



LIPID PROFILE IN CHRONIC RENAL FAILURE

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ABSTRACT**BACKGROUND**

Chronic Kidney Disease encompasses a spectrum of different pathophysiologic processes associated with abnormal kidney function and a progressive decline in GFR. It is important to identify factors that increase the risk for CKD, even in individuals with normal GFR.

AIM

1. To know the prevalence of lipid abnormalities in chronic renal failure patients.
2. Quantitative assessment of lipid abnormalities in chronic renal failure patients.

MATERIALS AND METHODS

The present study was conducted in 50 patients admitted in the wards or who attended the O.P.D of MMCH & RI, Kanchipuram and data collected was noted serially in a pre- designed proforma.

RESULTS AND CONCLUSIONS

The lipid profile in hemodialysis patients was found on higher side compared to patients in conservative treatment. Majority of our patients showed changes of lipid profile which can predispose to atherogenic changes in chronic renal failure.

KEYWORDS : Chronic Kidney Disease (CKD), Glomerular filtration rate (GFR), Lipid Profile

INTRODUCTION

A moderate elevation of triglyceride concentration represents the characteristic plasma lipid abnormality in chronic renal failure, but a significant number of patients have normal triglyceride levels. The frequency of hypertriglyceridemia varies considerably among reported patient populations; in larger patient series, mainly in patients on dialysis, elevated triglyceride values are detected in 30% to 70% of the total patient populations. In contrast, plasma cholesterol levels often are found to be within the normal range. This plasma lipid profile has been a consistent finding in most studies since first described by Bagdade et al in 1968.¹

In contrast to numerous reports on plasma lipids in patients with end stage renal failure, relatively few studies have focused on the earlier, asymptomatic stages of renal insufficiency. Plasma triglyceride levels tend to be within the normal range when the glomerular filtration rate is greater than 15-20 ml per minute in non-diabetic patients. Grutzmacher et al² found increased serum triglyceride levels when the GFR was below 30 ml/ minute, in agreement with similar results obtained by Frank et al³ and McCosh et al. Attman P et al⁷ found elevated triglyceride concentrations in only 30% of patients with a GFR greater than 15 ml/minute in comparison with 62% of patients with more advanced renal failure and 76% of patients with hemodialysis. However, mean plasma cholesterol levels were only increased in 25% of patients with advanced renal failure.

PATHOGENESIS

Cardiovascular disease is the leading cause of morbidity and mortality in patients at every stage of CKD. The incremental risk of cardiovascular disease in those with CKD compared to the age and sex matched general population ranges from 10- to 200-fold, depending on the stage of CKD. Between 30 and 45% of patients reaching stage 5 CKD already have advanced cardiovascular complications. As a result, most patients with CKD succumb to cardiovascular disease before ever reaching stage 5 CKD. Thus, the focus of patient care in earlier CKD stages should be directed to

prevention of cardiovascular complications like Ischemic Vascular Disease, Heart Failure, Hypertension, Left ventricular hypertrophy and Sudden death

The presence of any stage of CKD is a major risk factor for ischemic cardiovascular disease, including occlusive coronary, cerebrovascular, and peripheral vascular disease. Traditional risk factors include hypertension, hypervolemia, dyslipidemia, sympathetic overactivity, and hyperhomocysteinemia. Among the latter causes Dyslipidemia represents one of the major, potentially correctable risk factor.

Dyslipidemia develop early in renal failure. The imbalance between lipoprotein synthesis and degradation in prolonged renal disease results in a pronounced Dyslipidemia. There are many specific abnormalities in the lipoprotein metabolism in CKD patients. HD patients usually display elevated TG, reduced serum high density lipoprotein (HDL) cholesterol and elevated concentration of Total and LDL cholesterol levels. High level of LDL-C and low level of HDL-C are the major factors in the development of atherosclerosis which could result in cardiovascular disease and the higher the ratio of LDL-C to HDL-C the higher the risk of developing cardiovascular disease (CVD).

MATERIALS AND METHODS

The present study was conducted in 50 patients admitted in the wards or who attended the OPD of MMCH & RI, Kanchipuram. All the selected patients were subjected to detailed history and complete physical examination and data collected was noted serially in a pre- designed proforma.

AIMS

1. To know the prevalence of lipid abnormalities in chronic renal failure patients.
2. Quantitative assessment of lipid abnormalities in chronic renal failure patients.

RESULTS

We found out of 50 patients, 7 patients (14%) had coronary artery disease (CAD) and 3 patients (6%) had cerebrovascular disease (CVD) as the commonest vascular complications. In this study, 28 patients (56%) had serum cholesterol in the desirable range, 12 patients (24%) had borderline high and 10 patients (20%) were in high range i. e., > 240 mg/dl. Mean total cholesterol 206.6 ± 41.34; Mean (male) = 208.2 ± 40.00; Mean (female) = 203.46 ± 45.02. We found 20 patients (40%) in the normal range, followed by high (32%) and borderline high (28%). Mean total triglyceride level was as follows: Mean Total Triglyceride = 175.9 ± 57.73; Mean (male) = 170.2 ± 47.85; Mean (female) = 188.35 ± 73.40. Maximum number of patients (50%) are found to have HDL-C < 40mg/dl, followed by 46% of patients who have HDL-C between 41 – 50 mg/dl and 4% of patients had HDL-C between 50 – 60 mg/dl. Mean S.HDL Cholesterol (total) = 40.7 ± 7.57; Mean (males) = 40.72 ± 8.39; Mean (females) = 40.76 ± 6.46. Maximum number of patients (42%) were found in near optimal range, followed by borderline high (20%) and equal number of patients (18%) were found in levels < 100 mg/dl and very high levels. Mean LDL cholesterol (total) = 130.6 ± 41.19; Mean (males) = 128.6 ± 39.05; Mean (females) = 125.29 ± 46.15. Table 1 shows Lipid Profile among Diabetic and Non-Diabetic CRF patients. Table 2 depicts patients on hemodialysis vs conservative therapy.

TABLE 1

Sl. No	Lipid profile(mg/dl)	Diabetic CRF Patients mean ± SD	Non-diabetic CRF patients Mean ±SD
1.	TOTAL CHOLESTEROL	221.4 ± 43.57	197.5 ± 37.79
2.	TOTAL TRIGLYCERIDES	195.3 ± 58.37	164.1 ± 56.79
3.	HDL	40.00 ± 8.60	41.1 ± 7.06
4.	LDL	142.6 ± 41.83	123.2 ± 41.94
5.	VLDL	38.7 ± 11.67	32.8 ± 11.35

TABLE 2

Sl. No	Lipid profile(mg/dl)	Patients on Haemodialysis Mean ±SD	Patients on Conservative Therapy Mean±SD
1.	TOTAL CHOLESTEROL	229.9 ± 51.50	188.3 ± 22.52
2.	TOTAL TRIGLYCERIDES	202.6 ± 66.82	149.2 ± 33.29
3.	HDL	38.1 ± 10.02	43.2 ± 6.01
4.	LDL	146.4 ± 49.16	114.7 ± 24.01
5.	VLDL	40.5 ± 13.36	29.8 ± 6.65

DISCUSSION

The present study was undertaken to study the Lipid profile in patients with Chronic renal failure. The study was conducted in 50 chronic renal failure patients. There were 33 males and 17 female patients with a mean age of 52.16 years. The mean age for male patients was 49.60 and for female patients was 54.47 years. The lipid profile of 50 chronic renal failure patients were analyzed irrespective of their etiology and modality of treatment. Attmanpo et al^{4,5,6,7} Alaupovic p et al studies done in University of Gotenberg, Sweden suggest that dyslipidemia is common in patients with chronic renal failure and also a contributing factor for the progression of disease. In this study there was three fold higher levels of S.triglycerides, Cholesterol, LDL and lower level of serum HDL. In our study the mean triglyceride level was found 175.9 mg/dl that is 60 % above normal, mean cholesterol 206.6 mg/dl that is 44 % above normal, LDL 130.6 mg/dl that is 82 % above normal but HDL 40.7 mg/dl that is 50 % below normal. There was elevation in Triglycerides, Cholesterol, LDL except HDL which was decreased in this study. In our study, the mean triglyceride level was found 175.9 mg/dL total cholesterol was 206.6 mg/dL, HDL 40.7 mg/dL and LDL was found 130.6 mg/dL. Lipid levels were found elevated among hemodialysis patients, when compared to patients on conservative therapy and was statistically significant.

CONCLUSION

- 7. 14% and 6% of CRF had respectively developed CAD & CVD as the commonest complications.

- 56% had total cholesterol in desirable range, 24% had borderline high and 20% on higher side.
- 40% of patients had serum triglyceride within normal range, 32% had borderline high, 28% on higher side.
- 4% had HDL in the range of 50-60 mg/dl, 46% between 41-50 mg/dl and 50% of patients had HDL below 40mg/dl.
- 18% of the patients had LDL-C in the optimal range, 42% in the near optimal range, 20% in borderline high, 2% in higher range and 18% in very high range.
- The lipid profile in hemodialysis patients was found on higher side compared to patients in conservative treatment.
- The difference in lipid profile among diabetic and non-diabetic was found to be statistically insignificant in our study.
- Majority of our patients showed changes of lipid profile which can predispose to atherogenic changes in chronic renal failure.

REFERENCES

1. Bagdade JD, Daniel Porte, Bierman EL: Hypertriglyceridemia – A Metabolic consequence of chronic renal failure. N. Eng. J. Med. 279:181-85:1968.
2. Grutzmacher et al: Lipoprotein and apolipoproteins during the Progression of chronic renal disease. Nephron 50: 103, 1988.
3. Frank WM, Rao TSK et al: Relationship of plasma lipids to renal function and length of time on maintenance of hemodialysis, Am J. Clin. Nutr. 31:1866-92:1978.
4. Attman P, Alaupovic P and Gustafson A: Serum apolipoprotein Profile of patients with chronic renal failure. Kid Int: 32:368, 1987.
5. Attman PO, Alaupovic A: Lipid and apolipoprotein profiles of Uremic dyslipoproteinemia - Relation to renal function and dialysis. Nephron 57:401-410, 1991.
6. Attman PO, Samuelson O & Alapuvovic P: Lipoprotein metabolism and renal failure. Am J. of Kid. Dis. 21:6:573-92; 1993.
7. Attaman PO, Alupovic P: Lipid abnormalities in chronic renal insufficiency. Kidney Int. 31:516:1991.