

Evaluation Of Serum CA-125 Levels In Threatened Abortion Cases And Healthy Pregnant Women: A Prospective Study.

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ABSTRACT

Background: Threatened abortion is an important issue in daily obstetric practice. Ultrasonography and serial serum quantitative assessment of beta-subunit of human chorionic gonadotropins (β -HCG), cancer antigen -125 (CA-125) and serum progesterone are evaluated alone or in combinations. This study was undertaken in order study the use of CA – 125 in diagnosis of threatened abortion.

Material and Methods: This prospective comparative study was undertaken among 35 cases of threatened abortion and 35 controls who visited OBG department at HSK hospital, Bagalkot. The cases and controls were selected as per inclusion and exclusion criteria. All the cases were subjected for a thorough history, physical examination and ultrasonographic evaluation. CA – 125 levels were assessed by using CLIA technique. The cases were followed up and further divided in to two groups. 1. Those who got aborted at 17-19 weeks (15 cases) and those who continued the pregnancy above 20 weeks (20cases).

Results: The mean CA-125 levels were 15.78 ± 4.68 IU in controls and 47.58 ± 10.6 IU in cases. There was a statistically significant difference. CA-125 values were 45.11 ± 12 IU in aborted cases and 27.26 ± 6.32 IU in pregnancy-continuing cases. The difference between the instances that aborted and those carried on with the pregnancy was statistically significant.

Conclusions: This study had shown that CA-125 levels are significantly elevated and is valuable in diagnosis of threatened abortion cases in comparison to cases who continued the pregnancy.

Introduction

Vaginal Bleeding before 20 weeks of pregnancy is often defined as threatened abortion. It is one of the most common obstetric complications, occurring in 25% of all pregnancies.¹ At least half of more than 80% of abortions that take place during the first 12 weeks of pregnancy are caused by chromosomal abnormalities. Both the incidence of chromosomal abnormalities and the abortion rate decline after the first trimester.² Bloody vaginal discharge or bleeding through a closed cervical os during the early half of pregnancy is considered a clinical diagnostic of threatened miscarriage or abortion.³

Ultrasonography, serial serum quantitative assessment of B-subunit of human chorionic gonadotropins (B-hCG), serum cancer antigen-125 (CA-125) and serum progesterone values are evaluated alone or in various combinations, have been effective in identifying if a live intrauterine pregnancy is present.⁴

The secretory function of the coelomic epithelium, mesenteric organs, amnion, and female genital tract epithelium is linked to CA-125 which is an excessive molecular weight cellular-floor mucin-like coelomic antigen. For foetal organs and female genitalia, cancer antigen 125 is not much precise. Certain conditions can raise the serum CA-125 levels, such as renal failure, hepatic illnesses, peritonitis, breast, colon, and lung malignancies, and tuberculosis. Furthermore, certain genital conditions, such as endometriosis, pelvic inflammatory diseases, leiomyoma, adenomyosis, ectopic pregnancy, and ovarian endometrial cancer, can also cause excessive serum levels of CA-125.^{5, 6} In pregnancy damage to fetal membrane or decidual disruption may lead to increase in serum CA-125 levels. This test is sensitive in determining the progression of loss of pregnancy¹. This study was mainly undertaken in order to study the use of CA-125 in prediction of miscarriage in pregnant women.

Material and Methods

This prospective comparative study was undertaken in Department of Obstetrics and Gynaecology of Shri Nijalingappa Medical College and Hospital, Bagalkot. Study duration was from January 2022 to August 2022. Approval from Institution ethics committee was obtained before the study was started. Informed and written consent was obtained from both groups before enrolling them in to the study.

Inclusion criteria: About 35 cases with vaginal spotting were enrolled as cases and were followed up till 20 weeks and 35 healthy pregnant women of same gestation were taken as controls. Both the groups were followed up.

Exclusion criteria: Cases with missed abortion, blighted ovum, molar pregnancy, ectopic pregnancy, higher order pregnancy, ovarian tumors with pregnancy, history of pelvic inflammatory disease, history of pelvic tuberculosis were excluded.

A careful history was obtained from all the cases and controls and subjected for complete physical examination and also subjected for ultrasonographic evaluation in order to confirm gestational age, fetal viability, intrauterine single gestation and absence of exclusion criteria.

Group 1 included 35 cases of threatened abortion with vaginal spotting at 11-12 weeks of gestation and **Group 2** Healthy pregnant controls of same gestation. Both the groups were followed up till 20 weeks. The group 1 cases were further divided in to two subgroups -**Group 1a** and **Group 1b**.

Group 1a (15) consisted of cases who had aborted/miscarriage at 18-20 weeks and **Group 1b** (20) had cases who continued the pregnancy beyond 20 weeks. 5 ml of venous blood was drawn to measure the serum level of CA-125. Within 15 minutes of the blood clotting, the serum was extracted after centrifugation. The CLIA technique was used to measure the serum levels of CA-125⁷. The data thus obtained was compiled and analysed using Statistical Package for Social services (SPSS 20). An independent samples “t” test was used to compare the results between cases and controls. A “p” value of less than 0.05 was considered as statistically significant.

RESULTS

Table 1. Age and gestation distribution among cases and controls

	Cases (N=35)	Controls (N=35)	p value
Age in yrs	24.21	22.8	0.82
Gestational age	19 wks 2 days	18 weeks 4 days	0.51

* Age and gestation shows no statistical significant difference

The mean age of cases was 24.21 years and controls was 22.8 years This difference was not statistically significant and thus ensuring comparability between the cases and controls. The mean gestational age of cases was 19 weeks and 2 days and controls was 18 weeks and 4 days. This difference was also not statistically significant between the two groups.

Table 2. Comparison of CA -125 levels in Group I (cases) and Group 2 (controls)

Test	Group I (35 cases)	Group 2 (35 controls)	p value
CA-125 (0-30 IU/ml)	47.58 ± 10.6	15.78 ± 4.68	0.001**

* Significant **highly significant

Mean CA – 125 levels in cases was 47.58 IU among cases and 15.78 in controls. This difference was statistically significant.

Table 3. Comparison of CA -125 levels in aborted cases and continued pregnancy cases among Group I

Test	Group Ia (aborted N=15)	Group Ib (continued N=20)	p value
CA-125 (0-30 IU/ml)	45.11 ± 12	27.26 ± 6.32	0.004*

* significant **highly significant

CA – 125 levels in cases with miscarriage at around 20 weeks was 45.11 IU and 27.26 IU in cases who continued the pregnancy. This difference was statistically significant.

DISCUSSION

This study was undertaken mainly to assess the CA – 125 levels in cases with threatened abortion and healthy pregnant women. For women, the threatened miscarriage can be extremely distressing both physically and psychologically. Predicting the pregnancy outcome is crucial to reducing stress for both the patient and the doctor because bleeding from a threatened miscarriage can occasionally last for days or weeks. To try to distinguish between normal and abnormal pregnancy, ultrasound has been used in conjunction with a number of biochemical-parameters. However, their findings showed that the sensitivity test they used in the early stages of pregnancy was not very satisfactory.^{8,9}

This study had shown significantly higher CA – 125 levels in cases with threatened abortion in comparison with healthy controls. Due to its expression in maternal deciduas and foetal membranes, CA-125 has gained interest as a potential helpful biochemical diagnostic test for predicting pregnancy outcome in cases of impending miscarriage.¹⁰ There have been mixed findings from research on CA-125 as a potential marker for impending miscarriage. Although a number of studies revealed that patients who experienced a first-trimester miscarriage had higher serum levels of it, these levels were not statistically different from those of women who carried their pregnancies to term.^{11,12} Few studies have demonstrated that the sequential measurement of CA – 125 helps in diagnosis of Threatened miscarriage.^{13,14} But some other studies have reported that, single measurement of CA – 125 is often important in order to diagnosis of threatened abortion.¹⁵

The cases with threatened miscarriage had higher levels of CA – 125 when compared to the cases who continued the pregnancy. These findings show the value of CA – 125 levels in diagnosis of threatened abortion. In predicting the outcome of a pregnancy with a healthy foetus, a systematic review and meta-analysis indicated that serum CA-125 had "a high predictive value in identifying pregnancies that are "likely to continue." In fact, it was suggested to be clinically superior to the commonly used biochemical markers like progesterone and β -HCG.¹⁶

CONCLUSION: This study showed significant elevated serum CA-125 levels in aborted cases in comparison to cases who continued pregnancy and also healthy controls. Hence CA-125 can be used as strong predictor of pregnancy outcome.

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