

DECREASE IN LEVEL OF CA-125 AFTER SURGICAL TREATMENT OF ENDOMETRIOSIS

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ABSTRACT

Background: Endometriosis is common gynecological condition of women in reproductive age. The objective of the study was to compare the level of CA-125 in patients with endometriosis before and after surgical treatment.

Material & Methods: This cross-sectional study was conducted in the Department of Gynecology and obstetrics, PIMS, Islamabad, Pakistan from February 2012 to March 2013. Sample size was 100. The sampling technique was consecutive non probability. The demographic variables were age and age group. The research variables were parity and level of CA-125. All baseline investigations, CA125 level and pelvic USG were performed. Percentage and frequency for categorical variables like age group and parity were calculated. Mean $\pm$ SD of numeric variables like age and level of CA-125 were calculated. Mean change was calculated in CA-125 levels by using paired sample t-test. All collected data was analyzed by using SPSS version 10.

Results: The mean age of the sample was 29.4 ± 5.5 years. Out of total 100 women 78% of the women were between 26 to 40 years of age, 4% were upto 20 years whereas 5% were above 41 years of age. Out of total 100 study cases, 53% were nulliparous, 10% were primiparous while 37% of the women were found to be multiparous. The pre operative mean CA-125 level was 60.5 ± 46.4 IU/ml while post operatively after 6 weeks it was 27.5 ± 17.5 IU/ml and this difference between pre operative and post operative CA-125 levels was statistically significant (p -value = < 0.001).

Conclusion: Level of CA-125 decreases markedly in patients with endometriosis after undergoing operative therapy.

KEY WORDS: Endometriosis, CA-125 levels, Surgery; Treatment.

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INTRODUCTION

Endometriosis is defined as presence of endometrial like tissue outside the uterus. The common site for endometriosis lesions are pelvic organs and peritoneum, however other parts of body are also affected like lungs.¹ Endometriosis is common gynecological condition of women in reproductive age. Patients usually presents with dysmenorrhoea, dyspareunia, pelvic pain and infertility.^{2,3} The incidence is about 40-60% in dysmenorrhoea and 20-30% in women with infertility.^{1,2}

Endometriotic lesions may vary from small

lesions in an otherwise normal pelvis to large endometriomas with extensive adhesions and fibrosis distorting the pelvic anatomy. However, pelvic anatomy of the endometriosis present variably at laparoscopy (black powder lesion white or red), while the definitive diagnosis can only be made by histological confirmation. CA-125 is a good prognostic marker in endometriosis.⁴ Serological testing of CA-125 is used for initial detection and monitoring of progression of disease. CA-125, a cell surface glycoprotein is also raised in other conditions such as menstruation, pregnancy, pelvic inflammatory disease, fibromas, genital neoplasm.^{1,4}

Various studies have reported that serum levels of CA-125 are significantly increased in patients of endometriosis compared to the controls. It was found that post operatively CA-125 level was related to clinical evaluation of the disease, being higher in patients with recurrent disease. It was also found that clinically serum CA-125 level correlate with severity of endometriosis and associated pelvic pain. In a prospective pilot study it was proved that during combined treatment with aromatase inhibitor and

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GnRH-agonist, endometriomal volume and serum CA-125 level decreased by 29% and 61% respectively.⁵ The objective of the study was to compare the level of CA-125 in patients with endometriosis before and after surgical treatment.

MATERIAL AND METHODS

This record based, descriptive cross-sectional study was conducted in the Department of Gynecology and obstetrics, MCH Centre, Pakistan Institute of Medical Sciences, Islamabad, Pakistan from February 2012 to March 2013. Sample size was 100 calculated by using WHO sample size calculator taking level of confidence interval 95%, anticipated population proportion 40% and absolute precision required 10%. The sampling technique was consecutive non probability. All the patients meeting the inclusion criteria were assessed with a detailed history, clinical examination including pelvic examination. The demographic variables were age, age groups having attributes of up to 20 years, 21 to 25 years, 26 to 30 years, 31 to 40 years and 41 or above. The research variables were parity (Nulliparous, Primiparous, Multiparous) and level of CA-125.

All baseline investigations, CA125 level and pelvic USG were performed. The patients were explained about the whole procedure and informed consent was taken. Postoperatively a venous sample was taken to see the fall in CA-125 level. Samples were sent to laboratory where these were reported by consultant pathologist. The findings were recorded in the study proforma. Percentage and frequency for categorical variables like age group and parity were calculated. Mean $\pm$ SD of numeric variables like age and level of CA-125 were calculated. Mean change was calculated in CA-125 levels by using paired sample t-test. All collected data was analyzed by using SPSS version 10.

RESULTS

The mean age of the sample was 29.4 ± 5.5 years. Out of total 100 women 78% of the women were between 26 to 40 years of age, 4% were upto 20 years whereas 5% were above 41 years of age (Table 1).

Table 1: Age of patients undergoing surgical treatment of endometriosis (n=100)

Age (years)	Number of cases	Percentage
Up to 20	4	4.0%
21 to 25	13	13.0%
26 to 30	45	45.0%
31 to 40	33	33.0%
41 or above	5	5%
Total	100	100%

Out of total 100 study cases, 53% were nulliparous, 10% were primiparous while 37% of the women were found to be multiparous (Table 2).

Table 2: Parity of patients undergoing surgical treatment of endometriosis (n=100).

	Number of cases	Percentage
Nulliparous	53	53.0%
Primiparous	10	10.0%
Multiparous	37	37.0%
Total	100	100%

The pre operative mean CA-125 level was 60.5 ± 46.4 IU/ml while post operatively after 6 weeks it was 27.5 ± 17.5 IU/ml and this difference between pre operative and post operative CA-125 levels was statistically significant (p-value = <0.001) Table 3.

Table 3: Comparison of pre and post operative CA125 levels in patients undergoing surgical treatment of endometriosis (n=100).

CA-125 levels	Pre-operative	Post operative	p-value
Mean $\pm$ SD	60.5 ± 46.4 IU/ml	27.5 ± 17.5 IU/ml	<0.001

DISCUSSION

Maiorana and colleague conducted a study to investigate clinical significance of CA-125 for the diagnosis and determining association between severity of pelvic pain with endometriosis.⁶ They found elevated CA-125 levels in severe dysmenorrhea and dyspareunia.

Another study by Marana R et al found that with medical treatment (GnRH agonists) CA-125 level decreased about 40% in 6 month therapy.⁷ Many studies have been conducted previously which shows a decrease in CA-125 level after surgery but no percentage fall in CA-125 after the surgery has been reported.

Another study by Moore RG and colleagues reported that CA-125 is increased in women with benign gynecologic disorders, the mean age of women in premenopausal group 40 years ranging from 18 to 56 years while in the postmenopausal group it was 62 years ranging from 39 to 89 years.⁸

In the current study primary infertility was witnessed in 30.0% of the cases while secondary infertility was found in 45% of the cases. Almost all the study cases were experiencing disturbed menstrual cycles, and 19% of the women were experiencing passage of clot. In our group of patients 53% had history of failed medical treatment and 34% had history of recurrent endometriosis.

In our study the mean level of CA-125 was found

very high pre operatively 60.5 ± 46.4 whereas post operatively after 6 weeks it was found at 27.5 ± 17.5 IU/ml and this decrease in means was found statistically significant (<0.001). A percentual decrease of 54.5% was witnessed in CA-125 levels post operatively.

A previous study by Garzetti GG et al reported that serum levels of CA-125 was significantly increased in patients of endometriosis compared to the controls.⁹ Chen FP et al witnessed that CA-125 level is not an effective tool for patients with dysmenorrhoea and monitoring therapy for endometriosis, however, it is a valuable adjuvant in the follow-up of recurrence in patients with advanced endometriosis and initially elevated CA-125 levels.^{10, 11}

In premenopausal patients, the most common reason is endometriosis for an elevated CA-125 level. Many investigators have witnessed that patients with endometriosis and fibroids have CA-125 levels $>1,000$ IU/ml.¹² The premenopausal patients having CA-125 level >200 IU/ml and adnexal mass, should be referred for surgical evaluation to gynecologic oncologist.¹³ There is abundance of literature on CA-125 level investigated as a diagnostic tool and monitoring medical treatment, however, data on pre and post operative levels is deficient.

The current study is one of the early attempts to determine the decrease in CA-125 levels after surgery. Our results have important implications for programmes and protocols related to gynecology and obstetrics.

CONCLUSION

It is concluded that level of CA-125 decreases markedly in patients with endometriosis after undergoing operative therapy. This would help in counseling the patients regarding prognosis and regression of the disease.

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CONFLICT OF INTEREST

Authors declare no conflict of interest.
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AUTHORS' CONTRIBUTION

Conception and Design:	SK, KI, SA, AT
Data collection, analysis & interpretation:	SK, KI, SA,
Manuscript writing:	SK, KI, SA, AT