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Assessment Outcomes Dyslipidaemia in Dialysis Patient

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Abstract

Background: *Chronic kidney disease is defined as the presence, for more than three months, of changes in the structure or function of the kidneys, secondary to a progressive decline in the number of nephrons, with a consequent deterioration in health resulting from the inability of the kidneys to perform their excretory functions, softener, and metabolism. Chronic kidney disease (CKD) is a clinical condition caused by the progressive and progressive loss of kidney function. Chronic kidney disease is not only implicated by the gradual deterioration of quality of life and life expectancy when it progresses to more advanced stages but also by the increase in cardiovascular morbidity and mortality, which is the leading cause of death in these patients.* ***Aim:*** *This paper aims to assess the outcomes of dyslipidemia in a dialysis patient. Patients and method: In this study, a descriptive cross-sectional study was applied to study the Assessment Outcomes of Dyslipidemia in Dialysis Patients in Iraq from 4th January 2021 to 7th August 2022. Data were collected for 150 patients in different hospitals in Iraq, where the patients were divided into two groups, the first group of patients, which included DIALYSIS PATIENTS, which included 80, and the second group, the control group, which included patients, which include 70 patients.* ***Results and discussions:*** *collected 150 cases distributed according to dialysis patients (80) and controls (70); the most frequent ages in this study ranged from 40-49 years old 34 (42.5%) patients group, 33 (47.14%) control group with a statistical difference of 0.0831. In this study was evaluated the Outcomes of dyslipidemia in a dialysis patient. Imbalances were found in levels of dyslipidemia which LDL 5.12±3.4 of the patients' group, as for the control group 2.1±3.3-HDL 2.43±2.4 of the patients' group, 1.4±1.5 for the control group, TRIGLYCERIDE 1.75±1.8 of patients group, 0.55±0.43 for the control group with A statistically significant relationship were found between dyslipidemia levels and outcomes in the group of patients at P value < 0.05.*

Keywords *— HDL, LDL, CKD, Cirrhosis and Diabetes*

I. INTRODUCTION

Chronic kidney disease is defined as the presence, for more than three months, of changes in the structure or function of the kidneys, secondary to a progressive decline in the number of nephrons, with a consequent deterioration in health resulting from the inability of the kidneys to perform their excretory functions, softener, and metabolism [1]. Chronic kidney disease (CKD) is a clinical condition caused by the progressive

and progressive loss of kidney function. Chronic kidney disease is not only implicated by the gradual deterioration of quality of life and life expectancy when it progresses to more advanced stages but also by the increase in cardiovascular morbidity and mortality, which is the leading cause of death in these patients [2]. The death rate for end-stage CKD is 30 times higher than that of the general population and may be up to 1,000 times higher when it affects lower-risk populations, such as children and adolescents, where its prevalence is increasing due to the higher life expectancy of the general population. [3,4]. Moreover, the prevalence of chronic kidney disease in Spain, according to the data of the EPIRCE study, is close to 10% when jointly assessing eGFR and albuminuria, with 21.4% of subjects over 64 years of age reporting only an eGFR < 60 mL/min / 1.73 sq. m. Age is the risk factor that has been associated primarily with CKD, with loss of function marked onset from the third decade of life, with significant loss of renal function from 60 years of age [5]. Based on German studies, CKD is an independent risk factor for cardiovascular disease, even in children and adolescents whose exposure to other cardiovascular risk factors is lower than in adults [6]. As a result, atherosclerosis in patients with chronic kidney disease, both pre-existing and new, presents an accelerated progression, increasing the incidence of premature cardiovascular events (in men <55 years or women <65 years). This effect may be related to a diffuse inflammatory pattern that persists, although some triggering factors can be corrected, such as renal artery revascularization in cases of renal artery stenosis [7,8]. For all these reasons, chronic kidney disease should be considered as a high and even very high cardiovascular risk condition, which requires early diagnosis and treatment and treatment of potentially modifiable risk factors identified during the disease [9]. Based on studies in the US, it is estimated that 6% of the US population is in stages 1 and 2, while 4.5% is focused on stages 3 and 4 of the same. 1 In Venezuela for 2008, the figures for deaths from this disease were dealt with for 1923, which accounted for 1.44% of all deaths. As for the Spanish study, it indicates that abnormalities of lipid metabolism similar to those implicated in atherosclerosis (increased triglycerides, total cholesterol, LDL, lipoprotein B, and decreased non-HDL cholesterol) may also contribute to the development of kidney injury, in particular, if associated with proteinuria or high blood pressure [11]. Plasma triglycerides begin to rise in the early stages of CKD and are the result of elevated production of lipoproteins rich in triglycerides, increased synthesis of VLDL, and decreased rate of partial catabolism due to decreased activity of endothelial lipase (lipoprotein lipase (LPL) and liver lipase). As a result, CKD patients had reduced plasma HDL-cholesterol concentrations compared to non-uremic individuals. Due to the lower apo A1 level and lower LCAT activity, the reduced capacity of HDL cholesterol particles may impair the reverse transport of cholesterol from peripheral cells to the liver, thus burdening the vascular system and promoting atherosclerosis [12]. To follow up, the decrease in lipoprotein lipase (LPL) activity and the consequent decrease in VLDL catabolism play an important role, leading to increased triglycerides and lower HDL cholesterol. On the other hand, coexisting hypoalbuminemia, by increasing levels of free lecithin, can reduce lecithin- cholesterol acyltransferase (LCAT) activity [13]. Cerebrovascular disease (CVD) begins and Progresses during renal disease, years before developing renal failure. On initiation of dialysis treatment, 18% of patients had an acute myocardial infarction (AMI), 22% had angina, 37% had episodes of congestive heart failure, and approximately 80% had left ventricular low ejection fraction (LVEF) <40% or left ventricular hypertrophy or both [14]. Therefore, they constitute the number one cause of mortality in chronic kidney disease, and atherogenic lipoproteins play an essential role in its development. Patients deficient in this enzyme develop renal fatty deposits, and progressive renal failure as chronic hyperlipidemia (CKD) is associated with the thickening of the carotid intima and media [15]. In the early stages, there are also prebiotic changes: nocturnal hypertension, insulin resistance, increased serum lipoprotein, C-reactive protein, fibrinogen, and parathyroid hormone changes that contribute to cardiovascular (CV) damage. This paper aims to assess the outcomes of dyslipidemia in a dialysis patient. [16]

II. MATERIAL AND METHOD

In this study, a descriptive cross-sectional study was applied to study the Assessment Outcomes of

Dyslipidemia in Dialysis Patients in Iraq from 4th January 2021 to 7th August 2022. Data were collected for 150 patients from different hospitals in Iraq, where the patients were divided into two groups, the first group of patients, which included DIALYSIS PATIENTS for 80 cases, and the second group, which was the control group which include 70 patients.

A statistical study was conducted for patients with osteoporosis using the SPSS program, and This study presented the demographic results of dialysis patients, which included age between 30- 60 years and BMI between <25, 25-30, >30, as well as CHRONIC DISEASES, which included Stroke, Diabetes, Hypertension, and Cirrhosis, including economic level and social status classification, which was divided into single and married, where these collected data were presented and shown in Table 1. As shown in Table 2, where the study of this research paper relied on the Outcomes of dyslipidemia in a dialysis patient to present the data presented, which included LDL, HDL, TRIGLYCERIDE as well as DESIRABLE, NON-DESIRABLE, which were applied to both groups, one of which is the DIALYSIS PATIENTS group and the other group CONTROLS as is evident in Table 2. Table 3 it showed a comprehensive evaluation of CKD patients Distribution of patients based on stages of CKD, which was divided into five stages, which included S1, S2, S3, S4, and S5, which depended on the degree of eGFR, which was distributed to the FREQUENCY OF PATIENTS GROUP for CKD As shown in Table 3. In addition, the collected data were evaluated statistically and analyzed logistically, which included age, stroke, diabetes, hypertension, LDL, HDL, TRIGLYCERIDE, S3, and BMI, which were distributed to both groups, hemodialysis patients and control patients, as shown in Table 4.

III. RESULTS

Table 1- The demographic results of dialysis patients.

ITEMS	DIALYSIS PATIENTS(80)	CONTROLS(70)	P-VALUE
AGE			
30-39	25 (31.25%)	17 (24.29%)	0.044
40-49	34 (42.5%)	33 (47.14%)	0.0831
50-60	21 (26.25%)	20 (28.57%)	0.0475
BMI			
< 25	17 (21.25%)	14 (20%)	0.0491
25-30	29 (36.25%)	25 (35.71%)	0.0493
>30	34 (42.5%)	31 (44.29%)	0.0485
CHRONIC DISEASES			
Stroke	22 (27.5%)	16 (22.86%)	0.0433
Diabetes	17 (21.25%)	14 (20%)	0.0492
Hypertension	14 (17.5%)	18 (25.71%)	0.03853
Cirrhosis	27 (33.75%)	22 (31.43%)	0.0485
ECONOMIC LEVEL			
LOW	35 (43.75%)	17 (24.29%)	0.0266
MIDDLE	25 (31.25%)	33 (47.14%)	0.0315
HIGH	21 (26.25%)	20 (28.57%)	0.0487
MARITAL STATUS			
SINGLE	22 (27.5%)	18 (25.71%)	0.0481
MARRIED	58 (72.5%)	52 (74.29%)	0.0482

Table 2- Outcomes of dyslipidemia in a dialysis patient.

ITEMS	DIALYSIS PATIENTS(80)	CONTROLS (70)	P-VALUE
LDL	5.12±3.4	2.1±3.3	0.0474
HDL	2.43±2.4	1.4±1.5	0.0483
TRIGLYCERIDE	1.75±1.8	0.55±0.43	0.049
TOTAL CHOLESTEROL			
DESIRABLE	2.75±1.7	1.2±0.32	0.0486
NON- DESIRABLE	4.9±1.34	3.6±0.47	0.0452

Table 3- Distribution of patients based on stages of CKD.

STAGES	EGFR	F (%)
S1	17±3.2	15 (18.75%)
S2	70±10	21 (26.25%)
S3	45±12	17 (21.25%)
S4	22±7.4	8 (10%)
S5	9±6.6	19 (23.75%)

Table 4 - Logistic Evaluation of affected parameters of 'dialysis patient' analysis.

ITEMS	DIALYSIS PATIENTS(80)	CONTROL	P-VALUE
AGE			
30-39	0.62 (0.63-1.4)	0.75 (0.65-1.7)	0.0424
40-49	1.63 (0.77-1.85)	1.4 (0.82-1.7)	0.0421
50-60	1.43 (1.2-1.9)	1.232 (0.84-1.52)	0.0432
Stroke	1.86 (1.65-2.5)	2.24 (1.9-6.4)	0.0452
Diabetes	1.5 (1.24-1.6)	1.42 (1.2-2.2)	0.0422
Hypertension	5.32 (2.3-6.67)	1.22 (0.5-2.1)	0.0387
LDL	1.4(1.34-1.6)	1.3 (1.0-2.6)	0.0444
HDL	1.4 (0.63-1.5)	1.23 (0.76-1.43)	0.0478
TRIGLYCERIDE	1.423 (1.0-1.6)	1.35 (0.77-1.66)	0.045
S3	1.45 (1.4-1.65)	1.36 (1.1-2.5)	0.0422
BMI			
< 25	1.43 (0.6-1.63)	1.4 (0.88-1.7)	0.0413
25-30	0.66 (0.64-1.2)	0.73 (0.65-1.5)	0.044
>30	0.645 (0.64-1.2)	0.73 (0.65-1.53)	0.0422

IV. DISCUSSION

Changes in lipid metabolism are a consistent finding in CKD, as dyslipidemia is an exacerbating factor in CKD that increases the risk of atherosclerosis and its complications [17]. Adequate control contributes to reducing the high rates of cardiovascular disease and mortality experienced by these patients [18]. As shown in Table 1, where the collected data were presented for both groups, which includes the Dialysis Patient group and the control group, where the data included The demographic results of dialysis patients, where the ages presented were between 30-60, which showed 25 (31.25%) dialysis patients 17 (24.29%)) for the control group for ages between 30-39 years, while the ages with the upper limit, which included the ages between 40-49 years, which contained 34 (42.5%) for the group of dialysis patients33 (47.14%) while 0.0431 for the group of control patients. However, the BMI results showed a discrepancy in the evaluation of pathological cases, where 17 (21.25%) were dialysis patients, while 14 (20%) were control patients, but in the case of >30, it showed a sharp rise in dialysis

Patients were 34 (42.5%) were dialysis patients. and 31 (44.29%) for control patients with a 0.0485 P-VALUE. Moreover, the demographic results showed that the patients in Cirrhosis presented 27 (33.75%) for dialysis patients and 22 (31.43%) for control patients with P- VALUE 0.0485, as shown in Table 1. In chronic kidney disease, early and aggressive intervention for dyslipidemia appears to be a priority before a significant decline in renal function occurs. Statin therapy has been shown to be safe and effective in lowering LDL-C and in reducing cardiovascular events in individuals with chronic kidney disease or after kidney transplantation; However, the evidence in dialysis patients is lower, as shown in Table 2. Outcomes of dyslipidemia in a dialysis patient were found to be 5.12 ± 3.4 for dialysis patients and 2.1 ± 3.3 for control patients with a P-value of 0.0474, while TOTAL CHOLESTEROL was found to be very high. Where it appeared that the pathological incidence of DESIRABLE was 2.75 ± 1.7 for patients of the first group, which was represented by dialysis patients, but

1.2 ± 0.32 for control patients. Results were also presented for non-desirable patients, as it was

4.9 ± 1.34 for the group of dialysis patients and 3.6 ± 0.47 for control patients. In addition, the results presented for the evaluation of HDL in patients were 2.43 ± 2.4 for hemodialysis patients and 1.4 ± 1.5 for control patients, as shown in Table 2. A general evaluation of the distribution of patients based on stages of CKD was conducted, as it showed in five stages, the second stage was more severe and susceptible, as it was found according to the evaluation of the EGFR score 70 ± 10 and the FREQUENCY OF PATIENTS GROUP at a rate of 21 (26.25%), and the least affecting stages were the fourth and five stages Where it showed in the fourth stage 22 ± 7.4 for the EGFR score and the FREQUENCY OF PATIENTS GROUP 8 (10%) and the S5 for EGFR 9 ± 6.6 and the FREQUENCY OF PATIENTS GROUP 19 (23.75%) as shown in Table 3. Also presented in Table 4, the logistic analysis of the collected data, which was evaluated based on the pathological conditions, showed Stroke 1.86 (1.65-2.5) for the group of dialysis patients and 2.24 (1.9-6.4) for the group of control patients, while Diabetes was found to be 1.5 (1.24-1.6) for patients Hemodialysis and 1.42 (1.2-2.2) for control patients, as well as Hypertension showed a rise, as 5.32 (2.3-6.67) for the dialysis patients group and 1.22 (0.5-2.1) for control patients, in addition to HDL 1.4 (0.63-1.5) for dialysis patients and 1.23 (1.23). 0.76-1.43) for control patients. American studies showed that dyslipidemia is a factor in the development of chronic kidney disease, which increases the risk of atherosclerosis and its complications [19,20]. Appropriate control contributes to reducing the high cardiovascular morbidity and mortality presented by these patients were. This effect may be related to a diffuse inflammatory pattern that persists, although some triggering factors can be corrected [21]

V. CONCLUSION

Changes in lipid metabolism are common in hemodialysis patients. The classic pattern of dyslipidemia on dialysis is determined by elevated serum triglycerides, low HDL cholesterol, and in most cases, normal or slightly elevated total cholesterol and low-density lipoprotein cholesterol. Although serum cholesterol levels were not particularly high, the atherogenic index improved in a quarter of the patients due to lower levels of HDL cholesterol, and thus the risk of atherosclerosis was high in these individuals. Although total cholesterol levels are stable, this group may have alterations, particularly in low-density lipoprotein (LDL), that confer a greater propensity for atherosclerosis. Therefore, this study concludes that the control patients were less at risk

and better in terms of complications than the group of dialysis patients.

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