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DYSLIPIDEMIA FREQUENCY IN RHEUMATOID ARTHRITIS PATIENTS

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Abstract:

Objective: *To determine frequency of dyslipidemia in rheumatoid arthritis patients.*

Study Design: *Descriptive / cross sectional study*

Place and Duration of Study: *This study was conducted at the Department of Medical OPD, Jinnah , Hospital, Lahore from 26thMarch2016 to 20 August 2017.*

Materials and Methods: *One hundred and fifty patients with rheumatoid arthritis, of both gender, age 18-80 years, disease duration ≥6 months, BMI 19-25 were included in the study. Fasting lipid profile was measured.*

Results: *Mean age of study sample was 54.51 ± 3.052 years (age range 44 to 60 years of age). The subjects were 60 (40%) male patients and 90 (60%) patients were females. 48 (32%) patients had dyslipidemia. Dyslipidemia was associated with duration of disease but not with age, gender or treatment*

Conclusion: *Frequency of dyslipidemia is quite high (32%) in our patients of rheumatoid arthritis.*

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INTRODUCTION:

Rheumatoid arthritis (RA) is the most common form of polyarticular inflammatory arthropathy characterized by persistent synovitis, bony erosions and progressive articular destruction leading to varying degree of physical disability [1]. Long-term complications of the disease are hospitalization, work disability, medical costs, poor quality of life, and cardiovascular disease (CVD) etc [2,3].

Rheumatoid arthritis is considered as an independent risk factor of cardiovascular disease ischemic heart disease (IHD) or congestive heart failure which cause up to 40% of deaths in these patients [3,5]. In the general population, dyslipidemia, especially elevated levels of low-density lipoproteins (LDL), has been shown to be one of the strongest predictors of CVD and according to the national guidelines it is a major constituent of the primary treatment [6].

Dyslipidemia in RA mainly presents as low concentrations of high-density lipoprotein (HDL), which is associated with an unfavorable. Total cholesterol and HDL levels in RA are inversely associated with the acute phase response, regardless of antirheumatic therapy [5]. It is also recommended that lipid levels should be monitored and to minimize the long-term risk of cardiovascular disease it is managed in patients with RA. A study reported prevalence of dyslipidemia in 48% patients of RA [7]. A local study also quoted various types of dyslipidemia in 54% of patients [8]. However, this study included patients with <6 months duration of disease and other CVD risk factors like smoking, obesity, hypertension was not recorded. The present study was undertaken to know the frequency of dyslipidemia in patients of rheumatoid arthritis who did not have any other risk factor for CVD. As cardiovascular disease is the leading cause of death in RA patients [9] disease-modifying therapies can be added to minimize the risk of mortality.

MATERIALS AND METHODS:

It was a cross-sectional study, carried out in Department of Medical OPD, Jinnah Hospital, cardiovascular risk. Lahore, over a six-month period from 36th March 2016to 20 August 2017. The Institutional Ethical Committee approved this study. Non-probability, purposive sampling technique was used and estimated sample size was 150 patients at 95% confidence level, 8% margin of error taking an expected percentage of patients of dyslipidemia in RA patients 54% [8]. Patients of both genders, 18-80 year of age, diagnosed as rheumatoid arthritis on the basis of American College of Rheumatism-(ACR-ELUR) criteria, with duration of RA ≥ six months, and having BMI 19-25 (with normal weight) were enrolled in the study. Exclusion criteria included smoking, diabetes (previous medical record or blood sugar fasting >126 mg/dl, blood sugar random (CVA), or any chronic systemic or metabolic disorder. Informed consent was obtained from each patient. Demographic profile (name, age, sex, contact no.) was taken. The patient's presentation had to go through a complete medical history and physical examination was done which included body mass index (BMI) and blood pressure measurement. Patients' fasting (12-15 hour) blood sample (5cc) were taken and sent to hospital laboratory for analysis of lipid profile including high density lipoproteins (HDL), low density lipoproteins (LDL), total cholesterol (TC) and triglycerides (TG). Patients with ≥ 1 abnormal serum lipid abnormalities i.e. cholesterol (>150 mg/l), triglycerides (>150 mg/dl), HDL (<40 mg/dl), LDL (>100 mg/dl) and VLDL (>32 mg/dl) were labelled as dyslipidemic.

All data were analyzed by SPSS-20. Quantitative variables like age, cholesterol, triglyceride, HDL, LDL and VLDL were presented as mean±SD. Qualitative variables like, gender and pattern of dyslipidemia were calculated as frequency and percentage. Data were stratified for age < or ≥55 year, gender, duration of disease (6-12 months, 12-24 months and> 24 months). For comparison of stratified variables for dyslipidemia Chi-square test was applied. *P* value < 0.05 was considered as significant.

RESULTS:

One hundred and fifty patients were included in our study sample with mean age of 54.51±3.052 years and age range from 44 to 60 years (Table 1). In that, around 85 (56.7%) patients were less than 55 years of age and rest of them were (43.3%) ≥ 55 years of age. 60(40%) patients were male and 90 (60%) were females, with M:F of 1:1.5. 48 patients (32%) had dyslipidemia (Table 2). In 102 (68%) patients, duration of dyslipidemia was 6 to 12 months, in 28 (18.7%) it was 13 to 24 months and in remaining 20 (13.3%) patients it was above 24 months (Table 1). There were 114 patients (76%) who were currently on treatment (Table 2). To determine the frequency of dyslipidemia among gender (20 male and 28 female patients), we stratified data, but there was insignificant difference (p=0.775). There were 48 dyslipidemia patients from which 43 were treated and 5 were not treated. Results were

again non-significant [p=0.008] (Table 2). The results were insignificant (p=0.332) when we crossed the tabulated age groups with dyslipidemia,. Out of 48 dyslipidemia patients, 25 were less than 55 year while 23 were more than 55 years of age. When we cross tabulated duration of disease with dyslipidemia, results were significant (p=0.001). Among 48 dyslipidemia patients 28 had duration of 13 to 24 month and 20 had 24 month duration. However no patient of dyslipidemia had duration of 6 to 12 months.

Table No.1: Demographic and clinical data of patients (n=150).

Variable	No.	%age
Age (years)		
< 55	85	56.7
≥ 55	65	43.3
Sex		
Male	60	40.0
Female	90	60.0
Duration of disease (months)		
6-12	102	68.0
13-24	28	18.7
> 24	20	13.3
Treatment		
Under treatment	114	76.0
No treatment	36	24.0
Dyslipidemia		
Present	48	32.0
Absent	102	68.0

Table No.2: Stratification of dyslipidemia, according to age, sex, treatment and duration of disease (n=150).

Variable			P value*
	Yes	No	
Age (year)			
< 55	25	60	0.43
≥ 55	23	42	
Gender			
Male	20	40	0.77
Female	28	62	
Treatment			
Under treatment	5	31	0.008
No treatment	43	71	
Duration of disease (months)			
6-12	0	102	0.001
13-24	28	0	
> 24	20	0	

* determined by X test.

DISCUSSION:

There is an increased risk of cardiovascular disease in patients with rheumatoid arthritis (RA), that may not always be related to the presence of traditional cardiovascular risk factors. In the general population, dyslipidemia has been found to be one of the strongest predictors of CVD, with elevated levels of low-density lipoproteins (LDL) constituting the primary treatment target according to various guidelines.

In our study, 48 (32%) patients had dyslipidemia. According to the previously reported data this figure is lower. A study from Spain by Batun-Garrido et al[9] reported dyslipidemia in 54.9% of patients. In 51-60 year age group, dyslipidemia was frequent and with it the type 1 obesity, positive cyclic citrullinated antipeptide antibodies and positive rheumatoid factor, ESR >13mm/hr and CRP>2mg/l. A negative correlation was seen with lower rate of disease activity and treatment with hydroxyl- chloroquine. It is also reported by Chavan et al[10] about increased serum cholesterol and decreased HDL along with reduced serum magnesium level and raised uric acid levels. In the study by Nisar et al[8] 54% of patients of RA had dyslipidemia in the form of deranged total cholesterol levels and low HDL levels. Another study from by Hassen Zrour[11] studied 92 subjects with active RA and 82 healthy subjects for the analysis of lipid profile. They reported a higher prevalence of associated dyslipidemia 95.7% in RA patients versus 65.9% in control, p<0.001).

Reported pattern of lipids in RA patients has been quite conflicting in different studies. Some studies described similar [12] higher [13] or lower [14]. levels of total cholesterol (TC) while others reported increased levels of TC and LDL-C in patients with RA [11] Liau et al. [15] compared 16,085 RA patients with 48,499 non-RA controls. They found that the relationship between LDL cholesterol levels, HDL cholesterol levels and risk of cardiovascular events was nonlinear and similar between RA patients and non-RA control.

When we cross tabulated age groups with, dyslipidemia. Out of 48 dyslipidemia patients, 25 were less than 55 year while 23 were more than 55 years of age i.e. results were non-significant (p=0.332). It shows that age of the patients in RA has no bearing on the presence of dyslipidemia. In our study sample 60 patients (40%) were male and remaining 90 patients (60%) were females. As

per the results the females have a greater risk of developing this disease. Stratification of the data revealed that there is no effect of gender on the presence of dyslipidemia.

When we cross tabulated duration of disease with dyslipidemia, results were significant (p=0.001). Among 48 dyslipidemia patients 28 were having duration 13 to 24 month and 20 were above 24 month duration however no patient of dyslipidemia was in duration of 6 to 12 months. This implies that longer the duration of disease, higher the chances of dyslipidemia and risk of cardiovascular diseases. Another parameter which we assessed in our study was treatment of the disease. Our results showed that patients under treatment had less chances of dyslipidemia. Similar findings have been reported previously [16,17]. Disease modifying agents used in the treatment of RA like hydroxychloroquine and methotrexate have anti-atherogenic effect whereas the impact of biologicals on lipid levels is variable [16,17].

Limitations of the present study were that we did not use healthy controls and did not measure the effect of lipid levels in relation to different treatments. We suggest analysis of lipid profile should be stratified by the presence of the use of corticosteroids, nonsteroidal anti-inflammatory drugs, selective cyclo-oxygenase 2 inhibitors etc. in some prospective studies.

CONCLUSION:

It is concluded that frequency of dyslipidemia is quite high (32%) in our population presenting with rheumatoid arthritis. It is not associated with gender, younger age and being on treatment. It is associated with duration of disease.

Conflict of Interest: No conflict of interest is to be declared by any author for the study.

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