Overview of findings in patients with ectopic pregnancy: case report

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ABSTRACT

Background: Ectopic pregnancy is the implantation of a fertilized egg outside the endometrial cavity of the uterus. Ectopic pregnancy is the leading cause of pregnancy-related death in the first trimester, accounting for 75% of maternal deaths in the first trimester and 9% to 13% of all pregnancy-related deaths. In the diagnosis of ectopic pregnancy, elevated serum levels of human chorionic gonadotropin (Beta-HCG) and uterine changes at early sonography are early indications for diagnostics. Magnetic resonance imaging (MRI) plays an important role in diagnosing and managing cases where ultrasound is inconclusive or when more accurate information is needed to make a proper diagnosis or to guide clinical management.

Case Description: There was a 30-year-old female patient with a diagnosis of G1P1A0 at 10-11 weeks gestation who came with complaints of bleeding from the vagina. In these patients, physical examination and laboratory were examined, followed by radiological examinations with transvaginal ultrasound (TVUS) and MRI, and confirmed by histopathology study.

Conclusion: MRI is not used conventionally in the diagnosis of ectopic pregnancy but can be an additional imaging modality for ultrasound. MRI is an effective diagnostic imaging alternative in cases where sonography is inconclusive or when more precise information is needed to diagnose properly or guide clinical and surgical management.

Key Words: ectopic pregnancy, gestation, human chorionic gonadotropin, magnetic resonance imaging, transvaginal ultrasound.


INTRODUCTION

Ectopic pregnancy is the implantation of a fertilized egg outside the endometrial cavity of the uterus. The uterus is a pear-shaped hollow organ located in the female pelvis, posterior aspect of the bladder, and anterior to the rectum, and functions by nourishing a fertilized egg that passes through the fallopian tube.1 The fallopian tubes, otherwise called fallopian tubes or uterine tubes, are hollow organs that originate in the uterine horn, extend laterally at the superior edge of the mesosalpinx broad ligament, and end near the ipsilateral ovaries, which serve as passageways for eggs or gametes from the ovaries to the uterus.2,4 Ectopic pregnancy is the leading cause of pregnancy-related death in the first trimester. In the United States and Europe, the incidence rate is only 1% to 2% of ectopic pregnancies, but ectopic pregnancies account for 75% of maternal deaths in the first trimester and 9% to 13% of all pregnancy-related deaths.5 Ectopic pregnancy can cause tubal rupture, resulting in massive bleeding. Because of the potential danger of delayed diagnosis of an ectopic pregnancy, a rupture diagnosis should be established immediately.

Symptoms of an ectopic pregnancy can vary depending on the structures involved, given that the embryo can implant in almost any organ. Typical symptoms of ectopic pregnancy are abdominal or pelvic pain, menstrual irregularity or amenorrhea, vaginal bleeding, breast tenderness, gastrointestinal symptoms, syncope, dysuria, rebound tenderness with pallor, tachycardia or bradycardia, abdominal distention, and shock. Even periumbilical ecchymosis (Cullen sign) can be seen.2 In the diagnosis of ectopic pregnancy, elevated serum levels of human chorionic gonadotropin (Beta-HCG) and uterine changes at early sonography are early indications for diagnostics. Ultrasound is a first-line imaging modality for diagnosing ectopic pregnancy.2 MRI plays an important role in the diagnosis and management of ectopic pregnancy. MRI is an effective diagnostic imaging alternative in cases where ultrasound is inconclusive or when more accurate information is needed to diagnose properly or guide clinical management.5 MRI offers a greater field of view with excellent contrast and tissue characterization but should be considered only in hemodynamically stable patients where information from TVUS is inadequate or specific additional information is required for patient management.6 This study aimed to describe the overview of radiological findings in patients with ectopic pregnancy.

CASE REPORT

A 30-year-old female patient with a diagnosis of G1P1A0 at 10-11 weeks...
gestation came with complaints of bleeding from the vagina that was felt two days before admitting to hospital. Complaints are said to be known when urinating and are fresh red. Initially, the patient complained of spotting since the 5th week of pregnancy, accompanied by abdominal pain, which felt aggravating since yesterday. Patients also complained of diarrhea once time and abdominal pain is said to be reduced. Flatus is normal, with no nausea or vomiting. History of menarche when the patient was 13 years old, with a menstrual cycle of 28 days for five days (regular). The patient’s last menstrual period (LMP) was on January 12, 2023. Surgical history (-)

From the physical examination conducted by obstetrics and gynecology colleagues, abdominal tenderness, not palpable mass, was obtained. The vaginal toucher looked portio cervix palpable and slippery, not palpable mass, with no site of tenderness, with minimal bleeding. On rectal toucher, the tone of the anal sphincter appears to feel strong, and the ampulla recti do not collapse. The mucosa is slippery, palpable solid mass at 12 o’clock, 5 cm away from the anal verge, the impression on the extra lumen with tenderness, and the absence of blood and mucus. Laboratory results showed an increase in white blood cell count with a positive plano test. Transvaginal sonography with imagery, empty blast, uterine anteflexion, measured +/- 6.34 cm x 4.26 cm, with endometrial thickness +/- 0.82 cm, extraterine gestational sac (GS) was visualized, crown rump-length (CRL) +/- 3.07 cm. Then, the patient is diagnosed as G1P1A0 gestational age 10-11 weeks with ectopic pregnancy (abdominal).

In the treatment, the patient is still in a stable state with minimal abdominal pain in the absence of active vaginal bleeding. MRI Examination Results of Pelvis Axial T1WI, T2WI, DWI/ADC; Sagittal Coronal T2WI without contrast obtained uterine image and normal endometrial thickness without GS in the intrauterine. GS appears on the right side of the pelvic cavity with placenta attachment to the infundibulum of the right fallopian tube accompanied by intraabdominal hemorrhage features.

The patient experienced a decrease in HGB from laboratory test results the next day, where HGB 6.50 / WBC 17.13 / PLT 278 appeared, then dropped back a few hours later with HGB 5.30 / WBC 11.85 / PLT 215 results, with blood Beta-HCG results of 13099.22 mIU/mL. The patient
immediately performed laparotomy, evacuation of ectopic pregnancy + placenta + right salpingectomy + adhesiolysis. From the results of exploration, fetal tissue was attached to the right infundibulum and posterior corpus of the uterus with hemoperitoneum, which suggested a suspicious ectopic pregnancy picture of the abdominal cavity with insertions in the pars infundibulum tube and posterior corpus of the uterus that had ruptured, so it was decided to do right salpingectomy with adhesion release. For patients with good prognostic and improved conditions after surgery and treatment, blood Beta-HCG results decreased to 56.97 mIU/mL, from the results of anatomical pathology impressed with microscopic results in the form of preparations in the form of tubal structures composed of mucosa, muscularis and serous layers. The lumen of the tubes contains erythrocyte deposits. In 1 focus of slide III appears tissue in the form of sheets containing trophoblast cells (cytotrophoblast and syncytiotrophoblast). Stroma tissue with a decidua reaction. There is also 1 focus of paratubal cysts. There is no clear placental structure in this preparation. There is also an area of bleeding, so that the histomorphological impression indicates an Ectopic Pregnancy, there is no clear placental structure in this preparation.

**DISCUSSION**

Ectopic pregnancy can cause tubal rupture, resulting in massive bleeding. In the case to be discussed, a 30-year-old female patient with a diagnosis of G1P1A0 at 10-11 weeks gestation came with complaints of abnormal bleeding from the birth canal spots since the 5th week of pregnancy. They were accompanied by abdominal pain that felt increasingly severe two days ago. The patient also complained of diarrheal as much as once, menarche when the patient was 13 years old, with a menstrual cycle of 28 days for five days. The patient’s LMP was recorded on January 12, 2023, with no previous surgery history. In ectopic pregnancies, patients usually have amenorrhea for 6-8 weeks after LMP, and they experience abnormal vaginal bleeding. It is also important to note the complete history and physical examination, including the patient’s last menstrual period. Patients with minimal tenderness in the abdomen were obtained from the physical examination. The vaginal toucher appeared to bleed minimally, while from the rectal toucher examination, there was a palpable solid mass at 12 o’clock, 5cm away from the anal verge, the impression of the mass on the extra lumen, with positive tenderness. Complete history and physical examination, including the patient’s LMP to distinguish the patient’s abdominal pain in a pregnant condition or not, in addition to past medical and reproductive history, including surgical history, dilation, and curettage, as well as cesarean section, to predict the likely location if ectopic pregnancy is found or differential diagnosis needs to be considered.

Conditions with normal Beta-HCG, such as acute ovarian disease, tubo-ovarian abscess, ovarian torsion, and ruptured hemorrhagic ovarian cysts, can resemble ectopic pregnancy. Serum Beta-HCG levels should be evaluated to exclude ectopic pregnancy. If Beta-HCG levels are not elevated, alive ectopic pregnancies can be excluded reasonably. Conditions with increased Beta-HCG decidual changes in endometriotic cysts can be detected in women with ectopic pregnancies and intrauterine pregnancies. Elevated serum levels of human chorionic gonadotropin (Beta-HCG) higher than 2000 mIU/mL (13099.22 mIU/mL) accompanied by images on ultrasound appear to be extraterine GS is an early clue to the diagnosis of ectopic pregnancy. When fetal heartbeat is observed on ectopic implantation by TVUS, it is evidence of ectopic pregnancy. Additional sonographic findings were associated with ectopic pregnancies in the presence of free intraperitoneal fluid in patients with positive pregnancy tests. Ectopic placental blood flow, commonly referred to as the ring of fire, can also be seen with the color Doppler at the periphery of the adnexal mass. In patients subsequently detected with a suspected ectopic pregnancy of the abdomen.

MRI is an effective diagnostic imaging alternative in cases where sonography is inconclusive or when more precise information is needed to make a proper diagnosis or guide clinical and surgical management. At the same time, the patient is still in stable condition without signs of intraperitoneal hemorrhage. In the MRI examination obtained. The main MRI imaging findings in ectopic pregnancy can be the presence or absence of normal intrauterine pregnancy endometrial changes in the intrauterine. While in extraterine, obtained cul de sac hemorrhagic fluid shows high signal intensity in T1-weighted images with fat suppression, accompanied by mixed signal intensity area in T2-weighted images. There is also an extraterine embryo or extraterine gestational sac outside of the uterine cavity in ectopic pregnancy. Gestational sac was found with a single
In the course of the patient, they have experienced a deterioration in condition with a decrease in Hb to 6.50 mg/dl, with the lowest Hb calculated at 5.30 mg/dl, with unstable vital signs, which showed signs of intraperitoneal active bleeding. Patients with suspected or confirmed ectopic pregnancies who show signs and symptoms of rupture should be treated immediately for surgical intervention because it is life-threatening. The patient then performed laparotomy surgery for evacuation of ectopic pregnancy with the results of exploration obtained fetal tissue attached to the right infundibulum and posterior corpus of the uterus with hemoperitoneum, so that right salpingectomy was performed. After surgery, the patient’s condition gradually improved and stabilized with a good prognosis. Histomorphology results indicate an ectopic pregnancy, and there is no clear placental structure in the preparation.

CONCLUSION
On ultrasound, extraterine findings combined with no clear evidence of intrauterine pregnancy can be a reference to an ectopic pregnancy. Free fluid can also be found in the pelvic cavity, which indicates intraperitoneal hemorrhage. MRI is not used conventionally in the diagnosis of ectopic pregnancy but can be an additional imaging modality for ultrasound. MRI is an effective diagnostic imaging alternative in cases where sonography is inconclusive or when more precise information is needed to make a proper diagnosis or guide clinical and surgical management. An MRI can provide information that improves a doctor’s ability to diagnose an ectopic pregnancy. MRI also plays an important role in identifying implantation sites in tubal and non-tubal ectopic pregnancies (with or without rupture), distinguishing ectopic pregnancies from other diseases, and identifying tissue and blood product characteristics.

CONFLICT OF INTEREST
The authors report no conflict of interest in writing this case series.

RESEARCH ETHICS
The writing of this manuscript has obtained written informed consent from the patient based on the publication ethics rules of the COPE and ICMJE guidelines.

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AUTHOR’S CONTRIBUTION
All authors have the same contribution in this case report, from the stage of case finding, reading of case radiology results, and clinical outcomes obtained, which are presented in scientific publications.

REFERENCES