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Case Report

Hysteroscopy in the treatment of intramural ectopic pregnancy: a case report

Aiwen Le[1], Rui Yuan[2]

[1]Department of Gynaecology, Huazhong University of Science and Technology Union Shenzhen Hospital, Shenzhen Nanshan People's Hospital and The Sixth Affiliated Hospital of Shenzhen University Health Science Center, Shenzhen 518052, Guandong, China; [2]Department of Gynaecology, The First Affiliated Hospital of Chongqing Medical University, Chongqing 400016, China

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Abstract: Intramural ectopic pregnancy (IMP) refers to the implantation of a fertilized egg in the myometrium. In this case a 42-year-old female patient was diagnosed with a space-occupying lesion in the uterus during an examination performed more than 3 months after a medical abortion. The level of beta-human chorionic gonadotropin (β-HCG) increased gradually three months after the abortion but decreased two months after the intramuscular injection of methotrexate (MTX). Hysteroscopy was performed and revealed IMP with an abnormal HCG level. The HCG level was reduced to negative after resection. IMP should be considered for patients with a gestational sac or mass in the myometrium and unsatisfactory β-HCG reduction or pelvic hematocele and hemoperitoneum. Hysteroscopic examination and treatment can be performed when the β-HCG level drops below 2,000 mIU/ml.

Keywords: Intramural ectopic pregnancy, human chorionic gonadotropin, hysteroscopy, methotrexate

Introduction

Intramural ectopic pregnancy (IMP) refers to the implantation of a fertilized egg in the myometrium, which is not connected to the uterine cavity or the fallopian tube lumen. IMP has an incidence of approximately 1/30,000, accounting for approximately 1% of ectopic pregnancies [1]. A gestational age > 10 weeks is a risk factor for uterine rupture and hysterectomy, while patients with gestational sacs located at the bottom of the uterus have a significantly higher risk of uterine rupture [2]. The clinical symptoms of IMP are atypical, and its diagnosis and treatment are difficult. Therefore, we are summarizing a case of IMP observed in the Department of Gynecology, at the First Affiliated Hospital of Chongqing Medical University, to provide a reference for the early diagnosis and treatment of IMP by hysteroscopy.

Case presentation

A 42-year-old female patient was admitted to the hospital due to a space-occupying lesion in the uterus that was detected more than 3 months after a medical abortion with B-mode ultrasound showing a fetal heartbeat that was intrauterine in location. After medical abortion, chorionic villus tissue was detected during curettage. The level of β-HCG decreased from 10,399 mIU/ml to 6,912 mIU/ml after three months, with 75 mg of MTX delivered via intramuscular injection on admission day. A lumpy abnormal signal (49 mm*51 mm*40 mm) at the uterine fundus myometrium with a normal endometrial cavity was detected during magnetic resonance imaging (MRI); the signal was continuously enhanced and indicative of a trophoblastic tumor. The patient had delivered one child via cesarean section nine years ago and had undergone two induced abortions. A physical examination by a specialist showed that the uterus was enlarged, consistent with an approximately similar size at 2 months of pregnancy, and was tilted to the right. There was a 30 mm*40 mm mass in the front of the uterus that was of medium hardness, was movable and had clear boundaries and the patient had no pain upon pressure. After hospitalization, the patient received five 8-day courses of MTX

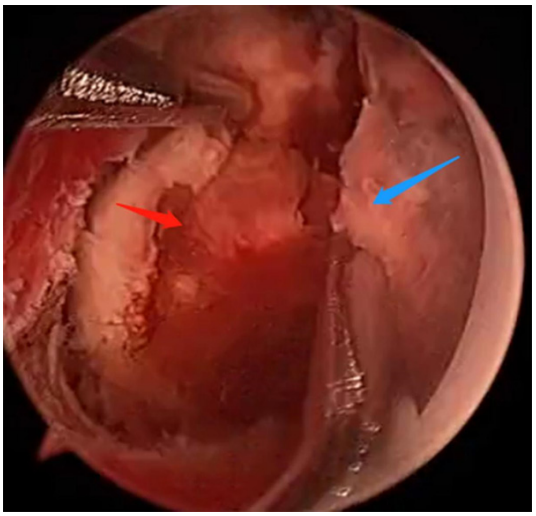

Figure 1. Hysteroscopic findings: The red arrow points to the mass of pregnancy, and the blue arrow indicates the myometrium.

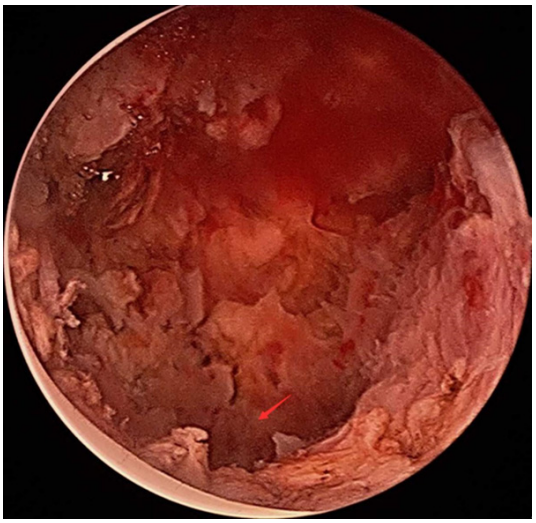

Figure 2. Findings after the hysteroscopic removal of the pregnancy substance; red indicates the wound after resection.

monotherapy (1 mg/kg.d), with 14 days between courses. Her β-HCG level was 15 mIU/ml after two months. Enhanced MRI of the entire abdomen and pelvis performed after two months showed an abnormal lumpy signal (41 mm*41 mm*39 mm) at the uterine fundus myometrium with a normal endometrial cavity. The patient underwent hysteroscopy for abnormal β-HCG level, and the intermural pregnancy substance was removed with uterine adhesion separation and uterine mediastinum excision (**Figures 1**, **2**). Villous tissue was detected in the removed tissue during the pathological examination (**Figure 3**). The patient's total β-HCG was normal, and her period returned after 3 months. No discomfort was reported, and the β-HCG level was negative during follow-up examinations.

Discussion

Over 90% of patients with IMP have a medical history of induced abortion, uterine cavity surgery, assisted reproduction and other operations. Patients with pelvic inflammatory disease and adenomyosis also have a risk of IMP. The possible mechanisms for IMP include the following: (1) Endometrial injury after uterine cavity surgery or infection leads to microchannel formation, and fertilized eggs implant into the myometrium wall through the microchannel [3]. (2) IMP often occurs at the posterior wall of the uterus, where adenomyosis tends to occur. The fertilized egg implants into the myometrium through the ectopic endometrial sinus [4]. The patient in this report had a history of cesarean section and uterine cavity surgery, which may have been related to IMP. IMP-related uterine rupture most often occurs at 11-30 weeks of gestation, and reports of live births by patients with IMP are extremely rare [5]. Only two cases of live births by patients with IMP have been reported in the English literature, and both cases required hysterectomy [6]. Memtsa et al. proposed that IMP can be divided into the following three types according to ultrasound imaging characteristics: (1) Gestational sac type: A gestational sac can be observed in the myometrium; (2) Mass type: A primarily mixed echo is detected, and irregular dark liquid areas are commonly found; (3) Rupture type: The main manifestation of this type is pelvic hematocele and hemoperitoneum, and local lesions are difficult to visualize [7]. In the present case, abundant blood flow signals were detected in the myometrium, there was no obvious decidual transformation or gestational sac, and the mass type of IMP was diagnosed. The patient also underwent multiple MRI examinations with no clear diagnosis; therefore, the pathological diagnosis was more reliable.

The early clinical manifestations of IMP are a missed period, a small amount of vaginal bleeding, abdominal pain, and elevated serum β-HCG. IMP often needs to be differentiated

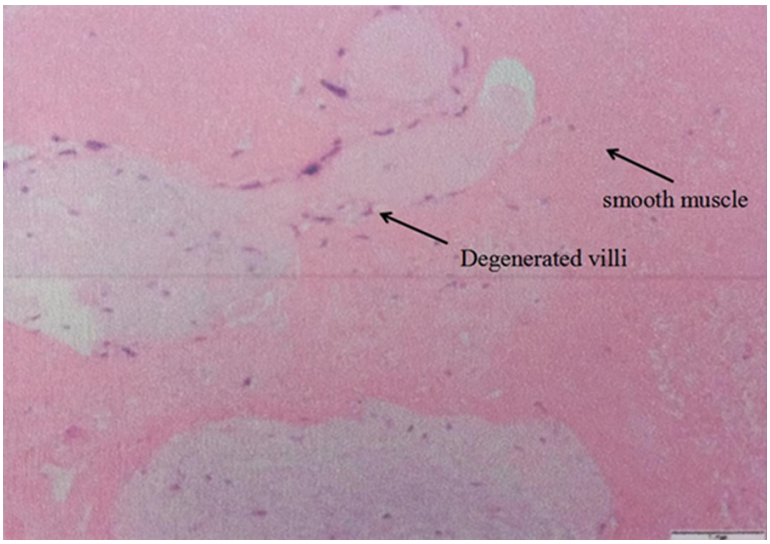

Figure 3. Postoperative pathology.

from the following diseases: (1) Early intrauterine pregnancy or miscarriage: Further ultrasound or MRI examination is needed if the serum HCG level is still high after curettage. (2) Other ectopic pregnancies: It is difficult to differentiate IMP from other ectopic pregnancies by ultrasound, and the main method for distinguishing them is surgical exploration. (3) Gestational trophoblastic disease: Patients with choriocarcinoma have high serum HCG levels, while the β-HCG levels of patients with IMP rarely exceed 10,000 mIU/mL [4]. In the present case, the patient's MRI showed obvious continuous enhancement, and her β-HCG level was 10,399 mIU/ml. Therefore, the patient was misdiagnosed with a trophoblastic tumor. This patient was first given an abortion and then misdiagnosed with choriocarcinoma after MRI examination. IMP should be considered for patients with a gestational sac or mass in the myometrium and unsatisfactory β-HCG reductions or pelvic hematocele and hemoperitoneum. The main reasons for the misdiagnosis were as follows: (1) The clinical and imaging physicians did not consider the possibility of IMP. (2) When the gestational sac surrounding the myometrium was found during imaging, the relationship between the myometrium and the uterine cavity was not evaluated. (3) When an IMP appears to stop developing or is aborted, it is easily misdiagnosed as fibroid degeneration, gestational trophoblastic disease, or another disease [8]. The patient was diagnosed by hysteroscopy. Hysteroscopy plays an important role in the diagnosis of IMP, and it can be used to rule out an intrauterine pregnancy and resect the lesion.

Treatment of IMP includes drug therapy, interventional uterine artery embolization, intrauterine intervention, and surgery. Medication can also be used for IMPs that are diagnosed early when the uterus has not ruptured and the embryo has died. Surgical treatment is used to remove the fetal substance and repair the uterus. In severe cases, hysterectomy is required [8]. Indications for conservative treatment of IMP include the following: Systemic drug therapy, including MTX, mifepristone, and traditional Chinese medicine, is appropriate for patients with a clear diagnosis, stable hemodynamics, a mass diameter < 4 cm, a serum β-HCG level < 2,000 mIU/ml, and no liver or kidney disease [3]. Laparoscopic surgery was used successfully as a sole treatment in thirteen cases, hysteroscopy combined with laparoscopic surgery was used in eleven cases, and hysteroscopic surgery was used in two cases [9, 10]. Uterine wedge resection by open surgery was used in 2 cases, and the wounds were large [11, 12]. The patient in the current report was misdiagnosed with choriocarcinoma and underwent MTX treatment that reduced her β-HCG level and provided conditions for hysteroscopy. The patient's HCG level was reduced to 15 mIU/ml. Hysteroscopy was used to remove the lesion, and the patient had an excellent prognosis when the β-HCG level was below 2,000 mIU/ml.

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Disclosure of conflict of interest

None.

Address correspondence to: Rui Yuan, Department of Obstetrics, The First Affiliated Hospital of Chongqing Medical University, Chongqing 400016, China. Tel: +86-18038090785; E-mail: YRui96@126.com

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