PREVALENCE OF HYPERTENSIVE RETINOPATHY IN NEWLY DIAGNOSED HYPERTENSIVE PATIENTS

Thanasekaran Vijhaya Priya[1], Sundaram Arul Murugan[2]

[1]Associate Professor, Department of Ophthalmology, Indira Gandhi Medical College and Research Institute, Vazhuthavur Road, Puducherry.
[2]Associate Professor, Department of General Medicine, Sri Lakshmi Narayana Institute of Medical Sciences, Osodu, Puducherry.

ABSTRACT

BACKGROUND

Systemic hypertension is one of the common problems which is often asymptomatic. Because of this, often we fail to detect hypertension earlier. Purpose of this study is to find out the prevalence of hypertensive retinopathy at the time of diagnosis. We wanted to determine the prevalence of retinopathy in newly diagnosed hypertensive patients.

METHODS

Among the patients who attended ophthalmology outpatient department, the prevalence of hypertensive retinopathy was studied in 100 newly diagnosed hypertensive patients. The results were analysed using MS excel sheet.

RESULTS

This study shows that 8% of newly diagnosed hypertensive patients had grade I hypertensive retinopathy, 3% had grade II hypertensive retinopathy, and 1% had grade III hypertensive retinopathy. In our study, none of the newly diagnosed hypertensive patients were found to have grade IV hypertensive retinopathy.

CONCLUSION

The presence of hypertensive retinopathy changes in newly diagnosed hypertensive patients indicates that there has been a significant time gap between onset of illness and diagnosis. Early detection, treatment, good control and follow up of hypertension will decrease the morbidity and mortality.

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BACKGROUND

Systemic hypertension is one of the major causes of the global burden of disease. More than a hundred crore people have elevated blood pressure which results in an estimated ninety lakh deaths per year.[1] ACC/AHA classified the people with BP of less than 120/80 as normal, systolic BP of 120 to 129 is defined as elevated blood pressure, systolic BP between 130 and 139 and diastolic BP between 80 and 89 is classified as stage-1 and the values above are classified as stage-2.[2] Target Organ damage involving cerebrovascular system, cardiovascular system, kidney and retina are the common complications of the poorly controlled blood pressure.[3] Linear association between various stages of HTR and both clinical and subclinical cardiovascular and cerebrovascular mortality and morbidity has been widely studied.[4] The incidence of hypertensive retinopathy increases in proportion with the duration and the severity of hypertension.[5]

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Corresponding Author:
Dr. S. Arul Murugan,
A-407, Sreenivas Apartments,
Azeez Nagar, Reddiarpalayam- 605010,
Puducherry.
E-mail: drsarulmurugan@yahoo.com
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Unlike other blood vessels, the retinal vessels don't have sympathetic nerve supply but have blood-retinal barrier. Vascular tone of the retinal vasculature is maintained by auto regulation.[6] Hypertensive retinopathy can be divided in to three broad categories namely hypertensive retinopathy, hypertensive choroidopathy, and hypertensive optic neuropathy.[7] Hypertensive retinopathy has a vasoconstrictive phase, sclerotic phase and exudative phase.[8] Keith, Wagener, and Barker classification system is the most widely used grading system for HTR.

Grade I	Slight or Modest Narrowing of the Retinal Arterioles with an Arteriovenous Ratio of ≥1:2
Grade II	Grade I + Modest to severe narrowing of retinal arterioles with an arteriovenous ratio <1:2 or arteriovenous nicking
Grade III	Grade II + Soft exudates or flame-shaped haemorrhages
Grade IV	Grade III + Bilateral optic disc nerve oedema

Table 1. Keith, Wagener and Barker Classification of Hypertensive Retinopathy[9]

METHODS

A prospective study was conducted in the ophthalmology outpatient department for six months between July 2018 to December 2018. The age group and prevalence of hypertensive retinopathy were studied in 165 newly

diagnosed hypertensive patients. Fundus examination was carried out by direct ophthalmoscope, slit lamp with a 90 D condensing lens and indirect ophthalmoscopy (whenever required)

Inclusion Criteria

- Patient more than 18 years of age.
- All patients with recently diagnosed hypertension (less than one week) with systolic blood pressure > 140 mm Hg and diastolic more than 90 mm Hg.
- Recently diagnosed hypertensive patients, who were not started on antihypertensive patients.

Exclusion Criteria

- Patients less than 18 years of age.
- Patients with hypertension of more than one-week duration.
- Patient on antihypertensive patients or any other medication that would affect blood pressure.
- Patients with known co morbidities like Diabetes Mellitus, chronic kidney disease.
- Pregnancy induced hypertension.

RESULTS

In our study, 57% (94 patients) were males and 43% (71 patients) were females.

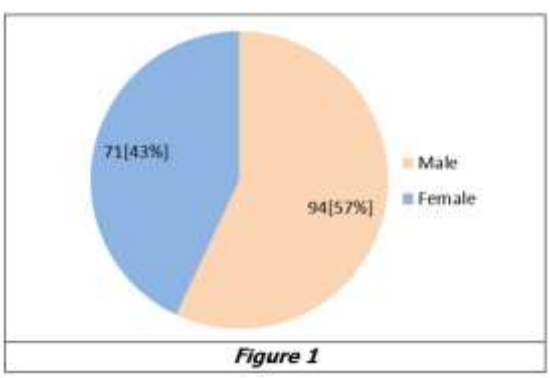

Figure 1

There were 31% (51 patients) in the age group of 18 to 40 years, 58% (96 patients) in the age group of 41 to 60 years and 11% (18 patients) in the age group more than 60 years of age.

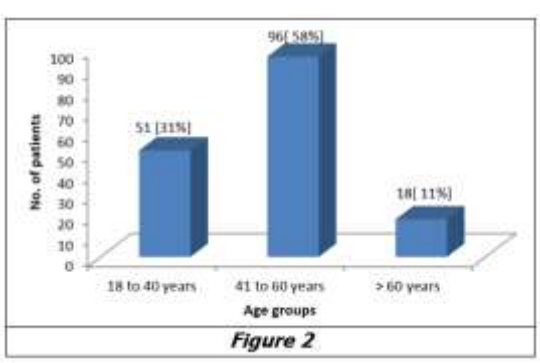

Figure 2

The overall prevalence of hypertensive retinopathy in our study is 12% (20 patients), with grade I hypertensive retinopathy was seen in 8% (13 patients), grade II was seen in 3% (5 patients), grade III hypertensive retinopathy was seen in 1% (2 patients).None of the newly diagnosed hypertensive patients had grade IV hypertensive retinopathy.

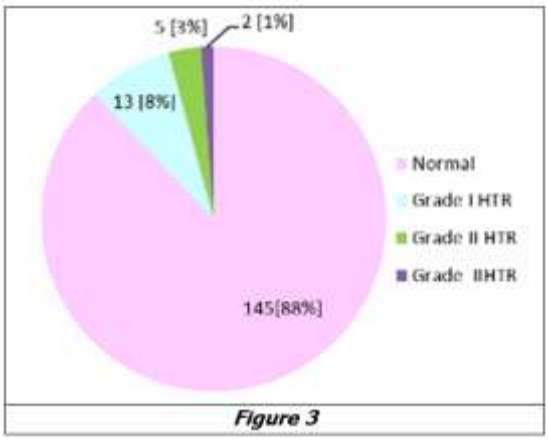

Figure 3

Prevalence of grade of hypertensive retinopathy according to age group.

Grade of Hypertensive Retinopathy	18 – 40 Years (No. of Patients)	41 to 60 Years (No. of Patients)	>60 Years (No. of Patients)
Grade I	2(1%)	8(5%)	3(2%)
Grade II	-	3(2%)	2(1%)
Grade III	-	2(1%)	-
Grade IV	-	-	-

Table 2

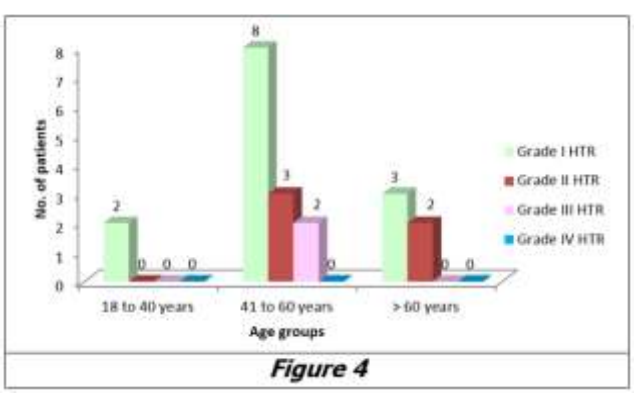

Figure 4

DISCUSSION

In our study, 57% (94 patients) were males and 43% (71 patients) were females. In a study by Sanjay G et al 76% were males and 24% were females.[10] However in a study by Chris Nadège Nganou-Gnindjio., et al, out of the 338 patients who were included in the study, 188 were females.[11]

In our study, maximum number of patients were in the 41 to 60 years (58%) followed by 31% in the 18 to 40 years and only 11% in the age group of >60 years, were diagnosed to have hypertension of recent onset, as per our inclusion criteria. Chris Nadège Nganou-Gnindjio., et al stated that most represented age range in their study was 50 - 59 years with 33.7%.[11] In the study by Chauhan H. et

al showed that the highest no. of (37%) patients were in 61-70 age.[12] In study done by Reis et al highest incidence was present in 51-60 age group.[13]

The overall prevalence of hypertensive retinopathy in our study is 12%. Grade I hypertensive retinopathy was seen in 8%, grade II was seen in 3%, grade III hypertensive retinopathy was seen in 1%. In the study by Sanjay. G,[10] 97% had no evidence of hypertensive retinopathy on fundoscopy, while 6 cases (3%) showed evidence of hypertensive retinopathy on fundoscopic examination with 2 cases each having Grade I, II, and III retinopathy respectively. However, no case with grade 4 retinopathy was detected, which was similar to this study.

In this study, Grade I HTR was seen in 5% of patients, Grade II HTR was seen in 2% of patients and Grade III HTR was seen in 1% of patients in the 41 t0 60 age group. Grade IV HTR was not seen in any of the patients included in the study. Grade I HTR was seen in 1% of patients in the 18 to 40 age group. Grade I HTR was seen in 2% of patients and Grade II HTR was seen in 1% of patients more than 60 age group. Triantafyllou A et al[14] found that hypertensive patients had higher rates of early-stage hypertensive retinopathy (40.9% vs. 10.8%). HTR was seen in 2.3% patients in a study by Chris Nadège Nganou-Gnindjio., et al[11]

OA Busari et al[15] studied the risk of hypertensive retinopathy in the presence of microalbuminuria. They showed that patients with microalbuminuria were more likely to have hypertensive retinopathy (HTR) than patients without it (71% vs. 37%). Grades III - IV, were more common in patients with microalbuminuria than in those without it (22.6% vs. 1.5%).

In Uganda, a study was conducted among the patients attended hypertension clinic of the medical outpatients' department of Mbarara Regional Referral Hospital (MRRH), by Peter Kangwagye et al. They found that the prevalence of microalbuminuria was 57.5% in patients with various stages of hypertensive retinopathy.[16]

Nelly N Kabedi and his team studied the association of hypertensive retinopathy with cardiovascular disease, renal disorders and cerebrovascular disease in Congolese patients. In their study hypertensive retinopathy was found in 83.6% of the patients. It was found that there is no association between hypertensive retinopathy with left ventricular hypertrophy, chronic kidney disease and the stroke.

Anitha A et al studied visual evoked potential among the newly diagnosed systemic hypertension patients. They found that there is a statistically significant delay in the P100 latency in visual evoked potential in newly diagnosed systemic hypertension patients. They concluded that subclinical hypertensive retinopathy occurs in early in patients with systemic hypertension.[17] Apart from retinopathy systemic hypertension my affect the choroid also. Studies have described the presence of choroidopathy in both malignant and benign hypertension though it is more prevalent in the former.[18] Patients with secondary hypertension like bilateral renal artery stenosis may present with hypertensive retinopathy and choroidopathy at the time of diagnosis.[19] These evidences suggests that future studies may include the visual evoked potentials and detection of choroidopathy apart from screening for the hypertensive retinopathy.

Most of our patients were from emergency department or internal medicine. Hence a community study would be better to estimate the prevalence of hypertensive retinopathy in newly diagnosed hypertensive patients.

CONCLUSION

Eye is the only organ where the blood vessels can be directly visualised, and sometimes ocular symptoms can be the early manifestation of systemic hypertension. It has been widely proven that the duration and severity of hypertension positively influences the occurrence of target organ damage. Puducherry is a city which has easy access to health care. Despite this, the presence of hypertensive retinopathy changes in newly diagnosed hypertensive patients indicates that there has been a significant time gap between onset of illness and diagnosis. Hence early detection, treatment, good control and follow up of hypertension will decrease the morbidity and mortality.

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