Am J Clin Exp Obstet Gynecol 2021;7(1):12-15
www.ajceog.us /ISSN:2330-1899/AJCE0G0123309

Case Report

Primary omental pregnancy: a case report and review of literature

Chenyang Dai[1], Manhong Tang[1], Jingyun Wang[1], Xingmei Xie[2], Yuxia Wang[3], Ruiman Li[4]

[1]Department of Obstetrics and Gynecology, The First Affiliated Hospital of Jinan University, Guangzhou 510632, P. R. China; [2]Department of Gynecology, The First Affiliated Hospital of Jinan University, Guangzhou 510632, P. R. China; [3]Department of Reproductive Medicine, The First Affiliated Hospital of Jinan University, Guangzhou 510632, P. R. China; [4]Department of Obstetrics, The First Affiliated Hospital of Jinan University, Guangzhou 510632, P. R. China

Received September 28, 2020; Accepted December 8, 2020; Epub February 15, 2021; Published February 28, 2021

Abstract: Primary omental pregnancy is a very rare kind of ectopic pregnancy. This article reports on a healthy 25-year-old female patient experiencing her first pregnancy, who only had pain in the left lower abdomen after 5 weeks of menopause, and none of the typical symptoms of ectopic pregnancy rupture. The serum level of the β subunit of human chorionic gonadotropin (β-HCG) and color Doppler ultrasonography findings of the patient were closely monitored during hospitalization, until the gestational sac was found beside the left ovary 5 days later. Diagnostic laparoscopic surgery revealed a lesion in the omentum of splenic flexure of the colon, which was removed. The intraoperative findings and postoperative pathological reports were consistent with the diagnostic criteria for primary omental pregnancy. Based on this case, emphasis must be put on the early diagnosis of abdominal pregnancy and clinicians being vigilant against rare diseases.

Keywords: Abdominal pregnancy, ectopic pregnancy, laparoscopy, omental pregnancy

Introduction

An ectopic pregnancy occurs when the fertilized egg implants outside the body cavity of the uterus, and has an incidence of 1-2% of all pregnancies [1]. The term abdominal pregnancy refers to the fertilized egg being localized out of fallopian tube, ovary, or broad ligament. It is a rare and serious type of ectopic pregnancy that accounts for about 1% of ectopic pregnancies. Omentum is the rarest site of embryo implantation in abdominal pregnancy [2]. Mortality rate of omental pregnancy is 7 times higher than that of ovarian pregnancy and 90 times higher than that of intrauterine pregnancy [3]. As far back as 1942, Studdiford [4] defined a primary abdominal pregnancy as (1) normal bilateral fallopian tubes and ovaries, (2) no uterine peritoneal fistula, and (3) pregnancy related exclusively to the peritoneal surface and early enough to discount secondary implantation following a primary nidation in the tube. Secondary abdominal pregnancy often occurs in a tubal pregnancy, and after aborting or rupturing the embryo falls into the abdominal cavity, while the chorionic villi continue to grow. Berghella et al. subsequently classified primary and secondary omental pregnancy based on whether or not new blood vessels or trophoblasts grow within the omentum [5]. Watrowski et al. recently reported that primary abdominal pregnancy tissue can continue to be implanted at other sites of the abdominal cavity [6]. In recent years, younger women show a higher incidence of abdominal pregnancy. In view of the fact that the clinical features and physical examinations, laboratory data, and ultrasound results are non-specific, the diagnosis of abdominal pregnancy is usually completed during the operation, which is still controversy about the use of laparotomy or laparoscopic surgery. We now report a case of primary omentum pregnancy diagnosed and treated by laparoscopic surgery, based on this case, emphasis must be put on the early diagnosis of abdominal pregnancy and clinicians being vigilant against rare diseases.

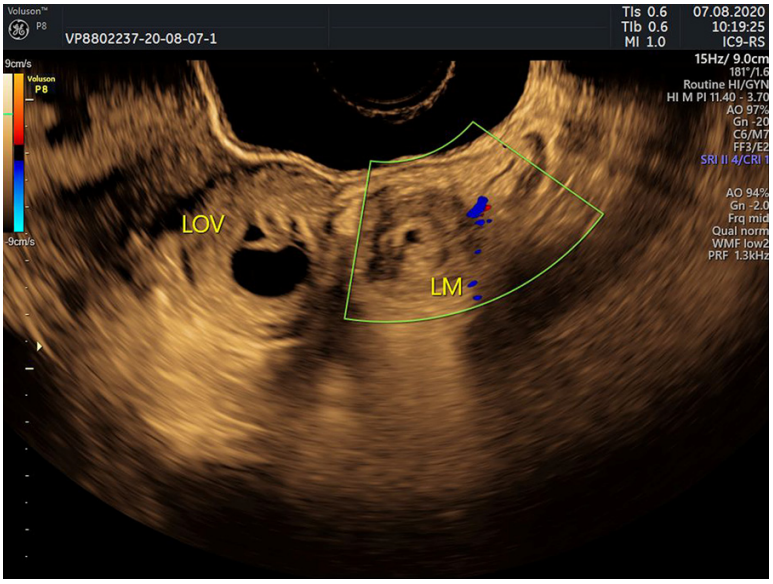

Figure 1. Transvaginal ultrasonography revealed an extrauterine pregnancy sac.

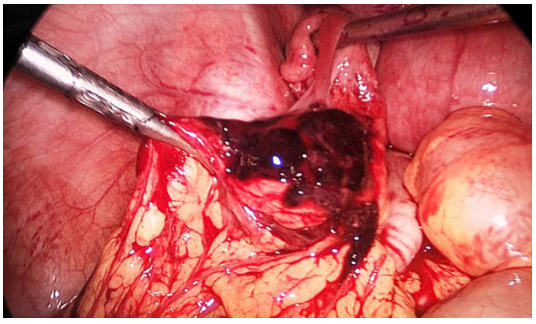

Figure 2. Omental ectopic pregnancy lesions was seen during operation.

Case report

A 25-year-old primigravida was brought to the emergency room because of unilateral left-sided abdominal pain and a positive urine pregnancy test 3 days earlier. Before this episode she had menses every 28 days, the last of which occurred 5 weeks previously. She initially experienced pain in the upper middle abdomen, which then moved to the lower left abdomen, with no gastrointestinal symptoms or vaginal bleeding. Her vital signs were stable, and tenderness in the left lower abdomen was revealed in a physical examination. No vaginal bleeding was present during the bimanual examination, and there was no pain during cervical movement. The quantitative serum level of the β-HCG was 981.22 mIU, hemoglobin was 125 g/L, and the serum amylase level was normal. Transvaginal sonography showed that the uterus was enlarged, the endometrium was 20 mm thick, and that there were uneven internal echoes. An inhomogeneous echo mass with an approximate size of 35 mm × 28 mm × 28 mm was seen in the area of the left-side appendix, with a clear boundary and signals of circular blood flow around it. No typical pregnancy sac was found inside or outside the uterus, and the accumulation of fluid in the cul-de-sac was noted.

The pain spontaneously disappeared 30 minutes later, and the patient was admitted to the hospital for close monitoring of ultrasonography findings and β-HCG levels, since the possibility of ectopic pregnancy was not ruled out. The β-HCG level increased to 3254.03 mIU after 2 days, and color Doppler ultrasound in the pelvic and abdominal cavity still showed no typical gestational sac. After 5 days, β-HCG had increased to 5166.36 mIU. Transvaginal sonography revealed a gestational sac-like echogenic mass of about 26 mm × 24 mm × 26 mm on the left side of the ovary (**Figure 1**), and no sac was observed in utero.

Laparoscopic surgery was performed on the patient to confirm the diagnosis. During the operation, the pelvic hemorrhage was about 100 ml, and a 2-cm × 3-cm brown mass was found embedded in the omentum, which slightly oozed blood on the surface (**Figure 2**). The uterus, bilateral appendages, the rest of the pelvic organs, and abdominal cavity were normal. The ectopic pregnancy lesions were then removed via a partial omentectomy performed laparoscopically. Endometrial curettage was performed, which yielded a small amount of endometrioid tissue. The β-HCG level decreased to 1025.86 mIU on the first day after surgery, and a histopathology report of the specimens confirmed chorionic villus (**Figure 3**). The serum β-HCG level had returned to normal after 3 weeks of outpatient follow-up.

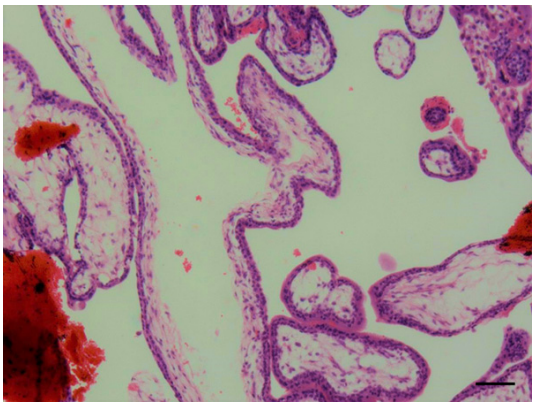

Figure 3. The histopathology of the specimen revealed the villi structure (magnification 10 × 20, scale bar = 50 μm).

Discussion

The present patient had no history of pelvic surgery or miscarriage, and omental pregnancy lesions were evident during the operation. There were no obvious abnormalities in the uterus or double appendages. The pathological examination of the resected part of the omentum showed the villous structure and trophoblast cells that allowed the diagnosis of primary omental pregnancy.

The nonspecific clinical symptoms and ultrasonography findings of an omental pregnancy make its early diagnosis difficult; instead, it is usually found only after the ectopic pregnancy lesion ruptures and hemorrhagic shock occurs. Few patients show symptoms of vaginal bleeding before the occurrence of such a rupture. The serum β-HCG level and ultrasonography remain the most common monitoring methods, and combined these with histopathological results allows an omental pregnancy to be distinguished from acute abdominalgia. CT and MRI are not commonly utilized to diagnose omental pregnancy due to the teratogenic effects of radiation on the fetus and also the high cost of MRI [7]. Patients with unclear early symptoms, a low serum β-HCG level, an empty uterus cavity, and stable vital signs should be admitted to the hospital for close monitoring of the β-HCG level and ultrasonography findings. Abdominal pain was the first symptom in the present case, and no typical manifestation of ectopic pregnancy rupture was detected. After admission, her serum β-HCG hardly increased exponentially. Ultrasonography was repeated every other day until a gestational sac-like mass was detected on the left side of the ovary. The diagnosis of primary omental pregnancy was confirmed during laparoscopic surgery, which demonstrates the difficulty of its early diagnosis.

Hemorrhagic shock can be caused by rupture of an abdominal pregnancy or the erosion of trophoblasts surrounding blood vessels and organs, and is associated with a maternal mortality rate as high as 20% [8]. There have been only a few reports of live births from abdominal pregnancies over the past 10 years. Therefore, the diagnosis of an abdominal pregnancy should lead to immediate termination being recommended to the patient, with the method of termination based on individual patient preferences. Methotrexate can be used to kill embryos for patients with a clear diagnosis, stable hemodynamics, low serum β-HCG level, low gestational age, and relatively safe embryo implantation sites. In contrast, surgical treatment is necessary for patients with an unclear diagnosis, unstable hemodynamics, high serum β-HCG level, high gestational age, and vascularized implantation sites. The surgical methods are divided into laparotomy and laparoscopy. The former is characterized by rapidly entering the abdominal cavity to stop bleeding, and so this approach is commonly applied to patients with hemorrhagic shock due to the rupture of an ectopic pregnancy. However, ongoing improvements in laparoscopic surgery are leading to increasing reports of its use in the diagnosis and treatment of primary abdominal pregnancy, especially in patients with stable hemodynamics. Its advantages include reducing blood loss and pain, accelerating gastrointestinal motility, and shortening the hospital stay [9]. A large prospective cohort study found that even for patients with unstable hemodynamics, experienced surgeons can achieve success rates of 70-100% using laparoscopic surgery [10]. The vital signs of our patient remained stable throughout the laparoscopic procedure, which was performed without complications. The patient was able to get out of bed at 12 hours after the operation. Her serum β-HCG decreased significantly on the first day after the operation, and 3 days later she was discharged in a stable condition. Her β-HCG level returned to normal over the 3-week follow-up.

Omental pregnancy is a rare type of ectopic pregnancy with extremely high fetal and maternal mortality rates, and it can be difficult to diagnose correctly. The lack of specific early clinical manifestations and findings of auxiliary examinations requires clinicians to be highly aware of the disease in their clinical diagnosis decision-making. Accurate judgments of the disease need to be made in a timely manner in those patients with no specific clinical symptoms other than β-HCG positivity detected by monitoring serum β-HCG changes and ultrasonography findings. MRI can be considered if the gestational sac is not found in continuous ultrasonography. The absence of abnormality in the bilateral fallopian tubes and ovaries during a laparoscopic exploration should prompt full explorations of the pelvic and abdominal tissues and organs, including the retroperitoneal vessels. The early detection, diagnosis, and treatment of abdominal pregnancy are the keys to reducing its high mortality rate, which requires the attention of all relevant medical staff.

Acknowledgements

Chenyang Dai and Manhong Tang have a common contribution to the article. We are also very grateful for the pathological pictures provided by the pathologist.

Disclosure of conflict of interest

None.

Address correspondence to: Dr. Ruiman Li, Department of Obstetrics, The First Affiliated Hospital of Jinan University, Guangzhou 510632, P. R. China. Tel: +86-020-38688603; E-mail: hqyyck@126.com

References

[1] Webster K, Eadon H, Fishburn S and Kumar G. Ectopic pregnancy and miscarriage: diagnosis and initial management: summary of updated NICE guidance. BMJ 2019; 367: l6283.

[2] Barel O, Suday RR, Stanleigh J and Pansky M. Laparoscopic removal of an abdominal pregnancy in the pelvic sidewall. J Minim Invasive Gynecol 2019; 26: 1007-1008.

[3] Yip SL, Tan WK and Tan LK. Primary omental pregnancy. BMJ Case Rep 2016; 2016: bcr2016217327.

[4] Studdiford WE. Primary peritoneal pregnancy. Am J Obstet Gynecol 1942; 44: 487-491.

[5] Berghella V and Wolf SC. Does primary omental pregnancy exist? Gynecol Obstet Investig 1996; 42: 133-136.

[6] Watrowski R, Lange A and Möckel J. Primary omental pregnancy with secondary implantation into posterior cul-de-sac: laparoscopic treatment using hemostatic matrix. J Minimally Invasive Gynecol 2015; 22: 501-503.

[7] Chen L, Qiu L, Diao X, Yue Q and Gong Q. CT findings of omental pregnancy: a case report. Jap J Radiol 2015; 33: 499-502.

[8] Bajis R, Paterson D and McElhinney B. Primary omental ectopic pregnancy: a case report. J Obstet Gynaecol 2019; 39: 560-561.

[9] Kelly A, Sowter M and Trinder J. The management of tubal pregnancy. Royal college of obstetricians and gynecologists (RCOG). Guideline No. 21, May 2004.

[10] Odejinmi F, Sangrithi M and Olowu O. Operative laparoscopy as the mainstay method in management of hemodynamically unstable patients with ectopic pregnancy. J Minim Invasive Gynecol 2011; 18: 179-183.