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Ophthalmology

CLINICAL PROFILE OF HYPERTENSIVE RETINOPATHY PATIENTS AT A TERTIARY CARE CENTRE.

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ABSTRACT **Background:** Hypertension acts a silent killer before overt end organ damage is clinically apparent. Retinal arterioles are visualised easily, non-invasively with similar anatomical-physiological properties with other organ's microcirculation thus hypertensive retinopathy could help assess its severity. Material and Methods: This is a cross sectional study conducted in a Tertiary care centre with the aim to study the clinical profile of hypertensive retinopathy patients and its associated comorbidities.140 hypertensive retinopathy patients were included who attended the hospital over a period of 18 months, 1st February 2021- 1st August 2022. **Result:** Majority of patients were above 60 years with mean age as 66.70 years and male to female ratio was 1.69. With longer duration of hypertension there was increase in the number of hypertensive retinopathy patients, mean duration was 8.56 years. Out of 140 patients 55.7% had grade I, 40% had grade II, 14.3% had grade III and 1.4% had grade IV Hypertensive retinopathy. Patients with Target Organ damage (IHD, stroke and CKD) were more with higher grade of retinopathy. **Conclusion:** Ophthalmologists and general physicians should work in collaborations to ensure that hypertensive patients at high risk (> 60 year of age, male, >10 years of duration of hypertension, overweight, uncontrolled blood pressure) are efficiently screened and timely managed to reduce the risk of ocular and systemic morbidity and mortality.

KEYWORDS :

INTRODUCTION

Hypertension is a major public health problem due to its high prevalence all around the globe. Hypertension affects nearly 26% of the adult population worldwide.[1] It is estimated that at least one in four adults in India has hypertension.[2] But only about 12 % of them have their blood pressure under control.[3]

Poorly controlled hypertension (HTN) affects several systems such as the cardiovascular, renal, cerebrovascular and retina. The damage to these systems is known as target-organ damage (TOD).[4] Hypertension acts as a silent killer many years before overt end organ damage is clinically apparent. Hence, the importance of refining risk stratification strategies to ensure reliable detection of hypertension related end organ damage before it becomes symptomatic.[5]

Eyes are proven hypertensive target organs. The retina provides a window to study the human circulation. Retinal arterioles can be visualised easily and non-invasively and share similar anatomical and physiological properties with cerebral and coronary microcirculation.[5] Hypertensive retinopathy refers to retinal microvascular signs that develop in response to raised blood pressure. The most known classification of hypertensive retinopathy is the Keith-Wagener classification. Some ophthalmoscopic findings are helpful in assessing the duration, severity, predictions or hypertension vasculopathy effects.[6] And can be useful to classify risk factors and treatment decisions for hypertension.[7] Ophthalmoscopic viewing of retinal vasculature is also useful in diagnosis of vascular anomaly in important organ like brain, kidney and heart.

MATERIALS AND METHODS

This cross sectional observational study was conducted in the Department of Ophthalmology in a Tertiary care centre after approval from the Institutional Ethical Committee. The aim of study is to assess the clinical profile of hypertensive retinopathy and associated comorbidities. 140 hypertensive retinopathy patients were included who attended the hospital over a period of 18 months, 1st February 2021- 1st August 2022. Quantitative data analysed by Mean and Standard deviation method and Qualitative data analysed by Percentage method. Use appropriate Test of Significance as per type of data. Data analysed using statistical software (GraphPad Prism Software- Trial version).

INCLUSION CRITERIA

1. All walk in patients diagnosed with hypertensive retinopathy.

EXCLUSION CRITERIA

1. Patients with pregnancy induced hypertension.
2. Patients with media opacity.
3. Patients with ocular infection.
4. Patients not willing to participate.

Patients data was recorded. Thorough personal, medical, past and family history was noted. Clinical examination, ophthalmic and systemic investigations and a physician checkup for systemic evaluation was done. The stage of hypertension was classified according to JNC 8 criteria.

All subjects underwent a detailed fundus examination under mydriasis with slit lamp biomicroscopy with 78D and 90D along with direct and indirect ophthalmoscopy. Grading of hypertensive retinopathy was according to Keith-Wagner- Barker classification. Patients with associated complication were treated accordingly.

OBSERVATION AND RESULTS

Socio-Demographic and Clinical Profile

TABLE 1 - Distribution of patients according to age, sex, BMI, severity and duration of hypertension.

VARIABLES	Number of patients	Percentage
AGE		
<30 years	0	0%
31- 40 years	5	3.6%
41-50 years	23	16.4%
51-60 Years	36	25.7%
>60 years	76	54.3%
SEX		
Male	88	62.9%
Female	52	37.1%
BMI		
Underweight	7	5%
Normal weight	49	35
Overweight	56	40%
Obesity	28	20%
DURATION OF HYPERTENSION		
0-5 years	22	15.8%
6-10 years	38	27.1%
>10 years	80	57.1%

HYPERTENSION STAGE		
STAGE 1	50	35.7%
STAGE 2	90	64.3%
BLOOD PRESSURE CONTROL		
Controlled	64	45.7%
Uncontrolled	76	54.3%

- Maximum patients were found in age group above 60 years. Mean age of our study was 66.70 years. Number of cases with hypertensive retinopathy increases with increase in age.
- Male to female ratio is 1.69:1. Male gender was found more prone to hypertensive retinopathy.
- Mean duration of years was 8.56 years. Number of cases of hypertensive retinopathy increases with increase in duration of hypertension.
- Number of cases were more in stage 2 and uncontrolled hypertension.

Grades of hypertensive retinopathy

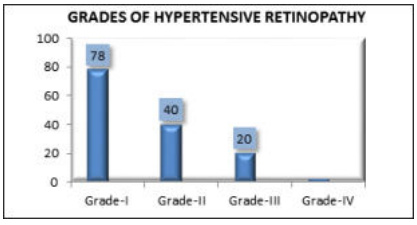

Chart 1- Grade wise distribution of hypertensive retinopathy

- Majority patients had Grade 1 hypertensive retinopathy and minimum patients were found in grade 4.

Ocular and Systemic Co morbidities

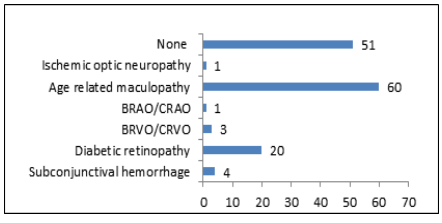

CHART 2- Distribution of other ocular conditions with hypertensive retinopathy

- Most common ocular condition present is age related macular degeneration.

TABLE 2- Grade wise distribution of associated comorbidities- Stroke, CKD-Chronic Kidney Disease, CVD-Cardiovascular Disease

	WITH STROKE	WITHOUT STROKE	Total
Grade-I	18(23.1%)	60(76.9%)	78
Grade-II	20(50%)	20(50%)	40
Grade-III	14(70%)	6(30%)	20
Grade-IV	2(100%)	0(0%)	2
Total	54(38.6%)	86(61.4%)	140(100%)
	WITH CKD	WITHOUT CKD	Total
Grade-I	23(29.5%)	55(70.5%)	78
Grade-II	14(35%)	26(65%)	40
Grade-III	8(40%)	12(60%)	20
Grade-IV	1(50%)	1(50%)	2
Total	46(32.9%)	94(67.1%)	140
	WITH CVD	WITHOUT CVD	Total
Grade-I	41(52.6%)	37(47.4%)	78
Grade-II	22(55%)	18(45%)	40
Grade-III	15(75%)	5(25%)	20
Grade-IV	2(100%)	0(0%)	2
Total	80(57.1%)	60(42.9%)	140

- x = 12.85, df= 1, p value= 0.0003. The association between stroke and grades of hypertensive retinopathy after application of Pearson Chi- square was statistically significant.
- x = 0.767, df= 1, p value= 0.38. The association between CKD and grades of hypertensive retinopathy after application of Pearson Chi- square was statistically non significant.
- x =4.31, df =3, p value=0.037. The association between CVD and grades of hypertensive retinopathy after application of Pearson Chi- square was statistically significant.
- Co morbidities more common with higher grades of hypertensive retinopathy.

DISCUSSION

Hypertension is one of the most important preventable contributors to disease and death. Hypertensive retinopathy represents the ocular findings of end organ damage secondary to systemic arterial hypertension. Ophthalmoscopic viewing of retinal vasculature is useful in diagnosis of vascular anomaly in important organ like brain, kidney and heart. It helps in early detection and prevention of further complications.

In our study number of hypertensive retinopathy cases with increased as age advances and most common age group was above 60 years. Similar finding were found in other studies as Rajendra P Gupta et al.[8] (2016), Mondal RN et al.[9](2017) and Nitin singh Salarai et al.[10]

Male to female ratio is 1.69:1. Studies like Mondal RN et al.[9](2017), Pun CB et al.[11](2017) and Godar et al. study[12] (2020) also found male gender to be more dominant than female. Pun CB et al.(2017) study had 1.7:1 male to female ratio.

In our study more number of patients are present in overweight with obese together than patients with normal or underweight category together.According to Third National Health and Nutrition Survey (NHANES III), the risk of hypertension has significantly increased in men and women with overweight and it was much higher for subjects with obesity. Nitin singh Salarai et al.[10] had their mean as 7.4 years of duration of hypertension and a similar distribution as number cases were more with increasing duration of hypertension with mean as 8.56 years. Our study showed hypertensive retinpathy was more common in stage 2 and uncontrolled hypertension. In 2020 Srijana Godar et al.[12] study also showed uncontrolled blood pressure and untreated patients of hypertension were significant risk factors for hypertensive retinopathy.

In our study 78 (55.7%) patients were grade 1, 40 (28.6%) patients were grade 2, 20 (14.3%) patients were grade 3 and 2 (1.4%) patients were grade 4 hypertensive retinopathy according to Keith Wagner Barker classification system. Majority of patients had grade 1 hypertensive retinopathy and minimum had grade 4 hypertensive retinopathy like Mondal RN et al.[9](2017) and Pun CB et al.[11](2017) study.

In 2014 Kabedi et al.[4] study showed hypertensive retinopathy was present in 83.6% of the patients and similar distribution of co morbidities with grades of hypertensive retinopathy but no association was found between hypertensive retinopathy and LVH, CKD or stroke but CKD was the most significant predictor of hypertensive retinopathy. While our study showed significant association between grades of hypertensive retinopathy with stroke and CVD.

As Mondal RN et al[9] in their study found male sex, increasing age >60 years and longer duration of hypertension > 5 years were positively correlated with hypertensive retinopathy, our study also shows relationship of hypertensive retinopathy with different risk factors as increasing age, male gender, severity and duration of hypertension and to be screened for early diagnosis. In addition shows association of grades of hypertension with systemic comorbidities and could be used as marker for preventing complications.

CONCLUSION

Ophthalmologists and general physicians should work in collaborations to ensure that hypertensive patients at high risk (> 60 year of age, male, >10 years of duration of hypertension, overweight, uncontrolled blood pressure) are efficiently screened and timely managed to reduce the risk of ocular and systemic morbidity and mortality.

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