



Can a single progesterone test distinguish viable and nonviable pregnancies accurately in women with pain or bleeding?

Yes, according to this meta-analysis of 26 cohort studies involving 9,436 pregnant women.

Among women who had pain or bleeding or both, as well as inconclusive ultrasonographic assessment (five studies of 1,998 women and progesterone cutoff values from 3.2 to 6.0 ng/mL), the progesterone test predicted a nonviable pregnancy with pooled sensitivity of 74.6% (95% confidence interval [CI], 50.6–89.4), specificity of 98.4% (95% CI, 90.9–99.7), a positive likelihood ratio of 45 (95% CI, 7.1–289.0), and negative likelihood ratio of 0.26 (0.12–0.57). The median prevalence of a nonviable pregnancy was 73.2%, and the probability of a nonviable pregnancy was raised to 99.2% if the progesterone value was low.

Among women who had pain and/or bleeding but no ultrasound assessment, the progesterone test had higher specificity when a threshold of 10 ng/mL was used (9 studies of 4,689 participants) and predicted nonviable pregnancy with pooled sensitivity of 66.5% (95% CI, 53.6–77.4), specificity of 96.3% (95% CI, 91.1–98.5), positive likelihood ratio of 18 (95% CI, 7.2–45.0), and negative likelihood ratio of 0.35 (95% CI, 0.24–0.50). The probability of nonviable pregnancy was raised from 62.9% to 96.8% when the progesterone value was low.

FAST TRACK

A progesterone value below 6 ng/mL suggests, with almost 100% certainty, that a gestation is nonviable

Verhaegen J, Gallos ID, van Mello NM, et al. Accuracy of single progesterone test to predict early pregnancy outcome in women with pain or bleeding: meta-analysis of cohort studies. BMJ. 2012;345:e6077.

►EXPERT COMMENTARY

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It is not uncommon to see a patient in her first trimester who is experiencing abdominal pain or vaginal bleeding or both. At my institution, we use the beta human chorionic gonadotropin (β -hCG) value in conjunction with transvaginal ultrasonography to

determine whether the pregnancy is a viable intrauterine pregnancy, a missed

WHAT THIS EVIDENCE MEANS FOR PRACTICE

When a patient presents with pain or vaginal bleeding, or both, in early pregnancy, and β -hCG measurement and ultrasonographic imaging are inconclusive, a single measurement of the woman's progesterone level can help determine whether the pregnancy is viable. Values below 6 ng/mL suggest, with almost 100% certainty, that the gestation is nonviable.

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spontaneous abortion, or an ectopic gestation. However, even a combination of modalities can be inconclusive, necessitating repeated β -hCG measurements and several ultrasound images. For the patient, it can provoke considerable anxiety to be told to wait and see if the pregnancy will continue.

Testing will not distinguish ectopic from intrauterine gestations

In their meta-analysis, Verhaegen and colleagues focused on a single measurement of progesterone to predict the pregnancy outcome in women who experienced pain or bleeding, or both. In early pregnancy, progesterone is produced first by the corpus luteum, then by the placenta. It stands to reason that nonviable pregnancies would have a lower level.

Although measurement of the progesterone level will not help distinguish an ectopic gestation from an intrauterine pregnancy, it does help identify nonviable pregnancy. This study found that a progesterone level below 6 ng/mL excluded a viable pregnancy in 99.2% of cases. Measuring progesterone could be very helpful when the β -hCG level is low and ultrasound imaging is inconclusive. Currently, we tell patients under these circumstances that we need more time to sort it all out—we need to establish a trend for the β -hCG and repeat ultrasonography. However, if we added assessment of the progesterone level and it were less than 6 ng/mL, we would be able to determine with near certainty that the pregnancy is nonviable. As a result, we could provide patients with some certainty earlier than we would otherwise be able to, even if it were not the news they had hoped to hear.

When the serum progesterone level is higher than 6 ng/mL, it doesn't guarantee a viable pregnancy. Rather, it leaves us about where we were without it—somewhat unsure as to how things will turn out.

Testing may save money in the long run

Another advantage of adding the assessment of progesterone level may be lowered costs. If the progesterone level is less than 6 ng/mL and we can determine with almost 100% assurance when a pregnancy is nonviable, we stand to save the costs associated with additional visits, imaging, and β -hCG testing. The authors did not address this issue, but perhaps another study will look at it more closely.