

CASE REPORT

A case report of an ovarian ectopic pregnancy. A diagnostic dilemma

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ABSTRACT

Ovarian ectopic pregnancy (OEP) is a rare entity. It accounts for 3% of all ectopic pregnancies. We present a case of a nulliparous 27-year-old woman admitted to the hospital with lower abdominal pain. Clinical examination, laborato-

ry values and imaging suggested ruptured ectopic pregnancy. The diagnosis of ruptured ovarian ectopic pregnancy was established during exploratory laparotomy, which was confirmed by the histopathological examination.

KEY WORDS

Ovarian pregnancy, ectopic pregnancy, low β -hCG, TVS imaging

Introduction

Ectopic pregnancy (EP) is defined as the implantation of the blastocyst in a location outside of the uterine cavity. The majority occur in the fallopian tube (96%), with ampulla being the most common location (70%). Isthmus ectopic pregnancy accounts for 12% and fimbrial for 11.1%. Interstitial location can be found in 2.4% of ectopic pregnancies, whereas abdominal is the rarest with 1.3% frequency. Here we present a case of ovarian ectopic pregnancy which accounts for 3.2% of all ectopic pregnancies.¹

The diagnosis of an ectopic ovarian pregnancy is often challenging. A high index of suspicion is necessary

to make an early diagnosis. The exact etiology of ovarian ectopic pregnancy is still missing, yet there are a few theories involving ovulatory dysfunction, the egg is fertilized while still within the follicle²⁻⁴. Most OEP seem to be secondary due to the reflux of a fertilized ovum from the fallopian tube to the ovary. Risk factors, signs and symptoms of an OEP are not sensitive or specific enough to establish a definitive diagnosis. Transvaginal Ultrasound (TVS) with the combination of beta-human chorionic gonadotropin (β -hCG) serum levels are valuable tools for the diagnosis. Transvaginal ultrasonography has a discriminatory zone of β -hCG between 1,000 and 1,500 mIU/mL.⁵ An ectopic pregnancy can be suspected if the

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Figure 1: TVS image, Star: Ovary, Arrow: Echogenic mass

TVS examination does not detect an intrauterine gestational sac when the β -hCG level is higher than 1,500 mIU/mL. In our case β -hCG serum levels were lower than 1500 mIU/mL, thus a gestational sac could not be visible using a TVS, making it particularly difficult to establish a diagnosis using clinical methods.

Case

A nulliparous 27-year-old woman presented to the Emergency Department of our Hospital with sudden lower abdominal pain. She has had unremarkable past medical and surgical history. History of use of any form of contraception and she was a non-smoker. Her last menstrual period was 1 month ago and her menstruation cycle was regular. Physical examination showed a heart rate at 90 beats/min and a blood pressure of 120/78 mmHg. She had abdominal tenderness at the hypogastric area. The laboratory analysis, at the time of admission, revealed a total white blood cell count (WBC) of 14,300/mm³, hemoglobin (Hgb) of 13.1 g/dl, hematocrit (Htc) of 40 %, positive urine pregnancy test followed by a serum test for β -hCG which was 448.87 mIU/mL.

Transvaginal sonography was performed, which showed a normal-sized uterus with no intrauterine gestational sac. However, the presence of an inconclusive echogenic mass at the outer edge of the right ovary was observed (Image 1), giving the impression of a pseudo-

sac and a heterogeneous liquid and blood clots in the pouch of Douglas. Multiple intraovarian cysts were identified in the area of the right ovary. Her left ovary seemed to be unaffected. The combination of the ultrasound findings along with β -HCG quantification and patient's clinical status raised the suspicion of a ruptured ovarian ectopic pregnancy. Even though there was a high index of suspicion for an OEP, a ruptured corpus luteum cyst cannot be excluded since β -hCG levels, confirmed in two consecutive measurements, are relatively low. The surgical treatment of the patient was decided, due to the hemodynamic instability.

Exploratory laparotomy was performed. It revealed a hemoperitoneum of approximately 500 ml. The right ovary was 4x3 cm in size with a hemorrhagic mass on its surface (Image 2). Wedge resection was performed followed by primary repair, during which an unidentified mass was retrieved. Histological examination of the specimen revealed a ruptured ectopic ovarian pregnancy. Multiple ovarian cysts were observed underneath the rupture.

Early postoperative period was uneventful and β -hCG levels were reducing gradually reaching 39 mIU/mL three days after the operation, ruling out the possibility of a coexisting intra-uterine pregnancy. Subsequently, patient was discharged on postoperative day three. Follow up β -hCG levels were reduced to 15 mIU/mL on day 14 postoperatively.



Figure 2: Intraoperative image of a hemorrhagic mass at the outer edge of the right ovary.

Discussion

We present a case of a nulliparous 27-year-old woman with signs of ectopic pregnancy. TVS suggested the presence of an ovarian mass and hemoperitoneum. Laparotomy revealed a ruptured ovarian mass and histology confirmed a ruptured OEP.

Several risk factors for ectopic pregnancy have been identified. The risk of EP is associated with previous EP, previous pelvic inflammatory disease and other genital infections such as Chlamydia trachomatis infection, history of infertility, in vitro fertilization and embryo transfer, previous adnexal surgery, previous appendectomy and previous use of intrauterine devices.³ Additionally, EP risk is increased with age, smoking and spontaneous or induced abortions.¹ Our patient however had no medical or surgical history, she was a non-smoker and never used contraceptives.

Patients with ectopic pregnancy may present symptoms of a normal early pregnancy, such as interruption of the normal menstrual period, nausea, vomiting and fatigue. Furthermore, the most common clinical manifestation of ectopic pregnancy is first-trimester vaginal bleeding with or without abdominal pain.⁷ Less commonly, EP presents with hypovolaemic shock secondary to acute intra-abdominal bleeding. Some women, however, can be asymptomatic.⁸ In our case, the 29-year-old presented at the ER with acute lower abdominal pain.

Transvaginal Sonography (TVS) is an essential tool for a pre-operative diagnosis with an increasing degree of

certainty. Ultrasonic images suggestive of OEP are a wide echogenic ring with a small internal echolucent area.⁹ However, resection of ectopic pregnancy tissue followed with histological confirmation is still the gold standard for the diagnosis. In 1878 Spiegelberg established four criteria for the diagnosis of ovarian pregnancy: the fallopian tube on the affected side must be intact, the gestation sac should occupy the position of the ovary, ovary and sac must be connected to the uterus by the ovarian ligament, and ovarian tissue must be histologically present in the sac wall.¹⁰

Our case was unique in terms of symptomatic manifestation, risk factors and clinical indications, putting us in a diagnostic dilemma. Our patient presented with acute lower abdominal pain without vaginal bleeding. She had no risk factors for ectopic pregnancy and β -hCG serum levels were low, raising several clinical questions. The existence of 448.87 mIU/mL of β -hCG indicates a pregnancy. However, at this level, the gestational sac cannot be visualized within or outside the uterus with the use of TVS. Even though there is a high index of suspicion for an OEP, a ruptured corpus luteum cyst cannot be excluded. In our case, we proceeded to exploratory laparotomy, due to the impended hemodynamic instability of the patient.

TVS is the most frequent tool used for the differential diagnosis of ectopic pregnancy¹¹. Taking into consideration the dilemma presented in our case, amendment of diagnostic modalities could be of value in the future research.

Conclusion

An ovarian ectopic pregnancy is a rare entity in everyday clinical practice. We present a case of a nulliparous 27-year-old woman with no medical history with a ruptured ovarian ectopic pregnancy. The diagnosis was established with histopathological examination of the surgical specimen.

The diagnosis of ovarian EP may be challenging. High

suspicion along with a systemic and robust approach of clinical information (symptoms and imaging), will aid in order to minimize diagnostic dilemmas and guide further surgical management. ■

Conflict of Interest

None declared

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