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# Lipid Profile and Hematological values in Chronic Kidney Disease.

Medicine

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## ABSTRACT

**Aims:** The aim of present study was to compare the lipid profile and biochemical values among patients of chronic renal failure (CRF) needing haemodialysis and patients of CRF being treated conservatively.
**Materials and Methods:** This cross sectional, observational study consisted of consenting patients of CRF admitted or from out patients department. Socio demographic data and fasting blood was collected for biochemical, hematological testing and lipid profile.
**Results:** For a total sample of 60 CRF patients 39 (65%) (mean age 59.48 ± 15.37 years) patients were on conservative treatment and 21 (35%) (mean age 54.00 ± 13.83 years) who were on hemodialysis. The mean serum creatinine was 4.92 ± 2.79 and 8.37 ± 3.20 respectively for conservative and hemodialysis groups (t= -4.339, df= 58, p=.000). Also mean hemoglobin was 9.81 ± 2.48 gm% and 8.35 ± 1.91 gm% respectively for conservative and hemodialysis groups (t= 2.335, df= 58, p=.023)
**Conclusions:** This study finds a significantly elevated serum creatinine and decreased hemoglobin among CRF requiring hemodialysis in comparison to patients being treated conservatively.

## KEYWORDS:

Antenatal, Anxiety, Depression, Primigravida, Multigravida.

## INTRODUCTION

Chronic kidney disease (CKD) is a serious and increasingly common condition [1] Dyslipidemia is common finding among patients with CKD [2] and its presence puts at higher risk of CKD progression [3,4]. Hyperlipidemia increases with deteriorating renal function specially hypertriglyceridemia and elevation of LDL cholesterol are considered proportional to the severity of renal impairment [5].

Elevated lipid parameters among CKD patients have strong risk for developing cardio vascular disease CVD, hence an early intervention is suggested for lipid abnormalities in CKD patients [6]. The relationship of CKD and CVD is so strong that a reports show 10–30 times higher mortality due to CVD in dialysis patients compared to general population [7]. The aim of this study was to determine the difference of lipid profile among patients of CRF needed haemodialysis in comparison to patients of CRF who are not needing haemodialysis.

## MATERIALS AND METHOD

This was a cross-sectional hospital-based study, conducted at a tertiary care medical college hospital, RIMS Ranchi, Jharkhand, India during October 2013 to October 2014. The study protocol was approved by the institutional review board of RIMS, Ranchi. Data were collected with consenting patients or their guardians. All adult consenting patients were enrolled for the study, which were diagnosed as CRF either on conservative treatment or hemodialysis, irrespective of other coexisting disease. the patients were either admitted to medical wards or attending outpatients, both were included for the study. The inclusion criteria also included both sex and age of 15 years and above. The exclusion criteria were patients of renal transplant and patients on lipid lowering agents. All recruited patients were requested to complete a questionnaire about their socio-demographic variables and clinical information.

### Tools

Socio-demographic Data Sheet: The socio demographic data sheet included age, religion, occupation, education and clinical history like, history of Hypertension, Diabetes Mellitus, duration of treatment for CKD, duration of hemodialysis, history of dyslipidemia etc.

All patients underwent detailed physical examination and then blood collected for biochemical and hematological examination, the blood collected only after overnight 12 hours of fasting state.

Statistical Analysis: The collected data of all subjects was statistically analyzed, using Statistical Package for Social Sciences (SPSS, Inc., Chicago, Illinois) version 10.0.

Data analysis included means and standard deviations for complete sample for all continuous variables. Other categorical data analysed as descriptive frequency in percentage. Data analysis included means and standard deviations for both group of patients on conservative treatment and on hemodialysis. The independent sample t-test was used to determine if differences existed between the means of groups for different variables. Statistically significant levels are reported for p values less than or equal to 0.05. Highly significant levels are p values less than .001.

## RESULTS

A total of 60 subjects were included for the study, out of these total sample 39 (65%) patients were on conservative treatment without hemodialysis and 21 (35%) patients were on hemodialysis. Table 1 summarizes the sample characteristics, there was 15 females and 45 male patients. There were 39 (65%) patients with diabetes and 21 (35%) patients with no history of diabetes. Numbers of diabetic CRF patients were much higher in conservative treatment group as compared to hemodialysis group (chi square 4.290. p=0.038). Another important comorbid condition ie. Hypertension was present in 68.3% of total patients and skin markers for hyperlipidemia were present among 36.7% total patients. Other group distribution and sample characteristics are shown in table 1.

The mean age of the sample was 59.48 ± 15.37 years for conservative group and 54.00 ± 13.83 for hemodialysis group (t= 1.367, p=.178). Most of the mean lab values were comparable across the groups and there was no significant difference. These lab variables included Random blood sugar, blood urea, serum sodium – potassium, serum triglyceride, cholesterol, HDL, LDL and urinary albumin. Only two lab variables were found significant different across the groups; mean serum creatinine was 4.92 ± 2.79 and 8.37 ± 3.20 respectively for conservative and hemodialysis groups (t= -4.339, df= 58, p=.000). The another significant difference was mean hemoglobin. it was 9.81 ± 2.48 and 8.35 ± 1.91 respectively for conservative and hemodialysis groups (t= 2.335, df= 58, p=.023) (table 2).

## DISCUSSION

This study is a cross sectional descriptive study which included sixty

patients of chronic kidney disease who were treated as inpatients or outpatients. The cases were collected over one year; the complete sample was grouped as those who were managed with hemodialysis and those on conservative treatment. The patients fasting lipid profile was compared to the values by the National cholesterol education program extent panel on detection, evaluation and treatment of high blood cholesterol in adults (NCEP-ATP III) [8]

In this study we found normal lipid profile of CRF patients across both groups of conservative treatment and hemodialysis group. this is in contrast to many previous studies, which reported elevated serum triglycerides and VLDL levels along with reduced HDL [9] and increased LDL [10].

However few studies [11,12,13] found that hypertriglyceridemia and the elevation of LDL, VLDL cholesterol not only associated with CRF but were proportional to the severity of renal impairement. Also that diabetic patient had increased triglycerides and lower HDL, suggesting that diabetes itself exacerbated lipid abnormalities.

In this present study the two comparative groups represents the severity of CRF, as being treated conservatively represents mild CRF and being treated with hemodialysis represents severe CRF. Thus not finding any difference in lipid profile in between these two treatment groups does not affirms the progressive lipid profile derangements proportional to severity of CRF. This is in contrast to the study of Chan [11] where they found lipid derangements proportional to the severity of renal impairement.

We found two lab variables that differentiate the two groups i.e. mild and severe form of CRF. First obvious parameter was serum creatinine, the mean serum creatinine was found to be 4.92 mg/dl (± 2.79) and 8.37 mg/dl (± 3.20) respectively for conservative and hemodialysis groups (t= -4.339, df= 58, p=.000). This difference is expected as rising serum creatinine is the indicator for changing conservative intervention to hemodialysis. Another parameter was hemoglobin that was found 9.81 gm% (± 2.48) and 8.35 gm% (± 1.91) respectively for conservative and hemodialysis groups (t= 2.335, df= 58, p=.023). That implicates that lower hemoglobin represents the more severe renal impairement.

This study lacks in inability to control many other possible factors involved. This study also limited by its shorter sample size and lack of follow up longitudinal design. In future we need larger samples size and control of comorbid conditions associated with CRF.

## CONCLUSION

This study finds a significantly elevated serum creatinine and decreased hemoglobin among severe form of CRF requiring hemodialysis in comparison to patients being treated conservatively. However there was no significant difference in lipid profile of these two groups.

**Table 1. Sample Characteristics and findings:**

| | | conservative n=39 (65%) | Hemodialysis n=21 (35%) | Chi square test Mean ± SD | P value |
|---|---|---|---|---|---|
| Age | | | | | |
| Gender | Male | 31 | 14 | 1.197 | .274 |
| | Female | 8 | 7 | | |
| Diabetes | No | 10 | 11 | 4.290 | .038 |
| | Yes | 29 | 10 | | |
| Hypertension | No | 15 | 4 | 2.738 | .123 |
| | Yes | 24 | 17 | | |
| Skin Markers | No | 21 | 17 | 4.319 | .038 |
| | Yes | 18 | 4 | | |

**Table 2. Comparison of mean lab values across group of conservative and hemodialysis.**

| | Mean ± SD HADS Score | | t | DF | Sig.(2-tailed) p value |
|---|---|---|---|---|---|
| | Consevative n = 39 | Hemodialysis n = 21 | | | |
| Age | 59.48 ± 15.37 | 54.00 ± 13.83 | 1.367 | 58 | .178 |
| Hemoglobin | 9.81 ± 2.48 | 8.35 ± 1.91 | 2.335 | 58 | .023 |
| RBS | 182.13 ±100.16 | 148.81 ± 70.07 | 1.354 | 58 | .181 |
| Blood Urea | 135 .13 ± 98.4 | 148.05 ± 52.08 | -.559 | 58 | .578 |
| Serum Creatinine | 4.92 ± 2.79 | 8.37 ± 3.20 | -4.339 | 58 | .000 |
| Serum Na | 129.10 ± 8.64 | 132.48 ± 7.50 | -1.508 | 58 | .137 |
| Serum K | 4.46 ± 1.26 | 4.93 ± 1.13 | -1.436 | 58 | .156 |
| Urine Albumin | 142.44 ± 124 .94 | 147.24 ±115.63 | -.146 | 58 | .885 |
| S Triglyceride | 177.13 ±126.78 | 159.24 ± 55.08 | .614 | 58 | .541 |
| S Cholesterol | 177.97 ± 43.73 | 179.62 ± 38.94 | -.144 | 58 | .886 |
| Serum HDL | 43.74 ± 15.40 | 44.14 ± 12.61 | -.102 | 58 | .919 |
| Serum LDL | 95.71 ± 34.13 | 78.76 ± 36.72 | 1.788 | 58 | .079 |

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