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FULL PAPER

Evaluation of lipid profile in Iraqi patients of rheumatoid arthritis

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This research was designed to study the effect of rheumatoid arthritis disease on some biomarker, and it was included 100 samples belonging to 50 individuals with rheumatic joint disease that was divided into 3 groups according to the disease period of time (i.e., early, mid, and advanced) at the age ranges of (25-65 years old) with 50 sample healthy (control) at the age ranges of (20-40 years old) and clinical parameter of disease were assessed ,including total cholesterol (TC), triglyceride (TG), high density lipoprotein cholesterol (HDLC), low density lipoprotein cholesterol (LDLC), and very low density lipoprotein–cholesterol (VLDL-C). The results of the study revealed a significant increase with (HDLC) of patients with rheumatoid arthritis compared with control group, and also it was not significant in (TC, TG, LDLC, and VLDL-C) of the patients with rheumatoid arthritis compared with control group.

KEYWORDS

Rheumatoid arthritis; HDLC; LDLC; VLDL-C; serum; blood.

Introduction

Rheumatoid Arthritis (RA) is a chronic inflammatory condition marked by joint swelling, discomfort, and stiffness [1]. The extra articular effects Face, eye, heart, kidneys, nervous system, gastrointestinal tract, and lungs are perfectly involved in this conditions. More than half of RA patients that may make the term “rheumatoid disorder” a better match for the RA core for a number of compounds. These indications were highly notable and had an effect on the disease’s normal course as well as a significant impact on the RA-related morbidity and mortality [2]. In this study, the RA occurrence is significantly increasing in Sweden as 0.70% [3]. In 2013, the prevalence of rheumatoid arthritis was estimated to be 1% of population in Iraq [4] and approximately 0.5% of the general adult population of Spain dealt with the issue. Likewise, RA is associated with increased mortality rates which are mostly attributable to cardiovascular disease, primarily coronary heart disease, which is a consequence of early atherosclerosis [5-7]. Patients with RA have high mortality rate compared with the general population, with cardiovascular disease (CVD) contributing up to 50% of all deaths [8]. Moreover, the RA patients have frequently concomitant comorbidities that pose increased risks for atherosclerosis, and men with RA have worse CVD outcomes than women with RA [9]. The association of the systemic inflammatory responses in RA with lipid profiles further obscured the relation among RA pathophysiology and CVD. In initial RA patients, the research suggested normal or significantly increase in total cholesterol (TC), LDL, and triglycerides (TG), as well as lower HDL levels. Highly active RA, on the other hand, was related to the lower TC and LDL readings [10-12].

Materials and methods

Patients

The blood samples were collected from 100 people who were attended in Bagdad Medical City, in the time period since September, 2020 to January, 2021. The samples were divided into 50 patients mentioned in three groups as: early (6 patients, 2 months-2 years old), mid (24 patients, 3-8 years old), advanced (20 patients, 9-40 years old) according to the disease phase and the average age (25-65 years old), and 50 patients from healthy control (20-40 years).

Sample Collection

Two milliliters of blood used serum for serological assessments was bought by centrifugation at 3000 rpm for 10 minutes and coded serum aliquots had been stored at -20 ℃ until it used to be analyzed.

Methods

The total cholesterol (TC), triglyceride (TG), high density lipoprotein cholesterol (HDLC), and low density lipoprotein cholesterol (LDLC) were detected in sera. We performed the standard hematological and biochemical techniques. All participants' TC, TG, HDLC, and LDLC were analyzed using commercial analytical kits from BIOLABO SA (02160 Miazy, France).

Statistical analysis

In order to evaluate the parameters in this study, a comparison was done between (control, early, mid, and advanced) groups, for each case (lipid profile), and also the analysis of variance was conducted in a perfect randomized design for each case by using the least significant difference (LSD) at $p \leq 0.05$ to explain the differences between means by p-value and was expressed as (mean ± SD). The Statistical Package for Social Sciences (SPSS) program version 21 and Excel application were both used to find the result and draw the figures with some effects.

Results and discussion

The results of [total cholesterol (TC), triglyceride (TG), low density lipoprotein cholesterol (LDLC), and very low density lipoprotein–cholesterol (VLDL-C)] showed non-significant when compared control with all patients groups at p-value > 0.05, as presented in Tables 1 and 2. The inflammation in RA also increased CETP activity, which was involved in HDL metabolism and led to a decrease in HDL-C levels [13]. Due to the increasing inflammation which caused the increasing release of the free radicals, led to the LDL oxidizing and formation of the oxidized LDL which resulting in the precipitation of the LDL causing the narrowing of the arteries and resulting in arteriosclerosis and cardiac disease, as well [14]. Turner *et al.* indicated the how inflammation controls with faceting changed lipid metabolism measures, the exploratory HDL function, and particle size parameters [15]. In Tables 1 and 2, a significant increase was illustrated for high density lipoprotein cholesterol (HDLC) when compared control with the advanced groups at p-value < 0.05. Likewise, this examination appeared incompatible with study [16] due to the difference in number of patients or the city. The current study was not similar to the study [17], where the results were revealed no significant difference in HDL in the same disease; however, TC, TG, and LDL implied a significant increase in patient with rheumatoid arthritis, as compared with control [17]. In this respect, the higher levels of small and dense LDL particles were reported in RA patients compared with controls [18]. Several factors may be implicated in the lower apo B levels of these patients, which were mainly due to the

disease activity or chronic inflammation. The inflammation is related to a decreased hepatic lipoprotein production and increased catabolism, as well [19]. It reduces blood cholesterol in humans, which is followed by such a reduction in serum apo B levels. Several pathophysiological variables may be included in the method through which the infected inflammation affects cholesterol levels. Interleukin 6 suppresses cholesterol synthesis, while simultaneously limits cholesterol and apo B excretion; however, interferon-ß inhibits apo B generation [20].

TABLE 1 Comparison of lipid parameters among cases and controls

Parameter / Gro.	Numbers	Cholesterol	Triglyceride	LDL	HDL	VLDL
		(Mg / dl) Mean ± SD				
Control	50	173.0±33.89	134.3±63.02	115.1±25.68	44.12±8.186	27.18±12.53
Early	6	172.5±31.49	108.3±74.69	108.0±29.03	46.50±9.094	21.83±14.82
Mid	24	191.6±51.30	130.3±91.48	120.2±38.65	49.96±10.65	26.08±18.29
Advanced	20	190.6±52.75	120.6±52.22	119.7±34.0	51.10±10.9	24.45±10.47

TABLE 2 P-values comparison of lipid parameters among cases and controls

Para. / Comparisons between Groups	Cholesterol p-value	Triglyceride p-value	LDL p-value	HDL p-value	VLDL p-value
Control with Early	>0.9999	0.8251	0.9512	0.9369	0.8101
Control with Mid	0.2998	0.9956	0.9150	0.0680	0.9888
Control with Advanced	0.4044	0.8805	0.9468	0.0315	0.8798
Early with Mid	0.7610	0.9012	0.8268	0.8533	0.9083
Early with Advanced	0.7987	0.9815	0.8520	0.7228	0.9775
Mid with Advanced	0.9998	0.9681	>0.9999	0.9783	0.9801

Conclusion

It was concluded that TC, TG, LDL, and VLDL were not affected when compared with those with rheumatoid arthritis as with control, but HDL appeared prominently and had a significant increase when compared control with the advanced patients.

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