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ORIGINAL ARTICLE

Evaluation of Serum Lipid Profile in Hypertensive Patients at Mirpur Khas, Sindh, Pakistan

IRAM JEHAN BALOUCH[1], GHAZAL IRFAN[2], MUHAMMAD TAHIR[3], PIR ABDUL HAYEE[4], ATTAULLAH[5], KHALIL AHMED MEMON[6], ABDUL SAMAD[7], KARISHMA KUMARI[8], MARVI[9]

[1]*Assistant Professor of Cardiology, National Institute of Cardiovascular Diseases, Hyderabad, Sindh, Pakistan*
[2]*Senior Lecturer, Department of Pathology, Baqai Medical University Karachi, Sindh, Pakistan*
[3]*Assistant Professor, Department of Pharmacology, Mekran Medical College Turbat, Balochistan*
[4]*Assistant Professor, Department of Medicine, Muhammad Medical College, Mirpurkhas, Sindh, Pakistan*
[5]*Assistant Professor, Department of Community Medicine, Mekran Medical College Turbat, Balochistan*
[6]*Lecturer, Department of Pathology, Liaquat University of Medical & Health Sciences, Jamshoro, Sindh, Pakistan*
[7]Assistant Professor, Department of Forensic Medicine & Toxicology, PUMHSW, Nawabshah, District (SBA), Sindh, Pakistan
[8]*Final Year MBBS Student, Dow Medical College, DUHS Karachi*
[9]*Assistant Professor, Department of Pharmacology, Faculty of Pharmacy and Health Sciences, University of Balochistan, Quetta*
Correspondence to Dr. Pir Abdul Hayee, E-mail: drpirabdulhayee@yahoo.com, Cell: 0335-2831238,

ABSTRACT

Aim: To assess the lipid profile of hypertensive patients.
Study Design: Evaluation-based study.
Place and duration of study: Department of Medicine, Muhammad Medical College Hospital, Mirpurkhas, Sindh, Pakistan for a period of one year from 1st July 2020 to 30th June 2021.
Methodology: Three hundred and fifty-three hypertensive patients were enrolled in the study based on Rao-soft formula. Only those hypertensive patients who had confirmed diagnosis of hypertension were enrolled. The patients were requested for fasting to take the blood sample.
Results: 64.87% were males and 35.1% were females. 39.6% patients were above 60 years old and highest range values for systolic blood pressure 201-220mmHg. The majority of the patients 26.34% showed 91-100 mm Hg. The 11.05% of the patients were prescribed with the Atenolol, 7.08% of patients were prescribed with another beta blocker medication Propranolol. The majority of patients were prescribed with Rosuvastatin as antilipidemic drugs however the least majority i.e. 11.61 were prescribed with Simvastatin.The 16.9% patients showed HDL40mg/dL, higher LDL<100mg/dL, total glycerides<150mg/dL, total cholesterol<200mg/dL HDL30-39mg/dL, LDL100-150mg/dL, total glycerides150-200 mg/dL, total cholesterol200-250mg/dL among 31.73% of the patients. The 28.9% of the patients showed the pattern HDL20-29mg/dL.
Conclusion: The dyslipidemia associated with the hypertension and hypertensive patients. The irregular values and alteration of in the serum cholesterol and total cholesterol levels of lipid profile proves the association of lipid profile with the elevated systolic blood pressure levels. The total cholesterol, LDL and HDL can be controlled with an appropriate controlling of high blood pressures, thus preventing the cardiovascular diseases and cardiovascular diseases.
Key words: Lipid, Hypertension, Assess

INTRODUCTION

The hypertension and the dyslipidemiaare the major contributing factors for the cardiovascular diseases (CVDs)[1]. Hypertension causes almost 80% of deaths and comorbidities among the lower-income countries. The incidence and prevalence of hypertension has been growing widely around the globe in the developing countries.[2] The hypertension is connected to the unhealthy life style, co morbidities, and dyslipidemia which has certainly increased the risk to CVDs.[3]

The increased blood pressure and increased Low density lipoprotein (LDL) Total cholesterol (TC) and triglycerides levels. The researchers around the worlds have concluded that epidemiological studies agree with the strong association of high lipid profile and high blood pressure. The cardio vascular diseases are the major cause of disability and deaths rates around the world and effecting the different populations groups in the world. The increased serums levels of LDL, TC, triglycerides are the major reasons behind the cardio vascular complications.[4]

The altered levels of cholesterols have strong relationship with the High blood pressure levels. The pattern of lipid profile varies among patients to patients since Asian individuals are more prone to develop the CVDs abnormalities.[5] The abnormalities in the serum lipid profile levels are considered as the dyslipidemia, and major cardio factors for the essential blood pressure. The clinical profile of patients sowing lipid profile is considered as the significant problem. Despite of the multiple known factors and the prevalence details of dyslipidemia we still lack the true data regarding it[6]. Dyslipidemia has been considered as a common abnormality yet the specific pattern yet to be known association with hypertension.[7]

The combination of high blood pressure, metabolic abnormalities, and serum abnormalities in an individual has been a clear synergistic effect and a step forward accelerating to cardio complications[8]. All of these factors contribute into the morbidities, mortalities and economic burden, accounting to almost 57% of the all deaths occurring due to the stroke linked with cardio vascular complications[9] According to an assumption the numbers of hypertensive patients will increase by 214 million from the numbers were 118 million as 2000[10].

The objective of the study was to assess the lipid profile of hypertensive patients.

MATERIALS AND METHODS

An evaluation-based study was conducted in Department of Medicine Muhammad Medical College Hospital, Mirpurkhas, Sindh, Pakistan for a period of one year from 1st July 2020 to 30th June 2021. The samples were recruited on the basis of purposive sampling method. After permission from Ethical Review Board, a total of 353 hypertensive patients were enrolled in the study based on Rao-soft formula. Only those hypertensive patients who had confirmed diagnosis of hypertension were enrolled. The demographic details were collected as well as blood was also drawn to analyze the serum lipid profile. The patients were requested for fasting to take the blood sample. Only those patients were taken part in the study who had given the consent to drawn the blood. The lipidic profile i.e. HDL, LDL, total cholesterol, total glycerides were noted down. The history of hypertension, treatment and blood pressure values at the time of enrolment were noted down. The hypertensive patients were also classified based

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on international guidelines was also assessed and patients were analyzed. The data were transferred in to data analysis sheet and evaluate on various factors such as age, gender, systolic and diastolic blood pressure and also compare with lipid profile of the patients.

RESULTS

The data showed, out of total 353 patients, 64.87% were males, and 35.1% were females. 24.36% were in the age group of 30-44 years of age, 35.97% of the participants were in the age range of 45-60 years however, the 39.6% of the patients were above 60 years old.14.45% patients showed the average systolic blood pressure values 121-140 mmHg, 24.93% patients had average 141-160 mmHg of systolic blood pressure values, 20.39% showed an average of 161-180 mm Hg blood pressure values, 18.98% patients had 181-200 mmHg systolic blood pressure values. However, the highest range values for systolic blood pressure 201-220 mmHg. 11.33% of the patients had ranges of 60-70mmHg, 13.60% of the patients had diastolic blood pressure 71-80mmHg. The majority of the patients 26.34% showed 91-100mmHg (Table 1).

Table 1: Demographic information of the patients (n=352)

Variable	No.	%
Gender		
Male	229	64.87
Female	124	35.13
Age (years)		
30-44	86	24.36
45-60	127	35.97
>60	140	39.67
Systolic Blood Pressure (mmHg)		
100–120	27	7.65
121-140	51	14.45
141-160	88	24.93
161-180	72	20.39
181-200	67	18.98
201-220	48	13.59
Diastolic Blood Pressure (mmHg)		
60-70	40	11.33
71-80	48	13.60
81-90	54	15.30
91-100	93	26.34
101-110	62	17.56
111-120	56	15.86

Table 2: Pattern of antihypertensive and antilipidemic medications based on generic(n=353)

Medication	No.	%
Antihypertensive		
Atenolol	39	11.05
Propranolol	25	7.08
Amlodipine	26	7.36
Telmisartan	39	11.05
Valsartan+Amlodipine	31	8.78
Atenolol+Chlorthalidone	26	7.36
Telmisartan+hydrochlorothiazide	71	20.11
Valsartan+hydrochlorothiazide	38	10.76
Amlodipine+Perindopril	22	6.23
Amlodipine + Telmisartan	36	10.20
Antilipidemic		
Atorvastatin	91	25.78
Lovastatin	76	21.53
Rosuvastatin	108	30.60
Simvastatin	41	11.61
Ezetimibe	37	10.48

11.05% of the patients were prescribed with the Atenolol, 7.08% of patients were prescribed with another beta blocker medication Propranolol. 7.36% of the patients were prescribed with Amlodipine. Among the combination therapies the 8.78% of the patients were prescribed with Valsartan+Amlodipine together. 7.36% of the patients were given the two drugs combination of Atenolol+Chlorthalidone. However, the 10.20% of the patients were prescribed with Amlodipine + Telmisartan. The majority of patients were prescribed with Rosuvastatin as antilipidemic drugs, however the least majority i.e., 11.61 were prescribed with Simvastatinas (Table 2).There is significant ($P<0.05$) difference between LDL and body mass index of the hypertensive patients (Table 3).

Table 3: The statistical presentation of LDL and BMI of the hypertensive patients (ANOVA)

Cholesterol		Sum of Squares	Df	Mean sqare	F	Sig
BMI	Between Groups	17899.430	343	52.185	25	<0.05
	Within Groups	.000	0			
	Total	17899.430	343			
LDL	Between Groups	594636.432	346	1718.602	20	<0.05
	Within Groups	.000	0			
	Total	594636.432	346			

DISCUSSION

The hypertension is one of the leading disorders among older adults, which involve the multiple morbidities. The disturbed levels of blood pressure can lead to the cardiovascular problems and cardiac diseases[11]. The high systolic blood pressures are the leading risk factor to the cardiac disease. The essential blood pressure is linked with the issues such as the dyslipidemia. The dyslipidemia is the common problem of untreated high blood pressure and increased systolic and Di systolic blood pressure.[12] The specific pattern of the blood pressure in relation to the dyslipidemia is still unexplained, since many studies have shown the cholesterol. to assess the factors behind the dyslipidemia the study was conducted with multiple parameters, the data showed, out of total 353 patients, the 64.87% were males, and 35.1% were females which showed the similarity in the data with the study conducted previously[13]. The accordance of the data showed relevancy in the data. the age is one of the leading factors in the dyslipidemia among the hypertension, the current study's age distribution of the data showed 24.36% were in the age group of 30-44 years of age, which explained the middle-aged group having average rate of hypertension and 35.97% of the participants were in the age range of 45-60 years, however the 39.6% of the patients were above 60 years old similarly shown in the study[14]. The hypertension is clearly been seen among the older patients The data clearly showed the majority of the patients with hypertension and lipid profile were older adults which in accordance with the previous study. The study explained the age factors is linked with the hypertension and abnormalities in the lipidemic and cholesterol levels as shown in the results of the study[15].

Our study also focused on the systolic blood pressure values of the patients with variant ranges, the higher ranges are the data showed that, 100-120mmHg values among 7.6% of the patients regardless of the gender distribution. 14.45% of the patients showed the average systolic blood pressure values 121-140 mmHg, 24.93% of the patients had average 141-160mmHg of systolic blood pressure values[16]. 20.39 % of the patients showed an average of 161-180mmHg blood pressure values. 18.98% patients had 181-200mmHg systolic blood pressure values. However, the highest range values for systolic blood pressure 201-220 mmHg the quite similar ranges were found in a study conducted on the hypertension values, the highest ranges observed were above 200mmHg[17]. The pattern of medication varies from patients to patients in case of high blood pressure values and association with the dyslipidemia the type of prescription and pattern of anti-hypertensive medications showed 11.05% of the patients were prescribed with the Atenolol, the majority of the patients receives the beta blockers similarly found in the study[18]. 7.08% of patients were prescribed with another beta

blocker medication Propranolol. 7.36% of the patients were prescribed with Amlodipine. Among the combination therapies the 8.78% of the patients were prescribed with Valsartan+Amlodipine together the same pattern in the combination therapy was observed in a study the 7.36% of the patients were given the two drugs combination of Atenolol+Chlorthalidone[19]. However, the 10.20% of the patients were prescribed with Amlodipine + Telmisartan. The majority of patients were prescribed with Rosuvastatin as antilipidemic drugs, however the least majority i.e. 11.61% were prescribed with Simvastatin. The patients with high cholesterol values are prescribed with atorvastatin and simvastatintypically the same results were seen in the literature[20,21]

CONCLUSION

The dyslipidemia associated with the hypertension and hypertensive patients. The irregular values and alteration of in the serum cholesterol and total cholesterol levels of lipid profile proves the association of lipid profile with the elevated systolic blood pressure levels. The total cholesterol, LDL and HDL can be controlled with an appropriate controlling of high blood pressures, thus preventing the cardiovascular diseases and cardiovascular diseases. Controlling certain parameters can prevent the severe conditions.

Conflict of interest: Nil

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