



ROLE OF CANCER ANTIGEN 125(CA 125) IN OVARIAN CARCINOMA PATIENTS

Biochemistry

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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. CA-125 is the most frequently used biomarker for ovarian cancer detection. One of the most common and heavily researched screening tools today is elevation of the blood protein CA-125. Robert Bast (1980) first discovered the biomarker and he believes that although the CA-125 blood test is at par with mammography in terms of cost-effectiveness and potential years of life.

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 CA-125 are found in ovarian cancer.

Conclusion: The present study we highlights the importance and role of serum CA 125 in diagnosis, prognosis and recurrence of the disease. The study shows that serum level of CA 125 was elevated (more than 35 U/ml) in 48 (96%) patients of ovarian cancer and indicates that CA 125 has high sensitivity for diagnosis of ovarian cancer.

KEYWORDS

CA-125, Ovarian cancer

INTRODUCTION:

Ovarian cancer is considered an elusive disease, quietly progressing undetected and usually evading diagnosis until it reaches advanced stage. One of the most common and heavily researched screening tools today is elevation of the blood protein CA-125.¹ first discovered the biomarker and he believes that although the CA-125 blood test is at par with mammography in terms of cost-effectiveness and potential years of life.²

The widely used, classic, "gold standard" tumor biomarker, CA125, is a high molecular weight glycoprotein, has a sensitivity 60% with a specificity of 90% in early stage postmenopausal women, and expression of CA125 is enhanced in 90% of patients with epithelial ovarian cancer above normal levels.³ CA-125 is the most frequently used biomarker for ovarian cancer detection.⁴ Around 90% of women with advanced ovarian cancer have elevated levels of CA-125 in their blood. Therefore, CA-125 is a useful tool for detecting ovarian cancer after the onset of symptoms. Increase CA-125 levels within individuals in a remission is a strong predictor of the recurrence of ovarian cancer.^{6,7} Looking to the survey of literature it has been observed that very few studies have been conducted for CA -125 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 50 patients including cases (female). Informed consent was obtained from all subjects for participating in the study.

CA-125 was done using the COBAS e-411 ROCHE HITACHI ANALYSER by Electro- chemiluminescence immune assay (ECLIA)

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

TABLE – 2: MEAN ± SD AND P- VALUE OF BIOCHEMICAL PARAMETER OF CA125 IN SUBJECTS AND CONTROL (40 – 60 YRS)

PARAMETER	TOTAL SUBJECTS (40 -60)YEARS (n =50)	CONTROL (40 - 60)YEARS (n =50)
	Mean ±SD	Mean±SD
CA125	129.2±101.8	5.13±4.54

DISCUSSION:

CA 125 is a substances found in the blood called glycoprotein (a sugar associated protein). It is commonly referred to as a "biomarker" – or "tumor marker" – because it provides information about the biological state of ovarian cancer and is obtained by a blood sample from which a level can be measured. (**Foundation for women's cancer 2011**). CA 125 is the standard tumor marker used to follow women during or after treatment for ovarian cancer. More than 90% of women with advanced ovarian cancer have high levels of CA 125 (Normal value of CA 125 is 0 – 35 U/ml). If the CA 125 level is high when the women is first diagnosed, changes in the CA 125 level can be used during treatment to get an idea of how well it's working⁸. In the present study, the blood level of CA 125 was found to be elevated in study Pan SY, Ugnat AM, Mao Y, Wen SW, Jhonson KC. A case–control study of diet and the risk of ovarian cancer. Cancer Epidemiol Biomarkers Prev 2004; 13:1522–7.

group that was 129.2±101.8 U/ml as compared to 5.13±4.54 U/ml in control group and the difference between them was significant (p < 0.001). This finding was supported by **Digant and Christopher** (2009). They reported that CA 125 is the gold standard tumor marker in ovarian cancer patients and CA 125 is raised in approximately in 95% of patients with advanced epithelial ovarian cancer while in the present study, CA 125 was raised in 98% patients. Similarly it was observed by **Riedinger et al (2011)** they reported that 90% of women with advanced ovarian cancer have elevated levels of CA 125 in their blood serum.

CONCLUSION:

In the present study we have carried out CA 125. this biochemical investigation give us an idea about the prognosis, severity and recurrence of the ovarian cancer disease.

All patients (100%) of ovarian cancer included in our study were of age group 40 - 60 years . Over more than 30 years of clinical use, CA 125

has proven itself to be one of the most useful tumor markers in cancer medicine. The major utility of this serum marker is in following the clinical course of women with known ovarian cancer. Other potential uses of CA 125 include the evaluation of the effectiveness of new anticancer agents in this malignancy and in the modification of treatment strategies in individuals whose CA 125 level fail to decline at an acceptable rate following the institution of therapy. Thus serum CA 125 level is a strong prognostic factor for overall survival and progression free survival in ovarian cancer. There is an inverse relationship between serum CA 125 level and survival in ovarian cancer.

The present study we highlights the importance and role of serum CA 125 in diagnosis, prognosis and recurrence of the disease. The study shows that serum level of CA 125 was elevated (more than 35 U/ml) in 48 (96%) patients of ovarian cancer and indicates that CA 125 has high sensitivity for diagnosis of ovarian cancer.

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