CORRELATION OF RISK FACTORS WITH SEVERITY OF DIABETIC RETINOPATHY

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FINANCIAL DISCLOSURE
NO CONFLICT OF INTEREST

INTRODUCTION

- Diabetic retinopathy is a common microvascular complication of diabetes and is considered to be one of the leading causes of visual impairment and vision loss in adults.

- Many epidemiological studies on diabetic retinopathy, either cross sectional or cohort studies, have been conducted worldwide , exploring the risk factors associated with the disease and aiming at prevention and management of this disease.

- According to those studies, poor glycemic control, high lipid levels, hypertension, longer duration of diabetes have been implicated as the risk factors for development of diabetic retinopathy and its progression.

- This study aims at correlating the risk factors like duration of diabetes, HbA1c levels, hypertension, dyslipidemia, anemia and high serum creatinine levels with severity of diabetic retinopathy.

AIM

- To study the correlation of risk factors like duration of diabetes, HbA1c levels, hypertension, dyslipidemia, anemia and high serum creatinine levels with severity of diabetic retinopathy.

OBJECTIVES

- To estimate the correlation of duration of diabetes and HbA1c levels with severity of diabetic retinopathy.

- To estimate the correlation of dyslipidemia, hypertension, anemia and high serum creatinine levels with severity of diabetic retinopathy.

- To evaluate the sex distribution in diabetic retinopathy patients.

MATERIALS AND METHODS

- This is a hospital based cross sectional study conducted on 50 patients of diabetic retinopathy attending government regional eye hospital, Visakhapatnam from march 2021 to august 2021.

INCLUSION CRITERIA

- All diagnosed cases of diabetic retinopathy

EXCLUSION CRITERIA

- Patients who did not give consent.

- Patients with media opacity whose fundus examination is not possible.

- Patients with other retinal disorders like retinal vein occlusions, hypertensive retinopathy

METHODOLOGY

- All diagnosed cases of diabetic retinopathy were included in the study.

- Detailed history of patient was taken, especially regarding the presence of diabetes and hypertension and duration of diabetes and hypertension, development of defective vision, decrease in urine output and any known past history of diagnosed diabetic nephropathy or neuropathy.

- Systemic examination was done.

- Best corrected visual acuity and slit lamp examination were done.

- Detailed fundus examination was done using slit lamp biomicroscopy with 78D lens or indirect ophthalmoscopy with 20D lens for presence of any diabetic retinopathy changes.

- In our study, diabetic retinopathy was classified based on Early Treatment Diabetic Retinopathy Study (ETDRS) classification which was as follows:

ABBREVIATED EARLY TREATMENT DIABETIC RETINOPATHY STUDY (ETDRS) CLASSIFICATION

CATEGORY	MANAGEMENT
NON-PROLIFERATIVE DIABETIC RETINOPATHY (NPDR)	
NO DR	Review in 12 months
VERY MILD ▪Microaneurysms only	Review most patients in 12 months
MILD ▪Any or all of: microaneurysms, retinal hemorrhages, exudates, cotton wool spots	Review range 6-12 months, depending on severity of signs, stability, systemic factors, and patient's personal circumstances
MODERATE ▪Severe retinal haemorrhages in 1-3 quadrants or mild IRMA ▪Significant venous beading in no more than 1 quadrant ▪Cotton wool spots	Review in approximately 6 months (PDR in up to 26%, high-risk PDR in up to 8% within a year)
SEVERE The 4-2-1 rule- ▪Severe retinal haemorrhages in all 4 quadrants ▪Significant venous beading in ≥2 quadrants ▪Moderate IRMA in ≥1 quadrants	Review in 4 months (PDR in up to 50%, high-risk PDR in up to 15% within a year)
VERY SEVERE ▪≥2 of the criteria for severe	Review in 2-3 months (High-risk PDR in up to 45% within a year)
PROLIFERATIVE DIABETIC RETINOPATHY (PDR)	
MILD-MODERATE ▪New vessels on the disc (NVD) < 1/3 disc area ▪New vessels elsewhere (NVE) < 1/2 disc area	▪Treatment considered according to severity of signs, stability, systemic factors, and patient's personal circumstances ▪If not treated, review in up to 2 months
HIGH-RISK ▪NVD > 1/3 disc area ▪Any NVD with vitreous or preretinal hemorrhage ▪NVE >1/2 disc area with vitreous or preretinal hemorrhage	▪Laser photocoagulation ▪Intravitreal anti-VEGF agents ▪Intravitreal triamcinolone ▪Pars plana vitrectomy ▪Lipid lowering drugs
ADVANCED DIABETIC EYE DISEASE ▪Preretinal (retrohyaloid) and/or intragel hemorrhage ▪Tractional retinal detachment ▪Tractional retinoschisis ▪Rubeosis iridis (iris neovascularisation)	▪Pars plana vitrectomy

- All diabetic retinopathy patients were screened for associated risk factors with tests like blood pressure, serum lipid profile, HbA1c, Hb%, serum creatinine

- The severity of diabetic retinopathy, then was correlated with the above tests.

- Patients were considered to have abnormal test values if

➤ BP>/=140/90mmHg

➤ HbA1c - >6.7%

➤ Hb - <11%

➤ Dyslipidemia – Total cholesterol - >160mg/dl

                 Triglycerides - >150mg/dl

                 HDL - <40mg/dl

                 LDL - >100mg/dl

                 VLDL - >40mg/dl

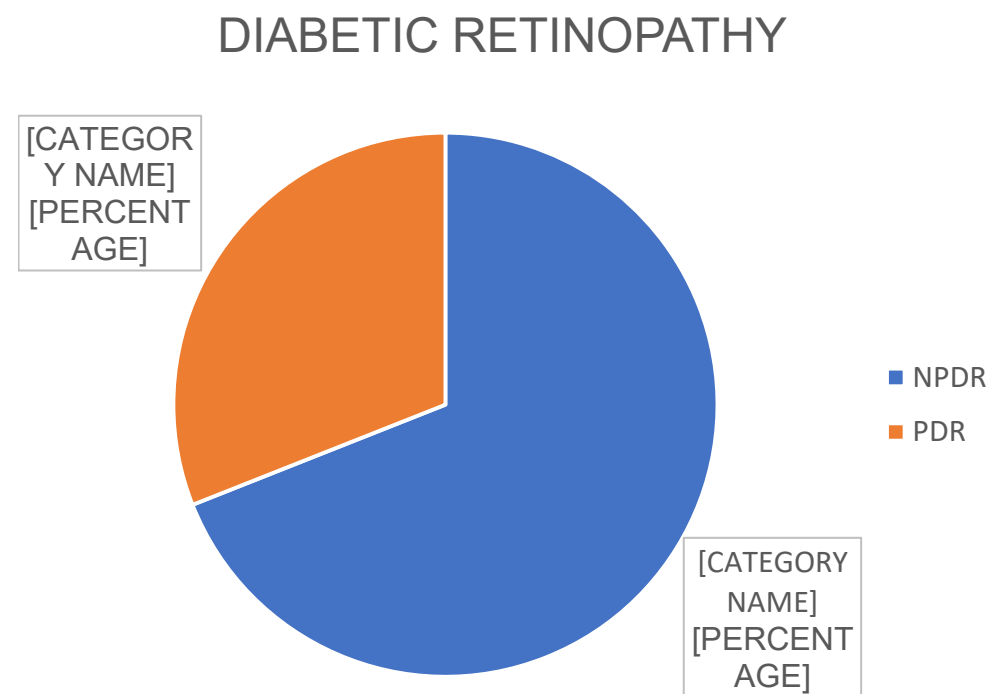➤ Serum creatinine - >1.5mg/dl

RESULTS

- Total 50 patients of diabetic retinopathy were included in the study. Out of these, 29(58%) were males and 21(42%) were females.
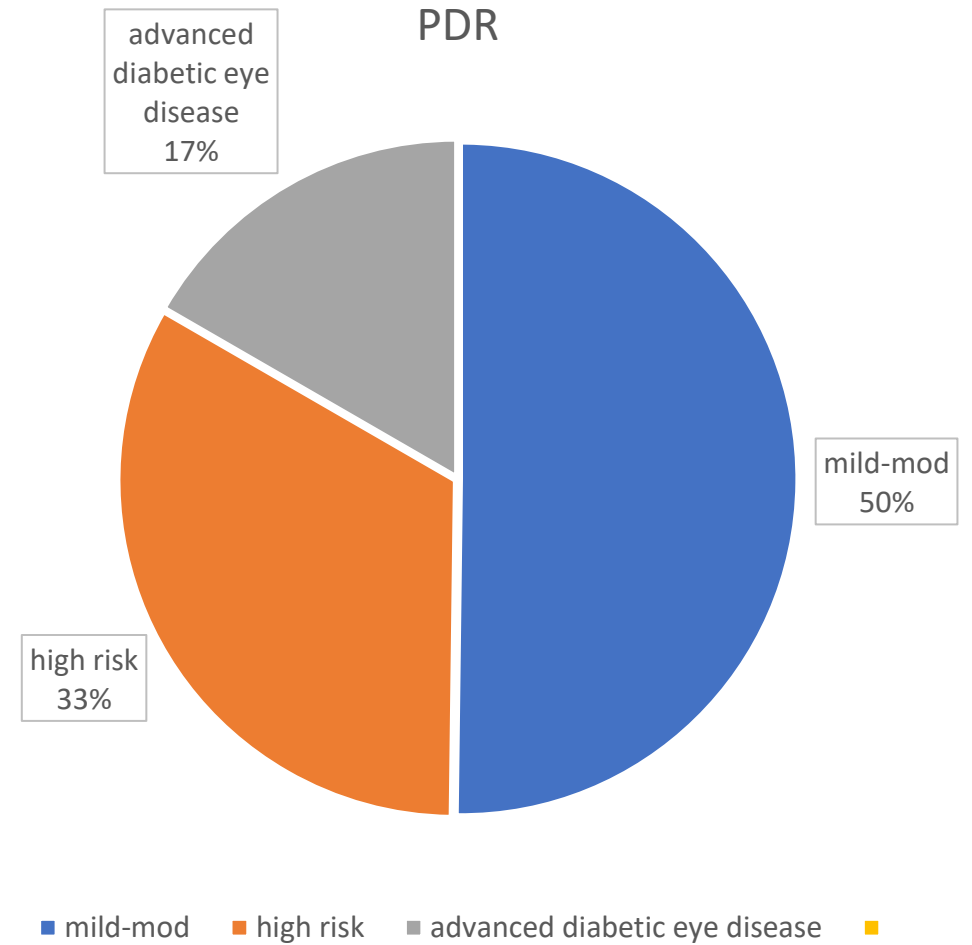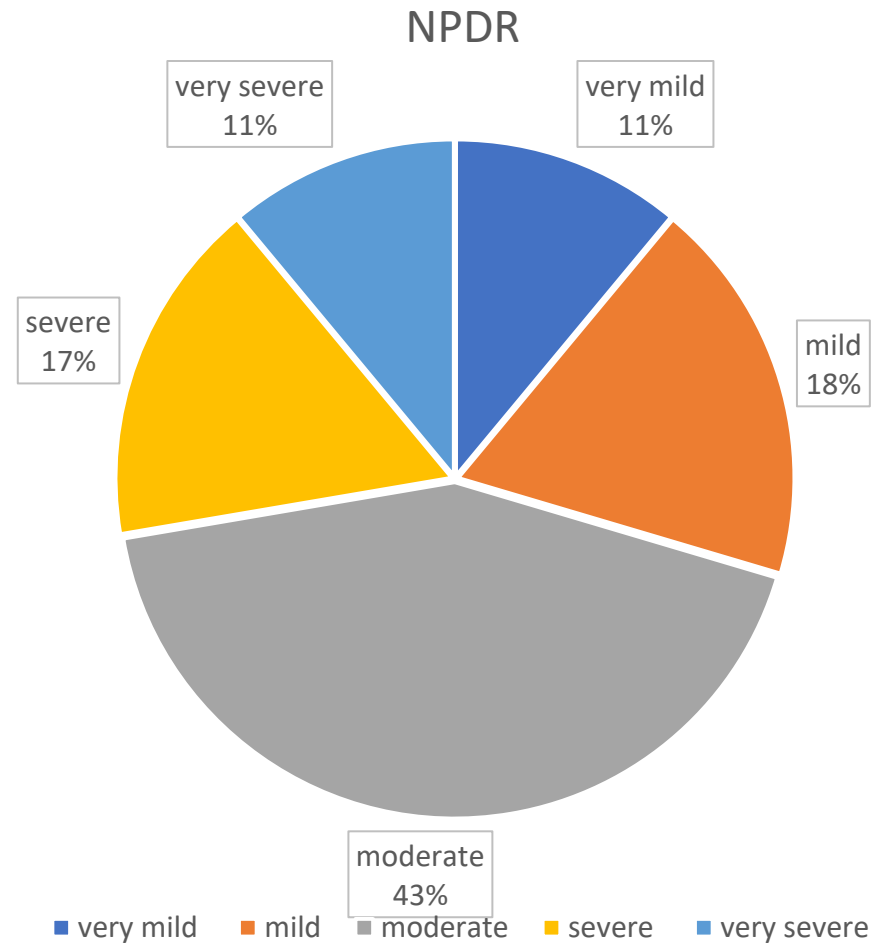
	NUMBER	PERCENTAGE
MALES	29	58%
FEMALES	21	42%

- Out of 50(78 eyes) patients of diabetic retinopathy, 54(69%) eyes were found to have non proliferative diabetic retinopathy(NPDR) and 24(31%) eyes were found to have proliferative diabetic retinopathy(PDR)
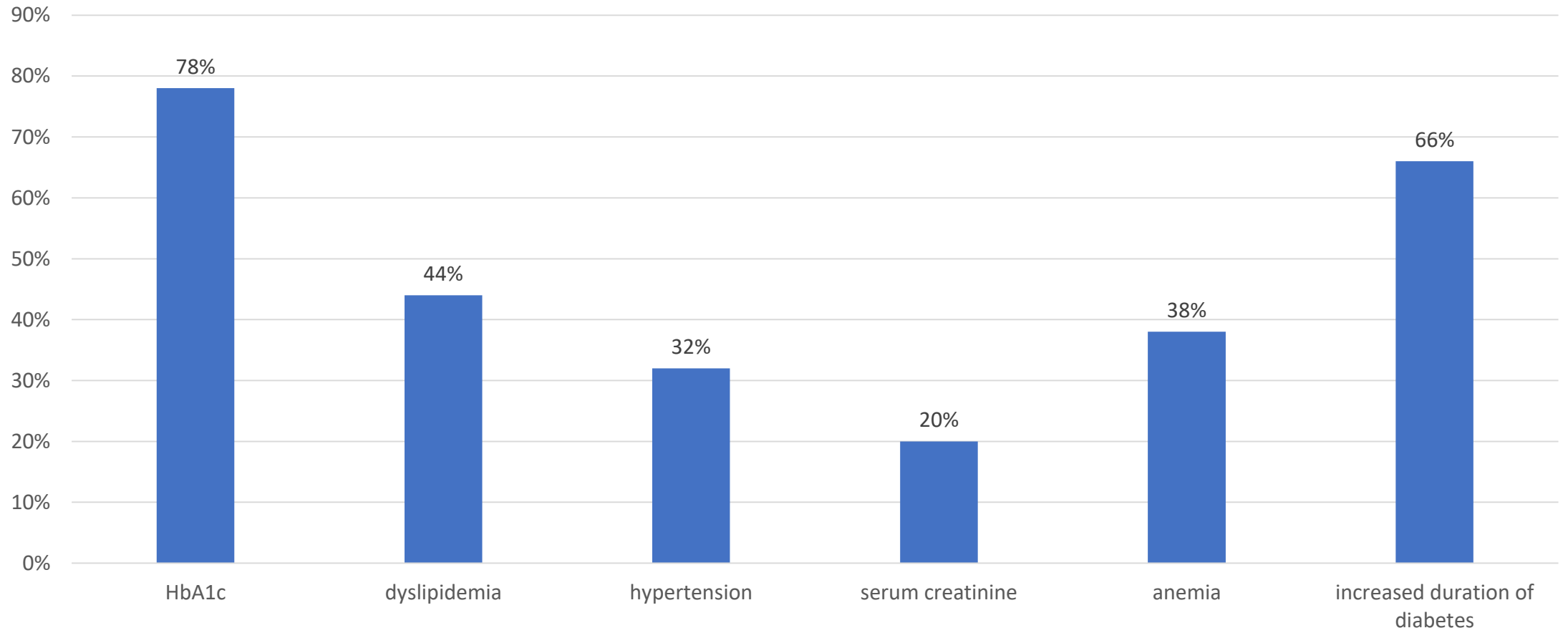
	NUMBER OF EYES	PERCENTAGE
NPDR	54	69%
PDR	24	31%

DIABETIC RETINOPATHY

DURATION OF DIABETES	NUMBER	PERCENTAGE
< 1 year	2	4%
1-5 years	8	16%
6-10 years	17	34%
11-20 years	19	38%
> 20 years	4	8%

PARAMETER	NUMBER	PERCENTAGE	p value
HbA1c	39	78%	0.0002
Dyslipidemia	22	44%	0.9
Hypertension	16	32%	0.5
Serum creatinine	10	20%	0.1
Anemia	19	38%	0.7
Duration of Diabetes	33	66%	0.01

DISCUSSION

- In our study, we found that 69% were found to have non proliferative diabetic retinopathy(NPDR) and 31% were found to have proliferative diabetic retinopathy (PDR).

- We also found that increased duration of diabetes and high HbA1c levels were most commonly associated with diabetic retinopathy.

- In our study, we also found that diabetic retinopathy is more commonly associated with male gender.

- Joanee W.Y Yau et al reported that longer duration of diabetes, poorer glycemic and blood pressure control are strongly associated with diabetic retinopathy.

- P.Hegde et al reported that diabetic retinopathy showed a male preponderance with risk factors like duration of diabetes and HbA1c levels having significant association with severity of diabetic retinopathy.

- N.Wat et al reported that good glycemic and blood pressure control remain the most important modifiable risk factors to reduce risk of progression of diabetic retinopathy and vision loss.

CONCLUSION

- In conclusion, in our study, high HbA1c levels and increased duration of diabetes have significant association with severity of diabetic retinopathy.

- Dyslipidemia, hypertension, high serum creatinine levels and anemia were found to have no significant association with severity of diabetic retinopathy.

- So, good glycemic control and regular screening for diabetic retinopathy changes are required to prevent the progression of disease and reduce morbidity due to diabetic retinopathy.

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