Study of lipid profile disorders in patients with chronic kidney disease undergoing hemo-dialysis

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Abstract
Background: Cardiovascular disease (CVD) is a major cause of morbidity and mortality in patients with CKD, thus, although some patients with CKD will ultimately develop end stage renal disease (ESRD), most patients with CKD will die of CVD before dialysis becomes necessary. **Aims and Objectives:** To Study Lipid profile disorders in patients with chronic kidney disease undergoing hemo-dialysis. **Methodology:** After approval from institutional ethical committee a cross-sectional study was carried out in the department of Medicine of a tertiary health care centre during one year period i.e. November 2016 to November 2017. During the one year period 45 (Group A) patients were confirmed and were taking treatment for CRF in the form of regularly hemo-dialysis. Similarly 45 normal patients with matching age and sex were admitted for different condition were also under the same investigations and included into the study (Group B). The statistical analysis done by Chi-square test, unpaired t-test calculated by SPSS 19 version software. **Result :** In our study we have seen that The average age of the patients were 45.67 ± 7.75 and 46.54 ± 8.65 was comparable to each other (p>0.05, t=3.21,df=88), Male and Female were also comparable (p>0.05, X^2=0.44,df=1). In lipid profile The significantly deranged lipids were TC (p<0.001, t = 52.0216, df = 88), TGs (p<0.01,t=47.82,df=88), VLDL (P<0.05,t=55.34,df=88) while HDL(p>0.05,t=2.34,df=88), LDL(p>0.05,t=3.42,df=88) were not significantly deranged in the patients of CRF on Hemo-dialysis. **Conclusion:** It can be concluded from our study that the patients with CRF on Hemo-dialysis are having significantly higher levels of especially TC, TGs, VLDL.
Key Words: Lipid profile, CRF (Chronic Kidney Disease/ Failure).

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INTRODUCTION

Chronic kidney disease (CKD) is a significant health problem. It was estimated that the prevalence of CKD among the USA population between 1999-2004 was 15.3%[1]. On the other hand, it is well documented that cardiovascular disease (CVD) is a major cause of morbidity and mortality in patients with CKD[2-6]. Thus, although some patients with CKD will ultimately develop end stage renal disease (ESRD), most patients with CKD will die of CVD before dialysis becomes necessary[7]. Mild chronic impaired renal function contributes actively to the development of CVD, so the American Heart Association has recommended that these patients should be classified in the highest risk group for developing cardiovascular events[5]. Even microalbuminuria in the absence of apparent deterioration in renal function or diabetes predicts more CVD and deaths[8]. In patients who finally advance to ESRD and especially dialysis patients, the prevalence of clinical coronary heart disease is 40% and CVD mortality is 10 to 30 times higher than in the

general population of the same gender, age and race[5, 9, 10]. Several factors contribute to atherogenesis and CVD in patients with CKD[11]. Although most of the cases of coronary heart disease in the general population can be explained by traditional, Framingham risk factors[12], in patients with CKD, uremia related, non -traditional risk factors, such as, inflammation, oxidative stress, anemia, malnutrition, vascular calcification (due to alterations in calcium and phosphorus metabolism) and endothelial dysfunction have been proposed to play a central role[13].

MATERIAL AND METHODS

After approval from institutional ethical committee a cross-sectional study was carried out in the department of Medicine of a tertiary health care centre during one year period i.e. November 2016 to November 2017. All the patients who were suspected of the CRF were investigated thoroughly like Kidney function test, Lipid profile test, USG-abdomen etc. where ever necessary. During the one year period 45 (Group A) patients were confirmed and were taking treatment for CRF in the form of regularly hemo-dialysis. Similarly 45 normal patients with matching age and sex were admitted for different condition were also under the same investigations and included into the study. The statistical analysis done by Chi-square test, unpaired t-test calculated by SPSS 19 version software.

RESULT

Table 1: Distribution of the patients as per the baseline characters

	Group A (n=45)	Group B (n= 45)	p-value
Age (Yrs.)	45.67 ± 7.75	46.54 ± 8.65	p>0.05, t=3.21,df=88.
Sex			
Male	28	31	p>0.05, X^2=0.44,df=1
Female	17	14	

The average age of the patients were 45.67 ± 7.75 and 46.54 ± 8.65 was comparable to each other (p>0.05, t=3.21, df=88), Male and Female were also comparable (p>0.05, X^2=0.44,df=1)

Table 2: Lipid Profile among Control and CRF Patients Parameters (mg/dl)

Lipid profile	Group A (n=45)	Group B (n= 45)	p-value (unpaired t-test)
TC	178.2±15.3	39.35±9.3	p<0.001, t = 52.0216 df = 88
TGs	131.54±17.2	212.92±17.1	p<0.01,t=47.82,df=88
HDL	43.1±9.24	42.11±8.32	p>0.05,t=2.34,df=88
LDL	101.2±7.3	107.12±5.2	p>0.05,t=3.42,df=88
VLDL	19.43±1.24	47.82±7.21	P<0.05,t=55.34,df=88

In lipid profile The significantly deranged lipids were TC (p<0.001, t = 52.0216, df = 88), TGs (p<0.01,t=47.82,df=88), VLDL (P<0.05,t=55.34,df=88) while HDL(p>0.05,t=2.34,df=88), LDL(p>0.05,t=3.42,df=88) were not significantly deranged in the patients of CRF on Hemo-dialysis.

DISCUSSION

The characteristic lipid abnormalities seen in CRF patients are elevated triglycerides, normal/reduced total cholesterol (TC), decreased High Density Lipoprotein (HDL), normal Low Density Lipoprotein (LDL) [14] Progressive CRF not only leads to End stage renal disease (ESRD), but it is associated with high cardiovascular morbidity and mortality. In fact, patients with CRF are much more likely to die because of dyslipidemias than to progress to ESRD.[15] With the implication of plasma lipids in the pathogenesis of atherosclerosis and ischemic heart disease, it becomes worthwhile to study the behavior of various lipid fractions in CRF patients. [16] CVD constitutes the major cause of death in patients with ESRD and it is still higher in hemodialysis patients than in post transplantation patients. 5ESRD Patients on hemodialysis have abnormalities in lipoprotein structure and metabolism and have a high incidence of cardiovascular diseases. [17,18] In our study we have seen that The average age of the patients were 45.67 ± 7.75 and 46.54 ± 8.65 was comparable to each other (p>0.05, t=3.21, df=88), Male and Female were also comparable (p>0.05, X^2=0.44,df=1). In lipid profile The significantly deranged lipids were TC (p<0.001, t = 52.0216, df = 88), TGs (p<0.01,t=47.82,df=88), VLDL (P<0.05,t=55.34,df=88) while HDL(p>0.05,t=2.34,df=88), LDL(p>0.05,t=3.42,df=88) were not significantly deranged in the patients of CRF on Hemo-dialysis. These findings are similar de Gómez Dumm NT [19] they found CRF patients under regular hemodialysis evidence a gradual deterioration in the fatty acid and triglyceride abnormalities, a finding that might be relevant to the risk of cardiovascular disease in this setting.

CONCLUSION

It can be concluded from our study that the patients with CRF on Hemo-dialysis are having significantly higher levels of especially TC, TGs, VLDL.

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