

# Abortion Rate in Progesterone Treated Women Presenting Initially With Low First Trimester Serum Progesterone Levels

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## Abstract

A previous study demonstrated that spontaneous abortions (SPAB) were an inevitable outcome in women whose serum progesterone (P) levels during the first trimester were  $< 15$  ng/ml. However, these patients were not treated with progesterone. We initiated a study to evaluate the efficiency of P therapy in preventing spontaneous abortion in women with low initial serum P levels. Successful completion of the first trimester occurred in 19 of 27 (70%) patients. Thus, the recommendation that a D and C be performed for suspected ectopic pregnancy rather than measuring sequential human chorionic gonadotropin (hCG) levels and sonography evaluating progressive changes (because of an extremely small chance of aborting a potentially viable intrauterine pregnancy [IUP]), does not seem tenable on the basis of our data.

## Introduction

A low serum progesterone (P) level has been used to help diagnose ectopic pregnancy (EP).<sup>1</sup> Yeko *et al* demonstrated a very high likelihood of spontaneous abortion (17/17) if a woman with an intrauterine pregnancy (IUP) presents with a serum P  $< 15$  ng/ml.<sup>2</sup> Based on these findings, Yeko's group

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further suggested that if there is suspicion of EP, the demonstration of a serum P  $< 15$  ng/ml should prompt immediate D and C looking for villi rather than serial ultrasounds and human chorionic gonadotropin (hCG) levels.

Though, from the above data, termination of a potentially viable fetus would seem unlikely if a D and C was performed in an IUP where the serum P was  $< 15$  ng/ml, the possibility exists that aggressive therapy with progesterone could salvage some of these pregnancies. A study was thus initiated to evaluate the efficiency of P therapy in preventing spontaneous abortion (SPAB) in women with IUP presenting in the first trimester with a serum P  $< 15$  ng/ml. Furthermore, the efficacy of progesterone therapy was evaluated prophylactically in the early luteal phase in a group of women at high risk for aborting.

## Materials and Methods

Twenty-seven consecutive patients presenting with an IUP and a serum P  $< 15$  ng/ml were enlisted in the study. Only those patients whose hCG beta subunit levels were appropriate for the estimated gestational age were included (ie. 1000 mIU/ml for 21 days; 5000 mIU/ml for approximately 25 days; 10,000 mIU/ml for approximately 28 days post conception). Each patient was treated

with 100 mg USP intramuscular (IM) P in oil (Lilly) every other day and progesterone vaginal suppositories 200 mg twice daily for the entire first trimester. The serum P was repeated following therapy and the dosage adjusted to try to keep the serum P level over 35 ng/ml. The serum P assay was performed by competitive binding radioimmunoassay. Pelvic sonograms for fetal viability were performed every two weeks until 12 weeks from conception.

In order to evaluate the efficacy of earlier use of progesterone therapy (ie. started shortly after ovulation and before implantation) the abortion rate of 80 habitual aborters were evaluated. These women were all treated with progesterone after the ovum was demonstrated to have released and the treatment was continued through the first trimester. The requirement for inclusion in the study was that they had a history of two or more previous spontaneous abortions and were found to have endometrial biopsies in two consecutive cycles dating more than two days out of phase. Mycoplasma and ureaplasma cultures had to be negative as were the anticardiolipin antibodies and the lupus anticoagulant (Russel-Venom-Viper Test). The dose of progesterone vaginal suppositories and/or intramuscular progesterone was maintained between 30-40 ng/ml during the first trimester (they all had weekly rapid serum progesterone assays).

### Results

In contrast to the 100% abortion rate in Yeko's study in pregnant patients with a serum P < 15 ng/ml, 19 of 27 (70%) successfully completed their first and second trimester following aggressive P therapy. All three women vaginally delivered full term normal infants.

The abortion rate in the group of women

with luteal phase defects treated from the early luteal phase was significantly lower at 11.2% (9 of 80) than the 27 women taking progesterone after pregnancy was already established (P < .002 using Fisher's exact test).

### Discussion

The present study was not controlled and so one cannot conclude that the aggressive P therapy prevented first trimester spontaneous abortions in women with very low serum P levels. However, the study clearly shows that a serum P < 15 ng/ml does not forebode that spontaneous abortion is inevitable. Thus, the recommendation by Yeko *et al* that a D and C be performed for suspected EP rather than sequential serum hCG levels and sonography because of an extremely small chance of aborting a potentially viable IUP, does not seem tenable on the basis of our data. Perhaps, the marked difference in the spontaneous abortion rate in these two studies may be related to the apparent decision by Yeko's group to only treat their IUP patients expectantly despite the low serum P levels.

The statistically lower abortion rate in the second group of habitual aborters with luteal phase defects emphasizes the importance of using progesterone in the luteal phase in those patients at high risk for abortion. Nevertheless, using this therapy even when pregnancy is already established increases pregnancy salvage as compared to no therapy.

### References

1. Matthews CP, Goulson PB, Wild RA: Serum progesterone levels as an aid in the diagnosis of ectopic pregnancy. *Obstet Gynecol* 68:390, 1986.
2. Yeko TR, Gorrill MJ, Hughes LH, Rodi DA, Buster JE, Saver MV: Timely diagnosis of early ectopic pregnancy using a single blood progesterone measurement. *Fertil Steril* 48:1048, 1987.