

Dyslipidemia in Patients with Chronic Kidney Disease: A Hospital Based Study

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Received: 25-07-2024 / Revised: 23-08-2024 / Accepted: 25-09-2024

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Conflict of interest: Nil

Abstract:

Background: Chronic kidney disease (CKD) is associated with a dyslipidemia comprising high triglycerides, low HDL-cholesterol and altered lipoprotein composition. Cardiovascular diseases are the leading cause of mortality in CKD, especially in end stage renal disease patients.

Methods: This is prospective study conducted in Department of General Medicine. Total 100 patients were included in this study who were diagnosed with chronic kidney disease(CKD). With the help of clinical history, examination and investigations data was collection.

Results: Normal Serum HDL values ranged between 23mg/dl to 46mg/dl. Patients showed abnormal HDL levels (<40 mg/dl) were 43. There was a significant reduction in HDL levels in patients with CKD. In 18 patients abnormally high LDL levels (>130mg/dl) were found. TGL levels were abnormal in 37 patient's shows > 160mg/dl. Total cholesterol was more than 200mg/dl in 26 patients.

Conclusion: In chronic kidney disease patients total cholesterol is significantly increased as well as triglyceride level also increase. Therefore dyslipidemia is common complication of CKD. Hence early diagnosis of dyslipidemia indicated potential therapeutic approaches like therapeutic life style changes and pharmacotherapy should be initiated to limit the long term consequences of cardiovascular disease in this population.

Keywords: CKD, LDL, HDL, TG.

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Introduction

Chronic kidney disease (CKD) is a global public health problem, with greater burden and very high cost of care especially in developing countries like India. The National Kidney Foundation in India states that, kidney diseases rank 3rd amongst the life-threatening diseases after cancer and heart disease. About 200,000 persons landed into terminal kidney failure every year and millions more suffer from lesser forms of kidney diseases. [1]

Indian studies on lipid profile in CRF have not been consistent. Sharma, et al [2] and Kunde et al [3] observed no hyperlipidemia in patients of CRF. On the other hand, Gupta [4] and Das et al [5] observed lipid abnormalities similar to those reported in Western studies i.e. hypertriglyceridemia and reduced high density lipoprotein (HDL). [6,7] In view of the inconsistency in Indian reports, we decided to study the lipid profile in our patients with chronic renal insufficiency.

Materials and Methods

This is prospective study conducted in Department of General Medicine. Total 100 patients were included in this study who were diagnosed with chronic kidney disease(CKD). With the help of clinical history, examination and investigations data was collection.

Patients with more than 18 year of age with physical and history with clinical findings of kidney disease and Biochemical evidence of CKD were include in this study. Sonological abnormalities suggesting CKD also include in this study.

Written consent was obtained from both patients and controls. A detailed history regarding symptoms and duration of the kidney disease, hypertension, diabetes, smoking, alcoholism, drug intake, and treatment was elicited.

A detailed clinical examination was performed in all patients. Blood pressure, renal function tests,

and abdominal ultrasonogram were done for all patients. Blood sample was taken for lipid profile from patients.

Data Analysis: Data was recorded as per Performa. The data analysis was computer based; SPSS-22 was used for analysis. For categorical variables chi-square test was used. For continuous variables

independent samples's *t*-test was used. *p*-value <0.05 was considered as significant.

Results

In present study, maximum patients (53.00%) were from 45-60 yrs age group. Mean age of patients was 52.36±10.36 yrs. 56.00% patients were male and 44.00% patients were female.

Table 1: Associated wise distribution of study subject

Associated disease	No. of cases	Percentage
DM	31	22.00
HT	26	26.00
Nephritis	22	22.00
Rheumatic heart disease	1	1.00
Others	52	52.00

In present study, 26.00% patients were from HT, 31.00% patients were from DM and 22.00% patients were from nephritis.

Table 2: Renal function test in study subject

Renal function test	Mean	SD
Serum creatinin (mg/dl)	8.20	3.47
Blood urea (mg/dl)	144.66	50.57

In present study, serum creatinine level was 8.20±5.47 mg/dl and blood urea level was 144.66±50.57 mg/dl

Table 3: CKD patients showed the following lipid disorder

Type of lipid abnormality	No of patients	Percentage
Increased cholesterol	26	26.00
Decreased HDL	43	43.00
Increased LDL	18	18.00
Increased triglyceride	37	37.00

Normal Serum HDL values ranged between 23mg/dl to 46mg/dl. Patients showed abnormal HDL levels (<40 mg/dl) were 43. There was a significant reduction in HDL levels in patients with CKD. In 18 patients abnormally high LDL levels (>130mg/dl) were found. TGL levels were abnormal in 37 patient's shows > 160mg/dl. Total cholesterol was more than 200mg/dl in 26 patients.

Table 4: Correlation between lipid fractions and GFR in patients

Type of lipid abnormality	GFR level			Total
	<15 ml	15-29	≥30	
Increased cholesterol	2	18	6	26
Decreased HDL	5	28	10	43
Increased LDL	4	8	6	18
Increased triglyceride	2	29	6	37

Maximum dyslipdemia was seen in 15-29 ml GFR group.

Discussion

In this study, Low HDL levels and Hypertriglyceridemia were found most common lipid abnormalities. As in study of Diana M Lee LG et al [9] patients with chronic kidney disease there is low HDL levels which in similar to this study

According to study of Lawrence et al [10] in CKD patients with low HDL levels is one of the independent risk factor for progression of kidney disease.

Out of 100 patients 18 patients showed elevated LDL levels. From many studies it is found that

Patients usually have normal or slightly reduced concentrations of LDL [11,12]

In this study abnormal triglyceride values were found in 37 of patients. CKD commonly follows by lipid abnormality in the form of hypertriglyceridemia. Similar observations was made in Western studies and recent Indian studies by Gupta DK, Das BS and Bagdae J C levels. [12,13]

Out of total 26 patients shows total cholesterol levels were elevated in combination with chronic renal insufficiency results in acquired LDL receptor deficiency that plays important role in the genesis of the associated hypercholesterolemia. This study found that abnormal TC, HDL, serum triglycerides to be

increased significantly in the group of eGFR between 15-29ml.

Conclusion

In chronic kidney disease patients total cholesterol is significantly increased as well as triglyceride level also increase. Therefore dyslipidemia is common complication of CKD. Hence early diagnosis of dyslipidemia indicated potential therapeutic approaches like therapeutic life style changes and pharmacotherapy should be initiated to limit the long term consequences of cardiovascular disease in this population.

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