



## Prevalence of Diabetic Retinopathy in Diabetics Population

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Diabetic retinopathy is the most dreaded complication of ocular manifestations of diabetes. Prevalence of diabetic retinopathy is higher in IDDM (40%) than in NIDDM (20%). The diabetic patients attending the diabetic camps were included in this study and an attempt was made to study the prevalence of retinopathy among these patients of Bareilly city (U.P) India. Ophthalmoscopy was used to check the retinopathy of diabetic patients. Blood sugar level of DM patients were estimated by GOD/POD and other information were also collected from their pathological reports made available in the camps. It was observed that 415 were diabetic patients and 17 (4.15%) subjects had retinopathy. Out of 17 retinopathy subjects 72.2% (12) were male and 27.7% (5) were female. Duration of diabetes of these subjects lie in between 10-15 years and 15-20 years while the duration of diabetes of only two subjects were more than 20 years. Age of these subjects lie mainly in between 50-60 years and 60-70 years age group while the blood sugar level of these subjects lie in between 201-250 mg/dl and four subjects were insulin dependent and some patients were hypertensive. In the present study, the prevalence of diabetic retinopathy was found to be 4.15% in 415 diabetic patients and it was more frequent among older patients with diabetes for 15 or more years.

**Keywords:** Diabetes, Retinopathy, Hypertension.

### INTRODUCTION

Diabetes mellitus is characterized by chronic hyperglycemia. The WHO (1985) classification of diabetes defines two major types according to whether insulin therapy is essential for survival (type1 diabetes; insulin-dependent diabetes; IDDM) or not (type2 diabetes; non-insulin dependent diabetes; NIDDM). Various other changes brought by diabetes lead to numerous complications (Raman, 2000) like nephropathy, neuropathy, retinopathy and others.

Diabetic retinopathy refers to the retinal changes that occur in patients with diabetes mellitus (Jogi, 2003). The prevalence of retinopathy is strongly related to the duration of diabetes (Kasper *et al.*, 2005). Eva Kohner's classification (Jogi, 2003) classified retinopathy into three main groups as follows:

1. Background Retinopathy
2. Preproliferative Retinopathy
3. Proliferative Retinopathy

Most significant risk factor for the development of retinopathy is the duration of diabetes. It is extremely rare for the diabetic retinopathy to develop within 5 years of onset of diabetes mellitus.

Hyperglycemia is also initiating event in the development of retinopathy and studies have shown that improved control is associated with decreased development and progression of retinopathy in diabetes (Renu, 2003).

Hypertension and proteinuria are also risk factors for the development of retinopathy.

### METHODS

In the present study, 415 diabetic subjects were studied. GOD/POD method was used to

estimate the blood sugar level of these subjects. Ophthalmoscopy was used to check the retinopathy of diabetic subjects. The authors observed that subjects were mainly suffering from proliferative retinopathy. Duration of diabetes, age of subjects and other information were collected from hospital records.

## RESULTS

Out of 415 diabetic subjects, 17 (4.15%) subjects were suffering from retinopathy and out of 17 retinopathy subjects, 12 (72.2%) were male and 5 (27.7%) were female. Five subjects were insulin-dependent while rest were non-insulin dependent as shown in table 1 and table 2.

**Table 1: Incidence of Diabetic Retinopathy in Male and Female patients**

	Male	Female	Total
Number	12	5	17
Percentage	72.2%	27.7%	4.15%

**Table 2: Incidence of diabetic retinopathy in Insulin-Dependent and Non-insulin dependent**

Insulin-Dependent Diabetic Subjects (IDDM)	Non-Insulin Dependent Diabetic Subjects (NIDDM)
5	12

**Table 3: Duration of diabetes in patients**

Duration of Diabetes (Years)	Subjects
1-5	-
6-10	-
11-15	9
16-20	6
21 and Above	2

**Table 4: Age of Diabetic retinopathy subjects**

Age (Year)	Male Subjects	Female Subjects
1-10	-	-
11-20	-	-
21-30	-	-
31-40	-	-
41-50	1	-
51-60	7	3
61-70	3	2
71 and above	1	-

**Table 5: Blood sugar level of diabetic retinopathy subjects**

Blood Sugar Level Mg/dl	Male Subjects	Female Subjects
101-150	-	-
151-200	-	-
201-250	6	1
251-300	3	2
301-350	1	1
351-400	2	1
401-450	-	-
451-500	-	-
501 and above	-	-

**Table 6: Incidence of diabetic retinopathy subjects with hypertension**

Blood Pressure (mm/Hg)	Subjects
120/80	12
140/90	2
160/100	3
Above	-

From the hospital records, it was noted that the duration of diabetes of these subjects were mainly in between 11-15 years and 16-20 years while the duration of diabetes of only two subjects were more than 20 years. The age of these retinopathy subjects were mainly in between 51-60 years and 61-70 years while only one subjects was more than 70 years as shown in table 3 and table 4.

Blood sugar level of these retinopathy subjects were in between 201-250 and 251-300 (mg/dl) while five subjects had >300 (mg/dl) blood sugar as shown in table 5. Twelve subjects had normal blood pressure (120/80 mm/Hg) but five subjects were hypertensive as given in table 6.

## DISCUSSION

In the present study, authors found that 17 (4.15%) subjects were diabetic retinopathy patients out of 415 diabetic subjects with diabetes for more than 10 years. Diabetic retinopathy was estimated to be the most frequent cause of new cases of blindness among adult aged 20-74 years (Aiello, 1998). It was extremely rare for diabetic retinopathy patients to develop it within 5 years of onset of diabetes mellitus but 5% of NIDDM have background retinopathy (Raman, 2000). In

the present study, the prevalence of diabetic retinopathy was found to be 7% in patients with diabetes for less than 10 years. 26% in patients with diabetes for 10 to 14 years and 63% in patients with diabetes for 15 or more years (Robert and Emilio, 1940).

A group of 1441 patients of IDDM were studied for a mean duration of 6.5 years. Of these 726 patients had no retinopathy and formed the primary prevention cohort and 715 patients had mild retinopathy (Raman, 2000). The population-based Wisconsin Epidemiologic Study of Diabetic Retinopathy (WESDR) used ophthalmoscopy and photographs to document the incidence and prevalence of retinopathy over a 10-year period (Klein *et al.*, 1994). Proliferative retinopathy was not seen before five years after diagnosis of diabetes but the prevalence increased to 26% within 15 years and 50% within 20 years after diagnosis (Klein *et al.*, 1984). In Wisconsin Study of the diabetics, of those diagnosed for more than 30 years of age 20% had background retinopathy at diagnosis (Klein *et al.*, 1984).

It can be concluded that diabetic retinopathy was associated with duration of diabetes among the diabetic patients.

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