RATE OF OCCURRENCE OF DYSLIPIDEMIA IN PATIENTS SUFFERING FROM LUPUS NEPHRITIS

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Abstract:
Objective: This research work aimed to find out the rate of occurrence of dyslipidemia in the patients suffering from LN (Lupus Nephritis) and its relationship with the proteinuria's degrees.
Methodology: This transverse research work included sixty five patients who completed the standard of American College of Rheumatology (ACR) for SLE and present with renal involvement, appearing in Mayo Hospital, Lahore from August to November 2019. After complete twelve hours of overnight fasting, we evaluated their samples of blood from TC (Total Cholesterol), TG (Triglycerides), HDL (High Density Lipoprotein and LDL (Low Density Lipoprotein). We noted the demographic variables and characteristics of their disease. We divided the patients into groups on the basis of proteinuria degree as having proteinuria greater than 1gm or equal or less than 1gm. We used the SPSS V.21 for analysis of data. We performed the correlation of the individual profiles of lipids with the proteinuria's degree.
Results: The most common abnormality of lipid discovered in this research work was hypertriglyceridemia (58.50%). TC & LDL-C was much high in 55.40% and 30.80% patients correspondingly. We found the low HDL in 21.50% patients. We also noticed the enhanced dyslipidemia's frequency in those patients who were present with proteinuria of greater than 1gm ($P < 0.050$).
Conclusion: We observed the dyslipidemia with high rate of occurrence in the patients suffering from LN and it has strong association with the proteinuria's degree.
KEY WORDS: Association, dyslipidemia, ACR, HDL, TC, TG, LDL, Lupus Nephritis, occurrence, SLE, correlation.

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INTRODUCTION:

The involvement and development of an autoantibodies array is SLE (Systemic Lupus Erythematosus) [1]. SLE can involve many other organs as joints, kidneys, lungs, heart, heart and CNS [2]. Majority of the patients of this research work were females. The presenting features can vary from the involvement of skin and other complication which are life-threatening as lupus nephritis (33.0%) [3]. Lupus has association with the pre-mature atherosclerosis owing to abnormalities of lipid which are much frequent in these patients. Many research work discovered that risk of MI (Myocardial Infarction) accelerate five to eight times as compared to the general public [4]. Research works have displayed that the rate of incidence of dyslipidemia in patients of LN ranges from 36.0% to 60.0% or more high after three years of disease duration [5]. There is increases level of TG, LDL-c, and decreased HDL-C in the patients present with SLE [6]. The increased levels of TG in the patients of SLE are in part attributable to anti-LPL (Anti-Lipoprotein Lipase), which are available in 47.0% patients [7].

Nephrotic range proteinuria, increased level of TC and decreased level of albumin in serum reflect the activity as well as the renal damage's severity [8]. Research works have displayed high degree of the prevalence of dyslipidemia in the patients present with duration of disease of three years [9]. The abnormalities of hyperlipidemia & lipoprotein can play an important role in the progression of glomerular atherosclerosis in various kidney diseases [10]. There is prevalence of dyslipidemia and it is more severe n the patients of LN in comparison with the controls [11]. In the patients suffering from LN, HTN, hyperlipidemia & APS (Anti-Phospholipid Syndrome) are most important risk factors having association with high rate of mortality and progression of renal failure [12]. Statin therapy in the patients suffering from LN decreases the danger of mortality (HR 0.440, 95.0% CI 0.320 to 0.6); CAD (Coronary Artery Disease) (HR 0.20, 95.0% CI 0.130 to 0.310); CVD (Cerebrovascular Disease) (HR 0.140, 95.0% CI 0.080 to 0.250) and ESRD (End-Stage Renal Disease) (HR 0.220, 95.0% CI 0.160 to 0.290) [13].

METHODOLOGY:

The research work carried out from August to November of 2019 in Mayo Hospital, Lahore after getting the approval of Ethical committee of institute. We selected total sixty five patients after the calculation of sample size (95.0% CI, 10.0% error and taking rate of occurrence of dyslipidemia in SLE of 60.0%) [7]. All the present were of greater than eighteen year of age and they fulfilled the ACR categorization standard of SLE. We excluded the patients with other serious complications. We did not include the patients who were under lipid lowering treatment. We took the written consent from every patient after explaining them the purpose of this research study. We also noted the demographic profiles, disease traits, proteinuria's degree, recent steroids doses and findings of renal biopsy in a well-organized questionnaire. After complete twelve hours of overnight fasting, we evaluated the samples of blood for TG, TC, LDL-C and HDL.

We diagnosed the hyperlipidemia in accordance with the program of National Cholesterol Education Program (TC > 200.0 mg/dl, TG > 150.0 mg/dl, LDL-C > 130.0mg/dl, HDL-C < 40.0 mg/dl) [14]. We used the SPSS V.23 for the statistical analysis of the collected information. We presented the age of patients, body mass index, disease duration, dose of steroid, TC, TG's, HDL and LDL in averages and standard deviations. We divided the patients in two groups depending upon the degree of proteinuria. We used the CHI square method for the comparison of patients of both groups for their proportions of dyslipidemia. We correlated the individual parameters of fasting profiles of lipid with the proteinuria's degree with the utilization of Pearson correlation-curve.

RESULTS:

Total patients of this research work were sixty five with 83.10% (n: 54) female patients. Details about demography and characteristics of the disease are present in Table-1. In this research work, 55.40% (n: 36) patients were present with TC greater than 200.0 mg/dl, 58.50% (n: 38) were present with TG greater than 150.0 mg/dl, and 30.80% (n: 20) patients had LDL greater than 130.0 mg/dl. Total 21.50% (n: 14) patients had levels of HDL less than 40.0 mg/dl. Proteinuria greater than 1gm was available in 55.40% (n: 36), whereas 44.60% (n: 29) patients were present with proteinuria lower than 1gm.

**Table-I: Demographic details and disease characteristics.**

Parameter	Mean	SD
Age (years)	27	8.00
Body mass index (kg/m^2)	22.88	4.47
Duration of symptoms (years)	3.02	1.97
Creatinine (mg/dl)	1.69	2.00
Albumin (mg/dl)	3.35	0.45
Cholesterol (mg/dl)	210.26	42.47
Triglycerides (mg/dl)	204.77	90.54
HDL-C (mg/dl)	47.91	8.80
LDL-C (mg/dl)	112.38	25.71
Steroid dose (mg/day)	11.36	11.26
HCQ dose (mg/day)	276.92	93.16
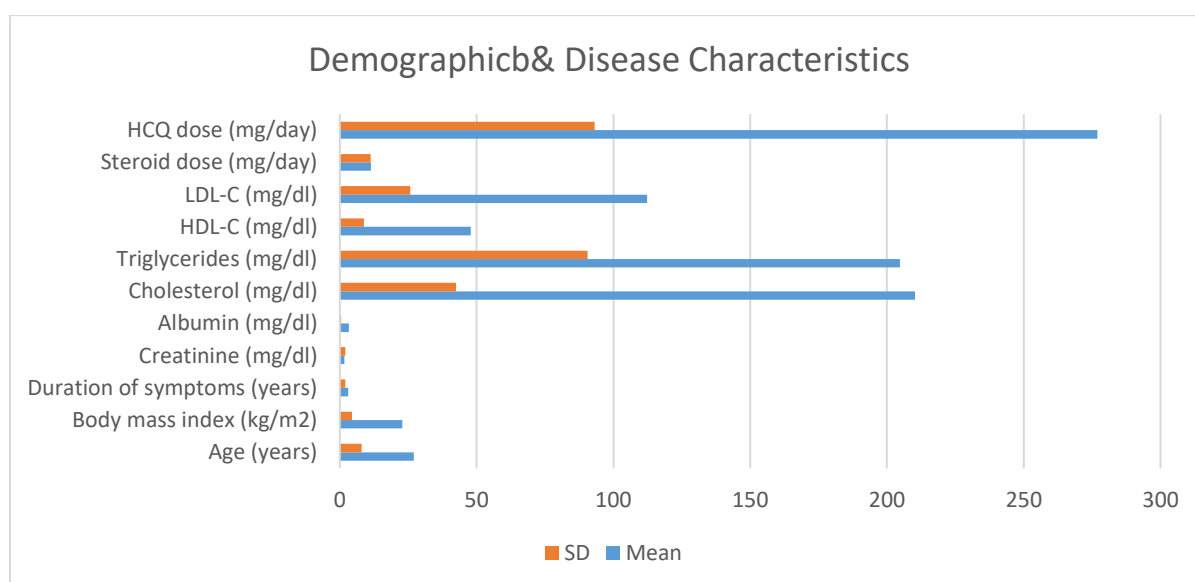
The rate of occurrence of patients with high levels of TC, LDL and TG were discovered to be very low in the subgroups of patients present with proteinuria ≤ 1.0gm and no patient in this very subgroup was present with HDL lower than 40.0 mg/dl (Table-2).

Table-II: Relationship of lipid profile to degree of proteinuria.

Lipid Profile	P:C ratio>1.0		P:C ratio<1.0		P-value
	No	Percent	No	Percent	
TC>200mg/dl	35.00	97.20	1.00	2.80	<0.0010
TG's>150mg/dl	34.00	89.50	4.00	10.50	<0.0010
HDL<40mg/dl	14.00	100.00	0	0	<0.0010
LDL>130mg/dl	20.00	100.00	0	0	<0.0010
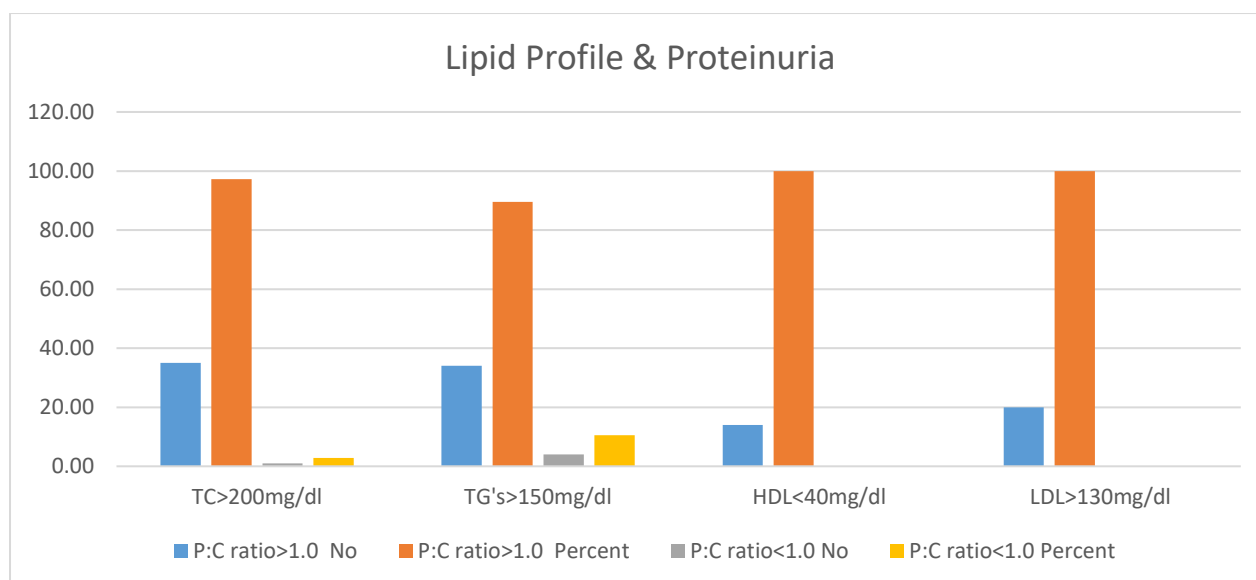
There was significant strong correlation available between LDL, TC, TG and degree of proteinuria. We also found the negative correlation degree of proteinuria and HDL. There was also positive correlation of TC with the body mass index (Chi square: 4.1420 P < 0.0420), duration of disease > three years (Chi square: 16.9840 P < 0.050) and steroid dose of greater than 10.0 mg/day (Chi-square: 13.970 P < 0.0010) whereas negatively correlation with the HCQ dose greater 200.0 mg/d (Chi square: 6.9870 P < 0.0080).

DISCUSSION:

Premature CAD (Coronary Artery Disease) have a significant impact on the rate of morbidity as well as mortality in SLE. There are some predictors identified for the occurrence of CAD. Some traditional factors are postmenopausal age, male gender, hypertension, smoking and dyslipidemia. Corticosteroids have link with the enhanced risk of CAD [15]. In current research work, the average age was twenty seven years with majority of female gender. All the patients were present with urinary complication in complete course. Proteinuria was available in 86.0% at the time of this study. There was presence of hypertension in 60.0%. some of the findings are similar with the research works conducted in past which stated that LN was more common in females, most common age was twenty to forty years. In those research works, proteinuria was present in 74.0% and HTN was present in 70.0% patients [16-18]. In this research work, average TC level was 210.30 ± 42.50, level of TG was 204.80 ± 90.50, HDL level was 47.910 ± 8.80, LDL level was 112.40 ± 25.70. Kakati stated that out of total nineteen patients were present with dyslipidemia in comparison with five patients in control group with average levels cholesterol as 155.80 ± 43.40, TG as 222.60 ± 49.90, LDL as 132.80 ± 74.20 and HDL level as 37.40 ± 3.80 [19]. In this research work, the amount of high levels of TC, TG & LDL was 55.40%, 58.50% and 30.80% correspondingly and low level of HDL was 21.50%. Wijaya stated that 75.30% patients were present with dyslipidemia with high levels of TC, TG & LDL in 43.0%, 44.20% and 26.40% respectively and

low level of HDL-C in 26.0% [9]. In this research work, we noticed the positive association between dyslipidemia & degree of proteinuria. HN Reich discovered a statistically vital association between these two variables [21]. In same manner, Kyung-Eun Lee observed sixty eight patients present with confirm LN. He discovered that the group present with high level of LDL-C of greater than 100.0 mg/dl excreted more twenty four hour urine protein than the group present with the lower LDL-C. This finding showed that high level of LDL-C was an important predictor of chronic kidney diseases [22]. Lui L stated that patients of SLE had very high level of TC, TG and LDL-C and much low level of HDL-C as compared to the patients present in control group [23].

CONCLUSION:

This research work showed that about fifty percent patients suffering from LN were present with high level of TC and TG and one out of 3 patients was present with high levels of LDL. There was association of all these factors with the proteinuria's degree.

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