

## Saliva CA 125 Levels in Early Pregnancy\*

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### Introduction

Recently, attention has focused on measurements of steroid hormones in parotid or mixed saliva, because this appears to be a convenient method for the measurement of protein bound hormones. Detection of protein hormones in saliva has proved to be possible.<sup>1)</sup>

CA 125 is a glycoprotein complex that might also be found in saliva.

In the present study, saliva CA 125 levels from pregnant women at various weeks of normal early pregnancy and complicated pregnancy were studied. Data on the saliva CA 125 levels in early pregnant women have not heretofore been published, though it has been reported that elevated serum CA 125 levels were observed during first trimester of pregnancy.<sup>2)</sup>

The aim of this study was to investigate the saliva CA 125 levels in early pregnancy and their correlation.

### Materials and Methods

Seventy pregnant women aged 22–35 years, all of whom had normal physical examination, no chronic illness, no drug abuse, and no pelvic masses. Author collected saliva, before lunch at outpatient clinic during histroy taking. Patients were asked to collect 10ml of saliva. The collected saliva was stored in deep freezer in the outpatient clinic.

Saliva CA 125 was measured by gamma coun-

ter made in England(model ISO-MEDI 4/600 HE) by means of beads antibody coating radioimmunoassay technic. Gestational ages were divided by biweekly at author's convenience.

The prospective study was attempted to identify variations in CA 125 levels during the different state of early pregnancy.

Average CA 125 levels of the four kinds of pregnancy outcomes were compared by kruskalwallis test according to gestational periods due to the obvious skewness of the distribution of CA 125 and relative scarcity of sample sizes of the pregnancy outcomes. All statistical significances were tested at 0.05 significance level.<sup>3)</sup>

### Result

Author studied 70 pregnant women ranged in age from 22–35 years. Table 1 shows an analysis of study variables, such as types of pregnancy, gestational periods(weeks) and CA 125 levels (u/ml).

Thirty three normal pregnancies(47.1%), 15 missed abortions(21.4%), 16 threatencd abortions(22.9%) and 6 ectopic pregnancies(8.6%) were presented. The various pregnant status ranged in 7–12wks gestational age.

There were 24 cases(34.3%) in less then 7 weeks gestation, 20 cases(28.6%) in 8–9weeks gestation, 12 cases(17.1%) in 10–11weeks gestation, and 14 cases(20%) over 12 weeks gestation.

The mean value of saliva CA 125 was  $554.2 \pm 445.2$ (u/ml), median 498.9, kurtosis 2.7, skewness 1.6, Max-min ranged 20.9–2205.5(u/ml). Table 2

\* 본 연구는 1991년도 동산의료원 특수과제 연구비로 이루어졌음.

shows the frequency distribution of types of pregnancy status by gestational periods(weeks). There were no cases of gestation over 10weeks in ectopic pregnancies. Table 3 shows the analysis of saliva CA 125 values by type of pregnancy and

gestational periods(weeks). Fig. 1 illustrates 3 dimensional histogram of means of saliva CA 125( $\mu$ /ml) by pregnancy types(dx) and gestational periods.

Table 1. Descriptive statistics of variables

| Variables                  | Statistics        |
|----------------------------|-------------------|
| Types of pregnancy         |                   |
| Normal pregnancy           | 33 (47.1%)        |
| Missed abortion            | 15 (21.4%)        |
| Treatened abortion         | 16 (22.9%)        |
| Ectopic pregnancy          | 6 ( 8.6%)         |
| Gestational periods(weeks) |                   |
| - 7                        | 24 (34.3%)        |
| 8 - 9                      | 20 (29.6%)        |
| 10 - 11                    | 12 (17.1%)        |
| 12 +                       | 14 (20.0%)        |
| CA 125(U/ml)               |                   |
| Mean $\pm$ SD*             | 554.2 $\pm$ 445.2 |
| Median                     | 489.9             |
| Kurtosis                   | 2.7               |
| Skewness                   | 1.6               |
| Max - Min                  | 20.9 - 2205.5     |

\* Standard deviation

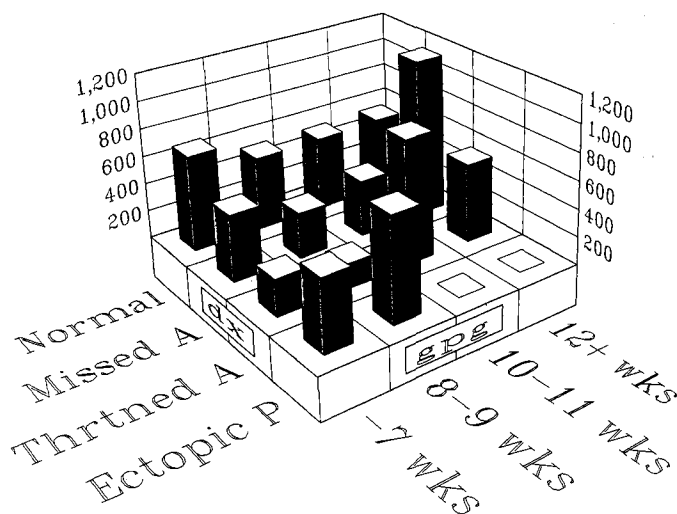


Fig. 1. Three dimensional histogram of means of CA-125( $\mu$ /ml) by pregnancy types(dx) and gestational periods(gpg)

Table 2. Frequency distribution of types of pregnancy outcome by gestational periods(weeks)

| Types               | - 7      | 8 - 9    | 10 - 11 | 12 +    |
|---------------------|----------|----------|---------|---------|
| Normal pregnancy    | 11(45.8) | 10(50.0) | 5(41.7) | 7(50.0) |
| Missed abortion     | 2( 8.3)  | 5(25.0)  | 4(33.3) | 4(28.6) |
| Threatened abortion | 8(33.3)  | 2(10.0)  | 3(25.0) | 3(21.4) |
| Ectopic pregnancy   | 3(12.5)  | 3(15.0)  | -       | -       |

Table 3. Means and standard deviations of types of pregnancy outcomes by gestational periods (weeks)

| Types                            | - 7           | 8 - 9         | 10 - 11        | 12 +           |
|----------------------------------|---------------|---------------|----------------|----------------|
| Normal pregnancy <sup>1</sup>    | 687.8 ± 549.3 | 530.2 ± 275.2 | 533.1 ± 219.1  | 546.3 ± 303.2  |
| Missed abortion <sup>2</sup>     | 477.4 ± 645.6 | 328.9 ± 140.2 | 404.0 ± 383.7  | 1150.9 ± 590.1 |
| Threatened abortion <sup>3</sup> | 262.6 ± 189.1 | 179.5 ± 144.6 | 895.2 ± 1141.6 | 568.6 ± 295.9  |
| Ectopic pregnancy <sup>4</sup>   | 511.1 ± 287.1 | 743.2 ± 558.8 | -              | -              |

1: p = 0.89 by Kruskal-wallis oneway ANOVA

2: p = 0.18 by Kruskal-wallis oneway ANOVA

3: p = 0.31 by Kruskal-wallis oneway ANOVA

4: p = 0.51 by Kruskal-wallis oneway ANOVA

### Discussion

CA 125 is a cell surface antigen expressed on certain cells derived from embryonic coelomic epithelium, the measurement of which aid in the diagnosis and clinical follow up of patients with ovarian carcinoma.<sup>4-7)</sup> Elevation of CA 125 levels has also been noted in patients with the benign conditions of the pelvis such as endometriosis, myoma, adenomyosis, acute pelvic inflammatory diseases, and ovarian cysts. Levels are also above normal in pregnant women, and marked elevation in the early first trimester have sometimes been associated with poor fetal outcome. The reason why the high elevation of saliva 125 level of missed abortion over 12 weeks gestation was thought as a result of destruction of decidua and embryonal tissue. But there was no statistical significance between missed abortion over 12 weeks gestation and other pregnancies. CA 125 levels may vary when measured at different phase of the menstrual cycle, levels during menses are elevated compared with the those during the follicular phase.<sup>8)</sup> Recently, high levels of CA 125 were reported from various sources, such as

serum, amniotic fluid, decidua, fetal membranes, and saliva. Saliva CA 125 assay was considered to be of better diagnostic value than the serum CA 125 assay. In collection of saliva is simple, non invasive, inexpensive, and samples could be obtained easily and repeatedly. For these reasons, assays of saliva CA 125 level may be new.<sup>1)</sup> By using saliva CA 125 assay screening for detection of early pregnancy complication and other conditions were reported.<sup>8-11)</sup> In normal population, various factors influencing serum CA 125 levels in normal women also reported.<sup>1)</sup> Therefore the specificity of the CA 125 assay must be evaluated before it can be practically applicable.<sup>12, 13)</sup> Author tried to do this study from the basic idea that serum CA 125 level could be increased during the first trimester of pregnancy with complications<sup>2)</sup>, but the relationship between serum CA 125 levels and saliva 125 levels was not attempted. Against author's idea, there was no statistical significant variations in saliva 125 levels among normal pregnancies and each complicated pregnancies with various gestational periods. There needed a more numerous cases to be collected for satisfactory results. Author should clarify that problem in near future.

## Summary

In this study, the mean level of saliva CA 125 of normal pregnancy was not different according to gestational periods but those of missed abortion showed a rapid increase over 12th week. Means of serum CA 125 levels in threatened abortion did not vary both under 7th week and during 8-9th week, but increased markedly during 10-11th week, thereafter it was decreased slightly. Average CA 125 levels of ectopic pregnancy found during 8-9th week was increased slightly than it occurred under 7th week. Statistical significances were not noted in all of pregnancy outcomes according to gestational periods ( $p > 0.05$ ) (Table 3, Figure 1).

But the negative findings of the study may reflect that a type 2 error is introduced due to rather small sample sizes of pregnancy outcomes except normal pregnancy.<sup>14)</sup>

However, further studies are necessary to verify the serial changes of saliva CA 125 levels with serum CA 125 during early normal pregnancies and complicated pregnancies.

Key words : CA 125, Threatened abortion, Missed abortion, Ectopic pregnancy.

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=국문초록=

## 임신 초기 타액 CA 125의 변동

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저자는 임신초기의 임신부 타액내에 난소종양의 표식자 물질인 CA 125가 존재하는가 하는 문제와 만약 존재한다면 임신초기 합병증인 절박유산, 계류유산, 자궁외 임신 상태에서는 어떠한 변동을 보이는가를 알아보기 위하여 연구를 실시 하였다.

검사대상은 33예의 정상임신, 16예의 절박유산, 15예의 계류유산, 6예의 자궁외임신 이었다. 타액의 CA 125 평균치는  $554.2 \pm 445.2 \text{ u/ml}$ 로써 일반적 혈청의 CA 125 평균치 보다 높았다. 초기 임신중에서는 임신주수간의 타액 CA 125 수치의 큰 변동은 없었으나 10-11주 사이의 절박유산, 12주이후의 계류유산에서는 타액 CA 125의 현저한 상승이 있었고, 임신 8-9주 사이에 발견된 자궁외 임신에서 타액 CA 125의 소폭상승이 관찰 되었다. 그러나 정상임신과 각기 합병증을 가진 임신 사이에 통계적인 유의성은 보이지 않았다. 결과의 정확성을 높이기 위해 향후 더 많은 증례에 대한 검사가 필요한 것으로 사료 되었다.