



A STUDY OF ASSOCIATION BETWEEN DYSLIPIDEMIA AND CAROTID INTIMA MEDIA THICKNESS IN PATIENTS WITH RHEUMATOID ARTHRITIS

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ABSTRACT **INTRODUCTION**-Rheumatoid arthritis (RA) is the commonest inflammatory joint disease of complex and heterogenous nature. **MATERIAL AND METHOD**-50 patients of RA attending Himalayan Hospital OPD and above 18 years of age who satisfy the ACR classification were included in the study. **RESULT**-There was a predominance of female patients. Dyslipidemia was observed in 30% of patients and carotid intima medial thickness (CIMT) of ≥ 0.9 mm in both carotid arteries was observed in 22% of patients. **CONCLUSION**-There was a predominance of female patients with RA. No association between CIMT and lipid levels was observed.

KEYWORDS : Rheumatoid arthritis, Dyslipidemia, Carotid intima media thickness.

INTRODUCTION-RA is a multisystem inflammatory process involving mainly the small joints of upper and lower limb and with a female predominance (1). Numerous studies have shown an association of deranged lipid profile in the patients of active Rheumatoid arthritis (2). Studies have also shown an increased risk of cardiovascular events leading to morbidity and mortality in RA patients (3). The impact of atherosclerosis as a risk factor for future cardiovascular risk can be assessed by carotid intima medial thickness (CIMT) (4). Values of CIMT over the 75th percentile or more than 0.9 mm is considered abnormal according to European society of Cardiology (5).

AIMS AND OBJECTIVES-To study the Lipid Profile and CIMT and the association between dyslipidemia and CIMT in patients with Rheumatoid arthritis."

MATERIAL AND METHOD-A total of 50 RA patients above 18 years diagnosed by 2010 EULAR criteria and without preexisting CAD, Hypertension, diabetes, obesity or mixed connective tissue disease and no history of smoking, alcoholism or known to have previous dyslipidemia or taking statins were included in the study (6). After detailed clinical evaluation they were investigated with Complete Hemogram, HbA1c levels, RF, Anti CCP, Lipid profile, ESR (Westergren), CRP and ECG.

Data were analyzed by using statistical software SPSS 22. Chi-square test and Fisher's exact test were used to test the significance of difference between proportions and association between qualitative variables. Unpaired Student's t-test was used for comparison of parametric variables. Correlations between different parameters were assessed by Pearson product moment correlation coefficient.

RESULTS-

Table-1: Baseline characteristics of patients with Rheumatoid Arthritis

Variable	Categories	No. of Patients	Percentage
Gender	Female	41	82
	Male	9	18
Religion	Hindu	49	98
	Muslim	1	2
Marital status	Married	45	90
	Widowed	5	10
Education	Illiterate	12	24
	Primary	14	28
	Intermediate	16	32
	Graduation and above	8	16

Majority of our patients were females most of the patients had some education up to different levels.

Table-2: Lipid profile of patients with Rheumatoid Arthritis

Lipid Profile	No. of Patients	Percentage	Mean \pm SD	
Serum VLDL-C (mg/dl)	≤ 30 mg/dl	28	56	27.2 \pm 11.3
	> 30 mg/dl	22	44	
Serum LDL-C (mg/dl)	≤ 130 mg/dl	43	86	95.6 \pm 34.7
	> 130 mg/dl	7	14	
Serum HDL-C (mg/dl)	≤ 40 mg/dl	17	34	46 \pm 11.92
	> 40 mg/dl	33	66	
Serum triglyceride (mg/dl)	≤ 150 mg/dl	31	62	134.78 \pm 56.2
	> 150 mg/dl	19	38	
Serum cholesterol (mg/dl)	≤ 200 mg/dl	35	70	171.2 \pm 42.2
	> 200 mg/dl	15	30	

Dyslipidemia was observed in 30% of patients. Most common dyslipidemia was raised serum VLDL-C."

Table-3: Value of CIMT in Rheumatoid Arthritis patients

Carotid intima media thickness	Category	No. of patient	Percentage
Carotid intima media thickness (mm) Right	< 0.9	39	78
	> 0.9	11	22
Carotid intima media thickness (mm) Left	< 0.9	39	78
	> 0.9	11	22

Abnormal Carotid intima media thickness was seen in 22% patients on right side as well as left side."

Table-4: CIMT as per lipid levels

Lipid Profile	Carotid intima media thickness (mm)	
Serum VLDL-C (mg/dl)	≤ 30 mg/dl	0.87 \pm 0.30
	> 30 mg/dl	0.87 \pm 0.36
P value	0.98	
Serum LDL-C (mg/dl)	≤ 130 mg/dl	0.85 \pm 0.31
	> 130 mg/dl	0.98 \pm 0.41
P value	0.34	
Serum HDL-C (mg/dl)	≤ 40 mg/dl	0.88 \pm 0.24
	> 40 mg/dl	0.86 \pm 0.37
P value	0.83	
serum triglyceride (mg/dl)	≤ 150 mg/dl	0.88 \pm 0.29
	> 150 mg/dl	0.86 \pm 0.38
P value	0.86	
Serum cholesterol (mg/dl)	≤ 200 mg/dl	0.84 \pm 0.25
	> 200 mg/dl	0.93 \pm 0.47
P value	0.41	

No significant differences were seen between CIMT on right as well as left side as per levels of lipid fractions.

Table-5: Observation of patients as per disease activity and Atherogenic index

Variable	Categories	No. of Patients (N=50)	Percentage	Mean ± SD
DAS 28	Remission	1	2%	3.9902±.9903
	Low disease activity	12	24%	
	Moderate disease activity	21	42%	
	High disease activity	14	28%	
Atherogenic index	Low Risk	5	10%	.44±.22
	Intermediate risk	4	8%	
	High Risk	41	82%	

Most of the patients had active Rheumatoid Arthritis while only 2% were in remission. Moderate disease activity was most common followed by high disease activity. High risk atherogenic index was present in most of the cases.

Table-6: Association between risk of Atherogenic index and CIMT

Variable	Carotid intima media thickness (mm) (Percentage)	P-value		
		<0.9	≥0.9	
		No. of Patients (Percentage)	No. of Patients (Percentage)	
Atherogenic index	Low risk	4(10.3)	1(9.1)	.984
	Moderate risk	3(7.7)	1(9.1)	
	High Risk	32(82.0)	9(81.8)	

No significant association was seen between risk of Atherogenic index and CIMT on right side.

Table-7: Association between risk of Atherogenic index and grade of disease activity

Variable	Atherogenic Index	Total	P-Value			
				Low	Intermediate	High
Das 28 Score	Remission	1	0	0	1	0.06
	Low activity	0	1	13	14	
	Moderate activity	2	1	18	21	
	High activity	2	2	10	14	
	Total	5	4	41	50	

Test-Chi Square test

No significant association was seen between risk of Atherogenic index and CIM

Table-8: Joint Deformities in RA patients

Deformity	No. of Patients	Percentage
Swan neck	10	20
Z deformity	4	8
Halux valgus	3	6
Lateral deviation and dorsal subluxation of toes	4	8
Others	2	4

Swan neck deformity was the commonest deformity observed in RA patients

DISCUSSION-

Chronic inflammation of Rheumatoid synovium causes tender and painful joint swelling with bone erosions and deformity as well as extraarticular structures including atherosclerosis and related morbidity and mortality. Our study showed a female predominance in Rheumatoid Arthritis and this is consistent with numerous studies (7). We had 82% female patients in our study which is consistent with a study conducted by Toosi et al which showed a prevalence of 87% in females. In our study dyslipidemia was seen in 30% patients which is

much less than reported by Toosi et al who reported dyslipidemia in 65% of patients (8). In our study, the mean serum total cholesterol was 171.2±42.2 mg/dl, the average HDL was 46±11.92 mg/dl, the mean VLDL was 27.2±11.3 mg/dl whereas in a study on the association between lipid profile and disease activity in RA patients by Yadav et al the mean serum total cholesterol was 157.27±16.65 mg/dl, HDL was 41.7±7.20 mg/dl and VLDL 26.6 ± 5.46 mg/dl(9). A Study by Gonzalez-Juanatey et al reported abnormal CIMT on the left and right side in 22% RA patients which is similar to our findings of abnormal CIMT also seen in 22% patients. According to Boers et al atherogenic index is an important prognostic marker for cardiovascular disease (10). In our study of 50 patients 82% had atherogenic index falling in high risk category. However, the association of atherogenic index with disease activity score (DAS 28) and CIMT was not statistically significant. In our study, the maximum number of RA patients were found to have swan neck deformity (20%) which is similar to a study by Vander Geison et al. In contrast to our study by Vainio et al, reported that 43.8% of respondents indicated the foot or ankle was the first site involved which contradicts our findings (11).

CONCLUSION-

The prevalence of Rheumatoid Arthritis (RA) was found to be higher in females than in males. Although majority of our patients were high risk category based on atherogenic index, the association with disease activity score and CIMT was not significant.

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