

The Comparison of CA125 Levels in the Normal Pregnancy and Threatened Abortion

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ABSTRACT

Background & Objective: In pregnancy, the serum level of cancer antigen-125 (CA-125) increases in the first trimester and abortion. However, different studies reported conflicting results about the use of serum CA-125 to determine the prognosis of threatened abortion. In the present study, we try to determine if the measurement of CA-125 level could be used as a predictor of outcome in women with threatened abortion.

Materials & Methods: This prospective case-control study was performed on 58 patients with threatened abortion and 58 healthy pregnant women with a gestational age of fewer than 20 weeks (as the control group). In both groups, serum CA-125 level was measured. The patients were followed to determine who completed the pregnancy period and who eventually miscarried. Finally, the levels of CA-125 in these groups were compared.

Results: The mean age of patients was 28.47 and 27.84 in the case and control groups, respectively; there was no significant statistical difference between the two groups (95% CI: -1.94 to 3.18, $P=0.632$). Also, there was no significant difference between them for BMI (95% CI: -1.09 to 1.38, $P=0.813$), gestational age (95% CI: -1.31 to 1.04, $P=0.816$), and parity ($P=0.51$). The mean serum level of CA-125 in the control group was 22.51 ± 6.82 IU/mL, and in the threatened abortion group was 27.70 ± 7.50 IU/mL. This difference was statistically significant ($P<0.001$). Of the patients, 51.72% with threatened abortion continued their pregnancy, and 48.28% eventually miscarried. The mean serum levels of CA-125 were 25.30 ± 6.63 IU/mL and 30.28 ± 7.63 IU/ml in patients who continued the pregnancy and miscarried, respectively ($P=0.01$).

Conclusion: A single measurement of the maternal CA-125 may be used as an available, inexpensive prognostic test to determine the outcome of threatened abortion. However, a small number of patients is the main limitation of the present study. More studies with a larger sample size are required to accept the role of maternal CA-125 in predicting the outcome of threatened miscarriage.

Keywords: Abortion, CA-125, Pregnancy



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Introduction

Threatened miscarriage is defined as vaginal bleeding before 20 gestational weeks. Taking place in about 20% of cases, the maximum common hassle of being pregnant is considered (1). Miscarriage in the patients with threatened abortion takes place 2.6 times as possibly, (2) and 17% of cases will reveal in different complications later in being pregnant (3). The supply of bleeding inside the first trimester may be the vagina, cervix, uterus, or extra-genital. Thorough physical exam and paraclinical assessment are important to decide the exact supply of bleeding.

One of the critical problems associated with threatened abortion is to decide the women who eventually miscarried following the threatened miscarriage. A few studies have shown that the serum ranges of hcg, progesterone, inhibin a, and activin a had been lower in cases who ultimately miscarried than the others who persisted in being pregnant (4-8).

Ca-125, an excessive molecular weight cellular-floor mucin-like coelomic antigen, is associated with the secretory function of coelomic epithelium, mesenteric organs amnion, amnion, and epithelium of the female genital gadget. Ca-one hundred twenty-five isn't

precise for girl genitalia and fetal organs. Some situations, including renal failure, hepatic sicknesses, peritonitis, breast, colon, and lung most cancers, and tuberculosis, can grow the level of ca-a hundred twenty-five (9, 10). Additionally, a kind of genital disease, including endometriosis, pelvic inflammatory illnesses, leiomyoma, adenomyosis, ectopic being pregnant, and ovarian endometrial cancer, can motivate excessive serum tiers of ca-one hundred twenty-five (10).

In being pregnant, the serum level of CA-125 increases in the first trimester and abortion. However, different research reported conflicting effects. Some research have reported a correlation between CA-125 levels and spontaneous abortion (7, 11). In contrast, other studies found higher CA-125 for normal pregnancies than abortions and ectopic pregnancies (12, 13).

Although there are multiple research projects comparing serum markers to determine the prognosis of threatened abortion, more studies are still necessary to verify the correlations between CA-125 serum degrees and threatened abortion. In the present study, we try to determine if the measurement of CA-125 level could be used as a predictor of final results in women with threatened abortions.

Materials and Methods

This was a prospective case-control study. We enrolled 58 patients with threatened abortion and 58 healthy pregnant women with a gestational age of fewer than 20 weeks (the control group). The groups

had been matched for patients' age, BMI, parity, and gestational age. Women who had a record of maternal illnesses including endometriosis, chronic pelvic infection, endometrioma, uterine fibroids, and lung, colon, kidney, and hepatic disease, would increase serum CA-125 level, have been excluded.

In each group, blood samples were received for each patient. Serum CA-125 levels have been measured using the CA-125 Roche E-170 kit and radioimmunoassay

The patients were followed to determine who completed the pregnancy duration and who eventually miscarried. Finally, the levels of CA-125 in these groups were compared. Statistics analysis was performed using SPSS 16 (SPSS Inc., IL., USA), and t-test, χ^2 test, and ANOVA.

Results

The mean age of patients was 28.47 and 27.84 in the case and control groups, respectively, with no significant statistical difference between the two groups (95% CI: -1.94 to 3.18, $P=0.632$). Also, there was no significant difference between them for BMI (95% CI: -1.09 to 1.38, $P=0.813$), gestational age (95% CI: -1.31 to 1.04, $P=0.816$), and parity ($P=0.51$).

Approximately 38.79% of Patients were nulliparous, 37.93% were primiparous, 18.10% had two prior pregnancies, and 5.17% had 3 previous pregnancies in both groups. Table 1 shows the baseline characteristics of the patients in each group.

Table 1. Baseline characteristics of the patients*

Group	Case	Control
Variable	(Mean)	(Mean)
Age (year)	28.47	27.84
BMI (kg/m ²)	24.253	24.403
Gestational age (weeks)	10.71	10.84
Gravidity	N(%)	N(%)
1	22(37.93%)	23(39.66%)
2	21(36.21%)	23(39.66%)
3	11(18.96%)	10(17.23%)
4	4(6.90%)	2(3.45%)

* At the baseline, the findings in the group Case were not significantly different from the findings in group Control.

The mean serum level of CA-125 in the control group was 22.51 ± 6.82 IU/mL and in the threatened abortion group was 27.70 ± 7.50 IU/mL. This difference was statistically significant ($P<0.001$).

Of the patients, 51.72% with threatened abortion continued their pregnancy, and 48.28% of them eventually miscarried. The mean serum levels of CA-125 were 25.30 ± 6.63 IU/ml and 30.28 ± 7.63 IU/ml in patients who continued the pregnancy and miscarried, respectively ($P=0.01$) (Table 2).

Table 2. The level of CA125 in different groups and sub-groups.

	Mean \pm SD	N (%)
Normal Pregnancy	22.51 \pm 6.82	---
Threatened abortion	27.70 \pm 7.50	----
On-going pregnancy	25.30 6.63	30(51.28%)
Miscarried	30.28 \pm 7.63	28(48.28%)

Discussion

It is clinically very crucial to predict the final results of patients with threatened abortion at the early stages of gestation. Distinctive biomarkers had been investigated to apply as a predictor of threatened abortion. Many research explored the value of maternal serum CA-125, but the outcomes were conflicting. Some recent research confirmed that serum CA-125 level within the patients with miscarriage was significantly higher than that of the patients with a favorable outcome (7, 14). Fiegler *et al.* found that a single CA-125 concentration of at least 43.1 IU/mL was associated with a higher risk of abortion in two hundred women with threatened miscarriage (7). Some other previous research determined that the mean CA-125 level of patients with favorable outcomes was significantly higher than that of patients who aborted (12, 13).

Yamane *et al.* Confirmed higher serum CA-125 levels in patients with favorable outcomes. They also found that the measurement of CA-125 is useful in predicting early abortion before 8 weeks of gestation (13). In our study, the mean serum CA-125 level of patients in the threatened abortion group was higher than that of patients in the normal pregnancy with the same gestational weeks ($P < 0.001$). However, some studies advocate that CA-125 measurement in the first trimester cannot accurately predict pregnancy outcomes due to the wide overlap of ranges (15).

In the present study, we used a single serum measurement of CA-125 to predict the outcome of threatened abortion. Many studies revealed single measurement of CA-125 is a valuable predictive marker in threatened abortion (7, 14). As mentioned above, Fiegler *et al.* found a single high CA125 concentration as a strong predictor of threatened miscarriage. (7) On the other hand, some studies indicated that a single measurement of serum CA-125 was not reliable enough to identify spontaneous abortion and predict the outcome of threatened abortion. Schmidt *et al.* in 2001 showed that single measurements of CA-125 in patients with symptomatic first-trimester pregnancy failed to discriminate the

spontaneous miscarriage and ectopic pregnancies from normal conditions. However, they showed that the sequential measurements of serum CA-125 were a highly sensitive prognostic marker in these patients (8).

According to these findings, it can be concluded that a single measurement of the maternal CA-125 may be used as an available, inexpensive prognostic test to determine the outcome of threatened abortion. Therefore, an increased serum level of CA 125 in pregnancies with vaginal bleeding could be an early signal in determining the progression to pregnancy loss. However, a small number of patients is the main limitation of the present study. More studies with a larger sample size are required to accept the role of maternal CA-125 in predicting the outcome of threatened miscarriage.

Conclusion

A single measurement of the maternal CA-125 may be used as an available, inexpensive prognostic test to determine the outcome of threatened abortion. However, a small number of patients is the main limitation of the present study. More studies with a larger sample size are required to accept the role of maternal CA-125 in predicting the outcome of threatened miscarriage.

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Conflict of Interest

None.

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