

Study of Lipid Profile and C- reactive Profile in Hypertensive Adult Patients of Andhra Pradesh

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ABSTRACT

95 adult (45 males and 50 females) aged between 30 and 75 having Hypertension and hyper lipidemia were studied. The mean value of CRP was 1.31 (SD+0.1.105), total cholesterol 259(SD+1.53) triglyceride 190.4 (SD+1.93) VLDL 32.2 (SD+1.8), HDL 34.3 (SD+1.5), LDL 165.3 (SD+2.10) systolic BP 145(SD+2.59), Diastolic BP 101.4 (SD+1.84) (mmHg). Correlation of CRP with lipid profile parameter were total cholesterol correlation coefficient value was -0.397 (p<0.01), triglyceride -0.562 (p<0.01), VLDL - 0.416 (p<0.01), HDL - 0.509 (P<0.01), LDL - 0.476 (p<0.01), systolic Bp - 0.409 (p<0.01), diastolic Bp - 0.420(p<0.01). The regression equation of CRP with lipid profile was CRP=9.91, total cholesterol - 0.00623, triglyceride - 0.0175, VLDL-0.0132, HDL - 0.02 35, LDL- 0.146. The regression equation of CRP with Blood pressure was CRP- 5.64, systolic BP=-0.0148, Diastolic BP- 0.0215. By knowing the value of CRP one can predict the values of lipid profile and vice versa It was revealed that increased CRP values strongly predict the future coronary events. These findings trigger widespread interest where the clinical use of CRP study had been largely ignored. CRP production is part of the nonspecific acute- phase response to most forms of inflammation, infection and tissue damage and was therefore considered not to provide clinically useful information. Indeed CRP values can never be diagnostic on their own and can only be interpreted at the bedside. The present study of CRP in cardio vascular disease and associated condition like hyper lipidemia have greater importance.

Keywords : CRP; HTN, SBP, DBP

INTRODUCTION

Study of dyslipidemia and hypertension are the two major risk factors contributing cardio vascular disease globally ⁽¹⁾ including India. which cause morbidity and mortality. Due to stroke myocardial infarction, cardiac failure, peripheral vascular disease, arterial fibrillation and end stage involve renal disease⁽²⁾ Hypertension is known for to double the risk of cardio vascular diseases including coronary heart disease moreover excessive intake of saturated fats, cholesterol and other sources of calories and subsequent disturbance of lipid profile

leading to hyper triglycemia, and hyper cholestramia consequently hypertension under such scenario study of c-reactive protein cannot be ignored because binding to CRP to lipids especially lecithin (phosphotidyl choline) and to plasma lipoprotein had been established factors. As CRP selectively bound to LDL, VLDL, As CRP could promote compliment activation and thus inflammation in the plaques, and there is atherogenesis CRP has been known to stimulate tissue factor production by peripheral blood monocytes in vitro and could thereby have important pro-coagulant effects. ⁽³⁾ Hence functional integrity of CRP have been confirmed in lipid profile and Hypertension (HTN) as well. Hence attempt was made to correlate the values of CR protein with lipid profile and HTN

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MATERIAL AND METHOD

95 adult patients (45 males 50 female) aged between

30 to 75 years, visiting kanasima Institute of medical sciences (KIMS) Amalapuram -533201 East Godavari Andrapradesh - were selected for study. They were hypertensive and having signs and symptoms of elevated lipids. Their blood pressure was recorded and their lipid profile and c-reactive- value was studied. Their hypertensive parameters, lipid profile and c-reactive values were compared, correlated statistically by using SPSS soft ware. The HIV and malignant patients suffering with HTN and elevated lipid were excluded from the study. The duration of this study was about 2 years and 6 months.

OBSERVATION AND RESULTS

Table-1 mean values of c-reactive protein was 1.3109(SD+0.1), Total cholesterol 259.9(SD+1.53), triglyceride 190.4 (SD+1.93), VLDL 32.2 (SD+1.8) HDL 34.3 (SD+1.5), LDL 165.3 (SD+201), systolic BP 145.(SD+2.59) (mmHg), Diastolic BP 101.4(SD+1.84) (mmHg).

Table-2 correlation of c-reactive protein with associated variables Total cholesterol value with CRP was - 0.397 with significant p value (P<0.01), triglyceride value of with CRP correlation coefficient was - 0.562 with highly significant p value (P<0.01), VLDL value with CRP correlation coefficient was 0.416 was highly significant p value (p<0.01), HDL value with

CRP correlation coefficient was - 0.509 which was highly significant P value(p<0.01), LDL value with CRP correlation coefficient was - 0.409 which was highly significant p value (p<0.01), moreover systolic BP with CRP coefficient value was -0.409 which was highly significant p value. Diastolic BP with CRP coefficient value was - 0.420 which was highly significant p value (p<0.01)

Table-3. The regression analysis of dependent variable c-reactive protein and independent variable were, total cholesterol, triglyceride, VLDL, HDL, LDL. Predictor constant coefficient value was 9.91, SE coefficient was 1.32, t value was 7.55 value was 0.00. Total cholesterol coefficient value was - 0.006, SE coefficient value was 0.005, t value was - 1.25 P value was 0.216. Triglyceride coefficient value was - 0.017 SE coefficient value was 0.003, t value was - 4.49 p value was 0.000, VLDL coefficient value was - 0.013, SE coefficient value. was 0.0038, t value was - 3.47, p value was 0.001, HDL coefficient value was - 0.023, SE coefficient value was 0.004, t value was - 4.88, p value was 0.000, LDL coefficient value was - 0.014, SE coefficient value was 0.0034, t value was - 4.21, P value was 0.000 Analysis variable had difference of regression was 5, residual error was 89 and P value was 0.000, The regression equation was CRP = 9.91, - 0.00623, Total cholesterol - 0.017 triglyceride, - 0.0132 VLDL, - 0.0235 HDL, - 0.0146 was LDL

TABLE 1: MEAN AND SD VALUES OF VARIABLE (No. of Patients - 95)

VARIABLE	MEAN	SD
C-reactive protein	1.3109	0.1056
Total cholesterol	259.92	1.53
Triglyceride	190.45	1.93
VLDL	32.23	1.85
HDL	34.337	1.568
LDL	165.33	2.10
Systolic BP	145.07	2.59
Diastolic BP	101.45	1.84

**TABLE 2: CORRELATION OF C- REACTIVE PROTEIN WITH ASSOCIATED VARIABLES
(No. of Patients - 95)**

C-reactive protein	Correlation coefficient	p- value
Total cholesterol	-0.397	P<0.01
Triglyceride	-0.562	P<0.01
VLDL	-0.416	P<0.01
HDL	-0.509	P<0.01
LDL	-0.476	P<0.01
Systolic BP	-0.409	P<0.01
Diastolic BP	-0.420	P<0.01

**TABLE 3: REGRESSION ANALYSIS OF DEPENDENT VARIABLE C- REACTIVE PROTEIN AND INDEPENDENT VARIABLE AND TOTAL CHOLESTRO, TRIGLYCERIDE, VLDL HDL AND LDL
(No. of Patients - 95)**

Predictor	Coefficient	SE Coefficient	T	P
Constant	9.910	1.321	7.55	0.000
Total Cholesterol	-0.006235	0.005006	-1.25	0.216
Tri-glyceride	-0.017486	0.003896	-4.49	0.000
VLDL	-0.013228	0.003812	-3.47	0.001
HDL	-0.02342	0.004809	-4.88	0.00
LDL	-0.014616	0.003468	-4.21	0.00

ANALYSIS OF VARIANCE

SOURCE	DF	SS	MS	F	P
Regression	5	0.65814	0.13163	30.08	0.00
Residual Error	89	0.38947	0.00438	-	-
Total	94	1.04761	-	-	-

The regression equation is :

C- reactive protein = 9.91- 0.00623 * (total cholesterol), 0.0175 * (triglyceride),
-0.0132*(VLDL) , -0.0235* (HDL), -0.0146* (LDL)

TABLE 4: REGRESSION ANALYSIS OF DEPENDENT VARIABLE C- REACTIVE PROTEIN AND INDEPENDENT VARIABLE ARE SYSTOLIC BP AND DIASTOLIC BP

Predictor	Coefficient	SE Coefficient	T	P
Constant	5.6410	0.6798	8.30	0.000
Systolic BP	-0.01497	0.00356	-4.15	0.000
Diastolic BP	-0.02153	0.00501	-4.30	0.000

The regression equation is :

C- reactive protein = 5.64, -0.0148* (Systolic BP),
-0.0215* (Diastolic BP)

ANALYSIS OF VARIANCE

SOURCE	DF	SS	MS	F	P
Regression	2	0.32087	0.16043	20.31	0.00
Residual Error	92	0.72675	0.00790	-	-
Total	94	1.04761	-	-	-

DISCUSSION

In the present study of lipid profile and CRP in Hypertensive (HTN) patients of Andrapradesh the mean values of c-reactive protein (CRP) was 1.310 (SD+0.1) total cholesterol 259.9 (SD+0.1), total cholesterol 259.9 (SD+1.53), triglyceride 190.4(SD+1.93), VLDL 32.2 (SD+1.85), HDL 34.3 (SD+1.56), LDL 165.3 (SD+2.10), systolic blood pressure (SBP) 145(mmHg) (SD+2.59) Diastolic Blood pressure (DBP) 101.4 (SD+1.84) (mmHg) (Table-1) correlation of c-reactive protein (CRP) with total cholesterol correlation coefficient value was 0.39 (P<0.01), triglyceride correlation coefficient value was -0.56 (P<0.01), VLDL correlation coefficient value was -0.41 (P<0.01), HDL correlation coefficient value was -0.50 (P<0.01) LDL correlation coefficient value was -0.47 (P<0.01). Moreover C - reactive protein correlation with SBP was -0.40 (p<0.01), and DBP was -0.42 (p<0.01) (Table -2). The regression equation was CRP = 9.91, - 0.0062 total cholesterol, - 0.0175 was triglyceride -0.0132 VLDL - 0.023 HDL, -0.014 was LDL, (Table-3). These obtained value were more or less in agreement with previous studies⁽⁴⁾⁽⁵⁾ The present study parameter having significant differences with significant p value indicate that c-RP is a biomarker to predict the HTN and dyslipidemia. The realization that CRP genetic polymorphism do exist and that certain of these directly and predictably influence steady - state, blood CRP level could be substantial clinical importance because genetic predisposition to high base line CRP might account for a significant value with higher risk of heart disease.⁽⁶⁾ In most though not all disease the circulating value of CRP reflects ongoing inflammation and / or tissue damage and liver failure impairs CRP production but no other inter current pathologies. Human CRP binds with highest affinity to phosphocholine residues but it

also binds to a variety of other autologous and extrinsic ligands ad it aggregates or precipitates the cellular particulate or molecular structures bearing these ligands. Autologous ligands includes native and modified plasma lipo proteins⁽⁷⁾ and damaged cell membranes⁽⁸⁾ hence the CRP levels are more reduced in lipids accumulation and damaged endothelial walls hence number of different phospholipids and related compounds were significant when CRP acts as inflammatory biomarker rigorously. The secondary effect of CRP that follow ligand binding has key properties of antibodies hence CRP may contribute to the host defense against infection pro inflammatory mediator and participate in physiological and patho-physiological handling of outologous constituents.⁽⁹⁾ Hence the low up regulation of CRP production that predicts the coronary events due to HTN and dyslipidemia.⁽¹⁰⁾ Hence binding of CRP to lipids especially lecithin and to plasma lipoprotein. It was reported that CRP is co- deposited with activated complement within all acute myocardial infarction. ⁽¹¹⁾ Hence it is speculated that CRP may have significant pro inflammatory effects and that by binding to glands exposed on cells or other antilogous structures as a result of infection, inflammation, ischemia, and other pathologies and triggering complement activation, it may exacerbate tissue damage, leading to more severe diseases.

SUMMARY AND CONCLUSION

The present study lipid profile and CRP in HTN patients is quite useful to cardiologist, physician to treat the HTN patients with elevated lipid profile by knowing the value CRP one can predict the values of lipid profile or vice versa because CRP strongly predict the future coronary events when correlated with other

patho-physiological parameter like HTN lipids etc, but this present study demands further genetic, histo-pathological, bio- molecular level study because exact mechanism of action CRP as a biomarker in various diseases is still unclear.

This research paper is approved by ethical committee of kanasima institute of medical sciences (KIMS) Amalapuram, 533201 east Godavari Andrapradesh

No Conflict of Interest

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