



Incidence of Ischemic Heart Disease in Hypertensive Retinopathy Patients

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ABSTRACT: Ischemic heart disease is caused by narrowed coronary arteries that carry blood to the heart muscle and hypertensive retinopathy occurs when the retinal arteries get damaged. This study was conducted to find incidence of retinopathy in hypertensive patients and correlate it with ischemic heart disease patients. The purpose of this study is to assess the incidence of hypertensive retinopathy in ischemic heart disease patients. It was conducted in Department of Ophthalmology, Saveetha Medical College and Hospital Sriperumbudur, between February 2021 to April 2021. It is a prospective cross sectional study was done on patients admitted to Cardiology department was referred to Ophthalmology department of Saveetha Medical College and hospital near Sriperumbudur. Visual acuity and hypertensive retinopathy are tested using funduscopy in hypertensive ischemic heart disease patients. Data was collected and entered in excel sheet and was analyzed using SPSS software. Percentage and frequency was used for descriptive statistics. Totally 100 patients were selected for this study, among them 68 patients are hypertensive ischemic heart diseased. Out of them 43 patients have hypertensive retinopathy. Out of which 25 patients are male and 18 patients are female. According to age category 3 patients belong to 25-45, 16 patients belong to 45-65, 24 patients belong to 65-85. According to stages of hypertensive retinopathy 22 patients belong to stage 1, 6 patients belong to stage 2, 12 patients belong to stage 3 and 8 patients belong to stage 4. This study reveals that

II. METHODOLOGY

This is a cross-sectional type of study including 100 hypertensive patients with ischemic heart disease patient from cardiology department referred to ophthalmology department for fundus examination. All the patient are provided informed consent. Inclusion criteria were age >25 years, willingness to participate in the study with established diagnosis of hypertension regardless of severity and duration.

there is a correlation between hypertensive retinopathy and ischemic heart disease patients.

KEYWORDS: Ischemic heart disease, hypertension, hypertensive retinopathy.

I. INTRODUCTION

Ischemic heart disease, also called (CHD) coronary artery disease, is caused by narrowed coronary arteries that carry blood to the heart muscle^[1]. Narrowing of the arteries, are usually caused by accumulation of cholesterol plaques leading to atherosclerosis^[2]. When blood flow to the heart muscle is completely blocked, heart muscle cells encounter with ischemia leading to myocardial infarction (MI)^[3].

Vascular disease is one of the leading cause of death worldwide. It has multiple complications which sometimes cannot be detected by normal angiograms due to the involvement of microvascular systems^[4]. Poorly controlled hypertension damages different organ systems, causing deteriorating effects.

Retinal microvasculature is at increased risk and may undergo certain changes in patients with CHD^[5]. Hypertensive retinopathy (HR) occurs when the retinal arteries are damaged due to chronic high standing blood pressure^[6]. The purpose of this study is to investigate whether patients with long term standing cases of IHD have hypertensive retinopathy, as examined by fundal examination.

All participants underwent blood pressure measurement with sphygmomanometer and provided personal information. Ophthalmological examination was performed using indirect ophthalmoscopy 20D lens for fundus examination. Fundus examination looked mainly for visual acuity and retinal abnormalities, which was graded based on Scheie classification: grade 0: no visible change grade 1: diffuse arterial narrowing with no focal constriction; grade 2: obvious arterial narrowing with focal constriction; grade 3: focal and diffuse narrowing with retinal haemorrhages; grade 4: grade

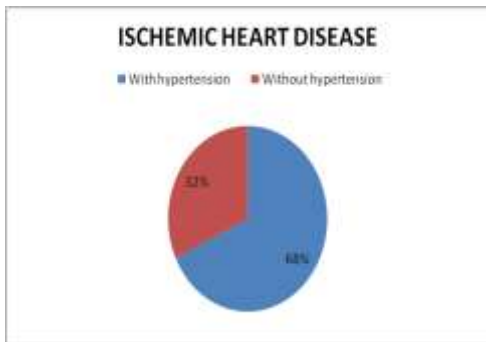


3 and papillaedema. This data will be analysed and their percentage will be calculated using Chi square analysis. The chi square analysis was done using the IBM SPSS software

III. RESULTS

FIG 1:PREVALENCE OF ISCHEMIC HEART DISEASE IN HYPERTENSIVE POSITIVE AND NORMOTENSIVE PATIENTS

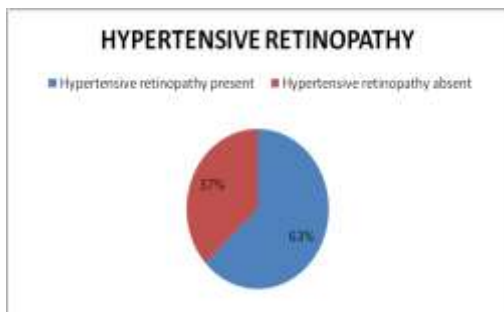
With hypertension	Without hypertension
68	32



In fig1 total 100 patients with ischemic heart disease out of which 68 patient(68%)with hypertension positive and 32 patient(32%) are hypertensive negative.

Figure 2:PREVALENCE OF RETINOPATHY IN HYPERTENSIVE ISCHEMIC HEART DISEASE PATIENTS

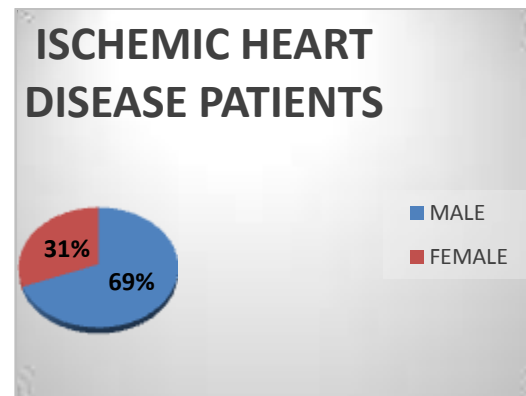
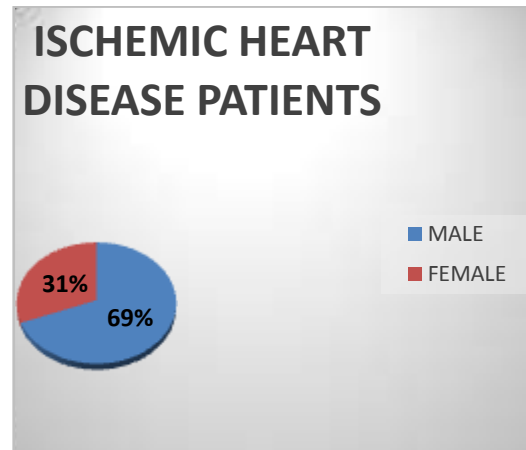
Hypertensive retinopathy present	Hypertensive retinopathy absent
43	25



In fig 2 Out of 68 patient with ischemic heart disease patient with hypertension, out of which 43 patients(63%)have hypertensive retinopathy and 25 patient(37%) hypertensive retinopathy absent.

FIG 3: SEX DISTRIBUTION IN ISCHEMIC HEART DISEASE PATIENTS

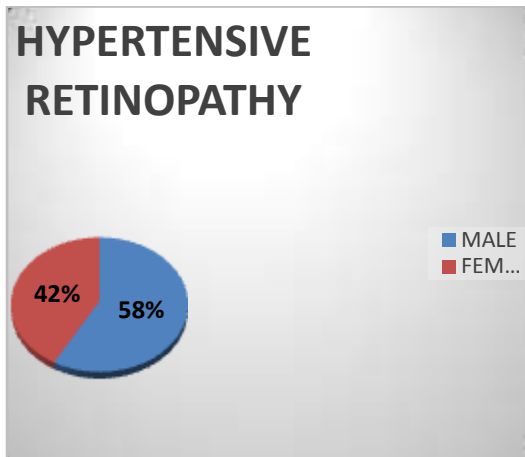
Male	Female
69	31



In fig 3 Out of 100 ischemic heart disease patient 69 patient(69%) are male and 31patient(31%) are female

FIG 4: SEX DISTRIBUTION IN HYPERTENSIVE RETINOPATHY PATIENTS

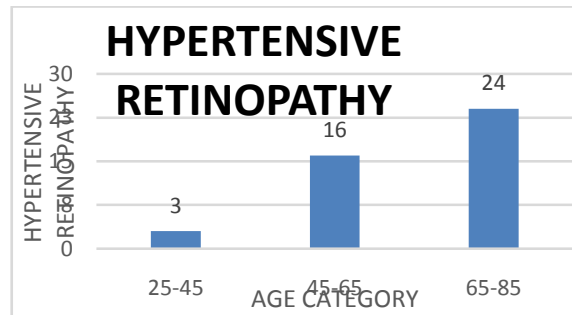
Male	Female
25	18



In fig 4 Out of 68 hypertensive positive ischemic heart disease patients,25 patients(58%) are male and 18 patients(42%) are female.

FIG 5 : AGE DISTRIBUTION IN HYPERTENSIVE RETINOPATHY PATIENTS

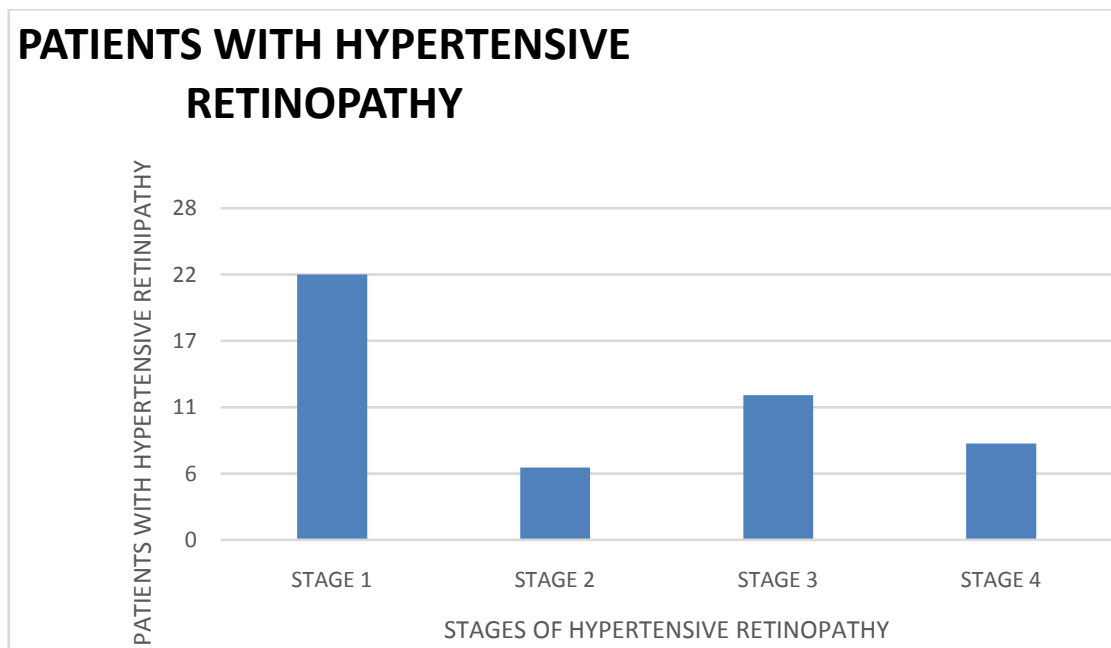
Age category	Hypertensive Retinopathy
25-45	3
45-65	16
65-85	24



In fig 5 The incidence of hypertensive retinopathy was seen highest in the age group between 65-85 years.

FIG6: STAGES OF HYPERTENSIVE RETINOPATHY

Stages of hypertensive retinopathy	Patients with hypertensive retinopathy
Stage 1	22
Stage 2	16
Stage 3	12
Stage 4	8



In fig 6 Among the total subjects with hypertensive retinopathy stage 1 shows the highest incidence with 22 subjects



IV. DISCUSSION:

Hypertensive retinopathy consist of retinal vascular changes that leads to microvascular damage from elevated blood pressure^[7].The symptoms of hypertensive retinopathy can be broadly divided into symptoms of diffuse retinopathy, such as generalised arterial stenosis and arteriolar wall opacification, and localised symptoms, such as focal arterial stenosis arteriovenous nicking and blot and flame-shaped haemorrhages, cotton wool spots, and microaneurysms^[8].

Hypertension and coronary artery disease are often associated. There are several pathophysiological mechanisms that link both diseases^[9]. Hypertension induces endothelial dysfunction, aggravates the atherosclerotic process, and helps make the atherosclerotic plaque more unstable^[10]. Left ventricular hypertrophy, the common complication of hypertension, promotes a decrease in "coronary reserve" and increases myocardial oxygen demand, both mechanisms that contribute to myocardial ischemia^[11].

This study shows, there is a correlation between hypertensive retinopathy and ischemic heart disease patients, it shows that hypertensive retinopathy is more common in male (58%) than female(42%).

The association between HR and CAD has been well established^[12].

The study confirms the association between hypertensive retinopathy and cardiovascular disease which shows hypertensive retinopathy is more common in female(54%) than male(46%) in the article hypertensive retinopathy and risk of cardiovascular disease in national cohort published in the year 2008 by the author M Fareed K Suri^[16]

Duncan et al^[13] studied 560 hypertensive middle- aged men for a median follow-up of 7.8 years. The risk of definite coronary heart disease was double in the presence of hypertensive retinopathy which was independent of other cardiovascular risk factors.

Wong et al^[14] studied the 10 year risk of cardiovascular mortality in a population-based study with nested case-control design and noted that, independent of other cardiovascular risk factors, retinopathy was associated with an higher risk of cardiovascular mortality (odds ratio 1.8).

Cooper et al^[15] in a cross-sectional study noted that persons with retinal microvascular abnormalities, independent of other risk factors, have odds of 1.9 for having cerebral infarcts on MRI compared to those without these changes.

This study looks at the prevalence of hypertensive retinopathy in patients with ischemic heart disease. According to the preceding findings, ischemic heart disease patients have a high prevalence of hypertensive retinopathy.

V. CONCLUSION:

This study shows the correlation between hypertensive retinopathy and ischemic heart disease patients. From the above results it is found that there is incidence of hypertensive retinopathy in ischemic heart disease patients.Among them there is prevalence of non vascular eye disease including age related macular degeneration and glaucoma, so by using hypertensive retinopathy as a marker we could reduce the further progression of the disease.

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