



## A STUDY OF RETINOPATHY IN PRE DIABETES IN A TERTIARY CARE CENTRE

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## ABSTRACT

**Background:** Diabetes is a chronic disease that has a prolonged prediabetic phase with specific microvascular complications like nephropathy, retinopathy, neuropathy that can begin during prediabetic phase itself.

**objective:** The study is intended to know the relative prevalence of retinopathy among prediabetes patients.

**Methodology:** A total of 100 subjects with prediabetes, visiting medicine OPD during the period of 6 months were included in the study. Qualifying patients underwent detailed history, clinical examination, direct and indirect ophthalmoscopy,

**Results:** Among IFG and/or IGT (Prediabetes), 6% patients had very mild Non proliferative diabetic retinopathy.

**Conclusion:** Microvascular complications such as retinopathy can be present in Prediabetes, though their prevalence is low.

## KEYWORDS :

## Introduction

Diabetes is a disease which affects 150 million individuals worldwide. Diabetes mellitus has long been recognized as a major public health problem with far reaching consequences, not only for its adverse health impact on individuals, but also for its economic burden on the health care system and the society at large<sup>1</sup>.

Prediabetes as defined by American Diabetic Association (ADA), include individuals with impaired fasting glucose (FBS 100-125 mg/dl), impaired glucose tolerance (Plasma glucose 140-199 mg/dl after 75gm 2 hr oral glucose tolerance test) or both. These glucose levels are above normal but below the level that is diagnostic for diabetes. They have a significant risk of developing type 2 diabetes mellitus and have an increased risk of cardiovascular disease and thus are an important target group for primary prevention.

People with diabetes are vulnerable to multiple and complex medical complications. These complications involve both cardiovascular disease (heart disease, stroke) and microvascular disease. Epidemiologic evidence suggests that these complications of diabetes begin early in the progression from normal glucose tolerance to frank diabetes<sup>2</sup>. Early identification and treatment of persons with prediabetic conditions has the potential reduce both the incidence of diabetes and related complications.

Retinopathy is considered the complication most closely associated with and characteristic of diabetes mellitus. However, almost 8% of individuals with impaired fasting glucose and impaired glucose tolerance have detectable early diabetic retinopathy, according to research presented at the 65th Scientific Sessions of the American Diabetes Association (ADA) in San Diego. Relatively few studies have measured the occurrence of diabetic retinopathy in IFG and IGT. The relationship between sub diabetic levels of glycemia and retinopathy therefore remains unclear. This study is done to know the prevalence of retinopathy in impaired fasting glucose and impaired glucose tolerance.

## Materials and methods

A total of 100 patients attending OPD of department of ophthalmology of B.R Singh hospital Kolkata with impaired Fasting Glucose and/or Impaired Glucose Tolerance (Prediabetes) during the year 2016 were included in the study after considering the inclusion and exclusion criteria. It was a cross sectional, hospital based, time bound study. A total of 100 subjects with abnormal Fasting blood sugar (FBS) and 2hr Oral glucose tolerance test (2hr OGTT) were enrolled in the study.

## Definitions

1. Isolated-Impaired Fasting Glucose (I-IFG): FBS between 100-125 mg/dl and 2hr OGTT <140 mg/dl.
2. Isolated-Impaired Glucose Tolerance (I-IGT): FBS <100mg/dl and 2hr OGTT between 140-199 mg/dl.
3. Impaired Fasting Glucose with Impaired Glucose Tolerance (IFG with IGT): FBS 100-125 mg/dl and 2hr OGTT between 140-199 mg/dl.
4. IFG and/or IGT (Prediabetes): Presence of Isolated-Impaired Fasting Glucose (I-IFG) or Isolated-Impaired Glucose Tolerance (I-IGT) or Impaired Fasting Glucose with Impaired Glucose Tolerance (IFG with IGT).

**Fundus Examination:** Done by Direct ophthalmoscopy and pupillary dilatation achieve using 1% Tropic amide. Indirect ophthalmoscopy and Slit lamp biomicroscopy were used whenever necessary. According to Fundus findings, the patients were divided into 6 groups

1. Fundus normal
2. Fundus not visualized
3. Mild Non-proliferative Diabetic Retinopathy
4. Moderate Non-proliferative Diabetic Retinopathy
5. Severe Non-proliferative Diabetic Retinopathy
6. Proliferative Diabetic Retinopathy

## Results

We studied the prevalence of diabetic retinopathy among 100 patients with IFG and/or IGT (Prediabetes). Study group consists of 55 males and 45 females. Retinopathy was present in 6% of patients with IFG and/or IGT (Prediabetes) in our study (Table-1)

**Table 1 - Prevalence of Retinopathy in IFG and/or IGT (Prediabetes)**

Retinopathy	Male	Female	Total
Present	4	2	6
Absent	51	43	94

Out of the 6 patients 4 were males and 2 were females, All 6 patients had Mild Non proliferative diabetic retinopathy. (Table-2) Four out of these six patients had only microaneurysms in both the eyes; one had microaneurysms only in his left eye and remaining one had microaneurysm along with mild superficial hemorrhage. No patient had moderate or severe NPDR or proliferative diabetic retinopathy. 1 was from I-IFG group, 2 were from I-IGT group and 3 were from IFG with IGT group.

Fundus appearance	Male	Female	Total
Normal	51	43	94
Mild NPDR	4	2	6
Moderate NPDR	-----	-----	-----
Severe NPDR	-----	-----	-----

### Conclusion

This study shows that microvascular changes like retinopathy is evident even before diagnosis of overt diabetes mellitus and by screening these prediabetic patients we can identify retinopathy at early stage and hence improve long term effective management of retinopathy.

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