

Answer

Kirk Hollohan, MD

Correct diagnosis is number 1: Ectopic pregnancy. The patient failed to return for her scheduled follow-up, but presented 4 days later with severe abdominal pain and vaginal bleeding. At this time she was restless and acutely distressed. Respiratory rate was 24 breaths/min, oxygen saturation 94% on room air, heart rate 80 beats/min, blood pressure 70 mm Hg by palpation and temperature 36°C. Her abdomen was rigid and diffusely tender, and a rectal exam was negative for blood. Her hemoglobin level was 86 g/L and a repeat quantitative beta-hCG was 262 mIU/ml. She was stabilized in the ED and transferred to the operating room, where laparotomy revealed a ruptured tubal gestation and 2 litres of intraperitoneal blood. Extensive adhesions related to pelvic inflammatory disease were also noted. A tuboplasty was performed and she recovered uneventfully.

Ectopic pregnancy (EP) is the leading cause of first trimester death and accounts for 10% of pregnancy-related mortality. Early diagnosis saves lives and preserves fertility, but the diagnosis is often difficult, since 15% of patients report normal menstruation, 50% have no predisposing risk factors and only half have a palpable mass on pelvic examination. Diag-

nosis, therefore, often depends on obstetrical ultrasound and quantitative beta-hCG measurements.

Transabdominal sonography is widely used but is unreliable if the beta-hCG is less than 6500 mIU/ml or the gestational age under 6 weeks. Early in pregnancy, transvaginal sonography (TVS) is superior — often being diagnostic without the need for quantitative beta-hCG levels. A recent meta-analysis reports that TVS is 84.4% sensitive and 98.9% specific for EP.¹

TVS findings should be interpreted in light of quantitative beta-hCG results. In patients who have symptoms compatible with EP, the combination of an empty uterus on TVS and a beta-hCG level greater than 1500 mIU/ml is said to be to 97% sensitive and 95% specific for ectopic pregnancy.² However, low serum beta-hCG levels may be falsely reassuring. A normal TVS (empty uterus with no pelvic pathology) combined with a beta-hCG less than 1500 mIU/ml is compatible with early viable intrauterine pregnancy (IUP), nonviable IUP or ectopic pregnancy,³ and 13% to 40% of patients in this group have an ectopic.⁴

Unstable patients and those with significant abdominal tenderness should have immediate obstetrical consultation, but in stable patients with normal TVS and low beta-hCG, it is reasonable to perform serial beta-hCGs. The mean doubling time for patients with normal IUP is 1.9 +/- 0.5 days (when initial beta-hCG level is less than

10,000 mIU/ml). Over a 48-hour observation time, serum beta-hCG will rise more than 66% in most normal pregnancies and less than 66% in most ectopic pregnancies. Declining beta-hCG values suggest a nonviable pregnancy but do not differentiate IUP from EP. In the case of a blighted IUP, levels tend to decline rapidly, with a half-life of 1.4 days.⁵ A more gradual decline suggests ectopic pregnancy, as was true in the case above.

Unfortunately, ruptured EP is not reliably predicted by exam, TVS or beta-hCG.

References

1. Brown D, Doubilet P. Transvaginal sonography for diagnosing ectopic pregnancy: positivity criteria and performance characteristics. *J Ultrasound Med* 1994;13:259-66.
2. Ankum W, Van der Veen F, Hamerlynck J, Lammes FB. Transvaginal sonography and human chorionic gonadotropin measurements in suspected ectopic pregnancy: a detailed analysis of a diagnostic approach. *Hum Reprod* 1993;8:1307-11.
3. Brennan D. Ectopic pregnancy — part 2: diagnostic procedures and imaging. *Acad Emerg Med* 1995;2:1090-7.
4. Kaplan B. Ectopic pregnancy with improved diagnostic accuracy. *Ann Emerg Med* 1996;28:10-6.
5. Brennan D. Ectopic pregnancy — part 1: clinical and laboratory diagnosis. *Acad Emerg Med* 1995;2:1081-9.

Department of Emergency Medicine,
St. Paul's Hospital, Vancouver, BC

Correspondence to: hollohan@interchange.ubc.ca

For the Challenge, see page 43.