

ROLE OF LIPID PROFILE IN OVARIAN CARCINOMA PATIENTS

Dr. Manisha¹, Dr. Ruchi Jindal²

¹Biochemist in Unipath lab Sikar, Rajasthan

²Biochemistry Department, GMCH, Udaipur, Rajasthan

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Corresponding author: Dr. Ruchi Jindal

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Abstract

Background: The term "ovarian cancer" includes several different types of cancer that arise from cells of the ovary, most commonly, tumors arise from the epithelium or lining cells of the ovary. Ovarian cancer risk is positively associated with higher consumption of dietary cholesterol and eggs, and inversely associated with a higher intake of vegetables. High consumption of fats may increase circulating estrogen levels, thus increasing the possibility of cell damage and proliferation that is responsible for cancerous growth.

Material & Methods: The present study was conducted at Geetanjali Medical College and Hospital, Udaipur (Rajasthan). Total 100 cases (females) attending the obstetrics and gynecology department for some gynecological and other problem were selected for this study between the age of 40-60 years, who were attending cancer centre at GEETANJALI MEDICAL COLLEGE AND HOSPITAL, Udaipur (Rajasthan).

GROUP I: - It consisted of healthy females control subjects (n=50). By routine examination and tests, we ensured that all the subjects were healthy and there were no signs and symptoms or history of ovarian tumor and diseases

GROUP II: - It consisted of ovarian cancer females subjects (n=50) with a history of ovarian tumor.

Results: Higher level of cholesterol, LDL, VLDL and low level of HDL are found in ovarian cancer patients.

Conclusion: The present study we highlights the importance and role of serum lipid profile in diagnosis, prognosis and recurrence of the disease. The study shows that serum level of cholesterol, LDL, VLDL was elevated in patients of ovarian cancer while low level of HDL are found in ovarian cancer patients.

Key words: lipid profile, ovarian cancer.

INTRODUCTION:

Ovarian cancer is considered an elusive disease, quietly progressing undetected and usually evading diagnosis until it reaches advanced stages. Unreliable and inconsistent screening is thought to be one of the primary reasons why mortality rates from ovarian cancer have not improved as much over the past many years as those from other cancers have.

Several case-control and cohort studies have found positive associations between ovarian cancer and an intake of foods with high levels of saturated fats or cholesterol, such as red meat, eggs, and dairy products¹.

Ovarian cancer risk is positively associated with higher consumption of dietary cholesterol and eggs, and inversely associated with a higher intake of vegetables.²

High consumption of fats may increase circulating estrogen levels, thus increasing the possibility of cell damage and proliferation that is responsible for cancerous growth³.

Dietary cholesterol may influence the risk of ovarian cancer through elevated circulating estrogen or progesterone. The repeated rupture of the follicle associated with ovulation, which leads to expose the ovarian epithelium to hormones in the surrounding fluid; high estrogen concentrations may increase the likelihood of tumor development⁴.

Looking to the survey of literature it has been observed that very few studies have been conducted for lipid profile specially in Rajasthan and that too not in this region, so we have planned this study.

Material and Methods:

This Study was conducted in department of biochemistry, Geetanjali Medical College & Hospital,

Udaipur (Rajasthan) in collaboration with department of Oncology and gynecology after obtaining institutional ethical committee permission. The total sample of 100 patients including 50 cases and 50 control (female). Informed consent was obtained from all subjects for participating in the study.

Estimation of lipid profile was done on Cobas C 311 by spectrophotometric method.

2) Estimation of serum total cholesterol by CHOD-PAP METHOD (Allain, 1974)

3) Estimation of serum Triglyceride by GPO-TRINDER Method (Bucolo, 1973)

4) Estimation of serum HDL Cholesterol by Precipitation method (Brustein M 1970)

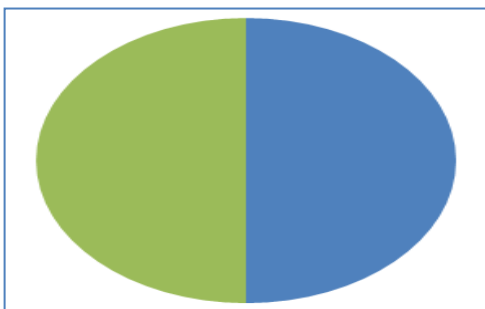
5) Estimation of serum LDL and VLDL Cholesterol by calculation by Friedwald’s formula (Friedwald 1972)

EXCLUSION CRITERIA: - Patients having any major systemic illness or having carcinoma other than ovary were excluded from this study.

Results:

TABLE 1: DISTRIBUTION BETWEEN CASE AND CONTROL

GROUP NAME	NUMBER (n)
Case (Patients of ovarian cancer)	50
Control	50
Total	100



Graph 1:

TABLE 2: MEAN ± SD AND P- VALUE OF LIPID PROFILE IN CASE AND CONTROL

PARAMETERS	CASE MEAN±SD	CONTROL MEAN±SD
LDL	146±53.9	104±29.1
VLDL	33.6±21.7	21.5±7.23
HDL	31.5±9.94	40.3±11.1
TC	203±63.8	166±34.4
TG	155±83.1	108±36

Discussion:

In the present study, we have observed significantly elevated levels of serum cholesterol and triglyceride in the study group as compared to control group. The mean value of serum total cholesterol in study group was 203±63.8 mg/dl and in control group was 166±34.4 mg/dl while that of serum TG is 155±83.1 mg/dl and 108±36 mg/dl respectively, in subjects and control. The difference among them was found to be significant. (P<0.0001).

Similarly it was observed by **Carmen et al (2013)** they have reported that abnormal lipid metabolism, leading to increased lipid synthesis would increase the availability of substrate for lipoprotein synthesis. They also reported that cancer cells depend on *de novo* lipid synthesis for the generation of fatty acids to meet the energy requirements for increased tumor growth. There was increasing evidence that lipid metabolism was deregulated in ovarian cancer. In present study, there were significant increase in level of serum LDL and VLDL in the study group as compared to control group. The mean value of serum LDL cholesterol in study group was 146±53.9 mg/dl and in control group was 104± 29.1mg/dl while that of serum VLDL is 33.6±21.7 mg/dl and 21.5±7.23 mg/dl respectively, in subjects and control. The difference among them was found to be significant. (P<0.0001). This findings was supported by **Scoles et al (2008)**. They reported those lipoproteins are chemically modified by oxidation. They identified a dose- dependent increase in cellular proliferation of ovarian carcinoma cell lines CaOV3, OVCAR3 and SKOV3 with increasing oxidized LDL concentration. Similarly it was reported by **Andrew Li et al (2015)** according to them there is potential correlation between lipoproteins (LDL, VLDL,) levels and survival in ovarian cancer patients. They also identified a statistically significance association between lipoproteins (LDL, VLDL,) levels and survival in ovarian cancer patients. They also identified a statistically significance association between elevated LDL levels and progression free and overall survival. Molecular studies by **Mack et al (2007)** support a role for elevated LDL in ovarian cancer biology. According to them chemoresistant ovarian carcinoma cells may overexpress ABCA₂, which functions in trafficking of LDL- derived free cholesterol. In the present study, we have observed significantly low levels of serum HDL are found in the study group as compared to control group.

Conclusion: In the present study we have carried out lipid profile. This biochemical investigation give us an idea about the prognosis, severity and recurrence of the ovarian cancer disease. Recently it has been shown, that levels of serum lipoproteins (TC, TG, HDL, LDL and VLDL) differ between women with ovarian cancer and those with benign condition. Abnormal lipid profile is implicated in poor survival in ovarian cancer. The present study highlights the importance and role of serum lipoproteins (TC, TG, HDL, LDL, and VLDL) level in prognosis and recurrence of the disease. The study shows that serum level of lipoproteins were abnormal in 43 (86%) patients of ovarian cancer, which indicates the potential correlations between lipoprotein levels and survival in women with ovarian cancer. If validated by independent studies in future, these biomarkers (TC, TG, HDL, LDL, and VLDL) may serve as an adjunct at the time of clinical presentation, to distinguish between women with advanced ovarian cancer and those with early stage of ovarian cancer. Therefore we must have a check all biomarkers (TC, TG, HDL, LDL and VLDL) in the females who are more than 40 years. We have to educate, aware the females about the screening of ovarian cancer. For this large a number of health worker, teachers, ward sarpanch, NGO's and social workers, should come forward, they

should go door to door to make them aware and educate about the incidence, prognosis and screening of ovarian cancer, specially in adult females (more than 40 years).

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