



FREQUENCY OF DYSLIPIDEMIA IN PATIENTS UNDERGOING MAINTENANCE HEMODIALYSIS AT BAHAWAL VICTORIA HOSPITAL, BAHAWALPUR.

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Article received on:

25/07/2019

Accepted for publication:

19/12/2019

ABSTRACT... One of the risk factor of cardiovascular disease in patients of maintenance hemodialysis is abnormalities in lipid profile. Deranged levels of cholesterol are related to increased risk of cardiovascular mortality and morbidity in hemodialysis patients. **Objectives:** To determine the frequency of dyslipidemia under going maintenance hemodialysis at BVH, Bahawalpur. **Study Design:** Cross Sectional study. **Setting:** Dialysis unit at Bahawal Victoria Hospital, Bahawalpur. **Period:** January to May 2019. **Material & Method:** A total of 220 patients who were undergoing maintenance hemodialysis at dialysis unit BVH, Bahawalpur were included in the study. Pre-dialysis blood samples were taken for assessment of Sr. Cholesterol (Total), Sr. Triglycerides & Sr. HDL and were sent to Chemical Pathology Lab of QAMC, Bahawalpur on same day for processing. **Results:** Out of 220 patients, most of the patients were male (66.8%), history of smoking was present in 7.3% & mean duration of dialysis was 27.12 + 25.85 months. The mean of Sr. Cholesterol (Total), Sr. Triglycerides, Sr. HDL were 155.51+37.72 mg/dl, 135.54+89.27 mg/dl & 35.22+7.77 mg/dl respectively. Dyslipidemia was present in 80% of patients with most common being low HDL (71.8%). **Conclusion:** Patients of maintenance hemodialysis are having significant number of dyslipidemia leading to inflammation, accelerated atherosclerosis and increased cardiovascular events.

Key words: Dyslipidemia, End Stage Renal Disease, Hemodialysis.

Article Citation: Malik SI, Khan R, Imran A, Akram M, Maqbool S, Habib R. Frequency of dyslipidemia in patients undergoing maintenance hemodialysis at Bahawal Victoria hospital, Bahawalpur. Professional Med J 2020; 27(9):1829-1833.
DOI: 10.29309/TPMJ/2020.27.09.3975

INTRODUCTION

Dyslipidemia has high prevalence in patients undergoing hemodialysis. It is defined as triad of high TGs, elevated vLDL and reduced HDL.¹ Dyslipidemia is one of the pathology of metabolic syndrome which is associated with accelerated atherosclerosis. Accelerated atherosclerosis causes increase rate of cardiovascular events in suffering patients and increase in mortality rate.² Chronic kidney disease is high risk equivalent to coronary heart disease.³ Cardiovascular events have high incidence among the patients undergoing hemodialysis.⁴ It is the leading cause of death among the hemodialysis patients.^{5,6} The risk factors of cardiovascular events are more prevalent in hemodialysis patients than in general population of same age and gender. There is great impact of reducing these risk factors to decrease the burden of coronary heart disease.⁷ According to K/DOQI guidelines treatment should

be considered in patients of hemodialysis having dyslipidemia and cardiovascular events.⁸

The study was planned to assess lipid profile of hemodialysis patients and identify the patients at risk of cardiovascular events.

MATERIAL & METHODS

The study was conducted at Dialysis Unit, Bahawal Victoria Hospital, Bahawalpur January to May 2019. After approval from Institutional ethical committee and informed consent from the patients 220 patients of both gender and undergoing hemodialysis twice per week for last 3 months were included in the study. Patients who refused to give consent and were already taking treatment for dyslipidemia were excluded from the study. The data was collected on pre-designed pre-tested questionnaire. Blood samples were taken pre-dialysis and were sent

to QMC, Pathology Lab for processing on same day.

Data was analyzed using spss v.23.0. Mean and SD were calculated for quantitative variables. Frequency and percentages were calculated for qualitative variables. Effect modifiers were controlled using stratification. Post-stratification chi square test was applied taking p-value <0.05.

RESULTS

Total 220 patients were included in the study. 66.8% of them were male. 16 (7.3%) were smokers. Renal stone disease (22.3%) was most common cause of CKD followed by Diabetes Mellitus (21.4%). Out of 220 09(4.1%) were HBsAg positive, 110(50%) were Anti-HCV positive and 101 (45.9%) were negative patients. Patients 28 (12.7%), 59 (26.8), 158(71.8%) had abnormal Sr. Cholesterol, Sr. TGs & Sr. HDL respectively.

Dyslipidemia was found in 176 (80%) of the patients. No statistical significance was found in stratification of gender, age groups, cause of renal failure, smoking, co-morbidities (Diabetes mellitus, Hypertension, Ischemic Heart Disease, Obstructive airway disease, Tuberculosis, Viral markers status).

Variable	Mean	SD
Age	42.16 (years)	14.921
Duration of Hemodialysis	27.12 (months)	25.859
Sr. Cholesterol (Total)	155.51 (mg/dl)	37.722
Sr. Triglycerides	135.54 (mg/dl)	89.27
Sr. HDL	35.22 (mg/dl)	7.776

Table-I. Descriptive Statistics.

Age Groups	Frequency	Percentage
Less than 26 years	36	16.4
26 to 50 years	118	53.6
Above 50 Years	66	30.0

Table-II. Age Groups.

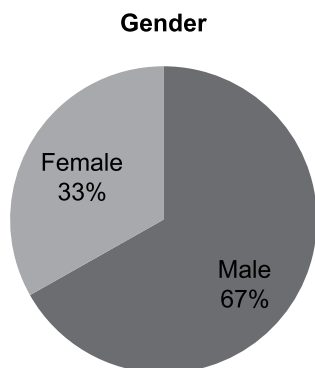


Figure-1. Gender of the patients.

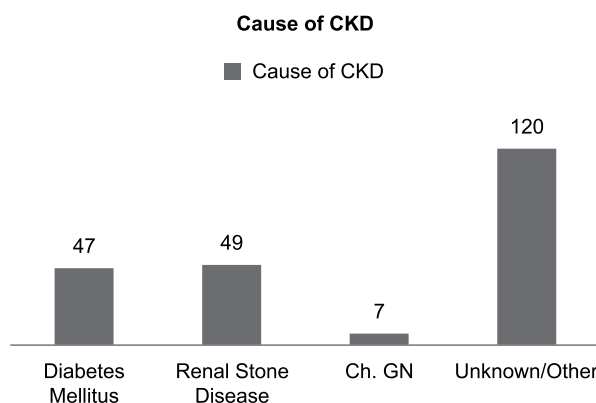


Figure-2. Cause of CKD.

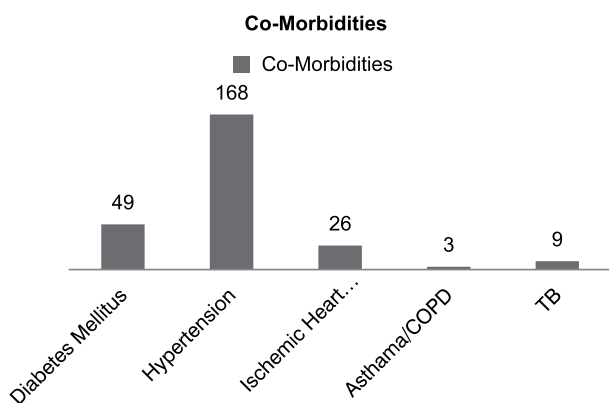


Figure-3. Co-morbidities of patients.

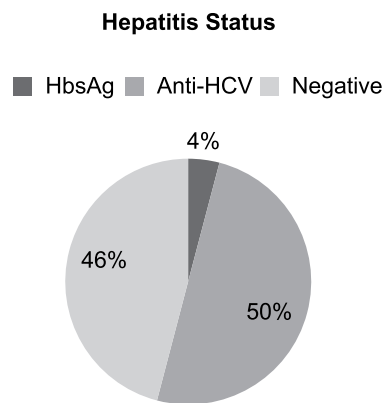


Figure-4. Hepatitis marker status of patients.

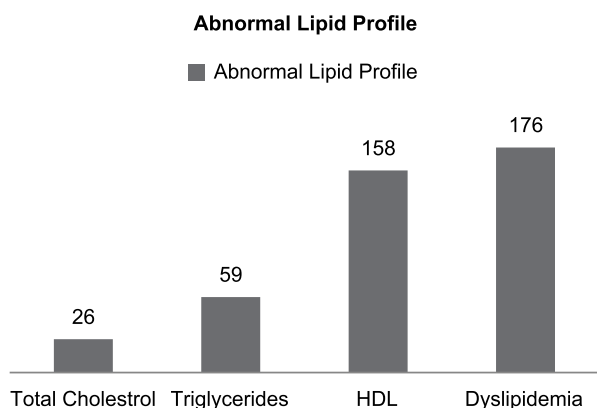


Figure-5. No. of patients having abnormal lipid profile.

Duration of Dialysis	Frequency	Percentage
Up to one year	74	33.6
One to two years	65	29.5
More than two years	81	36.8

Table-III. Duration of Dialysis.

DISCUSSION

The study was used to assess the frequency of dyslipidemia in patients undergoing hemodialysis so that measures can be adopted at the centre to decrease the incidence of cardio vascular events among these patients.

The serum total cholesterol mean was in normal range in the patients although 12.7 % of patient’s higher serum total cholesterol levels. Kalantar-Zadeh et al observed that serum total cholesterol was low in hemodialysis patients as compared to normal healthy population. This was attributed to low BMI in hemodialysis patients. Most of the patients of hemodialysis have mal nutrition due to uremia.⁹

The most common lipid abnormality in our patients was low HDL-c levels. Average HDL-c was 35.22 + 7.77 mg/dl which is below than normal and 71.8% of patients had this abnormality. It was in contrast to 51% and 33% of Pennell P et al and CHOICE study respectively.^{1,10} The low levels of HDL-c are associated with risk of coronary arteries as well as peripheral arterial disease.¹⁰ Chronic kidney disease is itself a cause of low HDL-c and it is also associated with weight loss.¹¹

In our study 26.8% of patients had high serum triglycerides levels. The CHOICE study showed that this number was 36% and Pennell et al found it to be 52%.^{1,9} The level of triglycerides is highly dependent on non-fasting state of the patients. That is why it has high variability in different studies.¹²

In different studies there was low levels of Sr. Cholesterol (Total), HDL-c & TGs in female patients but in our study no statistical significance was found among both genders. This may be due to decrease in these levels after menopause secondary to decrease estrogen levels.^{13,14} Females have early age of menopause than normal population in End Stage renal disease.¹⁵

Dyslipidemia has an inverse relationship to better survival rates.¹⁶ Dyslipidemia is associated with increase cardiovascular events and increase mortality among normal as well as hemodialysis patients.¹⁷ Both malnutrition and inflammation can lead to dyslipidemia in patients of chronic kidney disease and hemodialysis.¹⁸ There can be also deficiency of antioxidants and low immunity leading to decrease ability to remove endotoxins.¹⁹ The uremia and hemodialysis leads to oxidative stress, increase synthesis of complement fragments and cytokines and other pro-inflammatory factors leading to accelerated atherosclerosis.²⁰

These issues can be dealt with multi-disciplinary approach including counseling of patients regarding health life style, daily activity, nutritional support and pharmacological therapy when indicated.

CONCLUSION

Dyslipidemia is highly prevalent among the patients of maintenance hemodialysis increasing the morbidity and mortality of patients. Malnutrition and inflammation being the cause of dyslipidemia and atherosclerosis. Multidisciplinary approach is required to deal with this issue.

Limitation

The study was limited because of non availability of LDL-c and non-HDL-c cholesterol assessment

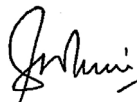


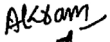

at the centre and non-fasting status of patients when blood samples were taken.

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4	Mohammad Akram	Drafting the article, Revising it critically for important intellectual content.	
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6	Rashid Habib	Conception & design, acquisition of data, analysis & interpretation of data, Drafting the article, Revising it critically for important intellectual content.	