



Case report

A RARE CASE OF AN INTERSTITIAL PREGNANCY

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ABSTRACT:

In ectopic pregnancy, implantation of the zygote occurs outside of the endometrial cavity. Interstitial pregnancy has an incidence of 2-4% of all ectopic pregnancies. We present a clinical case of interstitial pregnancy. On 20.10.2023, a woman visited the University Hospital "St. Marina" - Pleven, Bulgaria, because of a positive morning pregnancy test. The patient was a 30-year-old woman. The last menstrual period was on 12.09.2023. Two consecutive vaginal ultrasonography were made every 10 days. No fetal sac was visualized in the uterine cavity. The second ultrasonography visualized a hyperplastic endometrium, 21 mm thick. A fetal sac located interstitially was found high in the right uterine horn. The β -hCG values were 412 mIU/ml and 12490 mIU/ml, respectively. The patient was referred for a pelvic MRI, which confirmed the diagnosis. After discussion and informed consent signed by the patient, on 30.10.2023 at University Hospital "St. Marina" - Pleven, Bulgaria, under general anesthesia on 30.11.2023, a Laparotomia a modo Pfannenstiel. Resectio cornualis dextra. Extirpatio graviditas interstitialis dextra. Salpingectomy dextra. Sutura uteri. Lavage. Drainage. Abrasio probatoria was performed. The patient tolerated the surgical intervention well. The histological result proved interstitially located ectopic pregnancy. In cases of interstitial pregnancy, early diagnosis is crucial for successful treatment and health of the patient.

Keywords: Ectopic pregnancy, Interstitial ectopic pregnancy, Interstitial pregnancy,

INTRODUCTION:

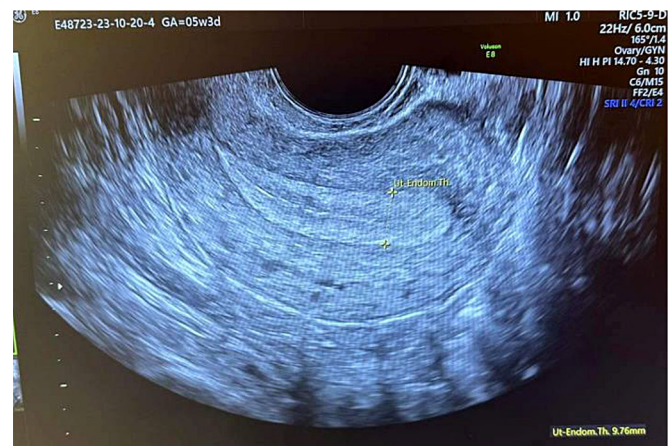
Ectopic pregnancy differs from normal pregnancy because in ectopic pregnancy, implantation of the zygote occurs outside of the endometrial cavity. The incidence of ectopic pregnancies, according to literature data, is about 2%. It is the most common cause of mortality in the first trimester of pregnancy. About 95% of ectopic pregnancies are located in the fallopian tubes. The laboratory criteria that guides clinicians to the diagnosis is the level of β -human Chorionic Gonadotropin (β -hCG). With values $e^{2000-2200}$ mIU/ml and no sonographic evidence of intrauterine pregnancy, the gynecologists are suspicious of ectopic pregnancy. Interstitial pregnancy is a type of ectopic pregnancy that is extremely rare. According to the Dahmert Manual of Radiology, the definition of an interstitial pregnancy, in terms of localization, is as follows: eccentrically located pregnancy relative to the endometrium, combined with proximity to the uterine serosa. According to the Williams textbook of obstetrics, the terms "interstitial pregnancy" and "cornual pregnancy" describe different implantations. In interstitial pregnancy, the implantation is in the proximal intramural portion of the fallopian tube and lateral to the uterine round ligament. Interstitial pregnancy has an incidence of 2-4% of all ectopic pregnancies. In cornual pregnancy, implantation is in the upper lateral part of the uterine cavity. This diagnosis is used in cases of intrauterine pregnancy in a uterus with a congenital anomaly - unicornuate, bicornuate or with a septum. Separately, in the specialized literature, the term "angular pregnancy" is also used. It represents implantation in the endometrium of the lateral angle of the uterus, medial to the uterine-tubal junction. It was first described by Kelly in 1898 [1, 2]. In the specialized literature, there are often inconsistencies in the terminology used regarding the types of ectopic pregnancy. For this reason, in 2020, the European Society of Human Re-

production and Embryology (ESHRE) issued recommendations to standardize terminology according to the exact site of embryo implantation [3]. Adequate differentiation between the different types of ectopic pregnancy is crucial for clinical practice. It is important to prevent the observation of an interstitial pregnancy as a normally progressing pregnancy, as the complications of this condition can be life-threatening [4, 5]. Diagnosis is made after the history of amenorrhea, positive blood test for β -hCG, 2D and 3D vaginal ultrasonography and MRI of the pelvis. Ultrasonographically, a fetal sac is visualized in the uterine horn surrounded by myometrium. In some cases, there is no clear border between the amniotic sac and the endometrium. In the past, the exact diagnosis regarding the location of implantation was made postoperatively and after histological examination. With advances in technology and the development of modern ultrasonographic and MRI equipment, differentiation of the type of ectopic pregnancy is possible even before surgical intervention. MRI is an alternative to ultrasonography in case a more accurate diagnosis and referral to appropriate professional management is required [6]. Ackerman increased the prognostic value of vaginal ultrasonography by introducing the term interstitial line. According to him, in an interstitial pregnancy, an eccentric gestational sac is visualized, located in the myometrium, bounded by a hyperechogenic strip representing the endometrial duct or the interstitial part of the fallopian tube [7]. The complications of late diagnosed interstitial pregnancy are rupture, hemoperitoneum and hemorrhagic shock. The condition is life threatening. Therefore, making an accurate diagnosis on time is essential. Treatment is surgical. Most often, a cornual resection is performed - laparoscopic or by conventional surgery. In cases with rupture and hemoperitoneum, hysterectomy is undertaken. In cases of early diagnosed and unruptured interstitial pregnancy, some authors also suggest a conservative approach with the injection of Methotrexate.

CLINICAL CASE:

We present a clinical case of interstitial pregnancy. On 20.10.2023, a woman aged 30 years visited the University Hospital "St. Marina" - Pleven, Bulgaria, because of a positive morning pregnancy test. The last menstrual period was on 12.09.2023. History revealed two miscarriages in the 6th gestational week. No children born (G2P0). Vaginal ultrasonography did not visualize a fetal sac in the uterine cavity. The endometrium was hyperplastic, 9.76 mm thick. Adnexa: right ovary, normal with a yellow body 10 mm in diameter. Left ovary is normal. The patient was ordered a blood test for pregnancy. Figure 1 shows the absence of a gestational sac in the uterine cavity and an endometrial thickness of 9.76 mm (Fig. 1).

Fig. 1. 2D vaginal ultrasonography of the uterus. Absence of gestational sac in the uterine cavity. Endometrial thickness 9.76 mm in amenorrhea of 5 weeks and 3 days.



The β -hCG value was 412 mIU/ml in amenorrhea of 5 weeks and 3 days. We advised the woman to come back in 10 days for follow-up ultrasonography. On 30.10.2023, the patient reported pelvic tenderness located on the right pelvis, unaffected by conservative treatment. The β -hCG value was 12490 mIU/ml. We performed follow-up ultrasonography, and we found a fetal sac located high in the right uterine horn, which was surrounded by myometrium. The diameter of the fetal sac was 9.9 mm. It corresponded to 5 gestational weeks and 5 days, with amenorrhea of 6 weeks and 6 days. A hyperplastic endometrium 21 mm thick was observed separately. There is a clear border of myometrium between the amniotic sac and endometrium. Right ovary with a yellow body 1.35 mm in diameter. Left ovary - normal. No freely mobile fluid in the pelvis. Figures 2, 3 and 4 present the findings described (Figs. 2, 3, 4).

Fig. 2. 2D vaginal ultrasonography of the uterus. A fetal sac with a diameter of 9.9 mm, corresponding to 5 gestational weeks and 5 days (amenorrhea of 6 weeks and 6 days), is visualized. It is located high in the right uterine horn and is completely surrounded by myometrium.



Fig. 3. 2D vaginal ultrasonography with color Doppler of the uterus and right ovary. In one slice, the fetal sac located in the right uterine horn and the right ovary with a yellow corpus of pregnancy are visualized.

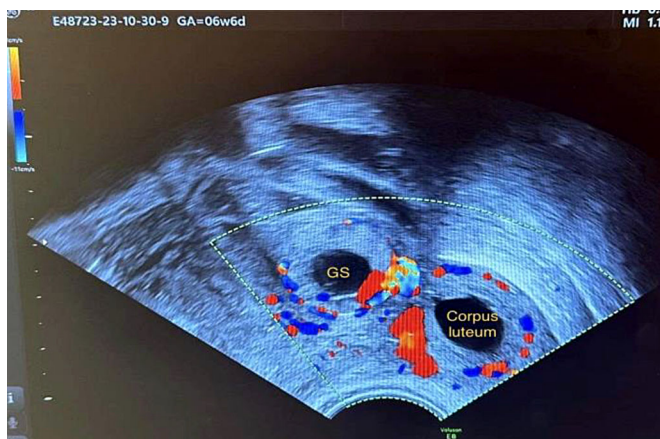


Fig. 4. 2D vaginal ultrasonography of the uterus. Absence of a fetal sac in the uterine cavity. Hyperplastic endometrium with thickness 21.02 mm at 6 weeks and 6 days of amenorrhea.



The patient was referred for an MRI of the pelvis: “Uterus in AVF, with superior border dimensions and preserved sagittal features. On this background, in the area of the right uterine horn in the tunica muscularis, immediately below the right fallopian tube and without lig ovarian proprium dex. involvement, an oval area suggestive of a gestational sac measuring 22x20 mm. Thickened endometrium filling the uterine cavity. Ovaries are situated in the usual place, with hyperintense follicles. In the right ovary, a hyperintense zone of T2 and a hypointense zone of T1, measuring 13x11 mm, most probably a corpus luteum of pregnancy. Diagnosis: The described finding suggests ectopic pregnancy located in the muscular layer of the right uterine horn” (Figs. 5, 6).

Fig. 5. MRI picture of the pelvis. In the area of the right uterine horn in the tunica muscularis, an oval area is suggestive of a gestational sac. The localization of the gestational sac is clearly visualized - there is no communication with the endometrium.

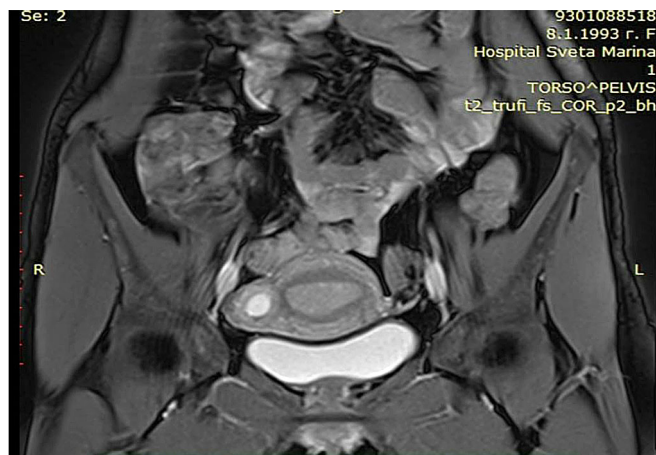


Fig. 6. MRI picture of the pelvis. In the area of the right uterine horn in the tunica muscularis, an oval area, suggestive of a gestational sac, with a diameter of 20 mm.



After the informed consent was discussed and signed by the patient, on 30.10.2023 at University Hospital “St. Marina”- Plevna, Bulgaria, under general anesthesia, an Abrasion probatoria. Laparotomia a modo Pfannenstiel. Resectio cornualis dextra. Extirpatio graviditas interstitialis dextra. Salpingectomy dextra. Sutura uteri. Lavage and Drainage was performed. In Figure 7, we present the intraoperative findings (Fig. 7).

Histological result: “Spongy decidua. Myometrium with endometriosis with decidualization and presence of trophoblast. Fallopian tube with pseudofollicular salpingitis”. The β -hCG value 48 hours after surgery was 3498.2 mIU/ml. The patient tolerated the surgery well and was dehospitalized on the third postoperative day. We found a gradual decrease in β -hCG values. They were monitored three times after the dehospitalization: β -hCG, 622.4 mIU/ml (06.11.2023); β -hCG, 156.2 mIU/ml (10.11.2023); β -hCG, 0.29 mIU/ml (18.12.2023).

The patient underwent a follow-up ultrasonographic examination three months after surgical treatment. A hyperechogenic area in the myometrium of the right uterine horn measuring 10 x 7 mm was visualized (fig. 8).

Fig. 7. Macroscopic view of Interstitial pregnancy, located in right uterine horn.



Fig. 8. A hyperechogenic area in the myometrium of the right uterine horn measuring 10 x 7 mm. The endometrium, with a thickness of 7 mm, adequate to the phase of the menstrual cycle, was seen separately.



DISCUSSION:

Late-diagnosed interstitial pregnancy is a life-threatening condition. Due to the low incidence of this condition, it is necessary to include it in the differential diagnosis of cases with abdominal pain, amenorrhea, positive urine pregnancy test, with or without genital bleeding and absence of gestational sac in uterine cavity ultrasonography. The Timermann team notes that the diagnosis of interstitial pregnancy should be considered if the β -hCG value is above 2000 mIU/ml and vaginal ultrasonography does not reveal a gestational sac in the uterine cavity [8]. A number of authors have suggested vaginal ultrasonography as the main diagnostic method in suspected interstitial pregnancy. As early as 1992, ultrasonographic criteria for interstitial pregnancy were described. They coincide with the ultrasonographic findings of the case we presented: absence of a gestational sac in the uterine cavity, gestational sac localized outside the endometrium, gestational sac surrounded by a hyperechogenic layer of myometrium [9, 10]. The Brincat team's experience has shown that 3D ultrasonography is not sufficiently informative in cases of interstitial pregnancy compared with 2D ultrasonography [11]. With advances in technology, nuclear magnetic resonance imaging of the pelvis is being incorporated into diagnostic imaging modalities in ectopic pregnancy. It helps clinicians visualize the exact localization of the gestational sac to determine its distance from the endometrium and uterine serosa and to refine the diagnosis. In addition, it is a safe method for the patient's health. It is crucial for early diagnosis to perform pelvic MRI in case the information from ultrasonography is doubtful [12, 13]. Two clinical approaches to ectopic pregnancies have been described in the specialized medical literature: conservative and operative. A number of authors share their experience in treating this condition with Methotrexate. The prerequisites are early diagnosis, asymptomatic ectopic pregnancy, hemodynamic stable patient and β -hCG value <10000 mIU/ml and desire for future pregnancy. In favor of conservative treatment of interstitial pregnancy, some authors report a risk of profuse bleeding during laparoscopic cornual resection. A consequence of this is the formation of a rough cicatrix located in the area of the uterine horn. In such cases, any subsequent pregnancy carries a risk of uterine rupture and should be monitored as a high-risk pregnancy. Another conservative method applied in this diagnosis is uterine artery embolization. However, endometrial atrophy and an unfavorable prognosis for fertility are reported as a result [14, 15]. In 2017, Liao's team postoperatively observed 29 women who underwent surgical cornual resection. Only two of them were diagnosed with cicatrix rupture [16]. Contemporary authors report their experience with the laparoscopic surgical approach.

According to them, laparoscopic evacuation of the fetal sac and subsequent suturing of the uterus is a reliable and safe therapeutic method [17]. Another team compared clinical outcomes after laparoscopic cornuotomy and laparoscopic cornual resection. They concluded that the results were comparable. In their scientific paper, Under experimental conditions, the possible implantation of a fertilized egg into the colonic wall of rats has also been established. As a result, neurotransmitter consequences were found in its longitudinal and circular muscles [18, 19, 20].

CONCLUSION:

In cases of interstitial pregnancy, early diagnosis is crucial for successful treatment and patient health. The availability of modern ultrasonographic and MRI equipment is a prerequisite for accurate identification of ectopic pregnancy. Adequate management of these patients depends on the experience of the physician, the duration of the ectopic pregnancy, its location, and the patient's condition.

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