

Clinical Profile of Hypertensive Patients More Than 40 Years Age with Special Reference to Lipid Profile and Its Co Relation with Retinopathy

Anurag Chaurasia^{1*}, Datta Jude², Rakesh Patel³, Manoj Indurkar⁴

¹Associate Professor, Department of Medicine, Shyam Shah Medical College and S.G.M.H, Rewa, Madhya Pradesh, India

²PG Resident, Department of Medicine, Shyam Shah Medical College and S.G.M.H, Rewa, Madhya Pradesh, India

³Assistant Professor, Department of Medicine, Shyam Shah Medical College and S.G.M.H, Rewa, Madhya Pradesh, India

⁴Professor and HOD-Department of Medicine, Shyam Shah Medical College and S.G.M.H, Rewa, Madhya Pradesh, India

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*Corresponding author

Anurag Chaurasia

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Abstract: Hypertension is becoming a major public health problem worldwide. Although chronic hypertension is an established risk factor for cardiovascular, cerebrovascular and renal disease, acute elevations in blood pressure can result in acute end organ damage with significant morbidity. This study was done to evaluate clinical profile and the risk factors for hypertensive retinopathy in patients of more than 40 years age and evaluate the dyslipidemia and its correlation to retinopathy. 420 patients attending OPD and admitted in medicine wards SGMH Rewa were included in study. Patients were interrogated and investigated including RBS, fundus examination and fasting lipid profile. Retinopathy was diagnosed by ophthalmoscope. In this study out of 420 patients 30.71% were having normal fundus examination and 69.29% patients had retinopathy. There is significant association of increasing retinopathy with age, male gender, illiteracy, hypertension, smoking, obesity, alcohol intake, tobacco chewing and dyslipidemia ($p < 0.0001$). Hypertensive target organ damage (TOD) like hypertensive retinopathy can now be diagnosed early and, may be reversed with specific and aggressive treatment. Probably the most important aspect in the treatment of a hypertension is to adherence to antihypertensive therapy during long-term follow-up and early recognition of target organ damage.

Keywords: Hypertension, Lipid profile, Retinopathy, Target Organ Damage (TOD).

INTRODUCTION

Hypertension is becoming an important public health problem worldwide. A recent report on the global burden of hypertension indicates that nearly 1 billion adults (more than a quarter of the world's population) had hypertension in 2000, and this is predicted to increase to 1.56 billion by 2025 [1].

In high-income countries, strong public health policies, multisectoral preventive action and widely available diagnosis and treatment have led to a reduction in the prevalence of high blood pressure. In contrast, in many developing countries including India the disease burden caused by raised blood pressure has increased over the past decade due to rapid urbanization and globalization leading to adoption of unhealthy lifestyles [2].

Dyslipidemia itself is known to be a risk factor for retinopathy and other ocular abnormalities. When it is associated with diseases like diabetes, hypertension the outcome is complicated. Its role in association with diabetic retinopathy and age related maculopathy is well proven [3,4].

Dyslipidemia in hypertensive patients may act as a predisposing risk factor, an aggravating or complicating factor. An understanding of hypertensive retinopathy manifestations, spectrum of findings and their association with components of lipid profile (Total Cholesterol, LDL, HDL, and Triglycerides) may be helpful in risk stratification and in tailoring of anti-hypertensive and lipid lowering treatment.

Hence this study was carried out to assess the association between retinopathy and concentrations of various serum lipids, in patients with essential hypertension.

MATERIAL AND METHODES

This was a cross-sectional study carried out over 420 patients attending OPD and admitted in medicine wards SGMH Rewa from April 2016 to September 2017. Patients were interrogated and investigated including RBS, fundus examination and fasting lipid profile. Staging of hypertensive retinopathy was carried out using Modified Keith Wagner Barker Classification [5]. For different groups and parameters, mean and standard deviations were calculated. Means of the relative groups were compared using Student's 't' tests. The Chi square test were used to identify the independence of the groups and the level of different parameters.

The average of the systolic and diastolic blood pressure values of 3 measurements was taken with five minutes intervals on the right arm, in sitting position after 10 minutes of rest. Hypertension was diagnosed according to JNC-7 criteria, those with systolic blood pressure >140 mmHg and diastolic blood pressure >90 mmHg or who were taking antihypertensive medication

were considered to have hypertension [6]. Blood sample for lipid profile was taken after an overnight fast. Dyslipidemia was defined if patient had Total cholesterol >200mg/dl or Serum Triglyceride >150 mg/dl or Serum HDL <40 mg/dl in males, <50 mg/dl in female and Serum LDL >100 mg/dl [7].

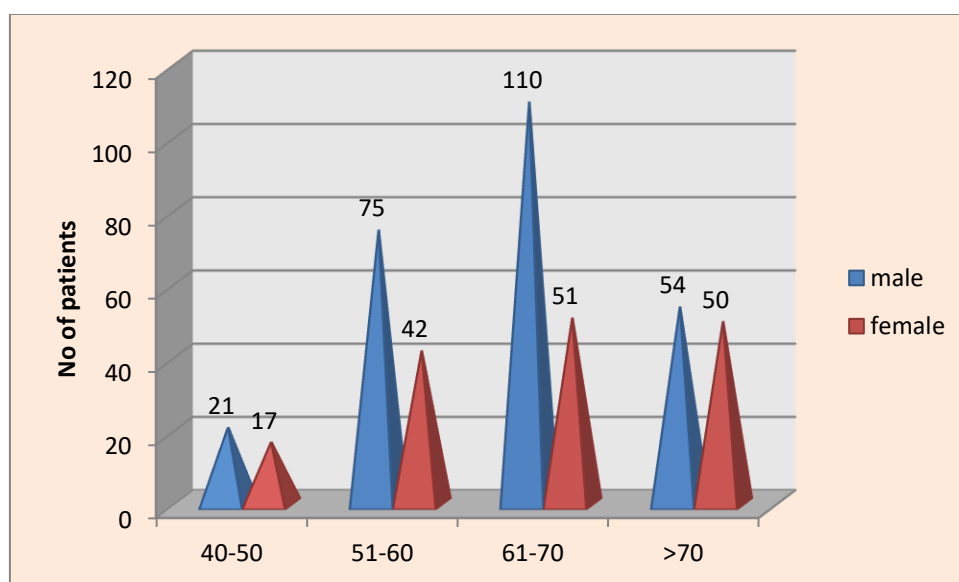
Inclusion criteria

- All patients of both the sexes above 40 years age who have hypertension
- All patients attending OPD and admitted in medicine wards of SGMH REWA

Exclusion Criteria

- Those with age less than 40 years age
- Patients suffering from diabetes, high myopia, patients with hazy ocular media in both eyes, and other retinal vascular disorders were excluded from the study.

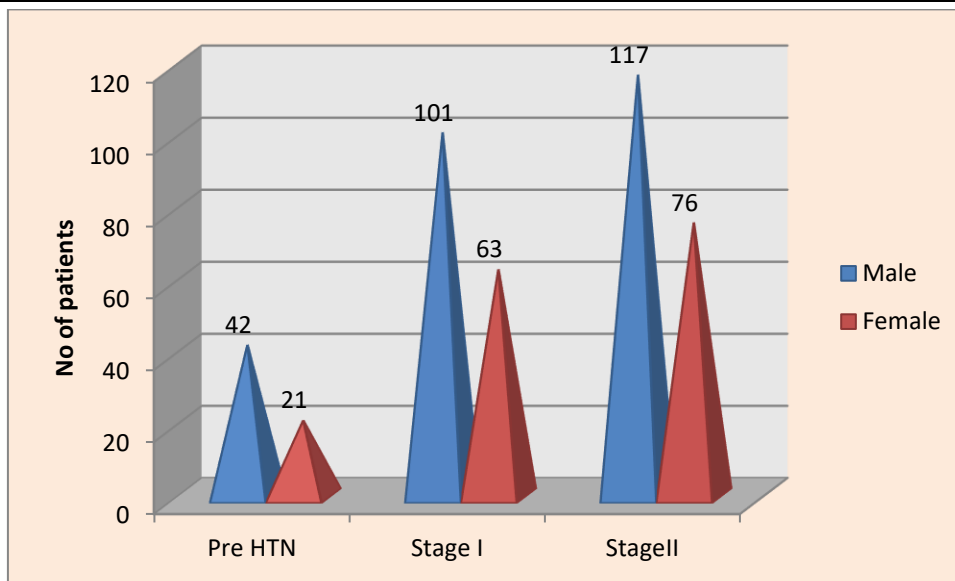
OBSERVATIONS AND RESULTS



Graph 1- Distribution of Hypertension as per Age and Sex

Above graph shows that there are higher incidence of hypertension in males than females 260

(61.9%) are males and 160 (38.10%) are females. (Graph no. 1).



Graph 2- Distribution of HTN cases according to JNC VII classification of HTN

In our study 260 (61.90%) were male and 160 (38.10%) were female. Out of 420 patients 63 (15.0%) patients were in Pre HTN, 164 (39.04%) patients in

stage I and 193 (45.96%) patients in stage II. (Graph no.2).

Table-1: Showing Relationship of Hypertensive Retinopathy with Serum Total Cholesterol

Grades of hypertensive retinopathy	Serum total Cholesterol level (mg/dl)			Total
	<200	200-239	>240	
Normal	114 (39.31%)	9 (10.46%)	6 (13.63%)	129
Grade I	75 (25.86%)	13 (15.11%)	4 (9.0%)	92
Grade II	64 (22.06%)	34 (39.53%)	17 (38.63%)	115
Grade III	34 (11.72%)	21 (24.44%)	13 (29.54%)	68
Grade IV	3 (1.03%)	9 (10.46%)	4 (9.0%)	16
Total no of patients	290 (69.04%)	86 (20.47%)	44 (10.47%)	(420)

P value <0.0001

Out of 420 patients, 290 (69.04%) had total serum cholesterol within normal limits (< 200 mg /dl). of which 176 (60.68%) patients had retinopathy. In the last group of 44 (10.47%) patients with serum total

cholesterol levels of >240. 38(86.36%) patients had retinopathy.

Overall the increase in total serum cholesterol levels correlated well with increasing severity of retinopathy (p<0.0001). (Table no.1)

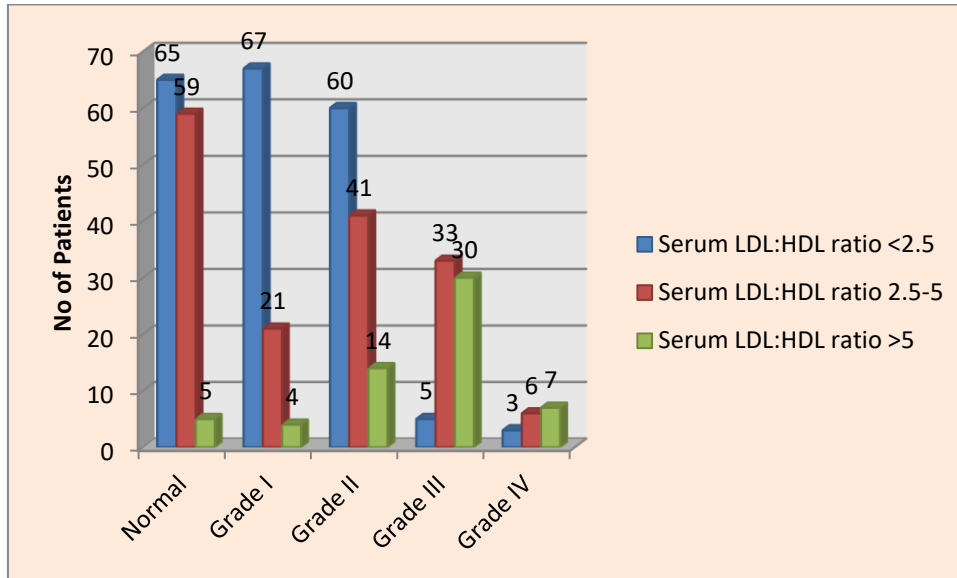
Table-2: Showing Relationship of Serum LDL Cholesterol with hypertensive Retinopathy

Grades of hypertensive retinopathy	Serum LDL Cholesterol level (mg/dl)			Total
	<130	131-159	>160	
Normal	91 (34.60%)	34 (36.17%)	4 (6.34%)	129
Grade I	74 (28.13%)	16 (17.02%)	2 (3.17%)	92
Grade II	72 (27.37%)	26 (27.65%)	17 (26.98%)	115
Grade III	21 (7.98%)	13 (13.82%)	34 (53.96%)	68
Grade IV	5 (1.90%)	5 (5.31%)	6 (9.52%)	16
Total no of patients	263 (62.61%)	94(22.38%)	63(15.00%)	420

P value is <0.0001

Out of 420 patients studied, 263 (62.61%) had serum LDL-Cholesterol levels of < 130 mg/dl (normal). Of which 173 (65.39%) had retinopathy of varying grades. The last group of 63 (15.00%) patients had serum LDL-Cholesterol levels of ≥ 160 mg/dl

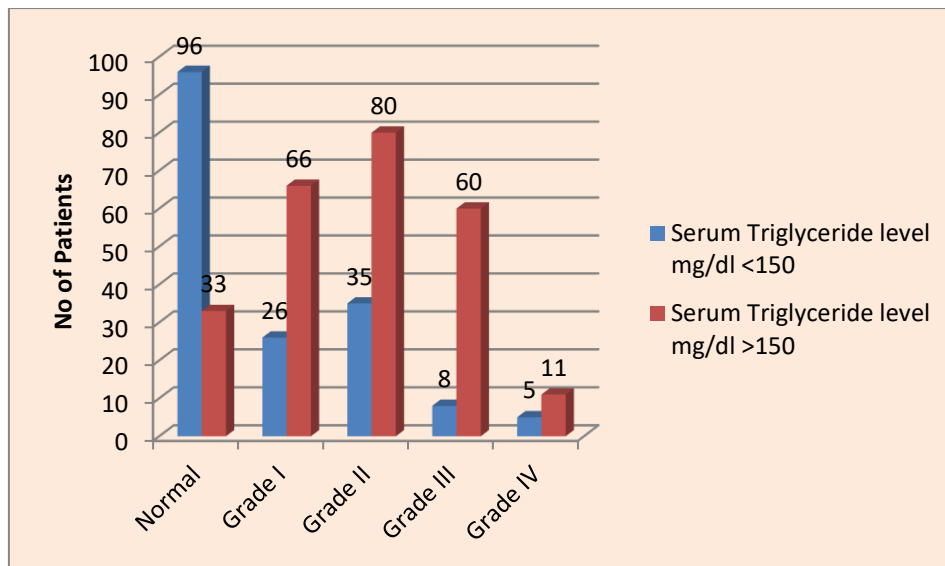
(abnormal) of which 59 (93.65%) had retinopathy. Overall, the increasing level of serum LDL-cholesterol showed statistically significant correlation with increasing the grades of hypertensive retinopathy ($P < 0.0001$). (Table no.2).



Graph 3: Showing Relationship between LDL and HDL Ratio with Retinopathy Grade of Hypertensive Retinopathy
P value is <0.0001

Overall this table shows that the increasing values of LDL: HDL-cholesterol ratio correlated positively with increasing severity of retinopathies,

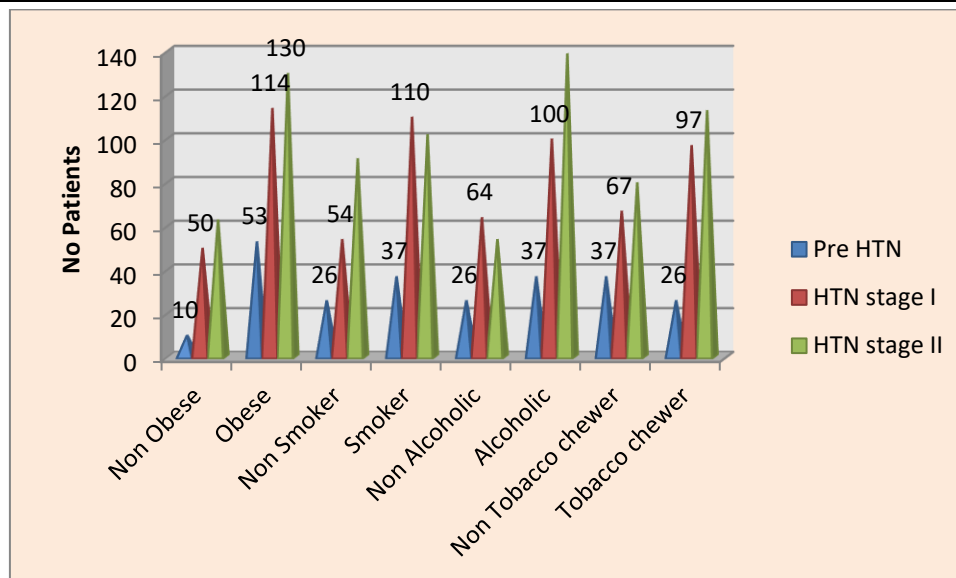
which was statistically significant ($P < 0.0001$) (Graph no.3).



Graph-4: Showing Relationship of Serum Triglycerides with Hypertensive Retinopathy
P value is <0.0001

This table illustrates that as triglycerides level goes up the prevalence and severity of hypertensive

retinopathy also increased which was statistically significant ($P < 0.0001$). (Graph no. 4).



Graph-5: Relation of hypertension with obesity, smoking, alcohol and tobacco chewing

This graph shows that overall incidence and severity of hypertensive retinopathy is higher in obese, smoker, alcoholic and tobacco chewers in comparison to non-obese, non-smoker, non-alcoholic and non-tobacco chewers counterparts. (Graph no. 5)

DISCUSSION

During this study 420 patients of hypertensive were screened. In this study maximum incidence of hypertensive patients was seen in the sixth and after the sixth decade of life. 161 patients out of 420 (38.33%) belonged to the age group 61-70 years, whereas 38 patients out of 420 (9.04%) were in 40-50 years of age group.

In present study we found higher incidence of hypertension in males than females, 260 (61.9%) are males and 160 (38.10%) are females. These results are comparable with the study of Gupta R P et al. [8] who found in their study 64% were males and 34% females. L. Kannan et al. [9] in their study among 189 hypertensive patients 81 females and 108 males. Male preponderance in our country in hypertension can be attributed to the educational and psychological stress. Males are also more likely to approach health care setup early in our country as compared to females. Hence detection rate of hypertension in males is higher.

In present study, there was an increased incidence of hypertensive retinopathy in patients having high serum total cholesterol level and this association was statistically significant ($P < 0.0001$).

Similarly, Bastola et al. [10] in their study, also showed that there was a statistically significant difference in the mean serum cholesterol level ($F = 10.38$; $P < 0.001$) of patients with normal fundus and in those with different grades of hypertensive retinopathy. In recent study, Gupta R P et al. [8] also showed that

there was an increased incidence of hypertensive retinopathy in patients having high serum cholesterol level and this association was also statistically significant ($P < 0.0008$).

In present study we also found a significant association between high serum LDL-Cholesterol and the severity of the retinopathy, ($p < 0.0001$). Badhu et al. [11] and Bastola et al. [10] also showed a significant correlation between high serum LDL-cholesterol and hypertensive retinopathy.

In present study the association of LDL: HDL-Cholesterol ratio with the retinopathy was found to be statistically significant ($p < 0.0001$). Our results are comparable to study of Gupta R P et al. [8].

In our study overall association of serum triglycerides was found significant with retinopathy ($p < 0.0001$). Gupta R P et al. [8] also found a significant association between serum triglycerides and hypertensive retinopathy patients ($P < 0.01$). Mean triglycerides levels were also found to be high in grade II and higher grades of hypertensive retinopathy patients in a study carried out by Bastola et al. [10].

Thus, this study shows a definite association between serum lipid parameters and the prevalence of hypertensive retinopathy.

In our study out of 420 patients 171 (40.71%) patients were non-smoker and 249 (59.28%) were smoker. Higher incidence of smoker in stage I 110 (67.07%) out of 420. These results are comparable with the study of Kannana L et al. [9] and the study of Paul P et al. [14].

Out of 420 patients 144 (34.28%) patients were non-alcoholic and 276 (65.71%) were alcoholic. Higher incidence of alcohol intake in stage II 139

(70.02%) out of 420. These results are comparable with the study of Manimunda SP, et al. [12] who found prevalence of alcohol was 54%. Heavy alcohol intake is associated with both an increased risk of hypertension, as well as treatment-resistant hypertension. In a cross-sectional analysis of Chinese adults ingesting > 30 drinks a week, the risk of having various forms of hypertension increased from 12% to 14% was reported by Wildman et al. [15] Puddey et al. [16] reported that the regular consumption of alcohol elevates blood pressure, with global estimates that the attributable risk for hypertensive disease from alcohol is 16%.

Out of 420 patients 184 (43.80%) patients were non tobacco chewer and 236 (56.19%) were tobacco chewer. Higher incidence of tobacco chewing in stage I 97 (59.14%) out of 420. These results are comparable with the study of Kannana L et al. [11] found that out of 189 patients of hypertension 47(24.86) were tobacco chewer and 142(75.13%) were non tobacco chewer. Habit of tobacco chewing is varied in prevalence in different population groups depending on social and economic status.

CONCLUSION

Hypertensive retinopathy has been found to occur in more oftenly people with hypertension above 40 years of age, with a mean age of 60 years.

There was an increase in incidence of hypertensive retinopathy with increasing levels of serum total cholesterol, serum LDL, and serum triglycerides.

This study focuses on the clinical profile of hypertension, the associated risk factors, the most frequent types of TOD, and their clinical setting. These characteristics lead to better knowledge of the natural history of the complications of arterial hypertension.

Hypertension and dyslipidemia are the leading risk factors for morbidity and mortality throughout the world. Hypertensive TOD like hypertensive retinopathy can now be diagnosed early and reversed with specific and aggressive treatment. The early detection and severity of typical end organ damage and secondary diseases are key determinants of prognosis in patients suffering from arterial hypertension where organ damage is still at a reversible stage. The diagnosis of hypertensive TOD is of decisive importance.

Tobacco chewing, obesity, smoking and alcohol intake increases chances of getting hypertension and subsequent retinopathy. They constitute modifiable risk factors for hypertensive TOD.

Probably the most important aspect of the treatment of a hypertension is to assure adherence to

antihypertensive therapy during long-term follow-up and early recognition of TOD.

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