the patients with Glycemic control Excellent (HbA1C <6) this was statistically significant (X^2=83.55,df=14,p<0.0001). These findings are similar to Hasniza Zaman Huri et al. [17] they found Most of the patients with diabetic retinopathy did not achieved targeted glycemic control, A1C.

CONCLUSION

It can be concluded from our study that prevalence various ocular co-morbidities were significantly higher among the patients with poor Glycemic control and lesser among with Glycemic control Excellent and Good.

REFERENCES

1. International Diabetes Federation: Diabetes Atlas. 2nd edition. Brussels: Gan D, Ed. Belgium; 2003.
2. Thomas JS: Disability in Diabetes[A]. National Diabetes Data Group. Diabetes in America[M]. Bethesda 2nd edition. 1995. NIH Publication NO.9521468
3. Roglic G, Unwin N, Bennett PH, Mathers C, Tuomilehto J, Nag S, Connolly V, King H: The burden of mortality attributable to diabetes: realistic estimates for the year 2000. Diabetes Care 2005, 28(9):2130-2135.
4. Shaw JE, Sicree RA, Zimmet PZ: Global estimates of the prevalence of diabetes for 2010 and 2030. Diabetes Res Clin Pract 2010, 87(1):4-14.
5. King H, Aubert RE, Herman WH: Global burden of diabetes, 1995-2025: prevalence, numerical estimates, and projections. Diabetes Care 1998, 21(9):1414-1431.
6. Yang W, Lu J, Weng J, Jia W, Ji L, Xiao J, Shan Z, Liu J, Tian H, Ji Q, Zhu D, Ge J, Lin L, Chen L, Guo X, Zhao Z, Li Q, Zhou Z, Shan G, He J, China National Diabetes and Metabolic Disorders Study Group: Prevalence of diabetes among men and women in China. N Engl J Med 2010, 362(12):1090-1101.
7. Lee ET, Keen H, Bennett PH, Fuller JH, Lu M: Follow-up of the WHO Multinational Study of Vascular Disease in Diabetes: general description and morbidity. Diabetologia 2001, 44(Suppl 2(2)):S3-13.
8. LeRoith D, Fonseca V, Vinik A: Metabolic memory in diabetes--focus on insulin. Diabetes Metab Res Rev 2005, 21(2):85-90.
9. Turner RC, Holman RR: Lessons from UK prospective diabetes study. Diabetes Res Clin Pract 1995, 28(Suppl(7)):S151-157
10. Priya PV, SrinivasaRao A, Sharma JVC. DR can lead to complete blindness. 2013. Available from: https://www.researchgate.net/publication/282609747 _Diabetic_Retinopathy_- _Can_Lead_to_Complete_Blindness.
11. Fong DS, Aiello L, Gardner TW, King GL, Blankenship G, Cavallerano JD, et al.. Retinopathy in Diabetes. Diabetes Care. 2004;27(1):s84-s87.
12. Goh PP, Ismail M, Hussein E. Status of DR among diabetics registered to the Diabetic Eye Registry, National Eye Database, 2007. Med J Malaysia. 2008;63(Suppl C):24-28.
13. Chatzialli IP, Sergentanis TN, Keryttopoulos P, Vatkalis N, Agorastos A, Papazisis L. Risk factors associated with DR in patients with diabetes mellitus type 2. BMC Res Notes. 2010;3(1):1-4.
14. Bin-Bin H, Li W, Yun-Juan G, Jun-Feng H, Ming L, Yu-Xiang L, et al.. Factors associated with diabetic retinopathy in chinese patients with Type 2 Diabetes Mellitus. Int J Endocr. 2012;2012:157940.
15. Kahlon AS, Pathak R. Patterns of glycemic control using glycosylated hemoglobin in diabetics. J Pharm Bioall Sci. 2011;3(3):324-328.
16. Zhang X, Zhao J, Zhao T, Liu H. Effects of intensive glycemic control in ocular complications in patients with type 2 diabetes: a meta-analysis of randomized clinical trials. Endocrine. 2015;49(1):78-79.
17. Hasniza Zaman Huri , Chua Chew Huey , Norasyikin Mustafa et al.. Association of glycemic control with progression of diabetic retinopathy in type 2 diabetes mellitus patients in Malaysia. Braz. J. Pharm. Sci. 2018;54(2):e17484.