

# PRESENTATION OF DIABETIC RETINOPATHY

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## ABSTRACT

**Objectives:** The aim of this study is to evaluate the presentation of diabetic retinopathy in diabetic patients presenting to Ophthalmology out patient.

**Material and Methods:** The study was conducted at the Department of Ophthalmology, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar over a period of 1 year from January 1999 to December 1999. A total of hundred cases were evaluated. A thorough and complete history was followed by careful Ophthalmological examination. Systemic evaluation for diabetic complications was also carried out.

**Results:** Male to female ratio in our study was 1.4: 1. Ninety one (91%) were cases of non-insulin dependent diabetes mellitus (NIDDM) and only 9% cases were of insulin dependent diabetes mellitus (IDDM). Non proliferative diabetic retinopathy (NPDR) was found in 28.6% of NIDDM cases and 22.2% of IDDM cases. Proliferative diabetic retinopathy (PDR) was found in 9.8% of NIDDM cases and 11% of IDDM cases. Diabetic maculopathy was found in 15.4% of NIDDM whereas it was present in 33.3% of IDDM cases.

**Conclusion:** Diabetic retinopathy is common sequelae of diabetes. Its presence and complications are strongly related to duration and control of diabetes. Diabetic maculopathy is commonest cause of visual impairment in diabetic patients.

**Key words:** Diabetes mellitus, Diabetic retinopathy, Diabetic presentation.

## INTRODUCTION

Diabetes mellitus is a global problem. The prevalence of diabetes mellitus based on population studies is around 3-6%.<sup>1</sup>

Blindness due to diabetes is now becoming more common.<sup>2,3</sup> Diabetes can affect any tissue of the body including eyes. In eyes, it can cause errors of refraction,<sup>4</sup> accelerated cataracts,<sup>5,6</sup> ocular motility disorders,<sup>7,8</sup> optic nerve involvement,<sup>9,10</sup> retinal vascular occlusions,<sup>11,12</sup> diabetic retinopathy,<sup>13</sup> diabetic maculopathy<sup>14</sup> and many other problems.

Diabetic retinopathy is a serious blinding complication especially in the 30-70 years age group<sup>15</sup>. We designed this study to know about the presentation of diabetic retinopathy cases presenting to our outpatient department.

## MATERIAL AND METHODS

Our study was a prospective observation study. The study was conducted at the Department of Ophthalmology, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar over a period of 1 year from January 1999 to December 1999.

A total of 100 cases were examined. Both eyes of all cases were evaluated.

A comprehensive proforma was completed for every case. It included careful history, ophthalmic and systemic examination. During history taking, emphasis was on presenting complaints, age of onset, duration of diabetes, type of diabetes, treatment modality and family history of diabetes.

The status of glycaemic control was noted from the most recent performed glucose test.

Ophthalmic examination included checking visual acuity, examination of adnexa and anterior segment on slit lamp. Fundi were

examined with direct and indirect ophthalmoscope after full dilatation of pupils. Slit lamp biomicroscopy with 78D was also carried out in every case.

General physical examination and systemic evaluation was also carried out. Patients were also examined for other diabetic systemic complications like diabetic foot and diabetic nephropathy. Patients were also evaluated for any associated hypertension or heart disease which can have bad prognostic effect on diabetic retinopathy.

## RESULTS

We evaluated 100 diabetic patients with diabetic retinopathy. Fifty nine (59%) were male while forty one (41%) were female. Ninety one (91%) of cases were NIDDM and remaining nine (9%) were of IDDM.

Age distribution was studied according to different age groups i.e.  $\leq 20$  years, 21 to 40 years, 41 to 60 years and  $>60$  years. In our study, patient's age distribution is given in Table 1.

The IDDM patients were in the 1 to 20 year age group while the age of NIDDM patients ranged from 21 to above 60 years.

In 55% cases, the duration of diabetes was less than 5 years while in 31% cases, it was 5 to 10 years and in 15% cases it was more than 10 years.

Distribution of patients according to type of diabetes and duration of diabetes is shown in Fig 1.

AGE DISTRIBUTION

| Age group        | No. of Patients | %  |
|------------------|-----------------|----|
| $\leq 20$ years  | 6               | 6  |
| 21 to 40 years   | 12              | 12 |
| 40 to 60 years   | 69              | 69 |
| 61 years & above | 13              | 13 |

TABLE 1

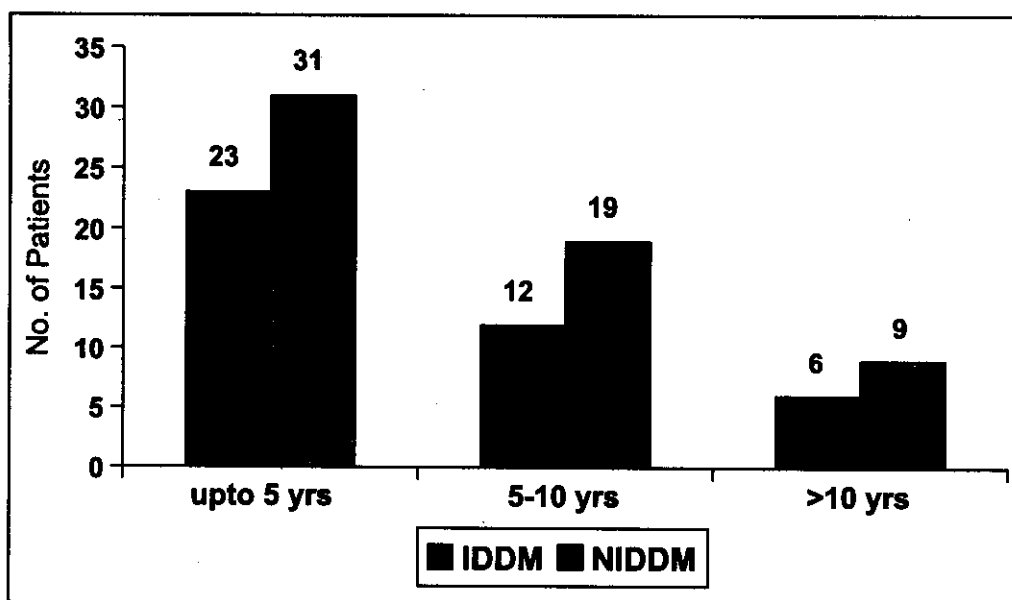


Fig 1. Distribution of patients according to types of diabetes and duration of diabetes

A positive family history of diabetes was found in 43(48%) cases among NIDDM subjects while in IDDM it was present in 2(22%) of cases.

31 (31%) cases were found to have associated hypertension.

4(4%) cases were having diabetic foot ulcers and 5(5%) were having diabetic nephropathy.

Ocular complications related to diabetic retinopathy were found in 6(6%) cases. 2(2%) had tractional retinal detachment, 3(3%) experienced vitreous haemorrhage while 1(1%) patient had neovascular glaucoma.

**VISUAL ACUITY OF THE MORE AFFECTED EYE AT PRESENTATION**

|             |    |    |
|-------------|----|----|
| 6/6 - 6/18  | 23 | 23 |
| 6/18 - 6/60 | 53 | 53 |
| 6/60 - 3/60 | 15 | 15 |
| <3/60       | 9  | 9  |

TABLE 2

Visual acuity of the more effected eye at presentation ranged from 6/6 to perception of light. Number of patients in different visual acuity groups is shown in Table 2.

In our study, control of blood sugar was also evaluated. 55% had controlled diabetes, 30% cases had borderline controlled diabetes and 15% had uncontrolled diabetes.

At the time of presentation, 15% cases were not taking any treatment for their disease. 16% were on diet control, 60% were using oral hypoglycemic agents while 9% cases were on insulin injection [Table 3].

**TREATMENT MODALITY USED BY PATIENTS**

|                          |    |    |
|--------------------------|----|----|
| No treatment             | 15 | 15 |
| Diet control             | 16 | 16 |
| Oral hypoglycemic agents | 60 | 60 |
| Insulin therapy          | 9  | 9  |

TABLE 3

RELATIVE FREQUENCIES OF VARIOUS  
TYPES OF RETINOPATHIES IN IDDM  
PATIENTS

| Retinopathy | No. of Patients | %    |
|-------------|-----------------|------|
| NPDR        | 2               | 22.2 |
| PDR         | 1               | 11   |
| Maculopathy | 3               | 33.3 |

TABLE 4

RELATIVE FREQUENCIES OF VARIOUS  
TYPES OF RETINOPATHIES IN NIDDM  
PATIENTS

| Retinopathy | No. of Patients | %    |
|-------------|-----------------|------|
| NPDR        | 26              | 28.6 |
| PDR         | 9               | 9.8  |
| Maculopathy | 14              | 15.4 |

TABLE 5

Relative frequencies of various types of retinopathies were evaluated in all cases. It was found that retinal complications were directly related to the duration of diabetes. Relative frequencies of various types of retinopathies in IDDM and NIDDM are given in Table 4 and Table 5.

We also found that patients with more severe retinopathy had some other associated systemic disease in the form of hypertension, ischaemic heart disease, diabetic nephropathy or diabetic foot ulcers.

## DISCUSSION

Diabetes mellitus is common medical problem and diabetic retinopathy is its common complication. It is important for the patients and also for the health professionals to have complete insight about this complication.

The prevalence of all types of retinopathy in the diabetic population increases with the duration of diabetes. We also found in our study that patients with longer duration of diabetes had more severe grade of

retinopathy. Klein R<sup>16</sup> and his colleagues reported that after 20 years of diabetic disease, more than 90% of IDDM and 60% of NIDDM were having some degree of diabetic retinopathy. So it is important that all diabetic patients presenting to physicians and endocrinologists should have routine examination of their fundi to detect diabetic retinopathy and then if needed should be properly referred to the ophthalmologist.

Family history is very important and the familial nature of NIDDM has long been recognized<sup>17</sup>. In our study, a positive family history of diabetes was found in 48% of NIDDM patients and in 22% of IDDM cases. Leslie<sup>18</sup> also reported a positive family history of 42% in NIDDM cases.

We found that patients with more severe retinopathy also had some other associated systemic disease in the form of hypertension, ischaemic heart disease, diabetic nephropathy and diabetic foot ulcer. Klein R et al<sup>19</sup> concluded from their study that presence of more severe retinopathy in diabetic cases is a risk indicator for increased risk of death from ischemic heart disease. Wirta et al<sup>20</sup> also found relationship of retinopathy with micro-albuminuria.

In advanced diabetic eye disease there is development of other complications like vitreous bleeding, retinal detachment and neovascular glaucoma<sup>21</sup>. We found vitreous haemorrhage in 3%, tractional retinal detachment in 2% and neovascular glaucoma in 1% of our cases. Vitreous haemorrhage and retinal detachment both can cause sudden drop of vision, therefore, any diabetic patient should urgently consult ophthalmologist in case they experienced sudden visual loss.

In our study, we found that 9% cases were having corrected visual acuity of less than 3/36 (i.e. blind according to WHO standard). 15% patients were with severe visual impairment i.e. visual acuity in range of 3/60 to 6/60.

Rehman<sup>22</sup> also reported that 10.9% of his patients to be blind (i.e. less than 3/60) and 14.8% to be with severe visual impairment (i.e. 3/60 to 6/60) which is similar to that what we found in our study.

Good glycemic control of diabetes delays the development of diabetic retinopathy<sup>23,24</sup> and also retards its progression to more severe forms<sup>25,26</sup>. We also found that the retinopathy was more severe in patients with uncontrolled diabetes than those patients with good diabetic control. All diabetic patients should be advised to keep their diabetes well controlled as it slows down the development and progression of diabetic retinopathy.

We also noted that in NIDDM positive family history of diabetes mellitus was more common. Obesity and adult onset were also found more frequently in NIDDM cases.

We found in our study that in NIDDM group, NPDR was present in 28.6% of cases. Different other studies reported different but comparable figures. Mohammad Z and Khan MD<sup>27</sup> reported 15% of their NIDDM patients to have NPDR. In United Kingdom prospective diabetic study<sup>28</sup> (UKPDS) 35% of NIDDM cases were reported to have retinopathy. A study by Reema M et al<sup>29</sup> in Southern India reported that 34.1% of diabetics attending a diabetes centre in Southern India had diabetic retinopathy.

In our study we found that 22.2% of our patients in IDDM group had NPDR compared to 44% reported by Hecker et al<sup>30</sup>. Khan AJ<sup>31</sup> recorded that 21% of patients with NIDDM had proliferative diabetic retinopathy (PDR). Leske et al<sup>32</sup> and Mckay et al<sup>33</sup> reported incidence of 15.2% and 29.1% of proliferative diabetic retinopathy in their studies, respectively. While in our study we found that only 9.8% of our NIDDM cases had PDR.

In IDDM, PDR was present in 11% of cases in our study which is much lower than that reported by WESDR II<sup>34</sup> which is 60%.

Diabetic maculopathy is the commonest cause of visual impairment in diabetic patients. Diabetic maculopathy or macular edema was present in 15.4% and 33.3% of NIDDM and IDDM patients respectively.

Ishaq N and Rehman N<sup>14</sup> reported that 34.14% of their cases had maculopathy.

Zander<sup>35</sup> also reported 42% of his patients to have maculopathy in his study.

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