Case Report
An early extra peritoneal ectopic pregnancy successfully treated with laparoscopy: a case report

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Abstract: Abdominal pregnancy is very rare. Compared to normal and ectopic pregnancies, it has a higher maternal mortality, perinatal mortality and morbidity. We report the case of a 32-year-old G4P1 female of extra peritoneal ectopic pregnancy. There was a past history of tubal pregnancy on the right side in Dec 2012 and she was treated completely by an abdominal salpingectomy. The patient was again diagnosed as ectopic pregnancy due to the largely increased β-HCG, while the location of the sac was still not found. Transverse CT of the abdomen showed a low density circular shadow next to abdominal aorta at the fourth lumbar level. The patient was diagnosed with an abdominal pregnancy by ultrasound and then cured by laparoscopy. The combination of ultrasound and β-HCG plays an important role in diagnosing ectopic pregnancy. And laparoscopy cured the abdominal pregnancy successfully, when the effect of MTX in intramuscular injection on ectopic pregnancy was not significant.

Keywords: Extra peritoneal ectopic pregnancy, serum human chronic gonadotropin (HCG), ultrasound, laparoscopic surgery

Introduction
Abdominal pregnancy, a form of ectopic pregnancy that the embryo or fetus is growing and developing outside the womb in the abdomen, rather than in the Fallopian tube, ovary or broad ligament. And it has a higher chance of maternal mortality, perinatal mortality and morbidity compared to normal and ectopic pregnancies [1]. The gestational sac of abdominal pregnancy usually implants in the pelvis or on highly vascular areas such as the liver, spleen, and mesentery [2]. Abdominal pregnancy is rare and often misdiagnosed [3, 4], only 24 primary abdominal pregnancy cases had been reported by 2007 [5]. The growing placenta may be attached to several organs, including tube and ovary. Other rare sites have been the liver and spleen [6], giving rise to a hepatic pregnancy [7] or splenic pregnancy, respectively [8]. The maternal mortality rate is estimated to be about 5‰, about seven times the rate for ectopics in general, and about 90 times the rate for a “normal” delivery (1987 US data) [9]. Previous publications are shown in Table 1.

Case presentation
A 32-year-old woman, G4P1, was admitted to the Department of Obstetrics and Gynecology of our hospital because of 10652 mIU/ml β-HCG in blood and no pregnancy ultrasonographic intrauterine or extra uterine. The patient had a history of regular menses, and her last menstruation was 43 days before admission. At admission, she was asymptomatic, and the physical examination revealed no abdominal tenderness or rigidity. The gynecologic examination revealed no abdominal tenderness or rigidity. The ultrasonographic examination indicated a normal cervix and normal discharge with no tenderness of the uterus or adnexa. There was a past history of tubal pregnancy on the right side in Dec 2012 and she was treated completely by an abdominal salpingectomy.

At admission, she was asymptomatic, and physical examination revealed no abdominal tenderness or rigidity. The ultrasonographic examination indicated a normal cervix and minimal white discharge with no tenderness of the uterus or adnexa. The ultrasound showed that the endometrium was about 9 mm thick and there is no
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Table 1. Previous correspondent references

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Position</th>
<th>Age</th>
<th>GPAL</th>
<th>Medical history</th>
<th>Examination method</th>
<th>Therapy method</th>
<th>Reference no.</th>
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<tr>
<td>Tanase Y et al., 2013</td>
<td>In the omentum</td>
<td>32</td>
<td>G1PO</td>
<td>Myomectomy and an enucleation of left</td>
<td>β-HCG 8160 mIU/mL</td>
<td>Laparoscopic exploration</td>
<td>[18]</td>
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<td>Seol HJ et al., 2009</td>
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<td>ovarian cyst</td>
<td>Computed tomography</td>
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<td>Ke Huang et al., 2014</td>
<td>Attached to the lower end of the uterine wall</td>
<td>30</td>
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<td>Assisted reproduction and uterine surgery</td>
<td>MRI</td>
<td>Surgery</td>
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<td>Ngene NC et al., 2015</td>
<td>Ruptured subcapsular hematoma of the liver</td>
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<td>MRI</td>
<td>Surgery</td>
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<td>Yael Yagil et al., 2007</td>
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<td>33</td>
<td>G1PO</td>
<td>β-HCG 36,800 U/L</td>
<td>Β-HCG 8,240 U/L and</td>
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<td>Abi Khalil ED et al., 2016</td>
<td>Left tubal</td>
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<td>Primary infertility</td>
<td>MRI</td>
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<td>Pardal C et al., 2016</td>
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<td>Β-HCG 38,485.9 U/L and ultrasonography</td>
<td>Β-HCG 38,485.9 U/L and</td>
<td>Laparoscopic right total</td>
<td>[22]</td>
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<td>Patel C et al., 2016</td>
<td>Intra-abdominal ectopic pregnancy with the</td>
<td>26</td>
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<td>salpingectomy</td>
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<td>\Álvarez-Goris MP et al., 2015</td>
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<td>Β-HCG and MRI</td>
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<td>Laparoscopic right</td>
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<td>Bazán-Ruiz S et al., 2015</td>
<td>In left ovary</td>
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<td>Regular prenatal ultrasound</td>
<td>Transvaginal ultrasound</td>
<td>Laparoscopic left</td>
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</table>

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100,000 pregnancies [10]. A history of tubal disease, tubal surgery, previous ectopic pregnancies and extensive use of ART procedures in recent years have been considered as the major associated risk factors for the ectopic pregnancy [11-13]. If the patient has the risk factors such as a previous history of tubal surgery, ectopic pregnancy, the feasibility of ectopic pregnancy will increase to 54% [14].

Retroperitoneal ectopic pregnancy is a rare special type with an exceedingly rare occurrence because the retroperitoneal space is an extraordinary location [15]. Without gestational sac in the uterus or oviduct, the patient of retroperitoneal ectopic pregnancy had highly elevated β-hCG levels.

During acute laparoscopic surgery what was given under general anesthesia in this case, it is exceptionally rare that retroperitoneal pregnancy located between abdominal aorta and inferior vena cava and all treatments involve a risk of critical bleeding. The pathogenesis of retroperitoneal ectopic pregnancy is equivocal and the potential mechanisms in this case could be presumed: the patient who had a previous history of tubal surgery whose right tubal was removed two years ago, as an unintended adverse consequence of the salpingectomy, a fistula between the tubal stump and retroperitoneum space may occur [16]. Embryo transfers from uterine cavity to peritoneum spontaneous under its strong ability to migrate after the uterine cavity, and peritoneal connected directly may be the key to the retroperitoneal ectopic pregnancy [17].

In conclusion, the fallopian tube is the majority location of ectopic pregnancies [2]. Nevertheless, the salpingectomy may lead to an unusual site implantation that results in diagnostic and therapeutic predicament. Inspection of retroperitoneal space like CT or MRI is indispensable to confirm retroperitoneal ectopic pregnancy for the patient that has abnormal elevations of serum marker levels (β-hCG) without gestational sac in the uterus or oviduct. Acute laparoscopic surgery should be given opportune to prevent the occurrence of uncontrollable bleeding.

Disclosure of conflict of interest

None.

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Figure 1. Transverse CT image: a low density circular shadow next to abdominal aorta at the fourth lumbar level. Red arrow indicates ectopic pregnancy sac; green arrow indicates abdominal aorta.

The β-hCG level decreased to 5263.00 mIU/mL the day postoperatively. The patient was discharged on the fourth postoperative day after an uneventful recovery.

Conclusion

It has been demonstrated that ectopic pregnancy is one of the highest risk causing of maternal mortality with an overall pregnancy-related mortality risk of 31.9 deaths per 100,000 pregnancies [10]. A history of tubal disease, tubal surgery, previous ectopic pregnancies and extensive use of ART procedures in recent years have been considered as the major associated risk factors for the ectopic pregnancy [11-13]. If the patient has the risk factors such as a previous history of tubal surgery, ectopic pregnancy, the feasibility of ectopic pregnancy will increase to 54% [14].

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Figure 2. Ultrasound image: the abdominal pregnancy sac was attached between the abdominal aorta (AO) and inferior vena cava (IVC). A. Gray scale longitudinal sonogram of the upper abdomen showing a mass with an anechoic center compatible with a gestational sac between the abdominal aorta and inferior vena cava. B. Color Doppler sonogram showing the blood flow of the abdominal aorta and inferior vena cava. C. Color Doppler sonogram noting a gestational sac with yolk sac and fetal pole. Red arrow indicates pregnancy sac; blue arrow indicates inferior vena cava; green arrow indicates abdominal aorta; yellow arrow indicates yolk sac and fetal pole.

Figure 3. A. Endoscopic findings: the abdominal pregnancy sac was in retroperitoneal and just next to the abdominal aorta. B, C. Ultrasound scalpel has been used to cut the lump completely. Red arrow indicates pregnancy sac.

Figure 4. The tissue extra peritoneal was confirmed to be the gestational sacs by Pathology. Histopathology sample of the surgically removed showing chorionic villi (hematoxylin-eosin, original magnification ×20). Blue arrow indicates lymph node infiltrated with embryotic tissue; red arrow indicates villous tissue; green arrow indicates syncytiotrophoblast.

References


[6] Anderson PM, Opfer EK, Busch JM and Magann EF. An early abdominal wall ectopic pregnancy successfully treated with ultrasound guided in-
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