



IMPACT OF LONG TERM HEMODIALYSIS ON LIPID PROFILE AMONG CHRONIC RENAL FAILURE PATIENTS- A DESCRIPTIVE STUDY

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ABSTRACT

Chronic Renal Failure (CRF) patients are at risk of cardiovascular diseases due to the elevation of various forms of lipids. The present study was done to describe the impact of long term hemodialysis on the levels of lipids profile. A total of 70 patients with chronic renal failure under regular hemodialysis that does not share the same period of dialysis time (4.0357 ± 1.76) per month. We obtained serum samples from patients in the morning after an overnight fast and were analyzed for total cholesterol (TC), triglycerides (TG), HDL, and LDL, VLDL was calculated. Triglyceride and VLDL levels observed significantly higher than the normal, with direct correlation with increase in the number of hemodialysis ($P=0.000$, $r = 0.336$), while there was no significant elevation observed in total cholesterol ($P = 0.561$, $r = 0.005$). HDL ($P: 0.468$) and LDL-C ($P : 0.588$) when compared with the number of times of hemodialysis. From this study we are conducted that increase level of triglyceride and VLDL level in the circulation with increase duration times of hemodialysis and they was no effect of hemodialysis on total cholesterol and HDL and LDL-C. So fail of hemodialysis as a treatment to treat the dyslipidemia mainly hypertriglyceridemia.

Keywords: Chronic renal failure, Hemodialysis, Lipid profile, Cardiovascular diseases.

1. INTRODUCTION

Chronic renal failure (CRF) is a permanent and significant reduction in glomerular filtration rate or chronic irreversible destruction of kidney tissue. It is characterized by a wide variety of biochemical disturbances and numerous clinical symptoms and signs [1]. Dyslipidemia is a very common complication of CRF. Disturbances in lipoprotein metabolism are evident, even at the early stages of CRF and usually follow a downhill course that parallels the deterioration in renal function. Recently published studies indicate that dyslipidemia in these patients may actively participate in the pathogenesis of Cardiovascular disease (CVD) as well as in the deterioration of renal function [2]. Lipoprotein metabolism is altered in most patients with renal insufficiency. The imbalance between lipoprotein synthesis and degradation in prolonged renal disease results in a pronounced dyslipidemia [3, 4]. Uremic patients have elevated serum levels of triglycerides and lipoprotein and this elevated level of this lipid may contribute to increased cardiovascular risk [5]. In renal failure these abnormalities of lipid metabolism presumably contribute to increased risk of atherogenesis, which may be troublesome in patients receiving long-term dialysis [6]. Progressive CRF not only leads to End stage renal disease (ESRD), but it is associated with high cardiovascular morbidity & mortality. In fact, patients with CRF are much more like to die because of dyslipidemias than to progress to ESRD [7]. 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 [8]. CVD constitutes the major cause of death in patients with ESRD and it is still highest in hemodialysis patients [9]. ESRD Patients on hemodialysis have abnormalities in lipoprotein structure and metabolism and have a high incidence of cardiovascular diseases [10]. Keeping in view the different outcomes of the researchers regarding hemodialysis modality in CRF patients The present study describe the impact of number of times of homodialysis on the level of lipid profile in chronic renal failure patient that under the hemodialysis treatment.

2. MATERIAL AND METHOD

2.1. Study population

A total of 70 adult subjects were used for this study (57 males and 13 female patients with chronic renal failure on hemodialysis treatment).

2.2. Blood sample collection

5 ml of venous blood samples were collected from chronic renal failure patient under hemodialysis in plain tubes after an overnight fast from ibn sena hospital. After collection, the samples were allowed to clot for half an hour following which the samples were centrifuged and serum was analyzed to measure the concentration of Serum total cholesterol (TC), triglycerides (TGs), HDL and, LDL-C.

2.3. Laboratory method

Serum total cholesterol (TC), triglycerides (TGs) were measured by (urite) its chemical fully automated analyzer while HDL cholesterol were measured by chemically precipitation method by (biosystem) commercially available kits, LDL cholesterol and VLDL cholesterol concentration was calculated using Friedewald’s Formula [11].

2.4. Statistical analysis

Statistical analysis was performed by using the statistical package for social science (SPSS). Results was presented as mean ± SD. ANOVA test was using to compare mean of different numerical variable, regression was performed using a general liner model approach to determine the association between serum triglyceride, VLDL and T.cholesterol versus number of times of hemodialysis .

3. RESULTS

A total of 70 patients with chronic renal failure under hemodialysis treatment were included in this study. The mean age of the patient was (56.5±12.1) years with the duration period of hemodialysis (4.03±1.76) month.

Table 1: Descriptive summary of the means and SD of serum total cholesterol, triglyceride, HDL-C, LDL-C and VLDL for the patient with chronic renal failure under hemodialysis treatment.

Variable	Mean	SD
Cholesterol in mg/dl	138	26.7
Triglyceride in mg/dl	134	38.9
HDL-C in mg/dl	46	10.3
LDL-C in mg/dl	64	26.0
VLDL in mg/dl	26	7.7
Age in years	56	12.1
Duration in months	4	1.7

Table 2: Comparison of mean and SD of serum total cholesterol, triglyceride, HDL-C, LDL-C and VLDL in the patient under hemodialysis against the different of times number of hemodialysis per month.

Variables	Duration /month	Analyses (mg/dl)	P value
T . cholestrol	4.0±1.7	138±26.7	0.561
Triglyceride	4.0±1.7	134±38.9	0.000
HDL-C in mg/dl	4.0±1.7	46.4±10.3	0.468
LDL-C in mg/dl	4.0±1.7	64.6±26	0.588
VLDL in mg/dl	4.0±1.7	26.9±7.7	0.000

There is no significant correlation observed between cholesterol level and the numbers of hemodialysis per month (mean ± SD: 138±26.7 and 4.0±1.7), respectively with (P.value = 0.561). But there is significant correlation

observed between triglyceride and the number of hemodialysis per month (mean±SD=134±38.9 and 4.0±1.7) respectively with (P value = 0.000) and also there is no significant correlation observed between HDL-C and the number of hemodialysis per month (mean ± SD: 46.4±10.3 and 4.0±1.7) respectively with (P value = 0.468). There is no significant difference observed between LDL-C and the number of hemodialysis per month (mean ± SD: 64.6±26 and 4.0±1.7) respectively with (P value=0.588).

Figure 1: Show comparison between the level of triglyceride versus the number of time of hemodialysis per month (P= 0.336)

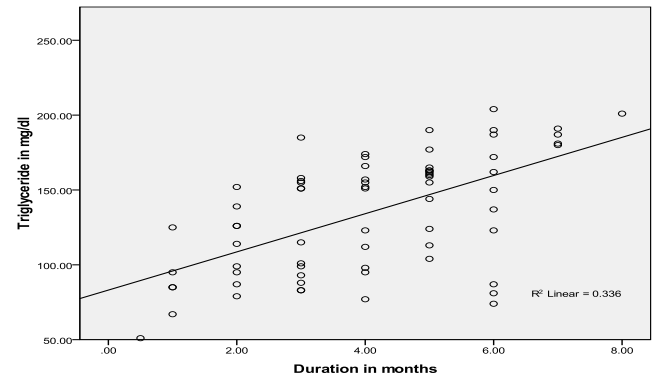


Figure 2: Show comparison between the level of VLDL versus the number of time of hemodialysis per month (P = 0.336).

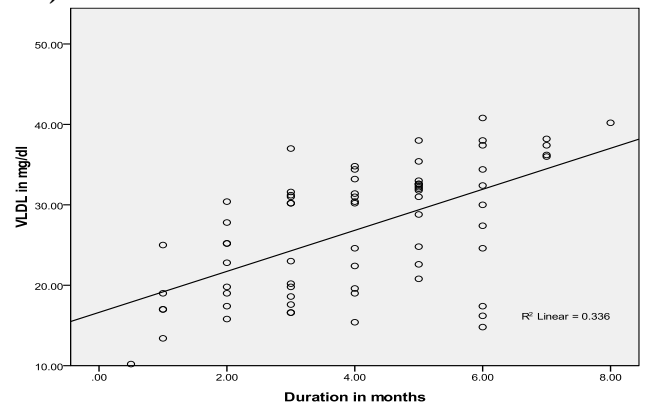
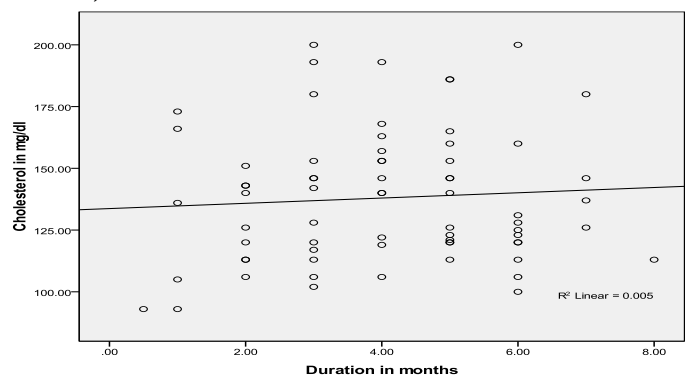


Figure 3: show comparison between the level of total cholesterol the number of time of hemodialysis per month (P = 0.005).



4. DISCUSSION

CRF is a worldwide health problem and is the leading cause of morbidity and mortality in the developed world. Patients with CRF are at high risk for CVD and cerebrovascular disease (CBVD), and they are more likely to die of CVD than to develop ESRD.

CRF is associated with premature atherosclerosis and increased incidence of cardiovascular morbidity and mortality. Several factors contribute to atherogenesis and cardiovascular disease in patients with CRF, the notably among all is dyslipidemias [12].

Cardiovascular disorders are one of the most serious problems in chronic hemodialysis patients. The mortality due to cardiovascular disease in hemodialysis patients is estimated to be 9% annually and is 30 times higher than that observed in the general population [13]. Dyslipidemias observed in CRF patients with hemodialysis in which were supported by Janicki et al. [14], Mekki et al. [15] and Reddy et al. [16]. Lipoprotein metabolism is altered in most patients with renal insufficiency. Chan et al. [17] and Riepponen et al. [18] said that dyslipidaemia develops early in renal failure and it becomes more pronounced as the renal disease progresses because of imbalance between lipoprotein synthesis and degradation.

In hemodialysis patients plasma lipoprotein lipase activity and hepatic lipase activity have been reported to be reduced, while the Apo CII/Apo CIII ratio is decreased. A possible disturbance in both enzymes, accompanied by an increase in Apo CIII in VLDL, results in a prolonged half life of the VLDL particles, which may explain the observed hypertriglyceridemia in these patients [19, 16]. The present study demonstrates that in CRF patients treated with long-term hemodialysis that the hemodialysis fail to correct dyslipidemias generated by CRF were different from Abdullah Al-Hwiesh et al. [20] which describe that the hemodialysis can reduce the level of triglyceride with long term homodialysis.

5. CONCLUSION

Still the patients on hemodialysis are exposed to several metabolic consequences. It is suggested that prescribing lipid

lowering treatment in CRF patients with dyslipidaemia for preventing future episode of cardiovascular events.

6. REFERENCES

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