Acute Gynecologic Disorders

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KEYWORDS

• Ultrasound • Acute pelvic pain • Pregnancy • Acute management

KEY POINTS

- Ultrasound is the preferred imaging modality of choice when a gynecologic source of actue pain is suspected. CT is more useful when GI or urinary tract pathology is more likely.
- Ectopic pregnancy is one of the most serious causes of acute pelvic pain. It should be always considered in patients with a positive pregnancy test and no IUP.
- A hemorrhagic physiologic cyst is the most common adnexal lesion and frequently the cause of acute pelvic pain. Bleeding is often limited but irritates the peritoneum.
- Dermoids are the most common benign ovarian neoplasm. They have characteristic appearances on ultrasound allowing for specific diagnosis. Dermoids pose a risk for torsion and can rupture resulting in acute pain.
- Gynecologic malignancies can present with acute symptoms in the emergency department. The most specific feature of malignancy in an adnexal lesion is solid elements with internal vascularity.

INTRODUCTION

Premenopausal women with acute pelvic pain comprise a significant percentage of patients who present to the emergency room. Etiologies can be gynecologic, urologic, gastrointestinal, or vascular. Signs and symptoms are often nonspecific and overlapping. The choice of imaging modality is determined by the clinically suspected differential diagnosis. Ultrasound (US) is the preferred imaging modality for suspected obstetric or gynecologic disorders. CT is more useful when gastrointestinal or urinary tract pathology is likely.[1] MR imaging is rarely used in the emergent setting, except to exclude appendicitis in pregnant women. This article presents a comprehensive review of imaging of acute gynecologic disorders.

ECTOPIC PREGNANCY

Ectopic pregnancy (EP) is one of the most serious causes of acute pelvic pain. Patients who present with pain and bleeding in the first trimester of pregnancy often undergo pelvic US to exclude an EP. EP typically present near 6 weeks gestation. Atypical locations of EP, including interstitial EP and abdominal pregnancy (**Fig. 1**), can present later. Premenopausal women with pelvic pain usually undergo pregnancy testing regardless of menstrual history.

Imaging findings are variable in the setting of EP. The gestational sac of an EP is often not identifiable on US. The more common US findings are the result of tubal rupture and include an adnexal mass and complex free fluid (hemoperitoneum). Hemoperitoneum, although life threatening, can be very subtle on US. It is an extremely important finding to recognize because hemoperitoneum is very specific finding for ruptured EP with a reported sensitivity of 93%.[2]

On US, hemoperitoneum appears as complex fluid, usually with low- to medium-level echoes (**Fig. 2**). Acute hemorrhage can mimic a solid adnexal mass as well as obscure visualization of an ovary. In the setting of hemoperitoneum, scanning should include the right upper quadrant. Morrison's pouch is the most dependent portion of the peritoneum and may indicate a larger volume

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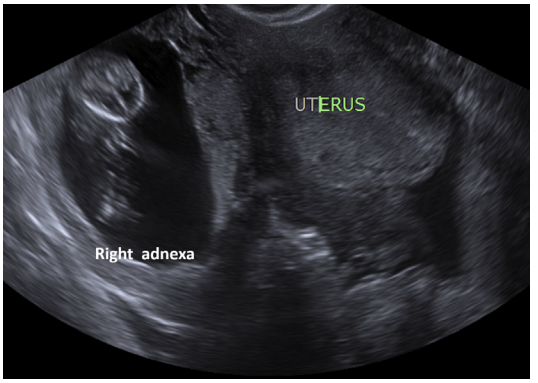

Fig. 1. Abdominal ectopic pregnancy. Transvaginal ultrasound of the pelvis reveals an empty uterus, complex-free fluid in the pelvis, and an obvious extrauterine pregnancy in the right adnexal region. A biparietal diameter could even be measured.

hemorrhage. The finding of hemoperitoneum should be reported immediately because intraperitoneal bleeding can be life threatening. On CT, blood manifests as hyperdense fluid (**Fig. 3**).

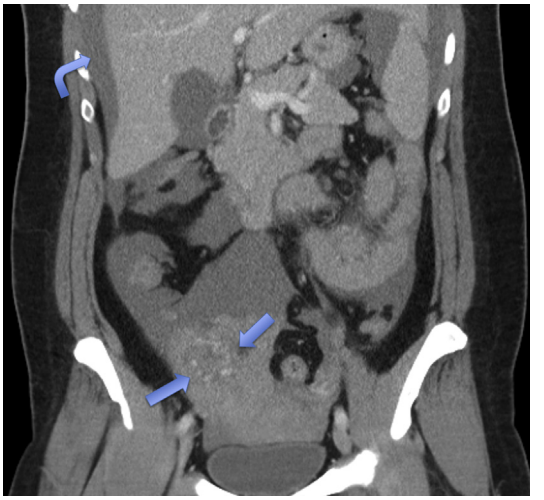

Fig. 3. Ruptured ectopic pregnancy: CT findings. Coronal reformatted CT reveals high- density free fluid in the pelvis with even higher density pooling in the right adnexal region (*straight arrows*). At surgery, active bleeding from a ruptured ectopic pregnancy was found. Note the free fluid surrounding the liver (*curved arrow*), spleen, and gallbladder.

HETEROTOPIC PREGNANCY

Heterotopic pregnancy (HP) is the simultaneous occurrence of 2 implantation sites (**Fig. 4**). It is most often manifested as an intrauterine pregnancy and EP. HP is a rare entity that is most frequently seen in fertility patients. The incidence of HP is 1 in 7000 fertility patients and occurs spontaneously 1 in 30,000 pregnancies.[3] The incidence of HP has increased owing to assisted reproduction and the increasing incidence of pelvic inflammatory disease (PID). Risk factors for HP are the same for EP. Treatment of HP is usually surgical (laparoscopy). Nonsurgical management with US-guided injection of potassium chloride may be used in a nonviable and nonruptured EP. The β-human chorionic gonadotropin levels are often misleading in the setting of EP and therefore falsely reassuring in the setting of HP. The β-human chorionic gonadotropin is often within the normal range owing to the coexisting intrauterine pregnancy.[4]

HEMORRHAGIC OVARIAN CYST

Rupture of an ovarian cyst can cause acute pain secondary to irritation of the peritoneum from

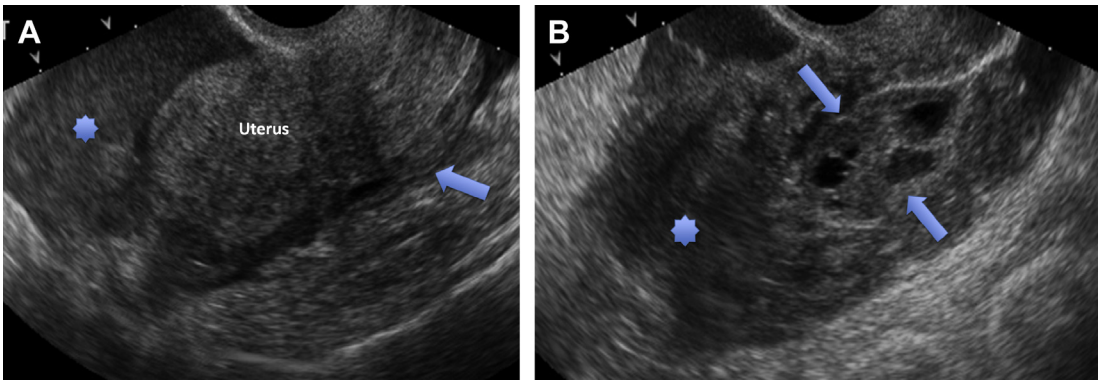

Fig. 2. Hemoperitoneum associated with ectopic pregnancy. (*A*) Sagittal pelvic sonogram shows complex fluid (blood) surrounding the uterus. A large amount of blood is present in the anterior cul de sac (*asterisk*) and surrounding the uterine fundus. More echogenic, even solid appearing, blood is present in the posterior cul de sac (*arrow*). (*B*) The hemoperitoneum obscures the ovary. Sagittal pelvic sonogram depicts the ovary (*arrows*) surrounded by blood (*asterisk*). Follicles allow for identification of the ovary.