Diagnosis and surgical therapy of the retroperitoneal ectopic pregnancy: A case report

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1. Introduction

Abdominal pregnancies account for 1% of all ectopic pregnancy cases and might be life-threatening [1]. Most ectopic pregnancies (around 95%) are located in the fallopian tubes, while the ovary and abdominal cavity are seldom involved. Retroperitoneal implantation of the embryo represents the scarcest type, and the timely diagnosis for this ectopic pregnancy type is always troublesome. Herein, a case of retroperitoneal pregnancy is reported in line with the surgical case report guidelines [2].

2. Presentation of case

A 34-year-old woman, gravida 2, parturition 0, was admitted via the emergency department on July 7, 2015 with the main complaint of missed period for 52 days and bellyache for 16 h. She had a regular menstrual cycle, and the last period was on May 16, 2015. She had no injury history or history of previous sexually pelvic inflammatory diseases or gynecological surgery. She complained that she was suffering from a bellyache radiating to the right waist, and symptoms including dizziness, flustered, fatigue, thirsty, and urinary incontinence. The urine pregnancy test revealed positive findings.

Physical examination revealed that: the blood pressure was 70/35 mmHg, pulse was 140/min, pale face, tenderness in the right lower quadrant and suprapubic area, signs of rebound tenderness and muscle tension (+), signs of shifting dullness (−). Gynecological examination showed a small amount of hemorrhagic secretions in the vagina; the pain of uterus lifts was obvious. Blood tests: blood hemoglobin (65 g/L), white blood cells (22.67 × 10^9/L), neutrophils percentage (0.928), blood HCG (6803 UI/L). The pelvic ultrasound assessment suggested that the uterine size was 4.9 × 4.1 × 4.2 cm, and the endometrial thickness was 1.1 mm without an intrauterine gestational sac (Fig. 1A). The ovarian tissue was normal (Fig. 1B). Free liquid was found in the pelvic cavity with a maximum depth of 2.17 cm (Fig. 1C). Aspiration puncture was conducted at the back vault and 5 ml bloody liquid was extracted. CT examination suggested that it was “retroperitoneal hemorrhage” in the right paraaortic region below the right kidney (Fig. 1D).

The patient was transferred to the operating room with the diagnosis of suspected retroperitoneal ectopic pregnancy. The laparotomy was performed and totally 300 mL of hemoperitoneum was collected. A thorough check-up was also performed in the operation field and we found that the liver, spleen uterus, fallopian tubes, and other pelvic organs were all normal with no evidence of pregnancy lesions.
A retroperitoneal mass with the size of 12 × 8 cm was found in the right lateral abdominal peritoneum region. The boundary of the mass was obscure. Additionally, a tiny defect with the size of 0.5 × 0.3 cm was found in the broad ligament. Then the retroperitoneal space was entered and a 2 × 2 × 2 cm hemorrhagic mass containing the ectopic pregnancy was carefully dissected out from surrounding tissues. Pathologic examination showed that the tissue was the chorionic villi (Fig. 1E). Therefore, the diagnosis of retroperitoneal ectopic pregnancy was verified. Control serum hCG tests were performed ten days after surgery with subsequently negative results (Fig. 1F). During the follow-up of 6 months, the patient recovered well without any complication. The patient’s permission was obtained for publishing these data.

3. Discussion

Retroperitoneal ectopic pregnancy (REP) is a rare gestation type with only several reported cases. Hitherto, no defined guideline is formulated for the diagnosis and clinical treatment [3–10]. Four mechanisms have been proposed for the abdominal location

Fig. 1. A) The pelvic ultrasound examination suggested that the uterine size was 4.9 × 4.1 × 4.2 cm, and the endometrial thickness was 1.1 mm without an intrauterine gestational sac. B) The ultrasound examination suggested that the ovarian tissue was normal. C) Free liquid was detected in the pelvic cavity with a maximum depth of 2.17 cm. D) CT examination suggested there was “retroperitoneal hemorrhage” in the right paraaortic region below the right kidney. E) Pathologic examination verified that the tissue dissected out from the retroperitoneal space was chorionic villi. F) Control serum hCG tests were performed ten days after surgery with subsequently negative results.
of an ectopic pregnancy in the in vitro fertilization and embryo transfer (IVF-ET) patients: a) spontaneous retrograde migration of the embryo after intrauterine transfer; b) iatrogenic placement of
embryo in the retroperitoneal space at the time of transfer due to uterine perforation; c) retroperitoneal implantation through a fistulous tract; d) transfer of the embryo from the uterine cavity to the retroperitoneal space through lymphatic channels similar to the metastasis of uterine cancer. In terms of the retroperitoneal pregnancy, three pathogenesis pathways for this ectopic pregnancy subtype are prevailing; some investigators suggest that the fertilized ovum reaches the retroperitoneal space via the lymphatic system [9]. Some investigators suggest that retroperitoneal embryo implants through a fistulous tract. Another explanation is that the embryo implants firstly on the peritoneal surface, and then reaches the retroperitoneal space by trophoblastic invasion through the peritoneum [8]. In the present case, intraoperative exploration right after the broad ligament of the lobe showed small congenital defects, which could lead to planting of free fertilized egg in retroperitoneal space. These defects may be considered as the risk factors for REP in the present case. The timely diagnosis of REP before massive hemorrhage is difficult, especially for those ectopic lesions that are located distantly from the uterine. The pregnancy may be inaccessible for vaginal ultrasonography, and the diagnosis is always readily overlooked. Generally, the diagnosis of REP is based on the following elements: a) The history of missed period; b) Sudden abdominal pain, low back pain without traumatic history; c) Positive signs of hemorrhage and lower abdominal tenderness, but always with negative signs of shifting dullness; d) Increased level of blood HCG; e) Imaging examinations show the mass is in the retroperitoneum without any gestational sac in the uterine canal.

The REP might cause retroperitoneal hemorrhage which would only be visible during surgery. Thus the completely diagnosis confirmation should be based on both the surgical and pathological results. If the admitted patients always fail to receive comprehensive auxiliary examinations the delayed diagnosis would result in passive condition assessments and insufficient therapeutic interruptions. In previous reports, surgical treatment was always performed due to the signs of significant intra-abdominal hemorrhage. Immediately after the removal of the retroperitoneal gestation which was discovered in surgery, no fatal intra-operative bleeding occurred and these patients eventually recovered well. This does not mean that the potential fatal complications do not exist. Especially in these regions with limited medical infrastructure resource and supportive measures, the surgery is always tricky for the retroperitoneum hematoma. If the REP is mishandled, complications such as the retroperitoneal vascular damage, quenchless hemorrhage, infection would be caused [11]. Conservative treatment with methotrexate (MTX) is another therapeutic strategy for tubal ectopic pregnancy, Which was administered systemically pre- or post operation [12,13]. Although none of the cases reached satisfactory effects by MTX administration alone, most authors reported subsequent resection of the gestational and hemorrhagic tissues with minimal blood loss after MTX treatment. Laparotomy can handle most disease of gynaecology, even some complex gynecological tumor surgery. In this study, the patients had hypotension and unstable vital signs, laparotomy is effective at this moment.

The following experiences derived from this case would enrich our knowledge of the REP: 1) These patients with a “missed period” history, higher blood HCG, and bloody vault puncture extraction without coagulation, might be readily misdiagnosed as the ordinary ectopic pregnancy; 2) Although no obvious mass is discovered by the ultrasonic examination, neither the accumulated fluid in pelvic cavity is evident, we should expand the ultrasonic scan range and enlarge the exploration scope, especially when the mild ultrasonic results are not in parallel with the severe hemorrhagic shock symptoms; 3) The REP might be easily misdiagnosed as the retroperitoneal hematoma for the lack of experiences or assistance from auxiliary examinations; 4) The lesions should be located exactly to exclude the possibility of REP, and the CT or MRI examination would be instrumental for diagnosis.

4. Conclusion

In summary, we have presented a rare case of REP. As the ectopic pregnancy could not be readily detected by laparotomy, unusual locations such as the retroperitoneum should be carefully examined. Moreover, the retroperitoneal surgery could act as an effective therapeutic strategy to alleviate this life-threatening complication.

Conflict of interest

The authors have no conflicts of interest to disclose.

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Ethical approval

This study were approved by the Institutional Review Board of PLA general hospital (Registration No. 2,016,030,306).

Consent

This study has ethics committee approval and fully informed written consent which be documented in the paper.

Author contribution

Yizhuo Yang, Zhongyu Liu, and Lian Li Complete preoperative diagnosis.
Yizhuo Yang and Hui Liu carried out the data collections.
Lei Song and Yuanguang Meng complete the operation.
Yizhuo Yang and Zhongyu Liu wrote the paper.

Registration of research studies

None.

Guarantor

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