

Serum Ca-125 Level In Patients With Endometriosis

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ABSTRACT

Objective To determine the frequency of increased serum cancer antigen 125 (CA-125) in patients with endometriosis.

Study design Cross sectional study.

Place & Duration of study Department of Obstetrics & Gynaecology, Civil Hospital Karachi, from January 2019 to July 2019.

Methodology A total of 85 women with endometriosis, 18 years to 40 years of age were included. Patients with pelvic inflammatory disease, liver disease, those treated for gynecological malignancy and pregnant women were excluded. The blood samples were obtained for serum CA-125 levels.

Results The mean age of the patients was 27.01 ± 4.94 year. Majority ($n=65$ - 76.47%) of the patients were between 18 years to 30 years of age. Mean height was 154.33 ± 12.33 cm, mean weight 76.43 ± 6.61 kg, mean BMI 28.29 ± 3.14 kg/m² and mean CA-125 level was 77.76 ± 8.91 mIU/ml. Frequency of increased serum CA-125 was found in 60 (70.59%) patients with endometriosis.

Conclusion Level of serum CA-125 was found significantly high in patients with endometriosis.

Key words Endometriosis, Serum CA-125, Tumor markers.

INTRODUCTION:

Endometriosis is a benign gynecological condition characterized by presence of endometrial tissue outside uterine cavity. The primary symptoms of endometriosis include infertility, abdominal and pelvic pain, back pain, dysmenorrhea, dysuria, dyschezia and dyspareunia.¹ It is found to be present in 8-10% of women of reproductive age group.²

The gold standard for the diagnosis of endometriosis is laparoscopic inspection, ideally combined with

histological confirmation.³ The revised American Society for Reproductive Medicine (rASRM) score is presently the renowned classification of endometriosis and is the one most extensively used tools all around the world. On the basis of rASRM score endometriosis can be classified into four stages: minimal, mild, moderate, and severe.⁴ Presently, there are no non-invasive or minimally invasive tests available in the medical field for the specific diagnosis of endometriosis.⁵

Cancer antigen 125 measurement is a rapid, easy, and non invasive method and has been studied as a serological marker for endometriosis.⁶ CA-125 is an important component in the diagnosis of a women with an ovarian mass. However, increase concentrations can be found in ovarian as well as other gynecological malignancies, such as malignancies of endometrium, pancreas, lung, colorectal and breast. Additionally, increase serum levels of CA-125 are related with tuberculosis, liver cirrhosis, pelvic inflammatory disease and also in

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physiological conditions such as in various stages of the menstrual cycle and pregnancy.⁷

A study reported high level of serum CA-125 in 67% of patients with endometriosis.⁸ Another study reported the cut off value for CA-125 in serum as 35 mIU/ml and according to this the increased level of serum CA 125 was found in 54% of patients with endometriosis.⁹ However, another study reported that frequency of increased serum CA-125 in patients with endometriosis as 37.1%.¹⁰

Endometriosis is a disease affecting the physical health and emotional wellbeing of many women. A major impediment to earlier and more efficacious treatment of this disease is diagnostic delay. Diagnosis of endometriosis is difficult and delayed due to its nonspecific manifestation. The aim of this study was to find the frequency of serum CA-125 in patients with endometriosis which may supplement the diagnosis of endometriosis.

METHODOLOGY:

This was a cross-sectional study conducted in the Department of Obstetrics & Gynaecology Civil Hospital Karachi, from January 2019 to July 2019. Sample size was calculated on OpenEpi, Version 3, by taking 67%⁸ of patients with endometriosis having increased serum CA-125 (cut off value >35mIU/ml) with confidence limit= 10% and confidence level=95%. The calculated sample size was 85. The non-probability, consecutive sampling technique was used for inducing study subjects.

Selected women were of reproductive age group (18 years - 40 years), parity 0-4, with regular menses (cycles lasting 28-35 days, with flow lasting for 2-7 days), at the time of surgery they were in follicular phase of menstrual cycle and patients undergoing surgery (laparoscopy or laparotomy) for symptoms associated with endometriosis (pelvic pain, subfertility, infertility or endometriotic cysts on ultrasound), whose peroperative findings confirmed endometriosis and patients undergoing surgery and diagnosed as endometriosis by peroperative visual inspection.

Patients having conditions that lead to high CA-125

values like pelvic inflammatory disease (PID) confirmed by examination and pelvic scan, liver disease (such as hepatitis or cirrhosis), pancreatitis, in luteal phase of menstrual cycle, with current or treated gynecological malignancy (ovarian cancer, endometrial cancer) and pregnant women were excluded. Study was started after taking approval from CPSP and ethical committee of Civil Hospital Karachi. The blood samples were obtained for serum CA-125 levels.

A form was used to collect data which included demographic information like age, height, weight, BMI, parity, peroperative findings and serum CA-125 levels. Data were entered and analysis done with SPSS version 22 software. Descriptive statistics were presented as mean and standard deviation for quantitative variables. Categorical variables like diagnosis and increased serum CA-125 levels, were compiled as numbers and percentages. Effect modifiers like age, parity, BMI and diagnosis were controlled through stratification. Post-stratification Chi square test was applied for determining association and p <0.05 was considered as statistically significant.

RESULTS:

The mean age of patients was 27.01±4.94 year. Majority of the patients (n=65 - 76.47%) were between 18 years to 30-years. Mean height was 154.33±12.33 cm, mean weight 76.43±6.61 kg, mean BMI 28.29±3.14 kg/m². There were 52 (61.18%) women with 0 – 2 parity and 33 (38.82%) with 3 – 4 parity. Mean CA-125 level was 77.76±8.91 mIU/ml. Frequency of increased serum CA-125 was in 60 (70.59%) patients with endometriosis. When stratification of increased serum CA-125 with age groups, there was found to be a significant difference while the stratification with respect to BMI was insignificant. Superficial lesion found in 35 (41.18%), and deep in 50 (58.82%) patients. The association of CA-125 level with respect to diagnosis is given in table I.

DISCUSSION:

The severe disease in the form of deep infiltrative endometriosis (DIE) harms many anatomical structures for example the uterosacral ligaments.

Table I: Association of Increased Serum CA-125 With Respect to Diagnosis			
Diagnosis	Increased serum CA-125		p-value
	Yes	No	
Superficial	29	06	0.038
Deep	31	19	

bowel, parametrium and bladder.¹¹ Endometriosis has no specific clinical presentation. However, the women suffering from endometriosis undergo urinary, bowel, and gynecological manifestations more than the women who do not have it.

The diagnosis is easy with detailed history and physical examination. Also, it helps to specify the possible site of the disease.¹² DIE can be diagnosed with the use of pelvic magnetic resonance imaging (MRI), transvaginal and transrectal ultrasound, cystoscopy and colonoscopy. Even with the advancement in imaging delay in diagnosis still occurs.¹³ In our study we did serum level of diagnosed cases of endometriosis and diagnosis was mostly on laparoscopy or laparotomy rather than using other radiological modalities. Serum CA-125 is thus used as a marker and a value of 35 IU/ML is the reference point of the ovarian cancer of epithelial origin. Same value is used in this study. During the different menstrual cycle phases, the CA-125 level keeps changing.¹⁴

Kurdoglu et al showed that 48% of the sample participants in their study had serum CA-125 values of more than 5.0 IU/ML.¹⁵ In our study raised levels of the marker in both superficial and deep endometriosis found which correlates with these studies. A study by Szubert et al reported that the mean value of serum CA-125 in women with endometriosis was 34.0 IU/ML, while the mean of CA-125 in peritoneal fluid was about 1241.9 U/mL.¹⁶ Amaral et al concluded that in patients with endometriosis serum CA-125 level was increased more than the set of women during menstruation.¹⁷ Age range of reproductive group between 18- 30 correlated with most of the studies. Ramos et al survey showed that the serum CA-125 level was increased at a significant level in women who had infertility issues because of endometriosis in comparison to the women who were fertile.¹⁸ In our studies main presentation of cases with endometriosis was either pain or infertility. Further study can be done keeping in view above mentioned study as its association with infertility as well. Since we have less resources and advanced radiological modalities cannot be used in our set up for all suspected cases thus serum levels of this marker may be used as one of the diagnostic tools.

CONCLUSIONS:

The frequency of increase in serum CA-125 levels among the patients suffering from the endometriosis was significantly high. Measurement of serum CA-125 in patients suspected of having endometriosis is therefore recommended for early diagnosis.

Declaration

This is a dissertation based study.

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Author's Contributions:

Sumera Meer: Concept and design of the study.
Gulfishan Haq: Critically revision of manuscript & final approval.

Saima Sheikh: Study design and data collection.

Ethical statement: Institutional review board permission was obtained and informed consent was taken.

Competing Interest:

The authors declare that they have no competing interest.

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