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Diabetic Retinopathy: Risk Factors Awareness and Presentation

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Research Article

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Abstract

Objective: To determine the level of awareness in diabetics regarding risk factors for Diabetic Retinopathy (DR) and to determine the patterns of presentation to ophthalmologist.

Study design: Descriptive cross sectional study.

Place and duration of study: This study was performed at department of ophthalmology, Hayatabad Medical Complex Peshawar and in a private setup in Saeed Anwar Medical Center, Dabgari Gardens, Peshawar from 1st March 2014 to 28th February 2015.

Methodology: Diabetics who presented for the first time to ophthalmologist were included in the study. Patients were inquired regarding their knowledge about diabetic retinopathy and its risk factors. It was recorded how and why they presented to ophthalmologist.

Results: A total of 180 diabetics were included in the study with a mean age of 49.80 $\pm$ 11.81 years. About 80% of the patients were unaware about the risk factors of diabetic retinopathy. In our study 30 % of the patients presented with features related to diabetes. However 34.4% presented with features not related to diabetes. Only 6.10% of the patients were aware that proper ophthalmological examination is needed for diabetic patients.

Conclusion: Most of the diabetic patients are not aware about the risk factors for development and progression of diabetic retinopathy. Cases who presented for eye check due to features other than diabetic retinopathy were almost equal to cases presenting with features related or due to DR.

Keywords: Diabetic retinopathy; Risk factors of diabetic retinopathy; Awareness of diabetic retinopathy; Diabetes mellitus; Diabetes related blindness

Abbreviations: DR: Diabetic Retinopathy; CRVO: Central Retinal Vein Occlusion; BRVO: Branch Retinal Vein Occlusion; IDDM: Insulin Dependent Diabetes Mellitus; NIDDM: Non-Insulin Dependent Diabetes Mellitus

Introduction

Diabetic retinopathy (DR) is the major cause of visual impairment and blindness amongst diabetic patients worldwide [1,2]. It is estimated that diabetic population will increase from 382 million in 2013 to 592 million in 2025 [3]. In developing countries, diabetes is now considered as a major public health problem due to changes in lifestyle [4]. In comparison with other parts of the world the prevalence of diabetes in Pakistan in adult population ranges from 8.6% to 13.9% [5]. Diabetic retinopathy is now the 5th leading cause of blindness worldwide and is the main cause of blindness in working population [6]. Blindness due to diabetic retinopathy is more common in type –I diabetes (4%) than in type-II diabetes (1.6%) [7].

Awareness about diabetic retinopathy plays an important role in patients seeking timely medical advice and treatment [8]. Diabetes is a silent disease, as many of the patients may be unaware of the disease till they develop serious complications [9]. Proper knowledge and information about the disease can lead to early detection and proper treatment ultimately reducing the burden on health care system. Blindness due to diabetic retinopathy is preventable as progression can be halted by timely interventions if the disease is detected early in its course [10]. Disease onset and progression can be controlled by increasing awareness about modifiable risk factors amongst patients. Awareness about diabetic retinopathy and related visual impairment will surely facilitate the diabetics to seek early and timely ocular check ultimately achieving early disease detection [11]. Because of lack of awareness in the community most of the patients present with vision threatening complications of retinopathy [12].

Many studies have been carried out in the developed world regarding awareness of diabetic retinopathy but in Pakistan no such data exist about the awareness of diabetic retinopathy and its risk factors among diabetic individuals [13]. The purpose of the study was to determine the level of awareness in diabetics regarding risk factors for diabetic retinopathy and to determine the pattern of presentation to ophthalmologists. Availing such data will help the diabetic care institutions and ophthalmologist to plan evidence based strategies in order to combat the enormous challenge of diabetes related blindness.

Subjects and Methods

Patients with diabetes who presented for the first time to ophthalmologist were included in the study from the Out Patient Department of Hayatabad Medical Complex, Peshawar and at private set-up in Saeed Anwar Medical center Peshawar. In all the patients detail history was taken about diabetes and patients were inquired regarding their knowledge about diabetic retinopathy, its risk factors, its effects on vision and the importance of follow-up. They were specifically asked regarding factors which affect frequency and progression of DR. These factors were type of diabetes mellitus, duration of diabetes, hyperglycemia, hypertension, hyperlipidemia, nephropathy, cataract surgery, pregnancy and puberty. They were also asked about the sources of their information and that why they were seeking ophthalmological consultation i.e. whether they presented because they were referred by an endocrinologist or a general physician or the patients knew about the ophthalmic complications from other sources of information. Their presentation to ophthalmologist was classified. It was also specified whether they presented with some diabetic ocular features, features related to diabetes like central retinal vein occlusion (CRVO) or branch retinal vein occlusion (BRVO), or other ocular symptoms which were not related to diabetes. History was followed by thorough ocular examination. Diabetic control of patients was assessed by HbA1c at the time of presentation. SPSS version 20.0 was used for analysis of data. Quantitative variables included age and qualitative variables included gender. Mean ± standard deviation was calculated for quantitative variables; percentage and proportion was calculated for qualitative variables.

Results

A total of 180 diabetic patients were included in the study with age ranges from 24 to 70 years with a mean age of 49.80 + 11.81 years (Table 1). Male were 106

(58.9%) and female patients were 74(41.1%). Out of 180 patients 18 (10.00 %) were having Insulin Dependent Diabetes Mellitus (IDDM) and 162 (90 %) were having Non-Insulin Dependent Diabetes Mellitus (NIDDM). Only 11 (6.10%) patients knew that diabetes can cause retinopathy and need proper ophthalmological examination. Regarding level of awareness about risk factors for diabetic retinopathy, it was found that 118 (65.6%) patients were unaware that duration of diabetes is a risk factor for retinopathy.

The information about the risk factors awareness is shown in Table 2. General practitioner referred only 7 (3.9%) patients to ophthalmologist for screening of diabetic retinopathy. Only 11 (6.0 %) of the patients had information about diabetic retinopathy from media (print and electronic) or from another diabetic individual in family or relatives or also through internet. Out of 180 patients, 54 (30.0 %) of the patients presented with ocular features related to diabetic retinopathy like decrease visual acuity, floaters and pain due to neo-vascular glaucoma while 11 (6.10%) presented with other features related to diabetes e.g. lenticular changes (Table 3). In our study, 36 (20.00 %) patients were having their HbA1c within normal range, 31 (17.3%) had borderline and 113(62.7%) had levels in the uncontrolled range.

Age	Frequency (N)	Percentage (%)
21-30 years	6	3.33%
31-40 years	39	21.67%
41-50 years	40	22.22%
51-60 years	58	32.23%
61-70 years	37	20.55%
Total	180	100%

Table 1: Age Distribution (n=180).
Mean age was 49.80 years with standard deviation ± 11.81.

Risk factors	Awareness n (%)	No awareness n (%)
Type of diabetes	39 (21.7%)	141 (78.3%)
Duration of diabetes	62 (34.4%)	118 (65.6%)
Hyperglycemic control	82 (45.6%)	98 (54.4%)
Hypertension	34 (18.9%)	146 (81.1%)
Hyperlipidemia	26 (14.4%)	154 (85.6%)
Nephropathy	30 (16.7%)	150 (83.3%)
Cataract Surgery	16 (8.9%)	164 (91.1%)
Pregnancy	14 (7.8%)	166 (92.2%)
Puberty	15 (8.3%)	165 (91.7%)

Table 2: Risk Factor Awareness (N=180).

Presentation	Number (n)	Percentage (%)
Ocular features of diabetic retinopathy	54	30.00%
Features related to diabetes	11	6.10%
Features not related to diabetes	62	34.50%
Referred by physician/ Endocrinologist	35	19.40%
Referred by General Practitioner	7	3.90%
Know about diabetic retinopathy	11	6.10%
Total	180	100%

Table 3: Presentation of the Patient (N=180).

Discussion

Diabetic retinopathy is a common cause of blindness and most of the patients are unaware of the risk factors and complications of DR. Lack of knowledge lead to misconception that DR will cause symptoms and after that they will seek ophthalmological advice and treatment [14]. Such low level of information leads to late presentation of these patients. Even when they are referred to the ophthalmologist by physician most of the patients refuse ocular examination because of lack of symptoms. These patients need to be educated about the salient features of diabetic retinopathy and its vision threatening complications. Special emphasis should be on early detection and treatment of retinopathy to reduce blindness and therefore to lower the socio-economic burden of diabetes mellitus on our community.

Regular follow-ups to detect severity of diabetic retinopathy need to be emphasized to our community. In our study, only 6.10% of the patients presented to us because they were aware of diabetic retinopathy as a complication of diabetes mellitus. A study by Dondana, et al. in India documented that 34.4% of diabetic patients were aware of regular follow-up for diabetic retinopathy [15]. In our community, such low level of awareness is probably related to low socioeconomic conditions, literacy level and also to poor health education of patients. In our study 90% of patients were having NIDDM. Our study showed that 30.0 % of the patients were having diabetic retinopathy at presentation and in the remaining fundoscopy was normal. In a study by Verma, et al. showed that 25% of the patients had DR after 5 years of diabetes, 60% after 10 years and 80% after 15 years [16]. So duration of diabetes is a strong predictor of diabetic retinopathy but in our study 65.6% of patients was unaware of the fact that with increasing duration of diabetes there is increasing risk of retinopathy.

According to preferred pattern practice of American Academy of Ophthalmology all patients with type 2 diabetes should be screened for diabetic retinopathy at presentation [17]. It was interesting to find that almost 1/5th of study cases presented to ophthalmologist because they were referred by endocrinology unit. There exists a close liaison between ophthalmology department and endocrinology unit of our hospital. All diabetics presenting to endocrinology are screened by non-mydriatic fundus camera by a well trained optometrist. If patients are found to have features of DR which essentially requires ophthalmologist opinion regarding its management then they are referred to eye outpatient for ophthalmologist opinion. This higher frequency of referral from endocrinology department may be an over estimate and it may be unwise to extrapolate this data to other hospitals and to our community in general.

In our study, only 3.9% diabetic patients presenting to our outpatient were referred by general practitioner for fundoscopy showing poor liaison between general practitioners and ophthalmologists for diabetic retinopathy. It may also indicate the poor level of awareness and vigilance in general practitioners regarding diabetic retinopathy. In this study, only one fifth of the patients were having their HbA1c within normal range. There is a general agreement that the severity of diabetic retinopathy depends upon the duration of diabetes and the severity of hyperglycemia. Once the retinopathy starts then glycemic control is more important factor then duration of diabetes [18]. The controlled level of HbA1c reduces the chances of retinopathy progression [19]. This was the first hospital based study to determine the awareness about diabetic retinopathy in the province of Khyber Pakhtunkhwa. More than 60% of the patients were unaware of the risk factors for diabetic retinopathy. One of the sources of knowledge for these patients was affected family member, friend or relative suffering from the DR complications. Other sources of awareness were print and electronic media, from other diabetic individuals and doctors. Our community and masses need to be properly educated by the ophthalmologists and other eye care professionals about the risk factors, progression of the DR and its blinding complications. All sources of communications including print, electronic and social media should be properly utilized to educate our community. All the primary health care providers, physicians, general practitioners and endocrinologists should have close liaison with ophthalmologists and they need to be well informed about the importance of timely eye check and follow up of diabetic patients to prevent avoidable blindness related to diabetic retinopathy.

Conclusion

Most of the diabetic patients are not well aware about the risk factors for development and progression of DR and so importance of regular eye check. Proportion of diabetic patients who presented to ophthalmologist with features which were due to or related to DR was similar to patients who presented with features not related to DR. Almost 1/4th were referred by endocrinologist, General practitioners and physicians for DR screening.

References

1. Thapa SS, Thapa R, Paudyal I, Khanal S, Aujla J, et al. (2013) Prevalence and pattern of vitreo-retinal diseases in Nepal: The Bhaktapur glaucoma study. BMC Ophthalmol 13: 9.

2. Leasher JL, Bourne RR, Flaxman SR, Jonas JB, Keeffe J, et al. (2016) Global Estimates on the Number of People Blind or Visually Impaired by Diabetic Retinopathy: A Meta-analysis From 1990 to 2010. Diabetes Care 39(9): 1643-1649.

3. (2013) International Diabetes Federation. IDF Diabetes Atlas sixth ed. 2013. International Diabetes Federation.

4. Piccolo RS, Subramanian SV, Pearce N, Florez JC, McKinlay JB (2016) Relative Contributions of Socioeconomic, Local Environmental, Psychosocial, Lifestyle/Behavioral, Biophysiological, and Ancestral Factors to Racial/Ethnic Disparities in Type 2 Diabetes. Diabetes Care 39(7): 1208-1217.

5. Memon W, Jadoon Z, Qidwai U, Naz S, Dawar S, et al. (2012) Prevalence of Diabetic Retinopathy in Patients of Age Group 30 Years and Above Attending Multicentre Diabetic Clinics in Karachi. Pak J Ophthalmol 28(2): 99-104.

6. Bourne RR, Jonas JB, Flaxman SR, Keeffe J, Leasher J, et al. (2014) Prevalence and causes of vision loss in high- income countries and in Eastern and Central Europe: 1990-2010. Br J Ophthalmol 98(5): 629-638.

7. Chang CH, Chuang LM (2011) Effects of medical therapies on retinopathy progression in type 2 diabetes: Is blood pressure control the lower the better? J Diabetes Investig 2(2): 101-103.

8. Dondana R, Dondana L, John RK, McCarty CA, Rao GN (2001) Awareness of eye diseases in southern India. Bulletin of the World Health Organization 79(2): 96-102.

9. Bate KL, Jerums G (2003) Preventing complications of diabetes. Med J Aust 179(9): 498-503.

10. Hall CE, Hall AB, Kok G, Mallya J, Courtright P (2016) A needs assessment of people living with diabetes and diabetic retinopathy. BMC Res Notes 9: 56.

11. Shukla R, Gudlavalleti M, Bandyopadhyay S, Anchala R, Gudlavalleti A et al. (2016) Perception of care and barriers to treatment in individuals with diabetic retinopathy in India: 11-city 9-state study. Indian J Endocrinol Metab 20(7): 33-41.

12. Thapa R, Poudyal G, Maharjan N, Bernstein PS (2012) Demographics and awareness of diabetic retinopathy among diabetic patients attending the vitreo-retinal service at a tertiary eye care center in Nepal. Nepal J Ophthalmol 4(1): 10-16.

13. Hussain R, Rajesh B, Giridhar A, Gopalakrishnan M, Sadasivan S et al. (2016) Knowledge and awareness about diabetes mellitus and diabetic retinopathy in suburban population of a South Indian state and its practice among the patients with diabetes mellitus: A population-based study. Indian J Ophthalmol 64(4): 272-276.

14. Kannuri N, Anchala R, Murthy G, Gilbert C (2016) Strengthening diabetes retinopathy services in India: Qualitative insights into providers' perspectives: The India 11-city 9-state study. Indian J Endocrinol Metab 20(1): S59-S66.

15. Dandona R, Dandona L, John RK, McCarty CA, Rao GN (2001) Awareness of eye diseases in an urban population in southern India. Bulletin of the World Health Organization 79(2): 96-102.

16. Varma R, Torres M, Pena F, Klein R, Azen SP (2004) Prevalence of diabetic retinopathy in adult Latinos: the Los Angeles Latino eye study. Ophthalmology 111(7): 1298-1306.

17. Li HK, Horton M, Bursell SE, Cavallerano J, Zimmer-Galler I, et al. (2011) Telehealth practice recommendations for diabetic retinopathy, second edition. Telemed J E Health 17(10): 814-837.

18. Kilpatrick ES, Rigby AS, Atkin SL, Frier BM (2012) Does severe hypoglycemia influence microvascular complications in type 1 diabetes? An analysis of the Diabetes Control and Complication Trial database. Diabet Med 29: 1195-1198.

19. American Diabetes Association (2013) Standards of medical care in diabetes-2013. Diabetes Care 36(1): S11-S66.