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ORIGINAL RESEARCH PAPER General Medicine

HbAlc AND THE INCIDENCE OF DIABETIC RETINOPATHY IN TYPE 2 DIABETES MELLITUS PATIENTS

KEY WORDS:

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INTRODUCTION

- Diabetic Retinopathy is a microvascular complication of Diabetes mellitus, and the leading cause of blindness, affecting the age group of 20-74 years of age.
- It begins as non proliferative diabetic retinopathy (NPDR), and then progresses to proliferative diabetic retinopathy (PDR)
- Glycosylated Hb is non enzymatic addition of sugar residue to Hb, thereby making the quantization, easier. This measurement is directly proportional to blood glucose concentration1.
- A Study by Oshin M et al, has shown prevalence of retinopathy, significantly increased in patients with Hbalc of >7.6%.
- Inflammatory cytokines are upregulated in diabetes , resulting in chronic inflammation, endothelial damage, causing an increase in the vascular permeability of blood vessels. Thus, fluid leaking into the retina and depositing under the macula, causing the pathological changes in the retina².

METHODOLOGY

- An observational cross sectional analytical study was done in the diabetic OPD of General Medicine Department at Saveetha Medical College and Hospital from August 16,2022 to August 31,2022.
- Well informed consent was procured from all the patients. Study began after having received approval from the ethical committee.
- This study was conducted in a total of 60 patients, between the age group of 30-65 years, of either gender, with history of type 2 diabetes mellitus for more than 5 years, with ocular examination done at their latest visit.
- Pregnant women, patients with vitreoretinal degenerations, and dystrophies, hypertensive emergency, active ocular infections, or with hazy media, uveitis, retinal vascular occlusions, retinitis pigmentosa, were all excluded from the study.
- Thorough ophthalmic examination of both the eyestesting of visual acuity, colour vision, slit lamp examination of anterior segment, Indirect ophthalmoscopy to evaluate status of retina, were done, recently, in all the 60 patients involved in the study.
- Biochemical data such as FBS, PPBS, HbAlc were collected from the patient's records retrospectively, along with their ophthalmology consultation records.
- These observations were compiled using MS Excel for WINDOWS 365 version and the results were interpreted.

RESULTS

- Our observation from the study were as follows ,60% of the patients were male, 40% were female.
- The mean age was 58±2 years.
- 36.66% patients had been diagnosed with nonproliferative diabetic retinopathy, out of which 86.36% had an HbAlc≥10.5%.

- 71% with good glycemic control had no evidence of retinopathy.
- On an average, patients with history of type 2 diabetes for more than 8 years had incidence of non proliferative diabetic retinopathy.
- The incidence of NPDR was higher among males (63%), compared to females (36%).
- Maximum number of patients with NPDR, belonged to the age group of 50-60 years.

HbAlc(%)	NO. OF Patients(%)	NPDR(%)	AVG. BLOOD GLUCOSE (mg/dl)
6.5-7.5	6(10)	-	150
7.6-8.5	12(20)	1(4.54)	210
8.6-9.5	12(20)	1(4.54)	280
9.6-10.5	8(13.33)	2(9.09)	350
≥10.6	22(36.66)	18(81.81)	410

DISCUSSION

- In type 2 diabetes mellitus, overall, microvascular complications are more common than macrovascular or autonomic complications.
- Most common risk factors associated with these complications at present are age, uncontrolled diabetes mellitus and dyslipidemia3.
- Diabetic retinopathy is associated with increased intimamedia thickness and arterial stiffness in type 2 Indian diabetic subjects suggesting this pathogenic mechanism might predispose to diabetic microangiopathy.
- CURES Eye study showed that the major systemic risk factors for incidence and progression of DR, are duration of diabetes, glycemic control and Dyslipidemia. Hypertension did not play a major role in this cross-sectional analysis4.

CONCLUSION

- Based on our retrospective analysis, we were able to make a conclusion that poor the glycemic control, greater was the incidence of developing non-proliferative diabetic retinopathy. Thus, a direct relationship between HbAlc and diabetic retinopathy exists.
- Annual retinal examination and, good glycemic control and early detection of diabetic retinopathy can considerably reduce the risk of visual loss in diabetic individuals.

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