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A STUDY OF LIPID CHANGES IN RHEUMATOID ARTHRITIS PATIENTS

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ABSTRACT

Lipoprotein abnormalities are usually observed in chronic inflammatory conditions like rheumatoid arthritis. The aim of the study is to determine the lipoprotein abnormalities in patients with rheumatoid arthritis. 52 patients of rheumatoid arthritis of varying age groups are choosen for this study and 37 healthy people were taken for the control. The estimation of triglycerides done by method adopted in Foster and Dunn. The estimation of serum cholesterol was carried out by using modified Zak's method. The estimation of serum high density lipoproteins was done by phosphotungstate/ magnesium method. The marked reduction of cholesterol, HDL, LDL, VLDL were noticed in rheumatoid arthritis patients with significant p-values compared to normal values in control groups. The study concluded that hypolipoproteinemia in rheumatoid arthritis may be due to anemia. The hypolipidimiae may be caused by general debilitating illness found in rheumatoid arthritis causing cachexia, which in turn may cause hypoproteinimiae.

KEY WORDS: **Rheumatoid arthritis, Hypolipoproteinemias, Anemia**

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INTRODUCTION

Rheumatoid arthritis is a chronic inflammatory systemic disease of young or middle aged adults, characterized by destructive and proliferative changes in synovial membranes, particularly skeletal muscles and perineural sheath. Eventually all joints are destroyed, ankylosed and deformed. Archibald Garrod first used the term rheumatoid arthritis. The cause of the disease may be due to infection, endocrine, genetics, auto immune response, trauma and hormonal imbalance[1]. About 90-98% of fatty acids present in the plasma are esterified fatty acids mainly in the form of triglycerides, cholesterol, esters and phospholipids. Lipoprotein is a macro molecular structure and it is shown by the electron micrography as a particle that contains significant amount of TGL, phospholipids, free cholesterol and ester cholesterol. The lipids are arranged in such a way that a core of hydrophobic lipids are surrounded by polar lipids and then a shell of apoproteins. The hypolipoproteinemias in rheumatoid arthritis was related to the severity and activity of the disease[2,3]. This study concluded that lipoprotein levels are markedly decreased in rheumatoid arthritis patients which may be due to debilitating illness like anemias[4].

MATERIALS AND METHODS

This case control study was conducted in a tertiary care hospital which included 52 cases and 37 controls. A total number of 52 patients of varying age group were chosen for this study after confirmation of rheumatoid arthritis by performing tests like Rose Waller test, Latex test for Rheumatoid factor and C Reactive protein. The estimation of triglycerides done by method adopted in Foster and Dunn. The estimation of serum cholesterol was carried out by using modified Zak's method. The estimation of serum high density lipoproteins was done by phosphotungstate/ magnesium method. This study was approved by ethical committee. Blood samples were collected by veni puncture from all these subjects taking the necessary antiseptic precautions after getting consent from the patients. Samples for lipid studies were taken after 14 hours of fasting. Samples for estimation of sugar and urea were also collected together with postprandially. Care was taken to ensure that patients were not on any medication known to produce plasma lipid changes.

RESULTS

TABLE -1

	Age	**patient**	**Age**		**Hb%**		**TGL**		**Cholesterol**		**HDL**		**LDL**		**VLDL**	
			Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
	20-29	Control (20)	24.4	1.03	12.47	0.21	135.1	1.39	227.4	4.06	47.9	1.98	152.4	2.56	27.1	0.46
		R.A. (30)	22.3	1.07	10.46	0.12	115.9	5.85	181.4	4.55	36.6	1.43	121.5	4.34	23.3	0.86
P-value			**NS**		HS (P < 0.00)		HS (P < 0.01)		HS (P < 0.001)		HS (P < O.001)		HS (P < 0.001)		HS (P < 0.01)	

TABLE -2

	Age	patient	Age		Hb%		TGL		Cholesterol		HDL		LDL		VLDL	
			mean	SE	mean	SE	Mean	SE	mean	SE	Mean	SE	Mean	SE	Mean	SE
	30-39	Control (17)	32.5	0.80	12.85	0.15	143.5	1.5	242.25	2.05	50.13	1.54	161.25	1.8	29.63	1.56
		R.A. (22)	32.75	0.90	10.45	0.23	127.5	5.34	175.25	9.8	37.5	2.03	113.13	8.87	24.63	0.89
P-value			**NS**		HS (P < 0.001)		HS (P < 0.02)		HS (P < 0.001)		HS (P < O.001)		HS (P < 0.02)		HS (P < 0.02)	

DISCUSSION

This is a case control study carried out in a tertiary care center in Chennai. In this study the mean value of all lipoproteins like cholesterol HDL, LDL and VLDL are markedly decreased in rheumatoid arthritis patients compared to normal values in control. Both sexes seem to be anemic and the Hb% is less than 11 gms/100 ml. These findings are in accordance with results reported in literatures by various authors[2,4]. A study conducted by Manole and others in extra articular manifestations in rheumatoid arthritis , males were most affected than females in contrast to this study[5]. A study conducted by Carmen and others in rheumatoid arthritis patients that cardiovascular risk was increased in patients with rheumatoid arthritis which could not be explained by conventional cardiovascular risk factors[6]. According to Phoebe A Stapleton et al., nonconventional cardiovascular lipid risk factors can be suspected If proatherogenic lipid profile estimated in untreated rheumatoid arthritis (RA) is corrected to the normal lipid levels without the use of lipid lowering agent by treating RA[7]. A study conducted by George steiner and others evaluated conventional lipid risk factors and lipoprotein (a) in treated patients with RA[3] . Long-term risk of cardiovascular disease in rheumatoid arthritis patients can be reduced by estimating the lipid profile and also by managing the abnormal lipid changes. It is essential to do more research works to be done to relate lipoprotein levels and systemic inflammation and also to emphasize the impact of small dense low-density lipoprotein and subfractions of HDL causing cardiovascular risk in rheumatoid arthritis patients. In a study conducted by Eoin.R. Feeny[8] he told that, increased cardiovascular risk is due to reduced high-density lipoprotein cholesterol & human immunodeficiency virus (HIV) infection . HIV impairs cholesterol efflux, by increasing ABCA1 degradation and upregulation of ABCA1 messenger RNA (mRNA). ABCA1 expression is increased in untreated HIV-infected patients with virological suppression by ART leading to impairment of cholesterol efflux by HIV affecting the cholesterol metabolism[9].

CONCLUSION

From this study it was concluded that hypolipoproteinemia is also common in rheumatoid arthritis. The cause of this may be due to anemia. The hypolipidimiae may be caused by general debilitating illness found in rheumatoid arthritis causing cachexia[10], which in turn may cause hypoproteinimiae.

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