Hematometra caused by ectopic pregnancy mimicking an intrauterine pregnancy diagnosed by point-of-care ultrasound: a case report

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Introduction

Hematometra secondary to a ruptured ectopic pregnancy is uncommon. Familiarity with its sonographic findings can prevent misidentification of a hematometra as a normal intrauterine pregnancy. To our knowledge, this is the first case report of a point-of-care ultrasound diagnosis of ruptured ectopic pregnancy with hematometra in the emergency department.

Case presentation

A 30-year-old gravida 2 para 1 woman presented to the emergency department with 3 days of lower abdominal cramping and vaginal spotting. She had a positive home pregnancy test with a gestational age of 5 weeks by dates. The pregnancy was conceived naturally. Her past medical history was significant for chlamydia and breast reduction surgery.

The patient's vitals were temperature 36.8 °C (98.2 °F), heart rate 85 beats/min, respiratory rate 18 breaths/min, blood pressure 107/72 mmHg and oxygen saturation 96% on room air. She appeared comfortable. Her abdomen was soft with mild tenderness over the suprapubic region and left lower quadrant. There were no signs of peritonitis. A serum bHCG was pending (subsequently resulted as 991 IU/L).

A point-of-care ultrasound examination was performed in the emergency department by the ultrasound fellow

and fellowship director. The scan was performed using a 6–2 MHz curvilinear transducer and the obstetrics preset. The probe was positioned in the longitudinal plane cephalad to the pubic symphysis. There was what appeared to be an intrauterine gestational sac with internal echogenic material and fluid layer but no visible fetal heart rate (Fig. 1A, B, Video 1). The probe was then rotated 90° with the indicator to the patient's right to visualize the structures in the transverse plane. A moderate amount of complex free fluid was visualized in the pelvis, but none was seen in Morrison's pouch (Fig. 1C). The scan was declared as no definitive intrauterine pregnancy (NDIUP). While no adnexal mass was identified, the volume of fluid in the cul-de-sac was concerning for a ruptured ectopic pregnancy.

The emergency physician was immediately notified. A comprehensive ultrasound of the abdomen and pelvis in the radiology department confirmed a ruptured left tubal pregnancy (Fig. 1D). Diffuse low-level echoes with avascular echogenic soft tissue debris in keeping with hematometra and a moderate pelvic hemoperitoneum was noted. The obstetrics service was urgently consulted, and the patient was taken to the operating room where she underwent a laparoscopic salpingectomy. Perihepatic adhesions consistent with Fitz–Hugh–Curtis syndrome from prior pelvic inflammatory disease were found intraoperatively. The patient was discharged in good condition after 24 h.

Discussion

Hematometra is a rare pathologic retention of blood within the uterus due to outflow obstruction in the lower genital tract. It is commonly due to congenital anomalies, including imperforate hymen, transverse vaginal septum or vaginal hypoplasia. Adult cases are generally acquired, such as

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Fig. 1 **A** Longitudinal point-of-care ultrasound scan of the pelvis reveals an anechoic sac with internal echogenicity and fluid layer within the uterus measuring 5 cm. **B** Magnified view of the intrauterine lesion. **C** Right upper quadrant scan showing no free fluid within

the hepatorenal interface. **D** Transvaginal ultrasound in the sagittal plane demonstrating a grossly enlarged (5.3×5.7×4.1 cm) and heterogeneous left adnexa mass concerning for a tubal pregnancy

cervical stenosis post loop electrosurgical excision procedure (LEEP), intrauterine adhesions and endometrial malignancies [1]. Patients typically present with cyclic midline cramping abdominal pain, amenorrhea and urinary retention. On palpation, the globular uterus may be firm and tender. The diagnosis is suspected clinically and confirmed by ultrasound, which demonstrates uterine distension with mixed echogenic blood, likely representing hemorrhage of different ages. The blood may fill the entire cavity or be contained in multiple pockets. There should be no flow when color Doppler mode is applied. Treatment usually involves dilation of the cervix to drain the accumulated blood or other interventions to address the underlying cause of the hematometra [2].

Point-of-care ultrasound (POCUS) is a common adjunct for the evaluation of the pregnant patient with abdominal pain and vaginal bleeding in the emergency department. Sonographic criteria for the diagnosis of an intrauterine pregnancy include the identification of: (1) a decidual reaction, (2) a gestational sac, (3) a yolk sac or fetal pole with heartbeat, (4) a myometrial mantle > 5–8 mm, (5)

bladder-uterine juxtaposition and (6) vaginal-uterine continuity [3, 4]. In the absence of all six criteria, no definitive intrauterine pregnancy (NDIUP) must be declared.

In this case, the obstetrics scan was NDIUP. Although 5 of 6 criteria were seemingly met, the hematoma, which was 50 mm in length, did not demonstrate either a yolk sac or fetal pole. It was felt that the ectopic mass likely ruptured slowly, allowing the blood to stay loculated in the pelvis and form a hematometra without the usual shift of fluid into the upper quadrants by way of the paracolic gutters.

The case highlights some important pitfalls of first trimester obstetrical ultrasound. There are many mimics of intrauterine pregnancy, including a pseudogestational sac, a blighted ovum or a hematometra, which are potential false negatives. Though they may appear similar, these lesions will fall short of a definitive intrauterine pregnancy as defined by the six sonographic criteria. The physician must always maintain a high index of suspicion for an ectopic pregnancy. This is of critical significance in women with risk factors such as pelvic inflammatory disease, tubal surgery

or fertility treatment. Our patient had previous chlamydia, which along with gonorrhea, accounts for a third to a half of pelvic inflammatory disease cases [5], placing her at an increased risk for an ectopic pregnancy.

To practice POCUS safely, there are other factors to keep in mind. In delayed presentations, subacute blood can become isoechoic with adjacent solid organs, making it harder to detect at the interface. In patients with prior inflammatory conditions or surgeries, consider interrogation of both upper quadrants. While the right upper quadrant is most sensitive for free fluid, the left upper quadrant may sometimes be positive instead, as adhesions can affect flow of fluid within the peritoneal cavity. Sensitivity to detect fluid can be increased by placing the patient in the Trendelenburg position and doing serial scans as indicated.

Conclusion

When caring for patients with first trimester complaints, the index of suspicion for an extrauterine pregnancy must be high to prevent the significant morbidity and mortality associated with misdiagnosis and subsequent delay to treatment. An intrauterine pregnancy should only be declared if all six sonographic criteria are definitively met. Although

rare, hematometra should be on the differential for an intrauterine lesion with an atypical sonographic appearance as a potential clue for a ruptured ectopic pregnancy.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s43678-021-00230-8>.

Declarations

Conflict of interest None declared.

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