

Ruptured Corpus Luteum Cyst in Early Pregnancy: A Case Report

Snežana Vidaković^{1,2}, Milan Dokić^{1,2}, Zoran Vilenđević¹, Maja Djakonović Maravić¹

¹Clinic for Gynaecology and Obstetrics, Clinical Center of Serbia, Belgrade, Serbia;

²School of Medicine, University of Belgrade, Belgrade, Serbia

SUMMARY

Introduction Transvaginal sonography and human chorionic gonadotropin (hCG) testing are cornerstones of modern clinical practice in cases with the suspected ectopic pregnancy. In unclear cases, if the level of hCG is above the discriminatory zones, the use of uterine curettage is recommended. There is an increasing concern that strict observation of the guidelines would potentially harm otherwise normal early intrauterine pregnancies in certain cases.

Case Outline A 35-year-old woman was admitted to hospital due to a severe lower abdominal pain. Based on the positive pregnancy test and sonographic exams which failed to demonstrate intrauterine pregnancy, the diagnosis of ectopic pregnancy was presumed. Laparoscopy revealed ruptured corpus luteum cyst and the diagnosis was confirmed on histopathological finding. Postoperatively, normal intrauterine gestation was visualised.

Conclusion Since the diagnosis of early pregnancy and its complications can be misleading, in unclear cases, we support the expectative "wait and see" management consisting of serial hCG testing and repeated ultrasound examinations. Avoidance of uterine curettage in such unclear cases would further reduce the possibility of normal early pregnancy interruption.

Keywords: pregnancy of unknown location; human chorionic gonadotropin; discriminatory zone; ectopic pregnancy; transvaginal ultrasonography

INTRODUCTION

The combination of positive pregnancy test and absence of the intrauterine gestational sac on sonographic exam places a woman at high risk of ectopic pregnancy. These diagnostic procedures are not specific and can also be seen in normal early intrauterine pregnancies which are too early to visualise. Historically, the introduction of "discriminatory zones" for human chorionic gonadotropins (hCG) facilitated the diagnosis and management of ectopics, thus significantly reducing the associated morbidity and mortality. Although the introduction of transvaginal sonography further reduced hCG discriminatory levels, there is an increasing concern that procedures performed in unclear cases can harm normal intrauterine pregnancies.

Corpus luteum cyst is a functional cyst which is formed in the second phase of ovarian cycle. The natural history typically includes regression in the absence of pregnancy or regression after the first trimester of pregnancy and maturation of placenta. It is highly vascular structure and occasionally a subject of rupture. Blood loss is usually self-limited, but rarely can lead to massive hemoperitoneum and even death. Due to variable clinical presentation and sonographic appearance, the potential for misdiagnosis is high.

We present a case of the ruptured corpus luteum cyst in early pregnancy which was misdiagnosed as an ectopic pregnancy.

CASE REPORT

Following the sudden onset of severe lower abdominal pain, a 35-year-old woman was admitted to our institution. After admission, we noted the changing characteristic of pain which was now weaker and diffusely spread through the abdomen. The symptoms started few hours after the sexual intercourse. She was hemodynamically stable and had no other symptoms. Although having regular cycles, she reported that her period was late 6 days. Her reproductive history included one cesarean section and two spontaneous abortions.

There was no peritoneal irritation on clinical exam, but the presence of the right adnexal tumor sized approximately 5 centimeters was noted. Ultrasound exam supported clinical finding and demonstrated a heterogeneous formation in the right adnexal region sized 5×4 cm. Endometrial lining measured 13 mm. A small amount of free abdominal fluid was also evident. The uterus and left adnexal region appeared normal. Serum hCG assay was positive and showed the value of 2550 IU/l. The ultrasound exam was repeated on the following day. The scan showed an increased amount of free abdominal fluid and additional heterogeneous formation in the right adnexal region. The other formation, sized 6×3 cm, was located between the previously noted one and the uterus. Endometrium was non-homogenous and without clear appearance of gestational sac.

Correspondence to:

Zoran VILENDEČIĆ
Clinic for Gynecology and
Obstetrics
Clinical Center of Serbia
Dr Koste Todorovića 26
11000 Belgrade
Serbia
zoran.vilendecic@gmail.com

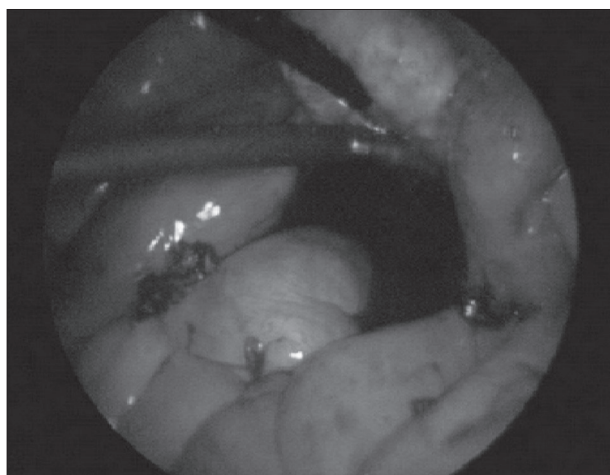


Figure 1. Laparoscopic view of the cul-de-sac and hematoperitoneum

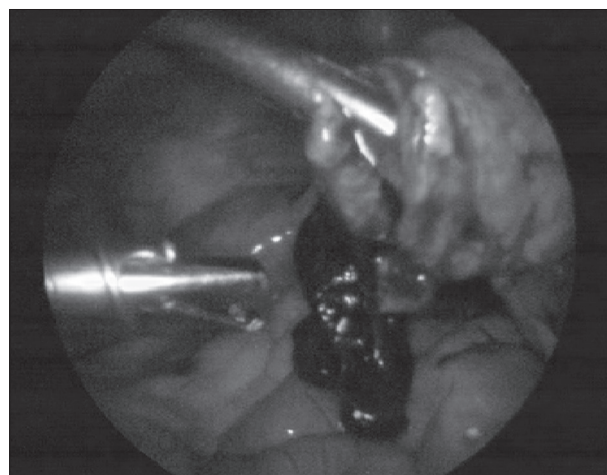


Figure 2. Ruptured cyst of the right ovary with blood clots

Ultrasound scan and laboratory findings were indicative of tubal abortion and we decided to perform laparoscopy.

During laparoscopy, hematoperitoneum with approximately 300 ml of partially coagulated blood was observed (Figure 1). Omentum was attached to the anterior abdominal wall by fibrin adhesions. The pelvis was thoroughly examined following the deliberation of omentum and removal of the blood and clots around the right ovary and cul-de-sac. The main finding was a ruptured cyst of the right ovary measuring 3-4 cm with visible site of active bleeding (Figure 2). The uterus, both fallopian tubes and left ovary appeared normal. Laparoscopic cystectomy and suture of the right ovary were carried out. Transvaginal ultrasound exam was intraoperatively repeated in attempt to visualise the intrauterine gestation. Once more, ultrasound failed to clearly demonstrate the intrauterine pregnancy. On the other hand, the absence of ectopic pregnancy, positive hCG and thickening endometrium were speculative of intrauterine pregnancy. Having the background information of desired pregnancy, we decided to end the intervention.

The postoperative period was uneventful. Progesterone therapy was started immediately after the surgery. Pregnancy testing was repeated on postoperative day 4 and showed hCG value of 4668 IU/L. Ultrasound exam demonstrated gestational sac measuring 6 mm without visible embryo or yolk sac. Based on gestational sac diameter and hCG value, the patient was at the beginning of the 6th week of pregnancy. She was discharged from hospital the same day. Pregnancy course was normal and she had regular check-ups at our hospital. The second admission to hospital was for term pregnancy. The cesarean section was performed at completed 38 weeks of gestation. She delivered a healthy male baby weighing 3750 g with Apgar score of 8.

Diagnosis of the ruptured corpus luteum cyst was confirmed histopathologically.

DISCUSSION

Pregnancy should be taken into consideration in any reproductive age woman experiencing lower abdominal

pain or vaginal bleeding. Positive pregnancy test and the absence of the intrauterine gestational sac on ultrasound exam place a woman at high risk of ectopic pregnancy [1]. In such a case, our efforts should be directed toward ruling out the ectopic pregnancy.

The distinction between normal early pregnancy and early pregnancy complications can be quite challenging. Visualization of a gestational sac within the uterus is the earliest sonographic confirmation of an intrauterine pregnancy. Prior to this, thickening of the endometrium or intradecidual sign might be recognized, but these can not be taken as reliable indicators of pregnancy. Thickening of the endometrium can be seen in the late luteal phase of the menstrual cycle, in the very early intrauterine pregnancy, in ectopic pregnancy or in association with early pregnancy resolution. Similarly, decidual cyst or pseudogestational sac could be interpreted as intradecidual sign. If the pregnancy test is positive and a clinician fails to visualize intrauterine pregnancy, the possible reasons could be normal intrauterine pregnancy that is too early to visualize, abnormal intrauterine or ectopic pregnancy. Using the approach consisting of serial hCG testing, ultrasound examinations, and occasionally uterine curettage will eventually classify pregnancies of unknown localizations to one of the above-mentioned groups. Due to non-specific nature of negative pregnancy scan, discriminatory zones of hCG were introduced [2, 3]. The concept of combining ultrasound with hCG testing using the discriminatory zones has been well described in literature [4-9]. Nevertheless, discriminatory levels are without clear cut-off values and range from 1,000 to 2,500 IU/L for transvaginal sonography. These levels are dependent upon the quality of the ultrasound equipment, the experience of the sonographer or the presence of misleading factors such as fibroids and multiple pregnancies. The next step in unclear cases with hCG above discriminatory level is uterine curettage, a step which could ultimately lead to termination of otherwise normal pregnancy [6, 10]. In a study by Doubilet and Benson, the highest value of hCG with negative initial ultrasound exam that preceded a live birth from term pregnancy was 4336 IU/L [8]. In a retrospective analysis of the clinically suspected ectopic

pregnancies, 51 out of 128 patients had hCG level above 2000 IU/L [11]. In a subgroup of patients who were not immediately treated for ectopic pregnancy, 33% had normal intrauterine pregnancy on follow-up. Use of second and third hCG value reduced misclassification of normal pregnancies as ectopics from 7.7 to 2.7%, respectively [12].

The majority of corpus luteum cysts remain clinically silent during pregnancy. The most frequently observed complication is a rupture of the cyst, although cases with the adnexal torsion have been described [13]. The ultrasound appearance of ruptured corpus luteum cyst depends on the size of the lesion, intensity of bleeding and time interval between the scan and hemorrhagic event [14, 15]. The spectrum of ultrasound findings ranges from hemoperitoneum without visible cyst to well defined ovarian lesion with the light abdominal hemorrhage. Further more, the sonographic identification of ectopic pregnancy, even in high-risk patients, lacks sensitivity. Visualisation of the corpus luteum can aid detection of an ectopic pregnancy because approximately 78% of ectopic pregnancies will be ipsilateral to the corpus luteum. Due to its variable nature, it is sometimes difficult to differentiate the complicated

corpus luteum from the ectopic pregnancy. Since the ultrasound picture can be non conclusive or can mimic ectopic pregnancy, the distinction largely depends on hCG testing. Generally, a positive hCG indicates ectopic pregnancy and a negative hCG suggests ruptured ovarian cyst. Furthermore, there are reports showing the coincidental presence of ruptured ovarian cyst with the intrauterine, ectopic or heterotopic pregnancy [16, 17, 18].

Regarding the treatment, diagnostic and therapeutic potential of laparoscopy was utilized. These features are underlined particularly in cases with the uncertain preoperative diagnosis. Diagnosis can be established with the minimal trauma to a patient, and if needed, surgery can be done in reasonable time with the conservative approach and with the superior postoperative course.

Since the diagnosis of early pregnancy and its complications can be misleading, in unclear cases, we support the expectative "wait and see" management consisting of serial hCG testing and repeated ultrasound examinations. Avoiding the uterine curettage in such unclear cases would further reduce the possibility of normal early pregnancy interruption.

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Руптура цисте жутог тела у раној трудноћи – приказ болесника

Снежана Видаковић^{1,2}, Милан Докић^{1,2}, Зоран Вилендечић¹, Маја Ђаконовић Маравић¹

¹Клиника за гинекологију и акушерство, Клинички центар Србије, Београд, Србија;

²Медицински факултет, Универзитет у Београду, Београд, Србија

КРАТАК САДРЖАЈ

Увод Трансвагинални ултразвук и одређивање хуманог хорионског гонадотропина (*hCG*) јесу основа савремене клиничке праксе онда када се сумња на ектопичну трудноћу. У нејасним случајевима, уколико је вредност *hCG* изнад тзв. дискриминаторне зоне, препоручује се киретажа, као следећа дијагностичко-терапијска мера. Међутим, постоји забринутост да би стриктно праћење смерница у водичу добре клиничке праксе могло оштетити нормалну рану интраутерину трудноћу код неких жена.

Приказ болесника Жена стара 35 година примљена је у болницу због јаких болова у доњим партијама абдомена. Дијагноза ектопичне трудноће је постављена на основу позитивног теста на трудноћу и ултразвучног прегледа током којих није уочена интраутерина трудноћа. Током лапаро-

скопије установљено је да је у питању руптурирана циста жутог тела. Ова дијагноза је потврђена хистопатолошким прегледом. У постоперационом периоду је визуелизована нормална интраутерина трудноћа.

Закључак Будући да дијагноза ране трудноће и њених компликација може бити проблематична, у нејасним случајевима подржавамо експектаивни приступ, који се састоји од серијског праћења промена вредности *hCG* и поновљених ултразвучних прегледа. Избегавање киретаже утеруса у нејасним случајевима смањује могућност прекида нормалне ране трудноће.

Кључне речи: трудноћа нејасне локализације; хумани хорионски гонадотропин; дискриминаторна зона; ектопична трудноћа; трансвагинални ултразвук

Примљен • Received: 14/02/2012

Прихваћен • Accepted: 20/03/2013