



Placental Site Trophoblastic Tumor (PSTT) Complicated by Uterine Arteriovenous Malformation

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ABSTRACT

Uterine AVMs are rare complication of gestational trophoblastic disease, with a life-threatening potential as a result of unexplained and torrential bleeding. Placental site trophoblastic tumor (PSTT) is a rare form of gestational trophoblastic disease. PSTT has a wide range of clinical presentations and behaviors. However, few case reports are available about PSTT cases complicated by uterine AVMs. In this report, a PSTT case with evidences of uterine AVM on imaging studies is reported. A 33-year-old patient, gravida 2, para 2 was referred to emergency service, with sever vaginal bleeding and β -hCG level of 1063 IU/L. Trans-abdominal and trans-vaginal ultrasonography images indicated hypoechoic mass in endometrium with echo-free center with size of 46*33mm that extended to anterior myometrium of uterus. Pelvic magnetic resonance imaging (MRI) revealed a 38*49mm mass with heterogeneous signal in T1 and T2 in right lateral side of uterus with enhancement after contrast agent injection. In angiography the right uterine artery had serpentine vessels and AVM view. Dilation and curettage was not possible due to risk of sever hemorrhage following damage to the hypervascular lesion. So suction biopsy was performed under hysteroscopic guide, after embolization of uterine artery for stabilization of the patient. The patient underwent laparotomy, total abdominal hysterectomy because of pathological report of PSTT. The patient is in good health with no evidence of disease at follow-up of 18 months after operation.

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Introduction

Uterine arteriovenous malformation (AVM) is considered as a rare condition and a potentially life-threatening disease, as a result of unexplained, intermittent and torrential bleeding [1]. The real incidence is unknown but less than 100 cases have been reported in the literature. Arteriovenous malformations have been described in women aged between 20 and 40 years [2].

Arteriovenous malformation of the pregnant uterus is very rare, and may present with massive bleeding [3]. Uterine AVMs are rare complication of gestational trophoblastic disease [4]. It occurs as a result of enlargement of the intervillous space which leads to direct flow of arterial blood to veins through the intervillous space due to placental destruction [5].

Placental site trophoblastic tumor (PSTT) is a rare form of gestational trophoblastic disease (GTD) and accounts for about 1-2% of all GTDs. It originates from the implantation site intermediate trophoblasts [6]. PSTT has an estimated incidence of 1 per 100,000 pregnancies and overall mortality rate of 25%. PSTT has a wide range of clinical presentations and behaviors ranging from a benign condition to an aggressive disease with mortalities [7].

However, few case reports are available about PSTT cases complicated by uterine AVMs [5, 8].

In this report, a PSTT case with evidences of uterine AVM on imaging studies is reported. After embolization of uterine artery for stabilization of the patient due to sever intermittent vaginal bleeding, hysteroscopic evaluation was performed in order to proper diagnosis. She was treated by hysterectomy as definite treatment of PSTT.

Case presentation

A 33-year-old patient, gravida 2, para 2, was referred to emergency service of Firoozgar hospital, gynecologic oncology referral center, Iran University of medical sciences, Tehran, Iran.

The patient had no positive point on her past medical history and no past surgical history. There was no personal or family history of GTDs.

On her last normal vaginal delivery, she gave birth to a girl weighting 2.800gr with no complications. She had normal breast feeding during this time. Five month after her last delivery, her menstruation resumed and she reported history of irregular menstruation periods. She did not use any contraception methods. After 9 months, she had amenorrhea for 3 months. The gynecological test revealed positive gravindex and there was no further medical followed-up.

In spite of spotting and irregular menstruation periods, she did not have any medical consultation.

On admission, physical examination revealed no abnormalities in the heart, lungs, or extremities. A normal vulva, severe vaginal bleeding, no pain in the cervix upon lifting or manipulation, and an enlarged uterus about 10th week of pregnancy was revealed in a gynecological examination. In addition, the uterus was soft on palpation, and there was no tenderness in the adnexa. The patient's β -hCG level was 1063 IU/l. An intrauterine balloon was inserted to control severe vaginal bleeding. After 12 hours vaginal bleeding ceased and intrauterine balloon was removed.

Dilation and curettage was not possible because of risk of sever hemorrhage due to hypervascular lesion. Suction biopsy was performed under hysteroscopic guide after embolization.

The patient underwent laparotomy, total abdominal hysterectomy. Frozen section report confirmed diagnosis of PSTT. After surgery patient was good and the estimated blood loss was scant.

CT images revealed an enhanced and enlarged uterus with heterogeneous density. The endometrial cavity was filled with fluid. Multiple and large branch of vessels were seen in uterine wall and pelvic cavity. Other sites of abdomen were normal.

A high-magnification photomicrograph of a tissue section stained with hematoxylin and eosin (H&E). The image displays a dense cellular architecture. Numerous cells are visible, many with large, round to oval nuclei containing prominent, darkly stained nucleoli. The cytoplasm of these cells is eosinophilic (pink). The cells are arranged in a somewhat disorganized pattern, with some areas showing more cellular density than others. The overall appearance is consistent with a malignant neoplasm, such as a carcinoma.

Embolization of uterine artery was considered for patient due to recurrent episodes of severe vaginal bleeding. In angiography the right uterine artery had serpentine vessels and AVM view (Figure 2) and was embolized with NBCA (n-butyl 2-cyanoacrylate/lipiodol) and polyvinyl alcohol (PVA) and left artery was embolized with PVA. After embolization the aneurysm diminished.

The β -hCG level was negative after 5 months follow up. Measurement of hPL level was not available in our center, though the serum prolactin level was 229 μ IU/ml. Other laboratory test such as liver and renal functional test were normal.

The patient is in good health with no evidence of disease at follow-up 18 months after the operation.

Discussion

Retained products of conception is in the top list of diagnosis in patient with abnormal uterine bleeding and positive β -hCG, and ultrasound is the first imaging method used to exclude this diagnosis [9].

Arteriovenous malformation (AVM) is suspected whenever an intramural or intracavitary lesion is seen on ultrasonography, which predominantly consists of prominent vessels with low-resistance, high-velocity pulsating flow [10].

Uterine AVM is classified in two categories, congenital and acquired [2]. Acquired uterine AVMs are associated with any damage of uterine tissue, such as history of cesarean section or curettage procedures. Other causes of acquired uterine AVMs include history of spontaneous abortion followed by dilation and curettage, infective processes like endometritis, septic abortions, remnant products of conception, endometrial carcinoma, or gestational trophoblastic disease, molar pregnancy, choriocarcinoma and other gynecologic malignancies.

These predisposing factors lead to disruption of the normal artery-vein channels which is followed by re-anastomosis in an abnormal tissue milieu. [2,7,11].

Our patient did not have any history of uterine damage including abdominal or pelvic surgery or infection and abortion.

Patients with uterine AVMs or masses related to products of conception present with similar symptoms. However, gestational trophoblastic disease must be considered in the differential diagnosis in any case of abrupt, torrential vaginal bleeding, along with retained products of conception [10].

Clinical diagnosis of PSTT is difficult because it is the rarest type of gestational trophoblastic disease and presents with non-specific and wide range of clinical presentations and ultrasound findings [12,13]. The tumorigenic character of PSTT may have been the cause of profuse blood flow [8].

Diagnosis of PSTT by biopsy is rare, even though, careful pre-operative evaluation is imperative before choosing hysterectomy for patients when PSTT is suspected. Differentiation of PSTT from placental mass and AVM would be important because in the case of uterine AVM or placental masses conservative management could be considered to preserve fertility [14, 15]. However, for patients with PSTT, hysterectomy would be the treatment of choice [16],

PSTT is characterized by a relatively low production of β -hCG, due to a lack of syncytiotrophoblasts. Serum hPL and β -hCG cannot be used as reliable tumor markers in these cases [17]. In 79% of cases, β -hCG level is lower than 1000 IU/l and in 58% of cases, it is lower than 500 IU/l [16, 18].

Considering β -hCG level (1063 IU/l) in our patient, biopsy was imperative to exclude retained products of conception.

However, dilation and curettage was not possible due to high risk of severe hemorrhage following damage to the hypervascular lesion. So suction biopsy was performed under hysteroscopic guide, after embolization of uterine artery for stabilization of the patient.

Whenever the diagnosis of PSTT is established, surgery remains the cornerstone of therapy, with total abdominal hysterectomy. PSTT is relatively resistant to standard chemotherapy so early diagnosis followed by hysterectomy and resection of extrauterine tumor lesion is vital as standard treatment [16, 18]. PSTT can occur after any type of gestation, including normal pregnancy, abortion, term

delivery, ectopic pregnancy or molar pregnancy. The gap since the antecedent pregnancy is on average 34 months (median of 18 months). A long interval (> 2 years) from the antecedent pregnancy to clinical presentation has been considered as a major adverse prognostic factor [19].

And also, level of mitosis higher than 6 in 10 high power fields, age older than 34 years, term birth for the last pregnancy, a myometrium invasion of more than 50%, an extensive coagulation necrosis, and cells with clear cytoplasm are considered as poor prognosis factors in literatures. A β -hCG level higher than 1000 IU/l is also a poor prognosis factor. On the other hand, this rate is not correlated with the tumor mass size [20].

Our patient was classified as FIGO stage I. Pathological finding in our case included invasion to full thickness of myometrium and high N/C ratio. Interval from antecedent pregnancy > 24 months, age older than 34 years, term birth for last pregnancy and β -hCG level higher than 1000 were poor prognostic factors in our case.

When clinical diagnosis was made within 48 months of the previous pregnancy, in 98% of cases cure is achieved, regardless of disease stage or β -hCG levels. The survival rate of 91-92% for those with stage I disease and 0% for those with stage II-IV diseases is supposed in patients with diagnosis more than 48 months after the previous pregnancy [21].

Interestingly, babies delivered among normal pregnancies preceding PSTT are frequently female than male and it was the same in our case. The etiological mechanisms and the causal relationship between female baby pregnancies and PSTT have not been proven yet [7, 22].

Conclusion

Delay in diagnosis of PSTT can be fatal due to its chemoresistant nature and high mortality in advanced cases. PSTT must be considered in cases presented with abrupt, torrential vaginal bleeding, along with uterine AVMs and retained products of conception.

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