



## DISEASE PATTERN STUDY OF FUNDUS CHANGES IN DIABETIC RETINOPATHY IN A TERTIARY HOSPITAL IN WESTERN INDIA

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**ABSTRACT** **Background-** Disease pattern study of fundus changes in diabetic retinopathy in a tertiary hospital in western India  
**Methods-** One hundred patients with established diabetes mellitus were subjected to ophthalmic examination and specific hematological investigations. The ophthalmic examination in form of visual acuity, pinhole, near vision, corrected vision, anterior segment examination, slit lamp examination, tonometry, (schiotz) direct ophthalmoscopy, indirect ophthalmoscopy.  
**Results-** During this study period, 100 patients showed the following results. Incidence of diabetes increased with age, with incidence being more in males, 81% of patients were diagnosed to have borderline changes. The study also showed that incidence increases with duration of disease, progression of the disease was less with better control.  
**Conclusion-** With maximum patients being detected at the borderline stage proper awareness, a good diabetic diet, regular check ups and investigations, frequent follow ups, need for a proper control of baseline disease helps in reducing morbidity & mortality.

**KEYWORDS :** Type II Diabetes Mellitus, HbA1C, Diabetic Retinopathy.

### INTRODUCTION-

Diabetes mellitus is emerging as one of the most common chronic disease in many part of the world. Incidence rates for blindness due to diabetic eye disease per total population have ranged between 0.19 to 13.5 per 100000 person years in various studies<sup>(1)</sup>. With raised blood glucose level, glucose bound with amino group of protein and glycosylation occurs and HBA1C formed. There will be marked increase in oxygen carrying capacity and migration power of red blood cells also increased. Normal retinal circulation time is 1.5 to 3 seconds. In diabetes increase circulation time particularly at micro aneurysm level are found there is reduced vasoconstrictor response to oxygen inhalation for five minutes in diabetic patients.

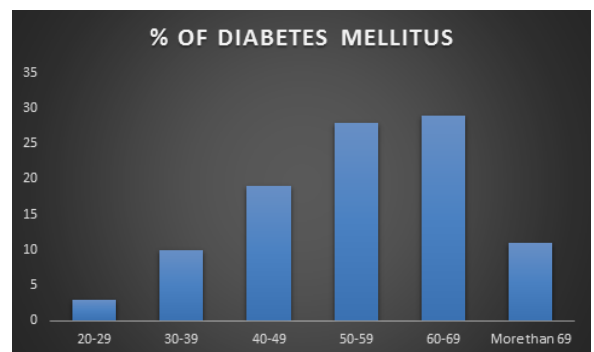
### MATERIALS AND METHODS-

One hundred patients with established diabetes mellitus were subjected to ophthalmic examination and specific hematological investigations. Most of patients were from diabetic clinic Guru Gobind Singh Hospital Jamnagar and some were referred cases to ophthalmic department from indoor medicine wards and surgical wards of Guru Govind Singh Hospital Jamnagar. After receiving approval from institutional ethics committee, detailed history of patient including name, age, sex, age of onset of diabetes, duration of diabetes, control over diabetes, family history regarding diabetes, associated systemic diseases. The ophthalmic examination in form of visual acuity, pinhole vision, near vision, corrected vision, anterior segment examination, slit lamp examination, tonometry, (schiotz) direct ophthalmoscopy, indirect ophthalmoscopy examination was done. The patients were classified according to the classification proposed by Jack J Kanski<sup>(2)</sup>. Haematological investigation carried out including haemoglobin, fasting and post prandial blood sugar, urine glucose, HbA1c were measured.

### RESULTS-

We found that incidence of diabetes mellitus type 2 is more as age increases. Incidence is maximum within age group 50 year to 69 years as depicted in graph 1.

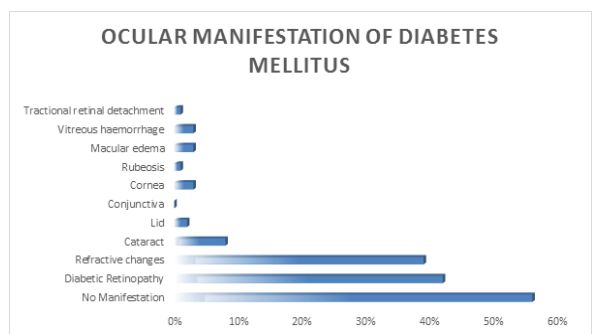
**GRAPH-1**



Incidence of diabetes is more in male population with total 68 patients being males and 32 were females.

Among the ocular manifestations Incidence of diabetic retinopathy is 42% with incidence of tractional retinal detachment being 1% & incidence of refractive changes is 39% as described in Graph-2

**GRAPH-2**



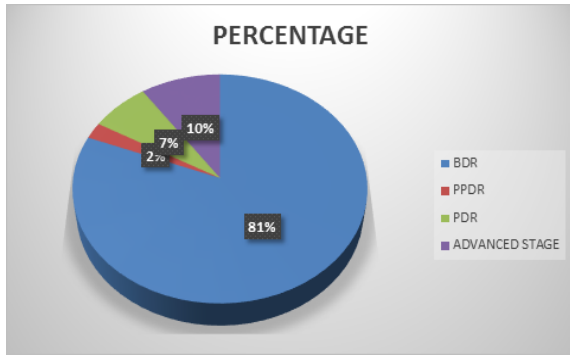
81% patients are of BDR i.e. 34 patients have BDR out of 42 patients with diabetic retinopathy

Incidence of PPDR was found to be 2.3% that is 1 patient out of 42 patients with diabetic retinopathy is having PPDR type

Incidence of PDR was 7.1% that 3 patients out of 42 patients with diabetic retinopathy is having PDR type

Advanced stage that includes macular edema, vitreous hemorrhage, tractional retinal detachment, rubeosis iridis was found to be 9.6% as described in Graph-3

**GRAPH-3**



Incidence of diabetic retinopathy in uneducated was 58% & incidence of diabetic retinopathy in educated was 19%. Incidence of diabetic retinopathy in patients with duration of diabetes upto 15 year was 32%. Incidence of diabetic retinopathy in patients with duration of diabetes between 15 year to 30 year was 65%. Incidence of diabetic retinopathy was 100% when patient was having diabetes for more than 30 yrs implying that severity retinopathy increased with increase in duration of diabetes.

#### DISCUSSION-

V Mohan et al in their study found that incidence of diabetes mellitus was increasing after age of 40yr of age<sup>(3)</sup>. On comparing with older reports our study shows that there was increasing prevalence of type 2 diabetes after age of 40 years of age. Sanjay D Bhalerao et al in their study showed that the prevalence of diabetes increased significantly with age<sup>(4)</sup>. On comparing with older reports our study shows there was increasing prevalence of type 2 diabetes with increase in age. Rob M van dam et al found a substantial increased risk for type 2 diabetes in men<sup>(5)</sup>. Correlating with older reports our study showed an increase in type 2 diabetes mellitus among males. R Khandekar et al in their study found that the prevalence of background diabetic retinopathy was more in comparison to proliferative diabetic retinopathy and advanced diabetic maculopathy<sup>(6)</sup>. On correlating with older article showed a similar study with more prevalence of background diabetic retinopathy. Ramndeeep Singh et al in their study states that there is direct correlation between the frequency and severity of DR and duration of Diabetes Mellitus<sup>(7)</sup>. In our study which in correlation with above finding suggest that incidence of diabetic retinopathy increases with duration of diabetes and it is even 100% when patient is having diabetes for more than 30 years.

#### CONCLUSION-

We suggest every patient with diabetes should have routine monitoring of blood glucose level and should follow strict blood glucose level control. Routine HbA1c monitoring is very much helpful in prevention and control of diabetic retinopathy in patients with diabetes mellitus type 2. A proper and timely screening of diabetes mellitus type-2 with good metabolic control of blood glucose levels is the most important measure in prevention and control of diabetic retinopathy. Timely implication of intravitreal Anti-VEGF agents, intravitreal Triamcinolone, and Laser photocoagulation would have beneficial effects on visual prognosis of patients with diabetic retinopathy.

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