Obstetrical emergency: an unusual case of an ectopic pregnancy

Harold R. Levine, MD, Julie O'Connor, MD, and Gregory de Prisco, MD

A 21-year-old African American woman presented to the emergency department with a 3-week history of heavy vaginal bleeding; she had experienced varying amounts of bleeding but never needed more than a pad per hour. She was known to be less than 12 weeks pregnant but was unsure of the date of her last menstrual period. She was gravida 3 and parity 2, with a spontaneous vaginal delivery approximately 5 years earlier and an “abdominal” (presumed ectopic) pregnancy removed by laparotomic surgery 5 months earlier at an outside institution. Other medical history included hypertension, depression, bipolar disorder, and surgery for a “hernia repair.” All laboratory values were within normal limits, and her human chorionic gonadotropin level was 8009 mIU/mL. Differential considerations at this time were threatened or spontaneous abortion and recurrence of ectopic pregnancy.

Upon transvaginal sonography, a bicornuate uterus was identified (Figure 1). No adnexal abnormalities were appreciated. Within the right cornua, a gestational sac, yolk sac, and fetal pole were identified and diagnosed as a cornual ectopic pregnancy (Figure 2). Fetal heart tones measured approximately 120 beats per minute. No appreciable myometrium surrounded the gestational sac (Figures 3 and 4). The left cornua demonstrated a thick endometrium, most likely related to hyperestrogenemia from a pregnant state, without any other abnormality.

DIAGNOSIS: Cornual ectopic pregnancy.

DISCUSSION

Ectopic pregnancy is one of the most common gynecologic abnormalities and emergencies that can afflict a potential mother. With ectopic pregnancy occurring in approximately 2% of all pregnancies, the myriad of locations have a hierarchy of prevalence as well as associated mortality and morbidity (1). The most common location for ectopic pregnancy continues to be the fallopian tubes (accounting for roughly 90% of all ectopic pregnancies), followed by the far less common interstitial pregnancies, which comprise 2% to 4% of extrauterine cavity pregnancies (2). While often the terms *interstitial* and *cornual* pregnancy are used interchangeably, there is a specific difference. Cornual pregnancy describes the presence of an eccentrically located gestational sac surrounded by a thin rim, specifically <5 mm of myometrium (2). The only semantic difference be-

Figure 1. Transvaginal ultrasound demonstrates two endometrial horns compatible with a bicornuate uterus.

Figure 2. Transvaginal ultrasound demonstrates an ectopically located gestational sac in the right cornua with surrounding hypervascularity.

tween the terms is that interstitial pregnancy refers to an ectopic location of the gestational sac in the intramyometrial segment of the fallopian tube in a normally configured uterus, while cornual pregnancy pertains to an ectopic location of the gestational sac in

From the Department of Radiology, Baylor University Medical Center at Dallas.

Corresponding author: Harold R. Levine, MD, Department of Radiology, Baylor University Medical Center at Dallas, 3500 Gaston Avenue, Dallas, Texas 75246 (e-mail: haroldrlevine@gmail.com).

Figure 3. Transvaginal ultrasound of the uterus and adjacent iliac vessels demonstrates no significant myometrium surrounding the gestational sac.

Figure 4. Transvaginal ultrasound of the uterus with ectopically located gestational sac demonstrating a fetal pole and yolk sac.

the intramyometrial segment of the fallopian tube in a bicornuate uterus (2).

Fortunately, interstitial and even less frequent cornual pregnancies (occurring in <1% of all ectopic pregnancies) are very rare, as the complications of these diagnoses can be grave. There is often a delay in diagnosis for interstitial pregnancies, as this segment of the fallopian tube has increased distensibility, leading to less pain. (Up to half of all ectopic pregnancies are asymptomatic to begin with.) Researchers have documented diagnosis being made as late as 16 weeks gestation (3). Timely diagnosis is essential, as rupture of these specific ectopic pregnancies can be life-threatening secondary to their close proximity to the cardinal vessels, specifically the uterine artery.

Radiographically, the finding most suggestive of interstitial

pregnancy is what is known as the “interstitial line” sign, which represents an echogenic line that extends from the endometrial canal into the upper regions of the cornua and borders the margin of the intramural gestational sac. The interstitial line sign is more specific than sensitive, with 80% sensitivity and 98% specificity reported (2).

Another interesting finding in this patient is an associated urinary tract anomaly, which happens commonly with uterine configuration variants. The uterine bud and female genital tract arise from the mesonephric duct embryologically, and commonly with uterine duplication anomalies there can be urinary tract abnormalities such as renal agenesis, cystic dysplastic kidney, cross-fused renal ectopia, and duplicated collecting systems (4). Renal agenesis is the most common, and that is what our patient had, as evidenced by a prior nonenhanced computed tomography scan (4) (Figure 5).

While attempts can be made to treat some ectopic pregnancies medically with agents like methotrexate when the patient is hemodynamically stable and has a low risk of rupture, surgical intervention (usually reserved for rupture, as most ectopic pregnancies can be removed laparoscopically) is generally curative with little mortality if diagnosed in a timely fashion. Current data provide a 9% to 14% overall mortality rate for ectopic pregnancies, and that is the leading cause of death in the first trimester of pregnancy (3). Morbidity is relatively patient specific according to the location of the ectopic pregnancy, in that a patient may lose a fallopian tube or a horn of her uterus or may have to succumb to a total hysterectomy.

For cornual pregnancies, possible surgical considerations are cornuostomy (excision of the gestational sac out of the cornua while preserving myometrium), salpingectomy, imaging- or laparoscopic-guided injection of cytotoxic agents (etoposide, potassium chloride, etc.) into the affected cornua, or, what has become the standard treatment, cornual wedge resection by laparotomy (3).

Figure 5. (a) Axial and (b) coronal noncontrast CT showing unilateral right renal agenesis.

Figure 6. Intraoperative images showing a bicornuate uterus and right cornual ectopic pregnancy.

The clinical course of our patient consisted of a minilaparotomy, which showed a bicornuate uterus with a right cornual pregnancy (*Figure 6*). Surgeons performed a wedge resection of the right cornual pregnancy with preservation of the left uterine horn in hopes of preserving fertility. She was discharged in stable condition on hospital day 2 with pain control and further follow-up as well as plans for long-term birth control until full healing could take place.

Acknowledgments

We thank Dr. Sharon Bakos for involving us in this case and for providing the intraoperative photos.

1. Kenney PJ, Spirt BA, Leeson MD. Genitourinary anomalies: radiologic-anatomic correlations. *Radiographics* 1984;4(2):233–260.
2. Lin EP, Bhatt S, Dogra VS. Diagnostic clues to ectopic pregnancy. *Radiographics* 2008;28(6):1661–1671.
3. Troiano RN, McCarthy SM. Mullerian duct anomalies: imaging and clinical issues. *Radiology* 2004;233(1):19–34.
4. Junqueira BLP, Allen LM, Spitzer RF, Lucco KL, Babyn PS, Doria AS. Müllerian duct anomalies and mimics in children and adolescents: correlative intraoperative assessment with clinical imaging. *Radiographics* 2009;29(4):1085–1103.

Course Directors:

David W. Barnett, MD
Stuart B. Black, MD, FAAN
Kennith F. Layton, MD, FAHA

Guest Speakers:

Harry J. Cloft, MD, PhD
Brian F. Gage, MD
Elena V. Kuklina, MD, PhD

Faculty:

Mark A. Casanova, MD
James P. d'Etienne, MD
Dion F. Graybeal, MD
Jeffrey A. Haithcock, MD
Joseph H. Hise, MD
Chaouki Khoury, MD, MS

For additional information, contact the A. Webb Roberts Center:

Phone: 214.820.2317
Email: cmeregistration@baylorhealth.edu
Online: www.cmebaylor.org