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CASE REPORT

Primary Ovarian Pregnancy Detected Ultrasonographically and Solved Laparoscopically

Milan Terzic MD,
Bojan Stimec MD,
Sanja Maricic MD,
Darko Plecas MD.

Department of Ob/Gyn, School of Medicine, University of Belgrade, Visegradska 26, 11000 Belgrade, YU

ABSTRACT

A 28-year-old woman was admitted with a serum hCG level of 896 mIU/mL on cycle day 56. Transvaginal sonography revealed an empty uterus, and a 25mm ring-like thick-walled hyperechoic structure within the right ovary. The echoic ring was surrounded by irregular, hypoechoic structures suggestive of an ovarian pregnancy with periluteal hemorrhage and blood clots. The ruptured cystic ovarian pregnancy and the corpus luteum were removed laparoscopically. Microscopic examination showed isolated chorionic villi within hemorrhagic areas in the vicinity of the corpus luteum.

Key words: laparoscopy, ovarian pregnancy, transvaginal ultrasonography

Primary ovarian pregnancy is one of the rarest types of ectopic pregnancy, occurring approximately once in every 40,000 deliveries, or in 0.5-1% of all ectopic pregnancies. According to Spiegelberg this diagnosis should be made only if the Fallopian tube is found to be intact and clearly separated from the ovary and if the gestational sac is definitely situated within the ovary with ovarian tissue within its wall. The criteria for ovarian pregnancy diagnosis is 1. The Fallopian tube on the affected side must be intact. 2. The fetal sac must occupy the position of the ovary. 3. The ovary must be connected to the uterus by the ovarian ligament. 4. Ovarian tissue must be located in the sac wall.

The most common mechanism of such a pregnancy seems to be through cortical implantation of the ovum with subsequent fertilization taking place there. Recently, evidence has accumulated and unlike tubal gestation, ovarian pregnancy is associated with neither pelvic inflammatory disease nor infertility. The only risk factor associated with the development of an ovarian pregnancy is the current use of an intrauterine device. The mechanism of this phenomenon has not yet been elucidated.

Patients have symptoms similar to those of ectopic pregnancies at other sites. Misdiagnosis is common because it is confused with the ruptured corpus luteum in up to 75%. Ultrasonography has made preoperative diagnosis possible.

Therapeutical approach to the ovarian pregnancy has changed. Whereas oophorectomy has been advocated in the past, ovarian cystectomy has

nowadays become the preferred treatment, usually using laparoscopic techniques. Treatment with methotrexate or prostaglandin injection has also been reported.

We present a case of an ovarian pregnancy. Early diagnosis with correct localization was achieved through endovaginal sonography. Conservative treatment with laparoscopy was successful and uneventful.

Case Report

In January 2000 a 28-year-old nulligravida and nullipara, without any intraabdominal operation, was admitted to Endocrinology & Infertility Unit, suffering of amenorrhoea, lower abdominal pain, and palpable mass in ileocoecal region. On her cycle day 56th, she had a serum hCG level of 896 mIU/mL.

The patient was underwent transvaginal sonography, which presented an empty uterine cavity, decidually transformed endometrium up to 15 mm thickness, and a 25 mm ring-like thick-walled hyperechoic structure within the right ovary. The echoic ring was surrounded by irregular, hypoechoic structures suggestive of an ovarian pregnancy with periluteal hemorrhage and blood clots. There was also a small amount of hypoechoic liquid in the pouch of Douglas.

After a rapid preoperative evaluation the patient was referred to the laparoscopy ward. During the procedure, the above ultrasonographic findings were confirmed, with a streaking appearance of ruptured cystic ovarian pregnancy. The remnants of the ruptured cyst and the corpus luteum were removed via laparoscopy. In addition the abdominal cavity was thoroughly laparoscopically explored; no other pathological findings were noted.

Light microscopic examination of the removed surgical tissue showed isolated chorionic villi within hemorrhagic areas in the vicinity of the corpus luteum.

Discussion

Ovarian pregnancy is a rare form of ectopic pregnancy in which the gestational sac is implanted within the ovary. For a correct diagnosis of the ovarian pregnancy, the traditional criteria proposed by Spiegelberg must be fulfilled. Currently, the ectopic pregnancies are being diagnosed more early, mainly given the endovaginal echographic advances. Ultrasonographic image of ovary tumor is highly characteristic with double hyperechoic ring surrounding small hypoechoic field. In our case an early diagnosis has lead to a very conservative treatment in order to avoid a reduced fertility. However, it is many times an intraoperative diagnosis.

Grossly, a cystic hemorrhagic structure can be seen outgrowing from the surface or within the cortical portion of the ovary. On microscopic examination, placental villi should be identified, and if these cannot be located, the presence of multinucleated syncytial trophoblastic giant cells is sufficient evidence that a pregnancy has occurred in that area. Decidual cells are seen in the surrounding cyst wall. It is extremely unusual to find fetal parts in an ectopic pregnancy. If the Fallopian tube is also submitted, it should be carefully examined both grossly and microscopically to rule out any evidence of normal pregnancy, which, if present, would of course eliminate the diagnosis of an ovarian pregnancy.

If diagnosis is not established on time, ovarian pregnancy usually finishes in rupture which occurs before the end of the first trimester. It is then difficult to make out the integrity of the organs and in particular of the tube and indeed to recognize them. On the other hand, when the mass persists intact with the development of pregnancy in a retort shape, it is easy to see how confusion is possible and arises between it and an intrauterine pregnancy. In this case, however, the different anatomical forms are clear and an almost definite diagnosis can be made at the time of operation (the three first criteria of Spiegelberg). The diagnosis of ovarian pregnancy is never made before operation. The presence of ovarian tissue in the wall of the sac, which is the fourth criterion of Spiegelberg, is easier to recognize in early accidents than in advanced cases of ovarian pregnancy in which the parenchyma of the ovary is compressed, distended and laminated by the increasing development of the fetus

and the adnexae. The absence of the placenta being adherent to other organs than the ovary can then be kept as a worthwhile criterion of ovarian pregnancy.

A case of repeated, consecutive primary ovarian pregnancy on both ovary is described by Terzic et al. Studzinski et al. published a case of prolonged ovarian pregnancy with retention of the dead fetus for more than a year. Also, a case of primary ovarian pregnancy proceeding up to term superimposed by another intrauterine pregnancy is described. Compound extrauterine and intrauterine pregnancy is a rare obstetric phenomenon and still rarer is a primary ovarian pregnancy proceeding up to the term. This condition is usually diagnosed at laparotomy during the second trimester of current pregnancy. Usually, this diagnostic laparotomy is done because the ovarian pregnancy is mimicking an ovarian tumor. In one patient with a primary ovarian pregnancy complicated by severe preeclampsia and a presumed fetal anomaly the diagnosis was made at laparotomy at 30 weeks of gestation.

There is a presented case of a coexisting 11 week intrauterine and ectopic pregnancies in the 25 years old woman, which had earlier been operated on the left ovary dermoid cyst. That operation was regarded as an ectopic pregnancy risk factor, but the suspicion of an ectopic pregnancy has been suggested only by physical examination, and sonography and laparoscopy were most important in final diagnosis. This case has drawn the attention to the necessity of thorough diagnosis in pregnant women particularly in those ones with lower abdominal pain in early pregnancy and with unfavorable gynecological and obstetric past, for example appendages operation.

Medical therapy in ectopic and ovarian pregnancies in particular, can be a valid alternative to the surgical approach, since it can guarantee the reproductive function in a better manner. More and more attempts with methotrexate, which can induce the death of both embryo and trophoblastic tissue, are being made. Both its administration and results are still under debate. Apart from the method of administration, the prerequisites for a therapeutic success are: a small ovular sac (maximally 30mm) and no echographically visible embryo, which corresponds to a six-week pregnancy. The success of the therapy, therefore, depends on the precociousness of the diagnosis.

In conclusion one can say that further investigations are needed for the better understanding of ovarian function, and especially ovarian pregnancy achievement. Up to that time, contemporary diagnostic approach including vaginal ultrasonography and laparoscopic operations will solve all ovarian pregnancies.

References

1. Dawood MY. Laparoscopic surgery of the fallopian tubes and ovaries. Semin Laparosc Surg 1999;6:58-67.
2. Spiegelberg 0. Casuistik der ovaralschwangerschaft. Arch Gynaecol 1878;13:73-8.
3. Ferro PL, Badawy SZA, Berry CJ, Rooney M. Laparoscopic resection of an ovarian pregnancy in a patient using the copper T intrauterine device. J Am Assoc Gynecol Laparosc 1996;3:329-32.
4. Ercal T, Cinar 0, Mumcu A, Lacin S, Ozer E. Ovarian pregnancy; relationship to an intrauterine device. Aust N Z J Obstet Gynaecol 1997;37:362-4.
5. Hallatt JG. Primary ovarian pregnancy: a report of twenty-five cases. Am J Obstet Gynecol 1982;143: 55-60.
6. Kowalczyk D, Kubicki J. The role of transvaginal ultrasonography in early diagnosis of ectopic ovarian pregnancy. Ginekol Pol 1996;67:91-3.
7. Honigl W, Reich 0. Vaginal ultrasound in ovarian pregnancy. Ultraschall Med 1997;18:233-6.
8. Bontis J, Grimbizis G, Tarlatzis BC, Miliaras D, Bili H. Intrafollicular ovarian pregnancy after ovulation induction/intrauterine insemination: pathophysiological aspects and diagnostic problems. Hum Reprod 1997;12(2):376-8.
9. Van Coevering RJ, Fisher JE. Laparoscopic management of the ovarian pregnancy: a case report. J Reprod Med 1988;33:774-6.
10. Paulsson G, Kvint S, Labecker BM, LUstrand T, Lindblom B. Laparoscopic prostaglandin injection in ectopic pregnancy: success rates according to endocrine activity. Fertil Steril 1995;63:473-7.
11. Salas Valien JS ' Reyero Alvarez MP, Gonzdlez Mordn MA, Garcia Merayo M, Nieves Diez C. Ectopic ovarian pregnancy. An Med Interna 1995;12:192-4.
12. Studzinski Z, Branicka D, Filipczak A, Olinski K. Prolonged ovarian pregnancy: a case report. Ginekol Pol 1999;70:33-5.
13. Terzic M, Stimec B, Maricic S. Laparoscopic management of the consecutive ovarian pregnancy in patient with infertility: a case report. Reproductionsinedizin 2000; in

press.
14. Shahabuddin AK, Chowdhury S. Primary term ovarian pregnancy superimposed by intrauterine pregnancy: a case report. J Obstet Gynaecol Res 1998;24:109-14.
15. Seki H, Kuromaki K, Takeda S, Kinoshita K. Ovarian pregnancy diagnosed in the third trimester: a case report. J Obstet Gynaecol Res 1997; 23:543-6.
16. Jaszczynski P, Adamek K, Szczudrawa A. Intrauterine pregnancy complicated by coexisting ectopic pregnancy. Ginekol Pol 1996;67:317-9.
17. Annunziata, N, Malignino E, Zarcone R. Ovarian pregnancies treated with methotrexate. Panminerva Med 1996;38:190-2.