"EVALUATION OF SERUM HIGH-DENSITY LIPOPROTEIN AND LOW-DENSITY LIPOPROTEIN IN PATIENTS WITH RHEUMATOID ARTHRITIS"

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Abstract

Introduction: Rheumatoid arthritis is a chronic systemic disease characterized by systemic features and joint involvement and it can lead to significant morbidity and mortality. The etiology of the disease could be attributable to genetic and nongenetic factors as hormonal, environmental, and infectious factors. Altered lipid levels have been reported in various inflammatory diseases including RA. There is an increased risk of atherosclerosis and cardiovascular disease in RA subjects than in the general population. **Aim:** The present study was planned to evaluate and compare the levels of serum HDL and LDL between RA patients and healthy controls.

Methodology: Total of 80 subjects, 40 were patients with RA while 40 were age and sex matched healthy controls.

Results and Discussion: The majority of patients were female. Decreased levels of HDL and Increased levels of LDL were observed in RA patients than controls.

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INTRODUCTION

Rheumatoid arthritis is a persistent systemic disease affecting often the synovium, main to joint damage and bone destruction[1]. RA causes huge morbidity due to synovial inflammation, joint destruction, and related disability[2].

RA is characterized by systemic capabilities and joint involvement and it can lead to substantial morbidity and mortality[3]. studies have shown accelerated untimely mortality in sufferers with RA in comparison with the overall population[4-7]. The etiology of the disorder can be a consequence of genetic and nongenetic factors as hormonal, environmental, and infectious factors[3].

numerous investigators mentioned an extra of cardiovascular morbidity and mortality amongst RA sufferers. In lively RA, the majority of cardiovascular deaths result from accelerated atherosclerosis[8-9].

Altered lipid levels have been suggested in diverse inflammatory disorders including RA[10]. There is an improved hazard of atherosclerosis and cardiovascular disease (CVD) in RA subjects than in the overall population[11]. Danger elements for atherosclerotic events and CVD include males, increased age, elevated plasma total cholesterol (TC) and low-density lipoprotein (LDL), reduced high-density lipoprotein (HDL), high blood pressure, smoking, and diabetes mellitus[12-15]. approximately 50% of atherosclerotic coronary artery disease (CAD) in the network occurs in the absence of traditional risk factors[16]. In widespread, and with some versions among several studies, the lipid profile of RA patients with untreated RA is generally characterized by lower serum HDL while contrasting outcomes were posted on the serum TC and LDL[17-21].

The present study was planned to evaluate serum HDL levels and serum LDL levels in RA patients and compare them with the healthy control group.

METHODOLOGY

The study design was a case-control study and conducted in the Department of Biochemistry with the collaboration of the Department of Medicine, Mahatma Gandhi Medical College and Hospital, Sitapura, Jaipur, Rajasthan.

Patients (n=40) diagnosed with Rheumatoid arthritis by Rheumatologist, and age and sex matched healthy subjects (n=40) fulfilling inclusion and exclusion criteria were enrolled for the study.

An informed consent was taken before the collection of the sample from cases. The study was conducted after approval from the Institutional Ethics Committee.

Blood samples after overnight fasting were collected by standard aseptic techniques. The samples collected were subjected to the following investigations:

a. High-density lipoprotein (HDL) – (Phospho-tungstic acid method)
b. Direct low-density lipoprotein (LDL) – (Colorimetric endpoint method)
   Investgations were estimated on Vitros 5600 Chemistry analyzer.

Inclusion criteria:

1. Age between 30 to 70 years, either gender.
2. Patients who were willing to participate in the study.

Exclusion Criteria:

1. Diagnosed cases of cardiovascular diseases and chronic kidney disease.
2. Pregnant and lactating Women.
3. Patients with malignancy.
4. Subjects with Age < 30 years and > 70 years

Statistical analysis:

The results obtained were presented as mean ± SD. Data analysis was performed using SPSS version 26. The data was carefully evaluated to obtain the mean values and SD and compared as student's 't' test between subjects and controls. p ≤0.05 was considered as statistically significant.

OBSERVATIONS

Table 1: Gender-wise distribution of Cases

Gender	Case	%
Male	10	25%
Female	30	75%

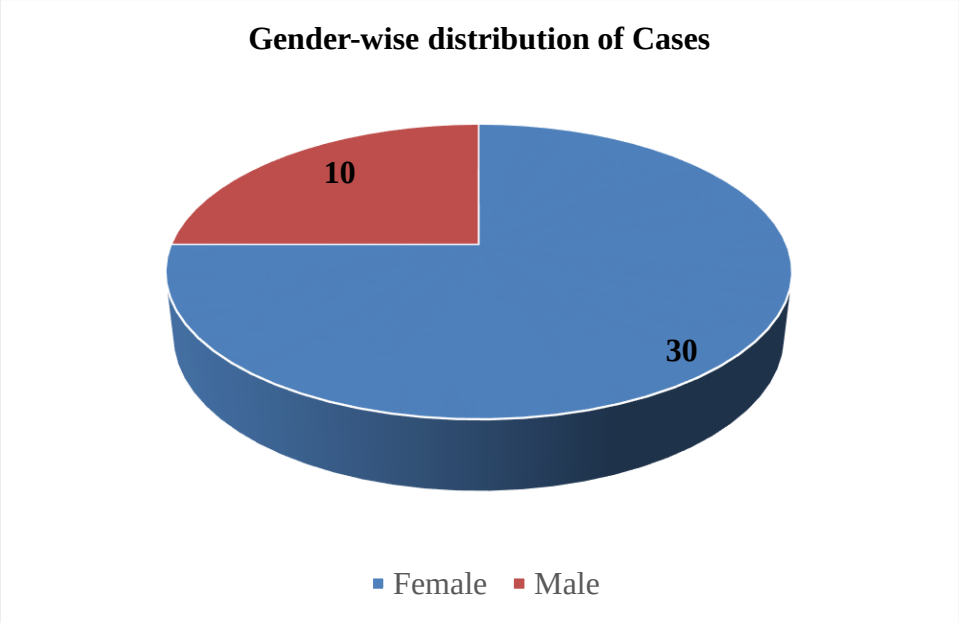

Figure 1: Gender-wise distribution of Cases

Table 2: Comparison of mean values of HDL and LDL in cases with control groups.

	Cases (n=40)	Controls (n=40)	t value	p value
HDL (mg/dl)	31.55±6.501	48.66±9.028	-9.73	<0.001
LDL (mg/dl)	104.39±17.835	79.31±25.98	5.03	<0.001

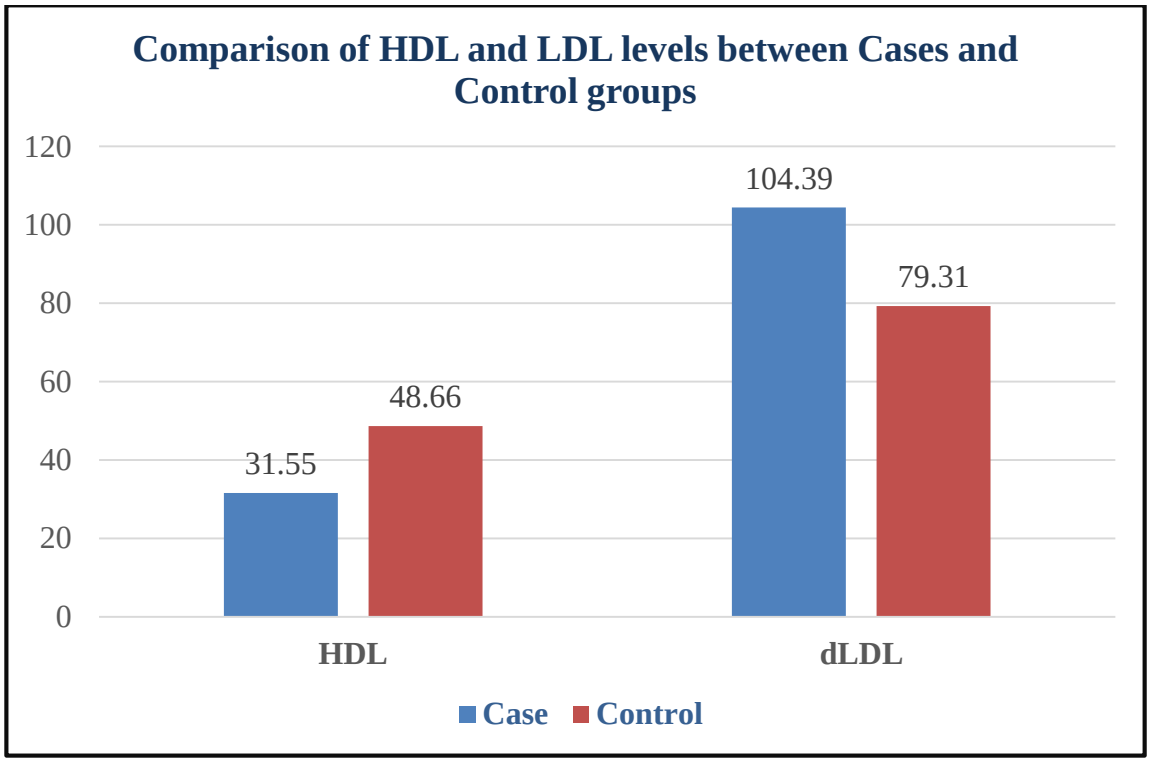

Figure 2: Comparison of mean values of HDL and LDL in cases with control groups.

RESULTS AND DISCUSSION: -

In the present study when cases (RA patients) were distributed on the basis of their gender, the majority of patients were female 75% (about 3 times higher) than male 25% as shown in Table 1 and Figure 1. According to WHO, about 70% of people living with rheumatoid arthritis are women [(22)]. Similar findings were suggested by A study by **Rossini M et al.,2010[(23)] and Chavan VU et al., 2015[(24)]**. The male-female ratio was comparable with that of the control group.

In the present study, it was observed that the level of HDL was lower among RA patients when compared with the control group. P value is

<0.001 hence it was highly significant as shown in Table 2 & Figure 2.

The present study shows that the level of LDL was significantly higher among RA patients when compared with the control group with a P value is <0.001 as shown in Table 2 & Figure 2. Similar observations were found by **Chavan VU et al., 2015[24] and Yadav S et al., 2018[25]**.

Rheumatoid arthritis (RA) is a chronic inflammatory disease that, if untreated, can cause severe damage to the joints and their surrounding tissue. It can lead to heart, lung or nervous system problems. It affects 0.8% of the total population of the world with an annual incidence of 0.5 - 1% in both developed and developing countries. Altered lipid levels have been reported in various inflammatory diseases including RA. There is an increased risk of atherosclerosis and CVDs in RA subjects than in the general population.

The total study population (n=80) was divided into two major groups; case group: comprising of RA patients (n=40) and control group: comprising of age and sex matched healthy individuals (n=40).

The major observations drawn from the study were:

- Of the total cases (n=40), the majority of cases 75% were female as compared to 25% male. The male-female ratio was comparable with that of the control group.
- Mean levels of serum HDL were significantly lower in RA patients when compared with the control group.
- Mean levels of LDL were significantly higher in RA patients when compared with the control group.

Conclusion: -

The present study concluded that Females are more affected by RA. Low HDL and high LDL levels were found in RA patients than healthy controls. However, the present study recommends thorough research with a large sample size.

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