CASE REPORT

Interstitial pregnancy rupture at 15 weeks of pregnancy

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SUMMARY

Ectopic pregnancy occurs when the developing blastocyst becomes implanted outside the uterine cavity. Interstitial pregnancy is a rare type, representing 2–3%, of all ectopic pregnancies. It is located outside the uterine cavity in the segment of the fallopian tube that penetrates the muscular layer of the uterus. Therefore, it is a difficult and challenging diagnosis. We report a case of a 19-year-old girl who was admitted to our emergency department because of a ruptured interstitial pregnancy at 15 weeks of gestation.

BACKGROUND

Ectopic pregnancy occurs when the developing blastocyst becomes implanted outside the uterine cavity. Interstitial pregnancy is a rare type, representing 2–3%¹ of all ectopic pregnancies. It is located outside the uterine cavity in the interstitial part of the fallopian tube (the segment that penetrates the muscular layer of the uterus). If undiagnosed, pregnancy usually develops beyond the 12th week, within the layer of myometrium, until it finally ruptures. Therefore, it is a difficult and challenging diagnosis and frequently constitutes a medical emergency. It has a mortality of approximately 2–2.5%.²

CASE PRESENTATION

A 19-year-old healthy nulliparous girl with a spontaneous planned pregnancy of 15 weeks gestation. Obstetrical history revealed a miscarriage (medical treatment). Medical history was negative regarding previous pelvic or genital infections or abdominopelvic surgeries. The patient was a smoker.

Pregnancy surveillance was undertaken by a general physician and the first trimester ultrasound was performed at 11 weeks. The report described an intrauterine pregnancy of 11 weeks and a fetus with a crown-rump-length of 44 mm with fetal heart movements (figure 1).

At 15 weeks the patient felt a strong pelvic pain after voiding and was brought to our emergency department. At observation she was pale, could not tolerate the orthostatic position, had a blood pressure of 95–58 mm Hg and heart rate of 63 bpm. Gynaecological observation did not show any vaginal bleeding.

Abdominal examination revealed tenderness, abdominal guarding and rebound tenderness compatible with washboard abdomen.

INVESTIGATIONS

Ultrasound examination identified a fetus with no heart rate movements, partially outside the uterine fundus, near the left fallopian tube and showed considerable amount of free fluid (>500 cc) in the abdominopelvic cavity, compatible with an hemoperitoneum.

Blood tests revealed a haemoglobin level of 7.6 g/dL at entrance.

DIFFERENTIAL DIAGNOSIS

Ultrasound examination revealed a fetus partially outside the uterine fundus and an important haemoperitoneum—uterine rupture was assumed.

TREATMENT

Emergency laparotomy was performed: we collected 1800 cc of blood in the abdominopelvic cavity and found a left interstitial uterine rupture with partial expulsion of the gestational sac (figures 2 and 3). We removed all gestational tissue and it was possible to make a cornuostomy (figures 4 and 5).

During surgery two blood units were transfused. No intraoperative complications occurred.

OUTCOME AND FOLLOW-UP

The patient was discharged on day 7 after surgery with a haemoglobin level of 11 g/dL.

After surgery, serial evaluation of β -human chorionic gonadotropin (β -HCG) was made. The patient was seen weekly until β -HCG was negative and then 1 month after. She was advised not to become pregnant and started on oral contraception. The patient's last follow-up visit was at 5 months after

Figure 1 First trimester abdominal ultrasound: fetus with a crown-rump-length of 44 mm (it was diagnosed as intrauterine pregnancy).

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Figure 2 Uterine cornual rupture: partial expulsion of the gestational sac out of the uterus.

laparotomy and she had no symptoms and a normal physical evaluation.

DISCUSSION

The authors report a case of an interstitial pregnancy that reached 15 weeks and then ruptured. Risk factors for ectopic pregnancy can be divided into those that confer high-risk, moderate-risk or low-risk. High-risk factors are: previous ectopic pregnancy, tubal pathology and surgery and in utero diethylstilbestrol exposure. None of these were identified in our patient. In fact we only could identify her smoking habit as a risk factor, however, this can be considered either a low or moderate risk factor depending on the dose of the patient's habit.^{3 4}

Interstitial ectopic pregnancy is associated with a higher risk of shock and hemoperitoneum than other forms of ectopic pregnancy, as well as with a higher risk of maternal mortality due to delayed diagnosis and because of the abundant blood supply in the cornual region from both uterine and ovarian vessels. The ultrasonographic diagnosis of interstitial ectopic pregnancies is challenging and needs expert hands because, as the images are similar to those of intrauterine pregnancies they are more likely to be mistaken for normal intrauterine pregnancies. Three sonographic criteria can be used to diagnose interstitial pregnancy: empty uterine cavity, the chorionic sac separated 1 cm from the most lateral edge of the uterine cavity and a thin myometrial layer surrounding the chorionic sac.^{2 5} The

Figure 4 Uterus after removal of gestational sac and fetus.

interstitial line sign (the echogenic line extending into the upper part of the uterine horn bordering the margins of the intrauterine gestational sac) is also helpful in diagnosing an interstitial pregnancy.^{5 6} Transabdominal ultrasound has a low sensitivity and specificity in diagnosing ectopic pregnancies⁷ and two-dimensional sonographic examination is not able to define the exact anatomic position of the gestational sac. Thus several reports suggest the use of tri-dimensional ultrasound, because it allows accessibility of the planes that are not accessible to two-dimensional ultrasound.⁷

In Portugal, most first trimester ultrasounds are executed in an outpatient regimen by a radiologist. As mentioned above, the level of suspicion must be high to diagnose these cases and is most often performed by an obstetrician with first-level ultrasound skills.

Rupture occurring after 12 weeks of gestation often leads to severe haemorrhage and even death. In our patient, pregnancy reached 15 weeks and she was admitted in the emergency department with massive intra-abdominal bleeding.

Management of ectopic pregnancy (including interstitial type) depends on its level of activity and includes four types of treatment: expectant management, medical treatment with methotrexate, conservative surgery (salpingotomy) and radical surgery (salpingectomy).⁸ Surgical treatment is preferred when there is rupture of pregnancy, hypotension, anaemia, diameter of the gestational sac is greater than 4 cm on ultrasonography or pain persisting beyond 24 h.⁶

The traditional surgical approach to a ruptured interstitial pregnancy used to be laparotomy with either cornual resection

Figure 3 Fetus of 15 weeks.

Figure 5 Cornuostomy.

or hysterectomy, especially in advanced gestations.^{2 9} This type of surgical management has been associated with morbidity and unfavourable effects on fertility, therefore more conservative approaches have been introduced into clinical practice. Conservative techniques, includes laparoscopic cornual resection, laparoscopic cornuostomy or hysteroscopic removal of interstitial ectopic tissue.² Nowadays, with the advances in laparoscopy, if equipment and surgical skills are available, this is the preferred surgical approach. It is also considered a safe and effective alternative.^{9–11}

Radical surgery (hysterectomy) is necessary in cases where haemorrhage is life threatening.

At our institution, the standard surgical treatment for ectopic pregnancy is laparoscopy. In this particular case, due to the lack of expertise of the surgical team in the context of haemorrhagic shock, laparotomy was preferred.

Learning points

- It is important to remember that even in women with low risk factors an ectopic pregnancy is possible.
- Because the diagnosis of an interstitial pregnancy can be difficult, there should be a high level of suspicion in these cases, in order to avoid high morbidity and mortality.
- Conservative techniques are possible even in the presence of a large hemoperitoneum.

Competing interests None.

Patient consent Obtained.

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