ORIGINAL ARTICLE

Dyslipidemia in Chronic Kidney Disease

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ABSTRACT

Objective: To determine the frequency for pattern of dyslipidemia in patients with chronic kidney disease.
Study Design: Descriptive, cross-sectional
Place and Duration of Study: Department of Nephrology, Jinnah Postgraduate Medical Centre (JPMC) from 26th December 2018to 28thJune 2019.
Methodology: One hundred and thirty-two patients were enrolled. Blood sample of 5 ml of each patient was taken and sent to the institutional pathology laboratory for measurement of lipid profile and pattern of dyslipidemia i.e. high cholesterol, low HDL, high LDL, hypertriglyceridemia was noted.
Results: The mean age was 44.68±9.39 years and mean of duration of chronic kidney disease was 5.13±2.19 months. Seventy eight (59%) were males and 54 (41%) were females. Pattern of dyslipidemia i.e. high cholesterol, low HDL, high LDL and hypertriglyceridemia were documented in 89 (67.4%), 61 (46.2%), 65 (49.2%) and 37 (28.0%) patients respectively.
Conclusion: Dyslipidemia is common among patients with chronic kidney disease is considerable. Regular evaluation of all chronic kidney disease patients for dyslipidemia and treatment need to be instituted.
Key words: Dyslipidemia, Chronic kidney disease (CKD), Cholesterol, Low density lipoprotein (LDL), High density lipoprotein (HDL), Hypertriglyceridemia

INTRODUCTION

The new analysis proposes that in 2017, the worldwide predominance of chronic kidney disease (CKD) was 9.1% (697.5 million cases). It was more in ladies and young ladies (9.5%) than in men and young men (7.3%). Almost 33% of all instances of CKD were in China (132.3 million) or India (115.1 million). Albeit the worldwide commonness of Chronic Kidney Disease expanded by 29.3% somewhere in the range of 1990 and 2017.[1]

Chronic kidney disease is a significant general wellbeing worry in South Asian nations. Studies detailed that one to four out of each ten people in these nations are experiencing CKD with variety inferable from disparity in research system and strategies utilized for deciding CKD. Pervasiveness of CKD rose with expanding age, anyway issues like sex and other financial components have not been investigated completely, in this way, and further exploration is justified. Set number of populace based examinations utilizing cross-sectional plan additionally made the requirement for additional exploration to recognize genuine weight of CKD and its circulation in these nations. It is additionally an opportune requirement for applicable partners of this district to foster reasonable approach and powerful general wellbeing mediation for avoidance, control and treatment of CKD in South Asia.[2,3]

Because of the nonstop changes in expectations for everyday comforts and dietary propensities, the frequency of dyslipidemia has expanded yearly. Dyslipidaemia incorporates hypertriglyceridemia, hypercholesterolemia, lower high-thickness lipoproteinemia, and mixed hyperlipidemia.[4] Many investigations have shown that dyslipidemia can prompt cardiovascular illness.[5] When the "lipid nephrotoxicity hypothesis" was proposed in 1982, CKD was hypothesized as being related with dyslipidemia.[6] Throughout the most recent couple of many years, this region has been persistently evolved and explored.[7-9] Study in Iran showed that an eating regimen dependent on fat and desserts was decidedly connected with diminished renal capacity.[10,11]

To be the best of our knowledge and based on literature search no prior data is available, in contextof our population, although international literatures are available for the pattern of dyslipidemia. Findings of international studies are not applicable in our local population due to ethnic, educational, socioeconomic, geographic, genetics and environment changes from western countries. So, I have decided to conduct this study in our population because the abnormal pattern of dyslipidemia is a sign of worsening and thus require early management to prevent adverse consequences especially in developing countries like ours. Hence, it is important to investigate the contemporary and local magnitude of dyslipidemia pattern in patients presenting with CKD; as it has a poor prognosis can cause a significant health burden on the community. Moreover, this study will help to made strategies for preventive measure and formulate an appropriate management plan in order to reduce the morbidity and mortality in this already compromised group of patients.

MATERIALS AND METHODS

This descriptive, cross-sectional studywas conducted at Department of Nephrology, Jinnah Postgraduate Medical Centre (JPMC) Karachi from 26thDecember 2018 to 26thJune 2019 and comprised 132 patients. Patients with age from 20-60years of either gender with chronic kidney disease, duration of CKD >3months, CKD stage 1to 5 were included. Those patients with chronic liver disease (assessed on history and serum bilirubin >2.0mg/dl), already taking lipid lowering drugs (assessed on medical record) and ischemic heart disease (assessed on history and medical record) were excluded. Informed written consent was taken after explaining the potential benefits and risks of procedure. Blood sample of 5ml of each patient was taken and sent to the Pathology Laboratory for

measurement of lipid profile and pattern of dyslipidemia i.e. high cholesterol, low HDL, high LDL, hypertriglyceridemia was noted. All the data was analyzed by using SPSS-20.Data was stratified for duration of CKD, stratified groups were compared by Chi-square test, taking P ≤ 0.05 as significant.

RESULTS

There were mean age was 44.68±9.39 years, mean duration of chronic kidney disease was 5.13±2.19months, mean BMI was 27.86±4.38 kg/m². Seventy eight (59%) were males and 54 (41%) were females. Fifty-eight (44%) patients who were on dialysis, hypertension was noted in 53 (40%) patients and diabetes mellitus was documented in 49 (37%) patients. Seventy (53%) were from urban area and 62 (47%) were from rural area. Eighteen (13.64%) had monthly income lower than 20000, 79 (59.85%) had 20000 to 40000 and 35 (26.52%) has greater than 40000. High cholesterol, Low HDL, High LDL and hypertriglyceridemia were noted in 89 (67.4%), 61 (46.2%), 65 (49.2%) and 37(28.0%) respectively**.** Stratification of duration of CKD with respect to pattern of dyslipidemia were done (Tables 1-3).

Table 1: Demographic information of the patients

Variable	No.	%
Gender		
Male	78	59.0
Female	54	41.0
Area		
Urban	70	53.0
Rural	62	47.0
On Dialysis	58	44.0
Hypertension	53	40.0
Diabetes mellitus	49	37.0
Monthly Income (rupees)		
< 20000	18	13.64
20000-40000	79	59.85
> 40000	35	26.52
Pattern of Dyslipidemia		
High Cholesterol	89	67.42
Low HDL	61	46.21
High LDL	65	49.24
Hypertriglyceridemia	37	28.03

Table 2: Descriptive statistics of age, BMI, duration of CKD (n=132

Variable	Mean±SD
Age (years)	44.68±9.39
Duration of CKD (months)	5.13±2.19
BMI (kg/m²)	27.86±4.38

Table 3: Stratification for duration of CKD with respect to pattern of dyslipidemia (n=132)

Pattern of dyslipidemia	Duration of CKD		P value
	3-6 months	>6 months	
High cholesterol			
Yes	37 (28.0%)	52 (39.4%)	0.074
No	25 (18.9%)	18 (13.6%)	
Low LDL			
Yes	31 (23.5%)	30 (22.7%)	0.411
No	31 (23.5%)	40 (30.3%)	
High LDL			
Yes	38 (28.8%)	27 (20.5%)	0.009
No	24 (18.2%)	43 (32.6%)	
Hypertriglyceridemia			
Yes	14 (10.6%)	23 (17.4%)	0.190
No	48 (36.4%)	47 (35.6%)	

DISCUSSION

In the beyond twenty years, a few studies have endeavoured to investigate the impacts of dyslipidemia and lipid-bringing down treatments on the movement of renal infection and proteinuria in animal and people. Various animal data have given proof to the job of hyperlipidemia in the movement of renal sickness. The utilization of a high-fat eating routine worsens, while amendment of hyperlipidemia weakens the seriousness of glomerulosclerosis and tubule-interstitial fibrosis in animal models of exploratory renal illness.[12-14] In addition, pharmacological mediation focused on standardization of HDL digestion in essence, with no adjustment of serum complete cholesterol, and has been displayed to impede the movement of renal infection in nephrectomized rodents.[15]

Notwithstanding the animal data, various clinical studies have given proof to the possible commitment of dyslipidemia in movement to renal sickness. In the Study by physicians showed a huge expansion in the danger of crumbling of renal capacity among people with somewhat raised gauge serum creatinine who had raised serum cholesterol and additionally decreased HDL cholesterol fixations.[16,17] Together, these perceptions have provoked a set number of clinical preliminaries investigating the impact of lipid-bringing down specialists in people with ongoing kidney illness (CKD). The forthcoming studies have uncovered critical decreases in proteinuria[18] and the pace of decrease in renal capacity[19] with statin organization in diabetic and non-diabetic patients with CKD. Also, data of meta-analysis of 13 little forthcoming studies uncovered a critical decrease in the pace of decrease in the GFR and negligible decreases in proteinuria and movement toward End Stage Renal Disease with lipid lowering treatment fundamentally with different statins.[20]

Dyslipidemia has been set up as a notable conventional risk factor for CVD in everyone what's more, huge scope observational data have discussed that aggregate and LDL esteems are two of the main autonomous indicators of cardiovascular dismalness and demise.[21] Additionally, it is notable that cases with weakened kidney capacity display huge changes in lipoprotein digestion, which in their most progressive structure might bring about the advancement of extreme dyslipidemia.[22]

Muntner et al[23] found that people with higher standard fatty substance and lower High Density Lipoprotein cholesterol levels were at expanded danger for an ascent in creatinine. Chawala et al[24] also utilized tertiles of lipid profiles (which probably won't uncover the U-shape relationship), and didn't discover huge connection among dyslipidemia and renal results. Chen et al[25] assessed a Chronic Kidney Disease stages 3-5 accomplice and confirmed that higher complete cholesterol, higherLow Density Lipoprotein cholesterol and higher non High Density Lipoprotein cholesterol affected on renal capacity movement and an antagonistic renal result.

In analysis, patients with CKD had 29%, 3.0%, and 68% more serious dangers for high triglycerides, high LDL, and low HDL, separately, then patients without CKD. After change, in any case, CKD patients had huge 9% and 12% more serious dangers for high triglycerides and low HDL,

individually, however no raised danger for high LDL, contrasted and patients who didn't have CKD.[26]

CONCLUSION

Dyslipidemia is common among patients with CKD is considerable. We have noticed High cholesterol, Low HDL, High LDL and hypertriglyceridemia in 89 (67.4%), 61 (46.2%), 65 (49.2%) and 37(28.0%) respectively. Regular evaluation of all CKD patients for dyslipidemia and treatment need to be instituted. Notwithstanding, there is a need to conduct more studies using huge sample size with various study sites in Pakistan to validate these outcomes.

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