

A pitfall in ultrasonographic diagnosis—heterotopic corneal pregnancy initially misdiagnosed as leiomyoma

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Summary

Background: Ultrasound has become a routine examination of early pregnancy especially pregnancy after in vitro fertilization and embryo transfer (IVF-ET). However, benign pelvic pathology such as uterine myoma, hydrosalpinx, and endometrioma may mislead the clinicians' interpretation. **Case Report:** A patient of heterotopic cornual pregnancy following IVF-ET, which had been misdiagnosed as uterine leiomyoma in serial ultrasound scans, and ruptured at 12 gestational weeks. **Conclusion:** This case report reminds us the versatility of an ectopic pregnancy. Clinicians need to record in detail the position and size of any uterine mass before commencing infertility treatment. Any newly developed mass could be misdiagnosed, even in the presence of an intrauterine pregnancy. The possibility of heterotopic pregnancy (HP) must be kept in mind if more than one embryo was transferred.

Key words: Heterotopic pregnancy; IVF; Ultrasound diagnosis.

Introduction

Heterotopic pregnancy (HP), once thought as a rare event, is increasing with the prevalence of assisted reproduction technology (ART) [1-4]. It occurs in around 1/5,000 to 1/10,000 in general population [4]. The number of embryos transferred in ART has been recognized as a risk factor and may exacerbate the occurrence to 1-3% [4].

Although ultrasound is an important tool in the diagnosis of HP, only 66% of cases are definitively diagnosed on basis of an ultrasound scan alone [2]. The diagnostic challenge in ART includes common conditions such as ascites and superovulated ovaries that may obscure an extrauterine pregnancy [5]. In addition, benign pelvic pathology such as uterine myoma, hydrosalpinx, and endometrioma may mislead the clinicians' interpretation.

In the presence of a known intrauterine pregnancy, clinicians easily neglect the possibility of ectopic pregnancy. The authors present the case of a heterotopic cornual pregnancy which mimicked features of a uterine myoma. This case report reminds specialists in reproductive medicine to note the size and location of uterine myoma before commencing infertility treatment.

Case Report

A 37-year-old woman, with a history of left salpingectomy for tubal pregnancy and right proximal tubal occlusion for hydrosalpinx had previously undergone three cycles of IVF-ET and one cycle of frozen ET due to tubal infertility. She had succeeded in

pregnancy after transferring three embryos in the fourth cycle of IVF-ET. Positive beta-hCG (900 mIU/mL) was observed two weeks after the ET. Four weeks after it, transvaginal ultrasound scan revealed a single viable gestation of six weeks. Repeated ultrasonography showed a well-developed embryo with positive beating heart at eight weeks' gestation. At the same time, a well-defined, heterogenous mass near the gestational sac was interpreted as an intramural myoma (Figure 1). At 12 gestational weeks, she had visited the emergency room (ER) at a regional hospital for abdominal cramping pain and diarrhea. Unexplained anemia (hemoglobin: 7.4 mg/dL) was noted. Since she had a complete blood count exam at the prenatal clinic two weeks prior, the authors knew her baseline hemoglobin concentration was 10.4 gm/dL. Therefore, internal bleeding was suspected. Due to her previous ART history and stable hemodynamic condition, she insisted to be transferred to this hospital for treatment. At this hospital's ER, her vital signs were BP: 100/60 mmHg and HR: 78 bpm. Physical examination revealed a soft abdomen and no obvious peritoneal signs. Bedside abdominal ultrasound scan showed a heterogenous mass at the cornual region accompanied with a viable intrauterine pregnancy of 12 gestational weeks. Compared to the sonographic imaging performed at eight gestational weeks, the mass increased in size and blood flow (Figure 2). There was also an echolucent area in peritoneal cavity. Cornual pregnancy with internal bleeding was suspected. MRI was performed to confirm the diagnosis and the margin of the two gestations (Figure 3). After detailed counseling and obtaining informed consent, the authors performed laparotomy under general anesthesia. A ruptured ectopic pregnancy was protruding from the right cornu of a 12-week-sized uterus (Figure 4).

Although no active bleeding was noted, 800 grams of blood clots were removed from the peritoneal cavity. The authors closed the myometrium in two layers using 2-0 vicryl after wedge resection of the ectopic pregnancy mass. The intraoperative blood

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Figure 1. — Sonographic image showing an intrauterine eight-week pregnancy and a round heterogenous mass in the right upper uterus

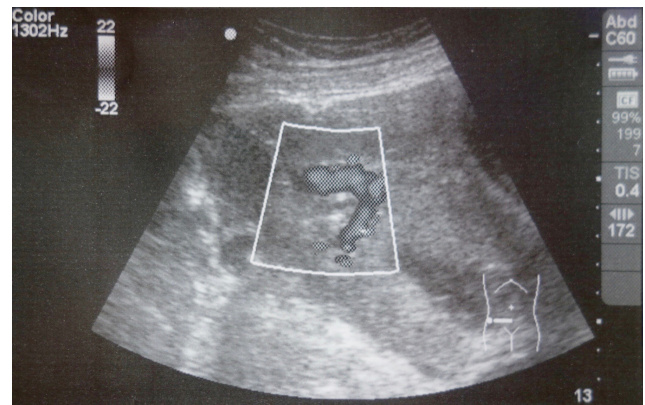


Figure 2. — Sonographic exam in emergency room. Blood flow in the mass.



Figure 3. — MRI showing the margin of gestational sacs.

loss was estimated to be 300 ml. The patient recovered uneventfully and continued her uncomplicated pregnancy.

Discussion

Heterotopic cornual pregnancy is a rare and life-threatening problem. Most cases are missed in the initial presentation and even diagnosed in the operation room [2].

Ascites, multiple corpus luteum, hydrosalpinx, and endometrioma, which are common sonographic findings in patients who receive ART, may confuse clinical practitioners. Enlarged fibroids during early pregnancy were another common confounding factor [6]. In addition, the presence of an intrauterine pregnancy will lessen the alertness of extrauterine mass. Hence, the reproductive specialist should



Figure 4. — Ectopic pregnancy in right uterine cornus.

always keep the numbers of embryo and previous ultrasound findings in mind. Ectopic pregnancy should always be suspected when more than one embryo is transferred, even after post-bilateral salpingectomy. Any uterine and adnexal masses should be compared to previous findings.

As an adjunct to ultrasound, MRI may serve in improved diagnostic accuracy for cases with high clinical suspicion of HP [7]. There are no specific sonographic features of leiomyoma. However, MRI shows a myoma with uniform or peripheral high T1 signal intensity [8]. Serial serum beta-hCG concentration may not be reliable in diagnosis of HP because of the coexistence of an intrauterine pregnancy. However, higher than usual levels of beta-hCG should evoke the possibility of heterotopic pregnancy [3]. According to a review of 30 HPs after IVF-ET, the overall live birth rate for intrauterine pregnancies with accompanying cornual pregnancies was 56.5%, if the mothers had been promptly diagnosed and appropriately treated [1].

In conclusion, high clinical suspicion and serial pelvic ultrasound scan for high-risk patients, even when an early

gestation has been noted, are crucial for the early detection and prompt action of heterotopic cornual pregnancy.

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