Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies

Journal home page: www.jamdsr.com doi: 10.21276/jamdsr UGC approved journal no. 63854

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805 Index Copernicus value = 76.77

Original Article

Clinical parameters and lipid profile in chronic kidney disease patients with or without hemodialysis- A comparative study

Dr. Purushottam Singh Yadav

Assistant professor, Department of General Medicine, Prasad Institute of Medical Sciences Lucknow, U.P.,India

ABSTRACT:
Background: Chronic kidney disease (CKD) results when a disease process affects the structural or functional integrity of the kidneys. The present study was conducted to assess lipid profile in CKD patients with or without hemodialysis. **Materials & Methods:** 110 CKD patients of both genders were divided into 2 groups. Group I were those who underwent hemodialysis and group II were those who did not undergo hemodialysis. Total serum cholesterol and triglycerides were determined by enzymatic estimation, while HDL-C was determined by precipitation. LDL-C was estimated using Friedwald formula. **Results:** The mean TC (mg/dl) was 182.8 and199.2, TG (mg/dl) was 123.2 and 170.4, HDL (mg/dl) was 53.0 and 74.6 and LDL (mg/dl) was 102.5 and 85.2 in group I and II respectively. The difference was significant (P< 0.05). **Conclusion:** There was dyslipidaemia in CKD patients without hemodialysis as compared to those with hemodialysis.
Key words: Chronic kidney disease, dyslipidaemia, Hemodialysis.

Received: 2 June 2018 Accepted: 8 July 2018

Corresponding author: Dr.Purushottam Singh Yadav

This article may be cited as: Yadav PS. Clinical parameters and lipid profile in chronic kidney disease patients with or without hemodialysis- A comparative study. J Adv Med Dent Scie Res 2018;6(8):161-163.

INTRODUCTION

Chronic kidney disease (CKD) results when a disease process affects the structural or functional integrity of the kidneys. Chronic kidney failure is the result of CKD. Chronic renal disease features various abnormalities of lipid metabolism, which results in an exceedingly atherogenic profile.[1] Although most striking lipid abnormalities are seen in nephrotic syndrome, hyperlipidemia characterizes renal disease of every cause. Lipid abnormalities in CRF are very important, because atherosclerotic heart disease is the foremost cause of morbidity and mortality in patients with end stage renal disease (ESRD).[2]

Dyslipidaemia is associated with rapid decline in renal function and commencement of RRT in CKD patients.[3] The precise mechanism is unknown, but it has been postulated that mesangial cells bind and take up oxidized LDL which then causes injury to mesangial, epithelial and endothelial cells by favouring recruitment of inflammatory cells such as macrophages which release cytokines, chemokines and growth factors.[4] This subsequently leads to glomerulo-sclerosis. Hypercholesterolaemia and hyper-triglyceridaemia also cause podocyte injury and mesangial sclerosis, subsequently leading to glomerulosclerosis. Dyslipidaemia in CKD patients is characterized by elevated triglyceride (TG), elevated total cholesterol (TC), high density lipoprotein cholesterol (LDL-C) and reduced high density lipoprotein cholesterol (HDL-C).[5] However, total cholesterol may be normal or reduced especially in the presence of malnutrition. The pattern of dyslipidaemia seen in CKD patients is highly atherogenic and is associated with development of atherosclerotic cardiovascular disease and all cause mortality.[6] The present study was conducted to assess lipid profile in CKD patients with or without hemodialysis.

MATERIALS & METHODS

The present study comprised of 110 CKD patients of both genders. All were enrolled after obtaining written consent. Inclusion criteria for control subjects were adults aged ≥18 years who were not hypertensive nor

diabetic with normal renal function, females who were not pregnant and not on steroids, immunosuppressant or lipid lowering medications.
Data such as name, age, gender etc. was recorded. About 10mls of fasting venous blood was obtained from patients to perform biochemical tests which included serum creatinine and fasting serum lipids. Patents were divided into 2 groups. Group I were those who underwent hemodialysis and group II were those who did not undergo hemodialysis. Results Total serum cholesterol and triglycerides were determined by enzymatic estimation, while HDL-C was determined by precipitation. LDL-C was estimated using Friedwald formula. Results tus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Status	With hemodialysis	Without hemodialysis
M:F	35:20	25:30

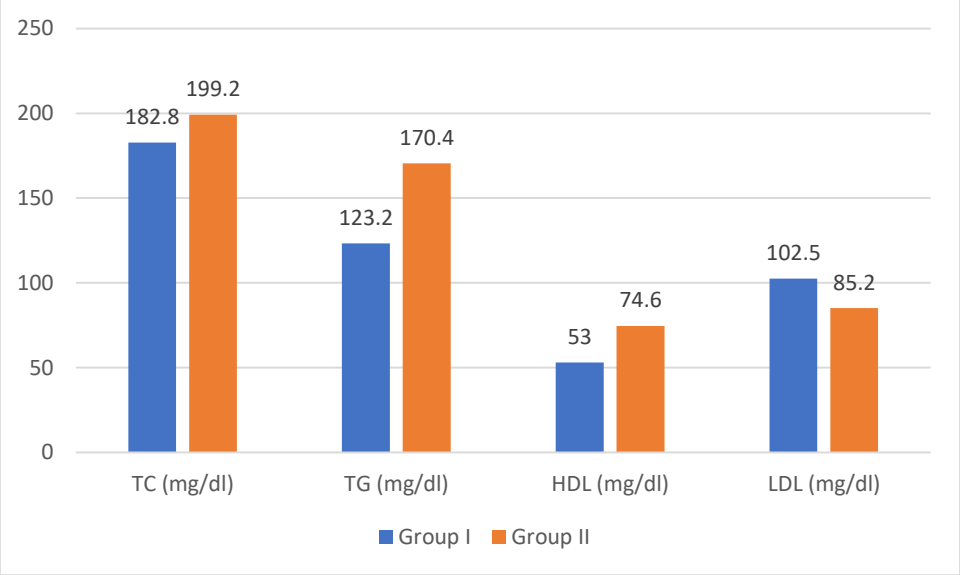
Table I shows that group I had 35 males and 20 females and group II had 25 males and 30 females.

Table II Lipid profile in both groups

Groups	Group I	Group II	P value
TC (mg/dl)	182.8	199.2	0.05
TG (mg/dl)	123.2	170.4	0.02
HDL (mg/dl)	53.0	74.6	0.01
LDL (mg/dl)	102.5	85.2	0.03

Table II, graph I shows that mean TC (mg/dl) was 182.8 and199.2, TG (mg/dl) was 123.2 and 170.4, HDL (mg/dl) was 53.0 and 74.6 and LDL (mg/dl) was 102.5 and 85.2 in group I and II respectively. The difference was significant (P< 0.05).

Graph I Lipid profile in both groups



DISCUSSION

Cardiovascular disease is the leading cause of hospitalization and mortality in patients with chronic kidney disease. The process of cardiovascular disease most likely started in early stages of CKD considering its severity at commencement of renal replacement therapy (RRT).[7] Dyslipidaemia is one of the recognized traditional cardiovascular risk factors in the general population as well as CKD patients. This cardiovascular risk factor occurs commonly in patients with CKD. Dyslipidaemia is associated with rapid decline in renal function and commencement of RRT in CKD patients.[8] The precise mechanism is unknown, but it has been postulated that mesangial cells bind and take up oxidized LDL which then causes injury to mesangial, epithelial and endothelial cells by favouring recruitment of inflammatory cells such as macrophages which release cytokines, chemokines and growth factors. This subsequently leads to glomerulosclerosis. Hypercholesterolaemia and hypertriglyceridaemia also cause podocyte injury

and mesangial sclerosis, subsequently leading to glomerulosclerosis.[9]

The patients have reduced HDL-C and increased plasma triglyceride concentrations and there is defect in the cholesterol transport. Other factors that may contribute to atherosclerotic coronary artery disease in ESRD are reduced HDL-C synthesis and reduced activity of the reverse cholesterol pathway.[10] The present study was conducted to assess lipid profile in CKD patients with or without hemodialysis.

In present study, group I had 35 males and 20 females and group II had 25 males and 30 females. Ganta et al[11] found the prevalence of dyslipidemia in CKD was found to be about 65.%. And the prevalence was increasing with the increase in severity of the disease. There was a significant rise in the serum triglyceride concentration in the study population. This abnormality was followed by a fall in HDL cholesterol and rise in the total Serum cholesterol in patients suffering from CKD. On comparing patients with CKD on hemodialysis with that on conservative management there is a significant prevalence of dyslipidemia in the Hemodialysis group. There is a significantly higher level of triglycerides and Serum cholesterol and a significantly lower level of HDL cholesterol in the hemodialysis group. The high prevalence of lipid abnormalities in CKD may accelerate the progression of CVD and increase the mortality of patients. Hence it is worthwhile to test and detect patients at high risk early on and manage accordingly.

We found that mean TC (mg/dl) was 182.8 and199.2, TG (mg/dl) was 123.2 and 170.4, HDL (mg/dl) was 53.0 and 74.6 and LDL (mg/dl) was 102.5 and 85.2 in group I and II respectively. Adejumo et al[12] found that the mean age of the CKD and control subjects were 46.98±16.81 and 47.57±15.97 years respectively with a male:female ratio of 1.7:1. The median atherogenic index of plasma (AIP), low density lipoprotein-cholesterol and triglyceride (TG) were significantly higher in the CKD patients while mean high density lipoprotein-cholesterol (HDL-C) was significantly lower in the CKD patients (p=<0.001). The overall prevalence of dyslipidaemia in the CKD patients was 60% which was significantly higher than 39% in the control (p=0.002). The prevalence of high AIP, elevated TG and reduced HDL-C increased with worsening renal function. Dyslipidaemia was commoner in female CKD patients (p=0.02) and those who were ≥ 45years (p=0.94). Dyslipidaemia is common in pre-dialysis CKD especially in female and older patients. Some lipid abnormalities increased with worsening kidney function.

CONCLUSION

Authors found that there was dyslipidaemia in CKD patients without hemodialysis as compared to those with hemodialysis.

REFERENCES

1. Myhre E, Gjone E, Flatmark A, Hovig T. Renal failure in familial lecithine acetyltransferase deficiency. Nephron 1997;8:840-852.
2. Rigatto C, Parfrey P, Foley R, Negrijn C, Tribula C, Jeffery J. Congestive heart failure in renal transplant recipients, risk factors, outcomes, and relationship with ischemic heart diseases. J Am Soc Nephrol 2002;13:1084-1090.
3. Kimak E, Solski J, Janicka L, Duma D, Zagojska M. Plasma lipoproteins in patients with CRF. Int Urol Nephrol 1997;29(5):597-601.
4. Bhagawat R, Joshi SP, Salgia P, Sepha A. Lipid abnormality in chronic renal failure. Indian J ClinBiochem1997 Jan;12(1):81-85.
5. Shah B, Nair S, Sirsat RA, Ashavaid TF, Nair KG. Dyslipidemia in patients with CRF and renal transplantation. J Postgrad Med 1994 Apr-Jun;40(2):57-60.
6. Rajman J, Harpel L, McPake D, et al. Low density lipoprotein profile in CRF. Nephrol Dial Transplant 1998;13:2281.
7. Foley RN, Parfrey PS, Sarnak MJ. Clinical epidemiology of cardiovascular disease in chronic renal disease. Am J Kidney Dis. 1998;32(3):S112-9.
8. Parfrey PS, Foley RN, Harnett JD. Outcome and risk factors of ischemic heart disease in chronic uremia. Kidney Int. 1996;49(5):1428-34.
9. Baugh ME, Stoltz ML, Vanbeber AD, Gorman MA. Are lipid values and BMI related to hospitalizations in the hemodialysis population. J Ren Nutr. 2001;11(1):37-45.
10. Cheng SC, Chu TS, Huang KY. Association of hypertriglyceridemia and insulin resistance in uremic patients undergoing CAPD. Perit Dial Int. 2001;21(3):282-9.
11. Ganta V, Yalamanchi RP, Mahanta KC, Sahu B, Raghvendar K, Anusha G, Bachu B, Reddy CR. A study of lipid profile in non-diabetic chronic kidney disease. Int J Adv Med. 2016 Oct;3(4):965-70.
12. Adejumo OA, Okaka EI, Ojogwu LI. Lipid profile in pre-dialysis chronic kidney disease patients in southern Nigeria. Ghana medical journal. 2016 Apr 7;50(1):44-9.