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ORIGINAL ARTICLE

STUDY OF DYSLIPIDEMIA AND ASSOCIATED CARDIOVASCULAR ABNORMALITIES IN CHRONIC KIDNEY DISEASE

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ABSTRACT

Objective & design: Dyslipidemia in chronic kidney disease (CKD) has a major role in enhanced atherosclerosis and hence by increasing cardiovascular adverse events. This study aims at identifying the incidence and type of dyslipidemia in early stages of CKD and the alteration with the severity of CKD.**Materials and methods:** 50 patients of CKD of stages 1 to 3, non diabetic, aged 20-60yrs, admitted between November 2014 and June 2016 in Rajah Muthiah medical college, Annamalai University, were studied for alteration in lipid levels and compared with control group.**Results:** There was significant increase in all lipoprotein fractions except HDL in CKD patients when compared to control group. Similarly their levels were comparatively lower in early stages than the advanced stages. Because the lipid abnormalities in CKD accelerates the progression of the renal failure and predisposes to atherosclerosis it is worth while detecting and treating hyperlipidemia in CKD patients at the earliest.

Keywords: CKD, TCH, TG, HDL, LDL

1.INTRODUCTION

Chronic kidney disease (CKD) encompasses a spectrum of different pathophysiologic processes associated with abnormal kidney function and a progressive decline in glomerular filtration rate (GFR) (Richard et al., 2010). Cardiovascular disease is a major cause of morbidity and mortality among patients with chronic kidney Disease CKD (King et al., 1992; Eggers,1990; Rostand et al., 1982). The growing recognition that dyslipidemia is a major risk factor for coronary heart disease has prompted interest in the identification and management of abnormalities in plasma lipids and lipoproteins in CKD. Reports available regarding accelerated atherosclerosis in CKD, due to alt Chronic kidney disease (CKD) encompasses a spectrum of different pathophysiologic processes associated with abnormal kidney function and a progressive decline in glomerular filtration rate erred lipid metabolism (Lidner et al., 1974; Foley et al., 1998). Therefore it is essential to study uremic dyslipidemia, since optimal treatment is essential for the prevention or delay of cardiovascular complications in patients with CKD(Tetsuo Shoji et al., 2001). This study is undertaken to study the alterations in lipid levels in early stages of CKD and thus aiding in early management so as to prevent or delay cardiovascular complications

AIMS AND OBJECTIVES

To study the incidence and type of dyslipidemia in early stages of CKD and to note the alteration of different lipoprotein fractions with the severity of chronic kidney disease.

2.MATERIALS AND METHODS

50 stable patients, non diabetic, of age 20 to 60, of both sexes, admitted in medical wards of Rajah Muthiah Medical college and hospital, Annamalai University, during the period

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of November 2014 - June 2016, diagnosed as chronic kidney disease of stages 1-3 were taken for present study. All the selected patients were subjected to detailed history and complete physical examination and data collected was noted in a pre-designed proforma. The control group was formed by 50 healthy persons, which was age and sex matched to the study group. Lipid levels like total cholesterol, triglycerides, LDL , HDL and VLDL were estimated and were compared with control group.

3.OBSERVATION AND RESULTS

Biochemical lipid profile data in controls and ckd patients. (mean±sd) mg/dl

Groups	Controls n=50	Patients n=50	t-value*	Significance
Total Cholesterol	186.82 ± 26.80	201.98 ± 48.30	1.941	P<0.05
Triglycerides	100.55 ± 23.40	165.98 ± 71.78	6.128	P<0.05
HDL	53.86 ±11.29	36.88 ± 6.85	9.089	P<0.05
LDL	115.10 ± 30.53	129.12 ± 46.52	1.781	P<0.07
VLDL	19.58 ± 3.49	32.80 ± 14.42	6.296	P <0.05
CHO/HDL	3.64 ± 1.00	5.80 ± 2.31	6.045	P<0.05

Total cholesterol value in controls and CKD patients are 186.82 ±26.8 and 201.98 ± 48.3 mg/dl respectively (P<0.05). This difference was highly significant.

Triglyceride values in control and CKD paients were 100.55 ± 23.40 and 165.98 ± 71.78 mg/dl respectively. Triglycerides values in patients of study group were significantly high compared to controls and this is statistically highly significant (P<0.05).

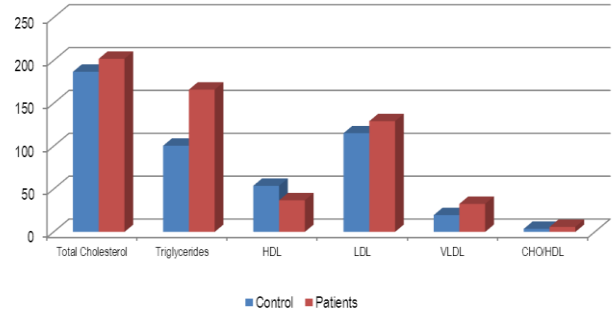
HDL values in study group are decreased compared to controls, 36.88±6.85mg/dl and 58.36 ± 11.29. respectively (P<0.05). this was statistically highly significant.

LDL values were high in study group when compared to control group, 129.12 ± 46.52 and 115.10±30.53 respectively. This difference is also significant (P<0.07).

VLDL- Significant increase in VLDL were found in study group as compared to controls, 32.80 ± 14.42 and 19.58 ± 3.49 respectively. This was also statistically highly significant(P<0.05).

CHO/HDL -There is highly significant increase in CHO/HDL ratio in study group when compared to controls, 5.80 ± 2.31 and 3.64 ± 1.00 respectively. This was statistically highly significant (P<0.005).

Fig. 1 Biochemical lipid profile data in control and CKD patients



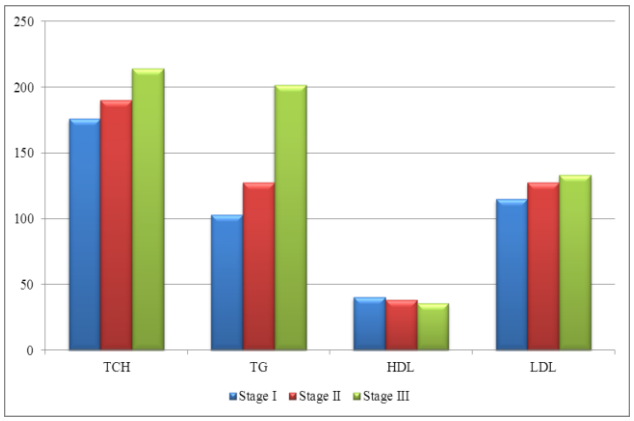
Biochemical profile (lipid) in patients with CKD-Stage wise (1 – 3)

	Stage	N	Mean	Standard Deviation	'P' value
TCH	1.00	6	176.0000	33.22048	0.100
	2.00	16	190.0000	43.28664	
	3.00	28	214.3929	50.92939	

	Stage	N	Mean	Standard Deviation	'P' value
TG	1.00	6	102.8333	27.48393	0.05
	2.00	16	127.3125	60.85252	
	3.00	28	201.6071	63.76539	

	Stage	N	Mean	Standard Deviation	'P' value
HDL	1.00	6	40.1667	4.57894	0.203
	2.00	16	38.1875	7.24080	
	3.00	28	35.4286	6.83904	

	Stage	N	Mean	Standard Deviation	'P' value
LDL	1.00	6	114.8333	32.40628	0.681
	2.00	16	127.4375	39.16966	
	3.00	28	133.1429	53.08813	



Biochemical profile (lipid) in patients with CKD- Stage wise (1 – 3)

Total cholesterol levels were significantly lower in patients on early stages of CKD than the advanced stages. Statistically significant (P<0.1).

Triglyceride levels were significantly lower in patients on early stages of CKD than the advanced stages. Statistically highly significant (P<0.05).

HDL cholesterol levels were marginally higher in patients on early stages of CKD than the advanced stages. (P<0.203).

LDL cholesterol levels were significantly lower in patients on early stages of CKD than the advanced stages. (P<0.681).

VLDL cholesterol levels were significantly lower in patients on early stages of CKD than the advanced stages. Statistically significant (P<0.05).

4.DISCUSSION

In this study alteration in different lipoprotein fractions in chronic kidney disease patients were studied, the alteration of lipoprotein fractions were compared stage wise. There is significant increase in total cholesterol, triglycerides, LDL

and VLDL concentration and TC/HDL ratio in chronic kidney disease patients when compared to control group. The HDL-cholesterol level was found to be significantly lower in CKD patients compared to control group.

The significant increase of all other lipoproteins & TC/HDL ratio and reduction in HDL in CKD patients may be a major contributory factor for enhanced atherogenesis in these patients and an important cause for increase in cardiovascular adverse events (Bricker,1972; Karl Skorecki et al., 2011). These patients require detailed cardiovascular evaluation despite absence of symptoms. Treating dyslipidemia at the earliest evidence of renal insufficiency can significantly alter the morbidity and mortality due to adverse cardiovascular events in the CKD patients.

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