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Research Article

EVALUATION OF LIPID PROFILE IN PATIENTS WITH NON-DIABETIC CHRONIC KIDNEY DISEASE STAGE III, IV & V

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ABSTRACT

Cardiovascular disease is a major cause of mortality in patients with mild to moderate kidney disease and End Stage Renal Disease [ESRD]. Dyslipidemia is a well known risk factor for cardiovascular disease. **Methodology:** This is a case-control study done to compare the levels of blood lipids in patients of CKD with healthy controls. The patients were subjected to CBP, RBS, Blood Urea, S.Creatinine, CUE and USG ABDOMEN. **Results:** Shown that patients with CKD had significantly lower levels of HDL and higher levels of all other lipids when compared to controls. **Conclusion:** There is a negative correlation between serum HDL-Cholesterol and severity of renal failure and positive correlation between the ratio of Total Cholesterol to HDL-Cholesterol and severity of CKD.

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INTRODUCTION

Cardiovascular disease is a major cause of mortality in patients with mild to moderate kidney disease and End Stage Renal Disease [ESRD]. Although there is still controversy whether CKD represents an independent risk factor for incident cardiovascular disease, accumulating evidence over the last decade marks out cardiovascular disease as major cause of mortality in patients with mild to moderate CKD or ESRD.

Dyslipidemia has been established as a well-known traditional risk factor for cardiovascular disease in the general population and large scale observational studies have shown that patients with impaired renal function exhibit significant alterations in lipoprotein metabolism.

The principal reason to evaluate dyslipidemias in patients with chronic kidney disease is to detect abnormalities that may be treated to reduce the incidence of cardiovascular disease. Since chronic kidney disease is a progressive disease, the various lipid abnormalities vary from CKD stages 1- 5. So it is prudent to look into various lipid abnormalities attributed to each stages of kidney disease.

The study mainly focuses on the lipid abnormalities attributed to different stages of chronic kidney disease.

Aim of the Study

1. To study the pattern of Blood lipids in CKD patients.
2. To compare the Blood lipids of CKD patients with health individuals.

METHODOLOGY

The study was a case-control study.

The study population consists of patients attending to General Medicine and Nephrology Departments in ASRAM Medical College, Eluru. Patients with chronic kidney disease (CKD) fulfilling all the criteria are taken as cases. A total of 100 cases were taken under this study. Controls were selected among the patients attending Out-Patient Departments and are having normal Renal and Cardio-vascular functioning. Matching was done for age group and gender.

The patients were subjected to CBP, RBS, Blood Urea, S.Creatinine, CUE and USG ABDOMEN.

Inclusion Criteria

1. Patients with chronic kidney disease stage III, IV and V on conservative management or dialysis irrespective of etiology except due to diabetes mellitus.
2. Patients with creatinine clearance < 60 ml/min

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3. Patients with bilaterally contracted kidneys on abdomen USG with poor cortico-medullary differentiation

Exclusion Criteria

1. Patients with Obesity, Diabetes Mellitus,
2. Past history of Coronary heart disease,
3. Patients with Smoking, Alcoholism, Pregnancy,
4. Patients on β-blockers and OCPs were excluded

All the patients who are included in the study are subjected to detailed history and clinical examination. Height, weight, and blood pressure of all patients were recorded. Apart from routine investigations Blood Urea, Serum Creatinine, and Serum Electrolytes were done Creatinine Clearance is calculated by using Cockcroft-Gault equation.

RESULTS

The studied patients have been analysed and compared with control group. Lipid abnormalities, Serum Creatinine, Blood Urea were analysed and compiled in following formats.

The study group has shown increased total cholesterol, triglycerides and LDL cholesterol but decreased HDL cholesterol.

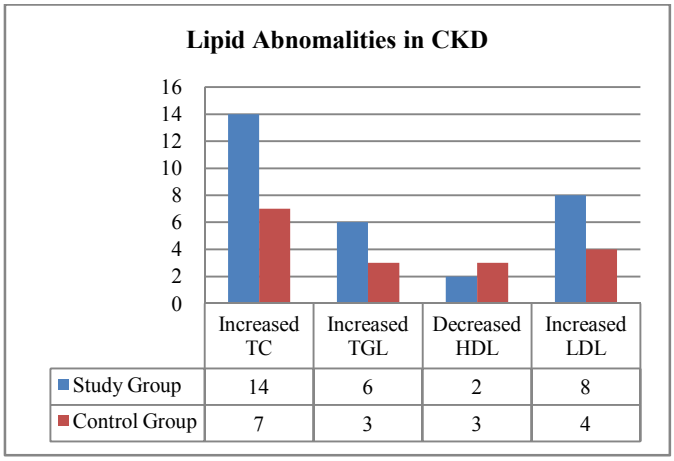

Figure 1 Lipid Abnormalities in CKD - Comparative study with control group

To find out if the difference among the two groups is statistically significant, we have applied Independent Samples t-test (shown in Table-1)

Table 1 T-test for difference in lipid levels between test and control groups

	Study Group (Mean ± SD)	Control Group (Mean ± SD)	P Value
Triglycerides	197.26 ± 59.75	127.78 ±27.53	<0.001
HDL	34.18 ± 4.62	52.90 ± 10.41	<0.0001
LDL	118.61 ± 21.27	100.02 ± 23.92	<0.001
Total Cholesterol (TC)	192.24 ± 22.55	178.48 ± 20.34	0.002
TC / HDL	5.7 ± 1.0	5.4 ± 0.7	<0.0001

This shows that the study group has higher levels on Triglycerides, HDL, LDL and total cholesterol, which is statistically significant.

More than 50% of study group has shown acute rise in blood urea levels up to 80mg/dl and 14% above 150mg/dl.

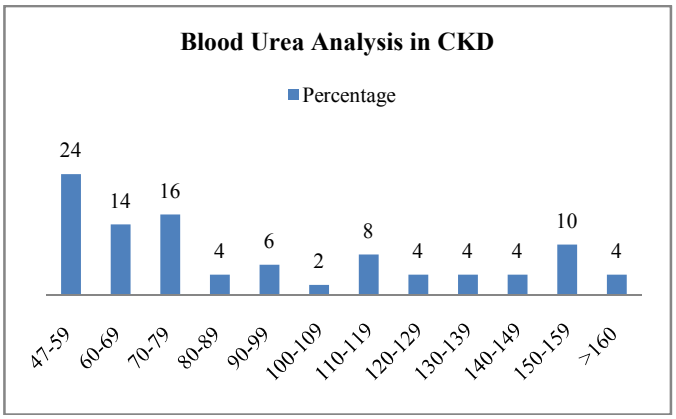

Figure 2 Blood urea analysis in CKD - X-axis: blood urea in mg/dl, Y-axis: percentage

Creatinine levels among the study group has shown that 32% of study group showed creatinine levels up to 3-6mg/dl, 40% showed 6-9mg/dl, and 28% showed 9-11mg/dl.

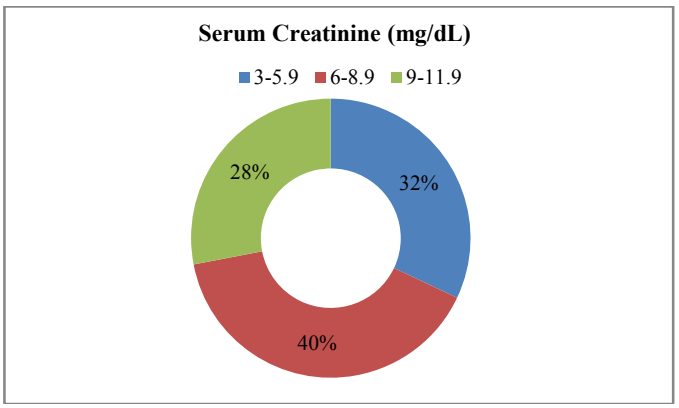

Figure 3 Serum creatinine in CKD - percentage showing severity of CKD

DISCUSSION

The study group has shown increased total cholesterol, triglycerides and LDL cholesterol but decreased HDL cholesterol. These are consistent with the findings of Liu *et al*. However in their study, the total cholesterol levels were normal or even low in CKD patients, whereas in present study, they were significantly higher than controls. Similarly another study by Vaziri at al reported normal total and LDL cholesterols in CKD patients, whereas they are significantly higher in the present study. All other findings are similar to the present study.

CONCLUSION

Most common lipid abnormality obtained in this study was significant reduction of HDL-Cholesterol level, significant increase in serum triglycerides level, serum LDL-Cholesterol and total Cholesterol level in patients with CKD stage 3, 4 and 5. There is a negative correlation between serum HDL-Cholesterol and severity of renal failure and positive correlation between the ratio of Total Cholesterol to HDL-Cholesterol and severity of CKD.

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