GLOBAL JOURNAL OF MEDICINE AND PUBLIC HEALTH

Prevalence of Diabetic retinopathy in Kashmir, India -A hospital based study

Tariq Qureshi[1], Nausheen Abdullah[1], Shagufta[1]*

GJMEDPH 2013; Vol. 2, issue 1

[1] Government Medical College Srinagar, Department of Ophthalmology Kashmir, India

***Corresponding Author**
Government Medical College Srinagar, Department of Ophthalmology
Kashmir, India
tariqqureshi317@gmail.com

ABSTRACT

Objective **To assess the prevalence of diabetic retinopathy among Kashmiri population.**

Material and Method **In a cross-sectional hospital based study, 500 patients with established diabetes who attended eye OPD at Govt Medical College Srinagar were evaluated for the presence or absence of retinopathy. Relevant clinical examination was done and the findings were recorded at one point of time. No follow-up findings of the patients were included in this study. Direct Ophthalmoscope (Heinz)and slit lamp bio-microscope (Zeiss) were used for examination. Statistical package for Social Sciences (SPSS) was used for statistical analysis. p<0.05 was taken as significant.**

Observations **Out of 500 patients with established diabetes, 38.4% were males and 61.6% were females. 2/3rd of the patients (65.4%) patients were in the age group of 40-60 yrs. Majority of the patients (98%) had NIDDM with IDDM in only 2%. Out of 500 patients 135 patients had DR showing a prevalence of DR as 27%. 62.2% patients with DR were>60 yrs of age and 49 patients (36.2%) were between 40-68 yrs of age. 33 (24.5%) were males and 102 (75.5%) were females. 30 patients (12.8%) with diabetes of <5 yrs duration had DR. 20% had a duration of 5-9 yrs, 47.2% had 10-14 yrs duration, 76.6% with DR had a duration of >= 15 yr. Mild DR was present in 67 (37.4%) patients, moderate to severe DR in 46 (9.2%) patients, proliferative DR in 5(1%) patients and diabetic maculopathy in 17(3.4%)patients. Patients who were managed with insulin, either alone or with oral hypoglycemic drugs, had more prevalence of DR.**

Conclusion **The present study concluded that DR is highly prevalent in this part of the world and needs early detection and appropriate treatment to prevent blindness due to this condition.**

Keywords: Diabetic Retinopathy (DR), Insulin dependent diabetes mellitus(IDDM), Non-Insulin dependent diabetes mellitus (NIDDM), Non-proliferative diabetic retinopathy (NPDR), Proliferative diabetic Retinopathy(PDR)

INTRODUCTION

Diabetic retinopathy is a common complication of diabetes mellitus and carries with it the threat of blindness. DR develops in more than 75% of diabetic patients within 15-20yrs of diagnosis of diabetes. Several epidemiological studies have provided valuable information on the prevalence of DR in western countries. Such studies are useful in assessing the individuals at risk and can help a long way in decreasing the visual impairment caused by this complication.

According to latest WHO report, India has 31.7 million diabetics and the number is expected to increase to a staggering 79.4 million by 2030. The state of Jammu and Kashmir is no exception to the rising trend of diabetes in general and Diabetic Retinopathy in particular. A large number of cases of Diabetic Retinopathy are being observed in the Department of Ophthalmology, Government Medical College, Srinagar. Till date no study has been attempted in the department to know the prevalence of Dr.Thus the need for the present study to assess the burden of this sight threatening complication of diabetes.

MATERIALS AND METHODS

This cross sectional study was conducted in the Post-Graduate Department of Ophthalmology, Government Medical College, Srinagar, J&K from 2006-2009. This institution is a tertiary level of the eye care centre and caters to all the referred patients of the valley. Total of 1000 eyes of 500 consecutive patients with established Diabetes who attended eye OPD at GMC Srinagar or referred from the Department of Medicine were subjected to detailed clinical study.

A questionnaire was completed regarding the name, age gender, occupation, residence, duration of symptoms, and history of drug intake.

Complete ocular examination was done. Visual acuity was recorded using Snellen Chart in Literate patients and E- chart for illiterate patients. Detailed torch lamp examination and slit lamp examination was done. Presence of diabetic retinopathy was assessed by direct ophthalmoscopy under full mydriasis. Fundus was examined for retinal micro-aneurysms, haemorrhages (flame shaped or dot and blot), cotton wool spots, hard exudates, venous beading, proliferative diabetic retinopathy and diabetic maculopathy. Patients with diabetic retinopathy were subjected to fundus photography. Diabetic retinopathy was graded with the early treatment of diabetic retinopathy study research group grading system.

Data collected was subjected to differential statistical tests using statistical package for social sciences (SPSS). P<0.05 was taken as significant.

RESULTS

Out of 500 patients, 192(38.4%) were males and 308(61.6%) were females. It was observed in our study that 33 patients (6.6%) were below 40yrs of age, 327 patients (65.4%) were between 40-60 yrs of age and 140 patients (28%) were above 60 yrs of age.

Prevalence of Diabetes Mellitus by Type

Type of Diabetes Mellitus	N	%
IDDM	10	2
NIDDM	490	98
TOTAL	**500**	**100**

Out of 500 patient 135(27%) had features of DR while 365 patients had a normal fundus. Among patients with DR, 33 (24.5%) were males and 102 (75.5%) were females giving female to male ratio of 3:1 which is statistically significant (p<0.05)

Distribution of Diabetic Retinopathy patients by gender

Gender	Patients with DR		Patients without DR		Results
	n	%	n	%	
Male	33	24.5	159	43.56	P<0.05 Significant
Female	102	75.5	206	56.44	
Total	**135**	**100**	**365**	**100**	

Distribution of patients with diabetic retinopathy by age

Age (years)	Patients with DR		Patients without DR		Results
	n	%	N	%	
<40	2	1.48	31	8.49	P<0.05 Significant
40-60	49	36.2	278	76.1	
>=60	84	62.2	56	84.59	
Total	135	100	365	100	

84 patients (62.2%) with DR were above 60 yrs of age and 49 patients (36.2%) were between 40-60 yrs of age and 2 patients (1.48%) were below 40 yrs of age. Above observation suggested that DR is an age related condition.

Visual Acuity of Patients with established diabetic retinopathy at presentation

Visual Acuity		n	%
Right Eye	6/6- 6/18	80	59.2
	6/18 – 6/36	30	22.4
	6/36 – 6/60	18	13.3
	<= 6/60	7	5.1
	TOTAL	**135**	**100**
Left Eye	6/6- 6/18	75	55.5
	6/18 – 6/36	25	18.5
	6/36 – 6/60	23	17.03
	<= 6/60	12	8.88
	TOTAL	**135**	**100**

Majority of patients had vision of 6/6 to 6/18

Fundus Picture of patients with Established Diabetes mellitus

Eye	Fundus	n	%
Right Eye	Normal	365	73
	Mild DR	67	13.4
	Moderate to severe DR	46	9.2
	Proliferative DR	5	1.0
	Diabetic Maculopathy	17	3.4
	Any DR	135	27
	Total	**500**	**100**
Left Eye	Normal	370	74
	Mild DR	52	10.4
	Moderate to severe DR	44	8.8
	Proliferative DR	10	2.0
	Diabetic Maculopathy	24	4.8
	Any DR	130	26
	Total	**500**	**100**

Treatment modality and DR of established Diabetic Patients

Treatment	Total	Retinopathy	
		n	%
Diet + E	30	3	10
Diet + E + OHA	351	67	19
Diet + E + Insulin	75	35	46.6
Diet + E + I+ OHA	44	30	68

DR=Diabetic retinopathy;E=Exercise;I=Insulin;OHA=Oral hypoglycemic drugs

Patients who were managed with insulin either alone or with OHA had more prevalence of DR than those managed without insulin.

Prevalence of DR by duration of Diabetes

Duration of Diabetes (years)	Total	Retinopathy	
		n	%
< 5	233	30	12.8
5-9	110	22	20
10-14	127	60	47.2
>=15	30	23	76.6
Total	500	135	27.0

30 patients (12.8%) with diabetics of less than 5 yrs duration had DR. Prevalence of DR was 20% (12 patients) in patients with duration of 5-9 yrs, 47.2% (60 patients) in patients with 10-14 yrs duration and 76.6% (23 patients) with duration of diabetes more than or equal to 15 yrs.

DISCUSSION

This study was the first of its kind from this part of the world. However since the study subjects included known diabetics attending a tertiary level health care institution some element of referral bias is likely to influence the prevalence rate observed in this study.
The current study showed the prevalence of any DR among known diabetics as 27%. Our results are consistent with those of Fatima AlKharaj et al in (1998) whose study included 451 diabetics and observed a prevalence of DR as 24%[5]. Foulds et al (1983) showed almost a similar prevalence[7].

The most prevalent type of DR in our study was NPDR (13.4%) which is consistent with those of Fatima AlKharaj et al (1998) who observed NPDR in 11.3%.Al-adsani et al (2007) showed similar results [8].Moderate to severe NPDR, in our study, showed prevalence of 9.2% (46/135). Our results are in agreement with Al-adsani, et al (2007)

This study revealed low prevalence of PDR comprising of 2%. Our observation is in agreement with Seyoun et al[9] whose study was conducted in Ethopia. Fatima AlKharaj et al[5] and Tapp et al[10] also showed similar prevalence.Prevalence of diabetic maculopathy was found to be 5% (24/135). This is in accordance with other studies by Khandekar et al [12] and Wong et al[11].

In other studies, prevalence of retinopathy at diagnosis varies from 20-60%. The observed geographic/ population variations in the prevalence of DR could be due to real ethnic differences in the susceptibility to DR (genetic) or due to poor control of diabetes and influence of socio-economic and cultural factors (environmental).

Mean age of patients with DR in this study was 57.4 yrs with the highest number of patients in the age group between 40-60 yrs consistent with the study conducted by Shrestha et al in Nepal[15]. The above observation suggested that DR is an age related condition. 61% of cases with DR in the present study were females. Similar observation was made by Jamaludin et al in their study conducted at Karachi Pakistan.Contrary to this, Mohan Rema et al (2005), Dandona et al (1999) showed increased susceptibility of males to DR. The reason for the sex preditection remains unclear and merits further investigation.

There was strong correlation between duration of diabetes and prevalence of DR. 76.6% of patients with diabetes of more than 15 yrs had DR. Jamal-u-din et al in their study at Karachi Pakistan observed similar association of DR with prolonged duration of diabetes. Ossame A W et al (1998) and Robyn J Tapp et al (2002) showed similar results[18,10]. In our study, prevalence of retinopathy was higher in those on insulin treatment (either alone or with OHA) which is perhaps explained by the fact that subjects with retinopathy may have been preferentially treated with insulin. Similar observations were made by R P Agarwal et al (2003) India.

CONCLUSION

1. Diabetic retinopathy is an age related condition as DR was found mostly in patients above 60 yrs of age.
2. Duration of diabetes has a strong association with retinopathy as above disorder was seen more commonly in patients with prolonged duration of diabetes.
3. Prevalence of diabetic retinopathy was more in patients on insulin treatment.
4. Prevalence of DR was higher among females.
5. Visual acuity of the patients with diabetic maculopathy was found to be more affected than the patients without diabetic maculopathy.

The study concluded that the prevalence of DR in our OPD based cross sectional study was found to be 27%. But our study being hospital based rather than population based survey with a low sample size, the actual prevalence may be different .So, DR poses an enormous public health and economic burden for the state since the number of diabetics is on the rise and future projections about the same are indicative of a further increase in the number of diabetics. In conclusion, there is a need for integrated preventive

promotive approach and an effective curative approach towards dealing with this disabling and sight threatening complication of the disease.

REFERENCES

1. Stratton I M, Kohner E M, Aldington S J, Turner R C, Holman R R, Manley Se, Matthews D R. UKPDS 50:risk factors for incidence and progression of retinopathy in Type II diabetes over 6 years from diagnosis. Diabetologia.2001 Feb; 44(2):156-163.
2. Dwyer M S, Melton J, Ballard D J, et al. Incidence of diabetic retinopathy and blindness: a population based study in Rochester, Minnesota. Diabetes Care. 1985; 8:316-322.
3. Klein R, Klein B E, Moss S E, Davis M D, DeMets ML. The Wisconsin epidemiologic study of diabetic retinopathy. III prevalence and risk of diabetic retinopathy when age at diagnosis is 30 or more years. Arch Ophthalmol 1984:102:527-532
4. Wild S, Roglic G, Green A , Sicree R, King H. Global prevalence of diabetes, estimates for the year 2000 and projections for 2030. Diabetes Care.2004;27:1047-1053
5. Fatima Al Kharaji, Nouria Alshemmeri et al. Prevalence and risk factors for diabetic retinopathy among Kuwaiti diabetics, Kuwait Medical Journal 2006; 38(3):203-206.
6. Fatima Al- Maskari and Mohd. El-Sadiq. Prevalence of diabetic retinopathy in the United Arab Emirates: a cross sectional survey.BMC Ophthalmology 2007;7(11):1471-2415.7-11
7. Foulds W S, MacCuish A, TB. Diabetic retinopathy in the West of Scotland. Its detection and prevalence and the cost effectiveness of a proposed screening programme. Health Bulletin 1983; 41(6):318-326.
8. Al-Adsani AM. Risk factors for diabetic retinopathy in Kuwaiti type 2 diabetic patients. Saudi Med.J.2007; 28(4):579-83
9. Seyoum B, Mengistu Z, Berhanu P, Abdulkadir J, Feleke Y, Worku Y, et al. Retinopathy in patients of TikurAnbessa Hospital diabetic clinic. Ethiop. Med. J.2001; 39(2):123-31.
10. Tapp R J,Shaw J E, Harper C A ,DeCourten M P, Balkau B, McCarty D J, et al. The prevalence of and factors associated with diabetic retinopathy in the Australian population. Diabetes Care 2003; 26 (6):1731-7.
11. Wong T Y, Klein R, Islam F M, Cotch M F, Folsom A R, Klein B E, et al. Diabetic retinopathy in a multi-ethnic cohort in the United States.Am.J.Ophthalmol.2006:141(3):446-455.
12. Khandekar R, ALLawatti J, Mohammed A J,AL Raisi A. Diabetic retinopathy in Oman: a hospital based study. Be.J.Ophthalmol.2003; 87(9):1061-4.
13. Rema M, Deepa R, Mohan V. Prevalence of retinopathy at diagnosis among type 2 diabetic patients attending a diabetic centre in South India. Br. J. Ophthalmol. 2000; 84(9): 1058-60
14. Foulds W S, Wallace S, McCruish A, T B, Green F, Ghafour I M. The cost- effectiveness of screening for diabetic eye disease. Seminars in Ophthalmology 1987; 2(1): 445-50.
15. Shrestha M J, Paudyal G, Wagle R R, Gurung R, Ruit S, Onta S R. Prevalence of and factors associated with diabetic retinopathy among diabetics in Nepal: A hospital based study. Nepal Med. Coll. J. 2007: 9(4): 225-9.
16. Mohan Rema, Sundaram Premkumar, Balaji A, Raj D. Prevalence of Diabetic Retinopathy in Urban India: The Chennai Urban Rural Epidemiology study investigative ophthalmology & Visual Science, July 2005: Vol 46, No 7. 2328-2333.
17. Dandona L, Dandona R, Naduvilath T J, et al. Population based assessment of diabetic retinopathy in an urban population in southern India. Br J Ophthalmol.1999: 83: 937-940.
18. Ossama A W, El-Haddad, Mohammad Kamal Saad "Prevalence & Risk factors for diabetic retinopathy among Omani diabetics.