Original Article

Frequency of Retinopathy in newly diagnosed Type 2 Diabetes Mellitus

Tahir Iqbal

ABSTRACT

Objective
To determines the frequency of retinopathy in newly diagnosed type 2 diabetic patients.

Methods
This cross sectional study was conducted on 100 newly diagnosed type-2 diabetic patients attending the diabetic clinic in Pakistan Institute of Medical Sciences (PIMS) during the period of May 2005 to October 2005. Those with type-1 diabetes, hypertension, retinal artery occlusion, retinal vein occlusion, retinal vasculitis and sickle cell retinopathy were excluded from the study. After pupillary dilatation with Mydracil, a detailed fundoscopic examination was done with direct ophthalmoscopy and retinopathy was graded into background, preproliferative and proliferative retinopathy.

Results
The mean age of participants was 47 years, 65 % were male and 35 % females. Overall, 9% patients were found to have retinopathy at the time of diagnosis.

Conclusion
The prevalence of retinopathy in newly diagnosed type 2 diabetes mellitus patients was found to be high in this study. This underlines the importance of detailed ophthalmic examination of all patients with diabetes at the time of diagnosis. (Rawal Med J 2009;34:).

Key Words
Diabetes mellitus, retinopathy, retinal hemorrhages.

INTRODUCTION
Diabetes is a major public health problem that is approaching epidemic proportions globally. The number of diabetes world wide in the year 2000 was estimated to be about 171 million; this figure being 11% higher than the previous estimate of 154 million.¹ Diabetic retinopathy is one of the most frequent and most serious complications of diabetes mellitus.² It is one of the leading causes of blindness not only in Pakistan but also worldwide. Since type 2 diabetes mellitus may be present well before its clinical diagnosis is made, it is not uncommon to see its micro vascular complications at the time of diagnosis.³ Reported prevalence of diabetic retinopathy at the time of diagnosis of type 2 diabetes varies from 5-35%.⁴ Blindness from diabetic retinopathy can be
delayed with timely detection and appropriate therapy. Therefore, newly diagnosed diabetic patients should be screened for retinopathy as early diagnosis and treatment can prevent its morbidity. Aim of this study was to determines the frequency of retinopathy in newly diagnosed type 2 diabetic patients in a tertiary care setting.

PATIENTS AND METHODS
The study was conducted at Pakistan Institute of Medical Sciences (PIMS) Islamabad from May 2005 to October 2005. The study group comprised of 100 consecutive patients of type 2 diabetes mellitus attending the diabetic clinic of PIMS. All those patients who were newly diagnosed with type 2 diabetes mellitus were included in the study. Patients with hypertension, retinal artery occlusion, retinal vein occlusion, retinal vasculitis and sickle cell retinopathy were excluded from study. A detailed clinical examination was done including calculation of body mass index. Type 2 diabetes mellitus was diagnosed using the criteria of WHO study group on diabetes. One drop of mydricil was instilled in each eye till pupillary dilatation and a detailed fundoscopic examination was done with the help of direct ophthalmoscopy. Retinopathy was graded into background, preproliferative and proliferative retinopathy (see below). Neuropathy was checked by using monofilaments. Urine examination was done for presence or absence of proteinuria. Statistical analysis was carried out using the SPSS version 8.

Classification of retinopathy used was as follow: background retinopathy had microaneurysm, dot/blot hemorrhages, hard exudates and retinal edema. Preproliferative retinopathy had venous loops/beading, cotton wool spots, dark blot hemorrhages and intra-retinal micro vascular abnormalities. Proliferative retinopathy had neovascularization, vitreous hemorrhages and vitreous and retinal detachment.

RESULTS
Over a period of six months 100 patients were enrolled in the study. Age range was 35 to 65 years; majority of them belonged to 5th decade (Table 1). Sixty-five patients were male and thirty five were females. The mean age of patient at the time of diagnosis was 47 years (men 46±1.73, women 48±3.60 years). Mean BMI for male was 25.2kg/m²±0.663 and for female 26.1kg/m²±0.515.
Table 1. Age distribution of patients

<table>
<thead>
<tr>
<th>Age in years</th>
<th>No of Patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-40 Years</td>
<td>7</td>
<td>7%</td>
</tr>
<tr>
<td>41-60 years</td>
<td>57</td>
<td>57%</td>
</tr>
<tr>
<td>61-80 years</td>
<td>36</td>
<td>36%</td>
</tr>
</tbody>
</table>

Overall, 9 patients were found to have diabetic retinopathy. Out of these, 6 were males and 3 were females (Table 2). Six patients among 9 were found to have background retinopathy, 2 had preproliferative and 1 had proliferative retinopathy (Fig 1).

Table 2. Sex Ratio of Diabetic Retinopathy in Study Group

<table>
<thead>
<tr>
<th></th>
<th>No. of patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>6</td>
<td>6%</td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
<td>3%</td>
</tr>
</tbody>
</table>

Out of the 6 patients with background retinopathy, 4 were males and 2 were females. Out of the 2 patients with preproliferative retinopathy, 1 was male and 1 was female while the only patient with proliferative retinopathy was male.

DISCUSSION
The relatively low rate of diabetic retinopathy 9% among newly diagnosed type 2 diabetic patients in this study is similar to studies from South India\(^7\) and Australia.\(^8\) A similar study was done in southern Pakistan which showed 15% of newly diagnosed diabetics to had retinopathy at the time of diagnosis.\(^1\) This difference is probably because of ethnic variations. In Europeans, the prevalence of retinopathy at the time of diagnosis of type 2 diabetes varies\(^8\) and in the United Kingdom Prospective Diabetes study (UKPDS), 35% of type 2 diabetic subjects were reported to
have retinopathy at diagnosis. This is considerably higher than that seen in our study. It, therefore, appears that prevalence of retinopathy at the time of diagnosis of type 2 diabetics in our patients is lower than that reported in UK\textsuperscript{10} and USA\textsuperscript{11} but similar to that reported from Australia\textsuperscript{7} and India.\textsuperscript{6}

\textbf{Fig 1. Types of Retinopathy.}

![Bar chart showing types of retinopathy.]

One possible explanation is that there could be a longer period of undiagnosed type 2 diabetes in UK. The mean age of the patients at the time of diagnosis in our study was considerably lower than in UKPDS study. Another explanation could be that the time at which patients seek medical attention may vary between Pakistan and UK as a result of different health systems. Although, it is difficult to identify the reasons for such variation in prevalence rates among various populations, race, age, method of detecting diabetic retinopathy, health care facilities and other risk factors could have contributed to the differences. The limitations of this study are that it was clinic based and the sample size was small. The strength of this study is that it is based on detailed fundoscopic examination.

\textbf{CONCLUSION}
The prevalence of retinopathy in newly diagnosed type 2 diabetes mellitus patients was relatively high in this study. This emphasizes the importance of detailed ophthalmic examination of all patients of diabetes at the time of diagnosis.

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