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Lipid Profiles in Chronic Renal Failure

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Abstract: Chronic renal failure is increasingly health problem all around the world with a high burden of mortality and cardio vascular morbidity rate. The study is mainly directed to establish lipid profile in chronic renal failure by ascertaining the levels of serum cholesterol, HDL cholesterol, LDL cholesterol, VLDL cholesterol and triglycerides. In view of this extensive work has been done in the field and incessant efforts are being made to widen the horizon of lipid in chronic renal failure. The present study was aimed to find lipid abnormalities in chronic renal failure. There is significant rise in Triglycerides, VLDL, LDL in chronic renal failure. There is decrease in HDL concentration in chronic renal failure as compared to control. Increased concentration of Triglycerides and VLDL are the main causes for increased incidence of cardiovascular abnormalities in chronic renal failure.

Keywords: lipid profile, renal failure, uremia, hyperlipid daemia.

INTRODUCTION

Lipoproteins: CHRONIC RENAL FAILURE [1]

In view of the role of lipoproteins in the genesis of atherosclerosis the dyslipoproteinemia has recently commanded considerable interest. In patients with chronic renal failure triglycerides will be elevated. Total cholesterol shows mild increase [2]. In order to understand deranged lipoprotein metabolism in uremia it is useful to consider metabolic fate of the lipid particles.

In uremia the levels of VLDL and IDL lipoproteins are elevated [3] whereas levels of HDL are low. A slowly migrating subclass of potentially at herogenic particles called beta-VLDL is common in uremia [4]. The lipid composition in lipoprotein particles is also altered; the ratio of triglycerides to cholesterol is diminished. VLDL decreases but increase in IDL, LDL and decrease in HDL.

This constellation suggests diminished of incompletely catabolized intermediate particles and depletion of HDL. Abnormal composition of lipoprotein is also reflected showing character eristic changes of the apolipoprotein profile. Low absolute levels of Apo A-I and AII are observed even in early renal failure.

While the ratio of Apo A-I and HDL-2 cholesterol is increased [5] the most pronounced abnormality in uremic patients is marked increase of Apo C-III in very low density lipoproteins [6]. Apo-B is elevated in 50% of patients of chronic ambulatory peritoneal dialysis dut normal in those undergoing hemodialysis [7]. The presence of intestinal apolipoproteins Apo A-4 and Apo-B 48 [4] in uremic serum suggests delayed catabolism of intestinal particles [3].

MATERIALS AND METHODS

The present study was carried out in the Department of Biochemistry, Index Medical College Hospital and Research Center Indore. The patients selected for the study were admitted in the medical wards for dialysis between Dec 2011 to Dec 2013.

Controls

Twenty five healthy volunteers were chosen as controls among doctors, patients relatives and paramedical staff. They underwent thorough clinical examination to exclude any ailment. Serum HDL cholesterol, LDL cholesterol, VLDL cholesterol; Total cholesterol and Triglycerides were estimated among all the controls.

PATIENTS AND METHODS

Fifty patients with chronic renal failure were selected. The chronic renal failure was diagnosed from the history, clinical findings, and biochemistry data.

They were subjected to following investigations- serum HDL cholesterol, LDL cholesterol, VLDL cholesterol Total cholesterol and serum Triglycerides.

The age of the patients ranging from 30-60 years of both sexes. In order to ensure accurate and reproducible results fasting blood samples are collected.

Serum is separated and kept at 4-6 degree C until analysis is carried out (Max hrs 12-24 hours).

OBSERVATION & RESULTS

Patients

Total of 25 controls and 50 chronic renal failure patients were studied.

The lipid profiles in controls and chronic renal failure patients are shown in table.

Table-1

	Total Cholesterol	TG'S	HDL-C	LDL-C	VLDL-C
Controls (n=25)	178.9±17.5	80.7±10.5	60.2±8.5	94.1±18.5	16.1±2.1
C.R.F. (n=50)	222±14.2	193.9±28.1	38.7±10.9	123±39.2	38.7±5.6
P value	P<0.001	P<0.001	P<0.01	P<0.005	P<0.001

Values are expressed in mg/dl

The serum Total Cholesterol and Triglyceride levels were 178.9±17.5mg/dl and 80.7±10.5 mg/dl in controls and 222.3±14.2mg/dl and 193.9±28.1mg/dl in chronic renal failure patients respectively. The differences are bound to be highly significant ($p<0.001$).

The levels of LDL cholesterol and VLDL cholesterol in controls were 94.1±18.5mg/dl, 16.1±2.1mg/dl while 123.6±39.2mg/dl, 38.7±5.6mg/dl in chronic renal failure patients respectively. The increase in LDL and VLDL in chronic renal failure patients is statistically significant ($p<0.005$ and $p<0.001$).

HDL cholesterol values in controls and in chronic renal failure patients were 60.2±8.5mg/dl and 38.7±8.84 mg/dl respectively. The decreased level in chronic renal failure patients is bound to be statistically significant.

CONCLUSION

The present study was aimed to find lipid abnormalities in chronic renal failure.

- There is significant rise in Triglycerides, VLDL, LDL in chronic renal failure.
- There is decrease in HDL concentration in chronic renal failure as compared to control.
- Increased concentration of Triglycerides and VLDL are the main causes for increased incidence of cardiovascular abnormalities in chronic renal failure.

It has long been suggested that hyperlipidemia could cause renal injury and controversial to the progression of chronic renal failure. There are controversial reports regarding the lipid profile in "CHRONIC RENAL FAILURE". This is to be rectified by further studies in chronic renal failure. One has to wait optimistically for tomorrow's success.

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