Extensive uterine arteriovenous malformation with hemodynamic instability: Embolization for whole myometrium affection

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ABSTRACT

Uterine arteriovenous malformation is abnormal and nonfunctional connections between the uterine arteries and veins. Patients typically present with vaginal bleeding which may be life-threatening. Treatment depends on the symptoms, age, desire for future fertility, localization and size of the lesion. Embolization of the uterine artery is the first choice in symptomatic AVM in patients in the reproductive age. We report a case of acquired AVM with an extensive lesion on ultrasound and MRI, which was successfully treated with uterine artery embolization for severe bleeding (UAE).

Introduction

Uterine arteriovenous malformations (AVMs) are not common but may be life-threatening. They are congenital or acquired. They should be suspected in severe or persistent abnormal uterine bleeding [1]. Sonographic evaluation using 2D and color Doppler should be used initially [1,2]. Uterine AVMs are often localized in the myometrium [3].

Case study

We report a rare case of a large AVM involving most of the myometrium in a 38-year-old G3P3 woman, previous 2 caesarean section no history of GTD or uterine curettage. The patient was admitted to our hospital with hemodynamic instability and heavy vaginal bleeding with blood clots. On examination, heart rate was 140 beat/min and blood pressure was 90/60 mmHg. Hemoglobin level was 7 gm%. Vaginal examination revealed 12 weeks gestational age uterine size with severe vaginal bleeding and blood clots in the vagina. (Fig. 1) She had done an MRI before admission for suspected uterine neoplasm that revealed multiple serpentine flow-related signal voids in the uterine wall, endometrial cavity, and parametrium on T1 and T2 weighted images. Contrast-enhanced dynamic MR angiography detected complex serpentine abnormal vessels that enhance as intensely as normal vessels and showed early venous return which is diagnostic of uterine arteriovenous malformation involving most of the myometrium. (Fig. 1) Transvaginal ultrasonography (Fig. 2) revealed about 10 cm heterogeneous mass lesion located in the anterior and lateral wall of the uterus. There was minimal fluid collection in the endometrial cavity. The adnexa appeared normal. Doppler ultrasonography revealed areas of hypervascularity and turbulent flow involving the whole myometrium. Low-resistance arterial flow and high peak systolic velocities were detected with prominent arterial and venous vascular signals. Owing to severe haemorrhage, blood and plasma transfusion was given. An interventional radiologist recommended UAE as a conservative measure before proceeding to hysterectomy if unsuccessful. No complications occurred after the procedure with patient monthly follow-up. Doppler USG performed two weeks later revealed lower blood flow than previous mainly a venous pattern and low velocity arterial signal in the uterine vessels . (Figs. 3 and 4)

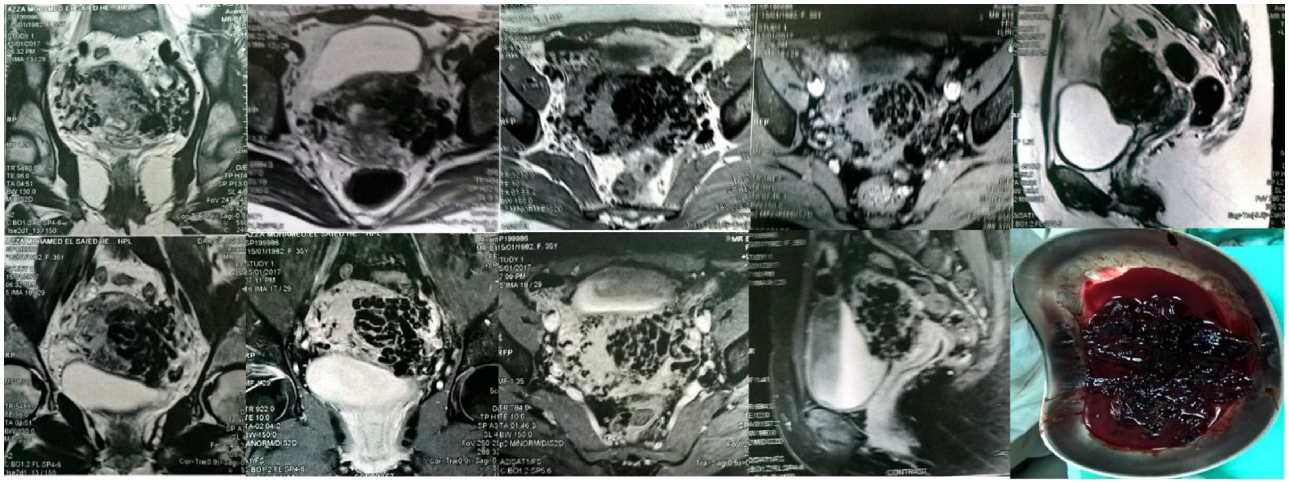

Fig. 1. MRI revealing large mass involving most of the uterine wall with large tortous dilated myometrial blood vessels and large parametrial ones. Blood clots retrieved from the patient vagina in the last photo.

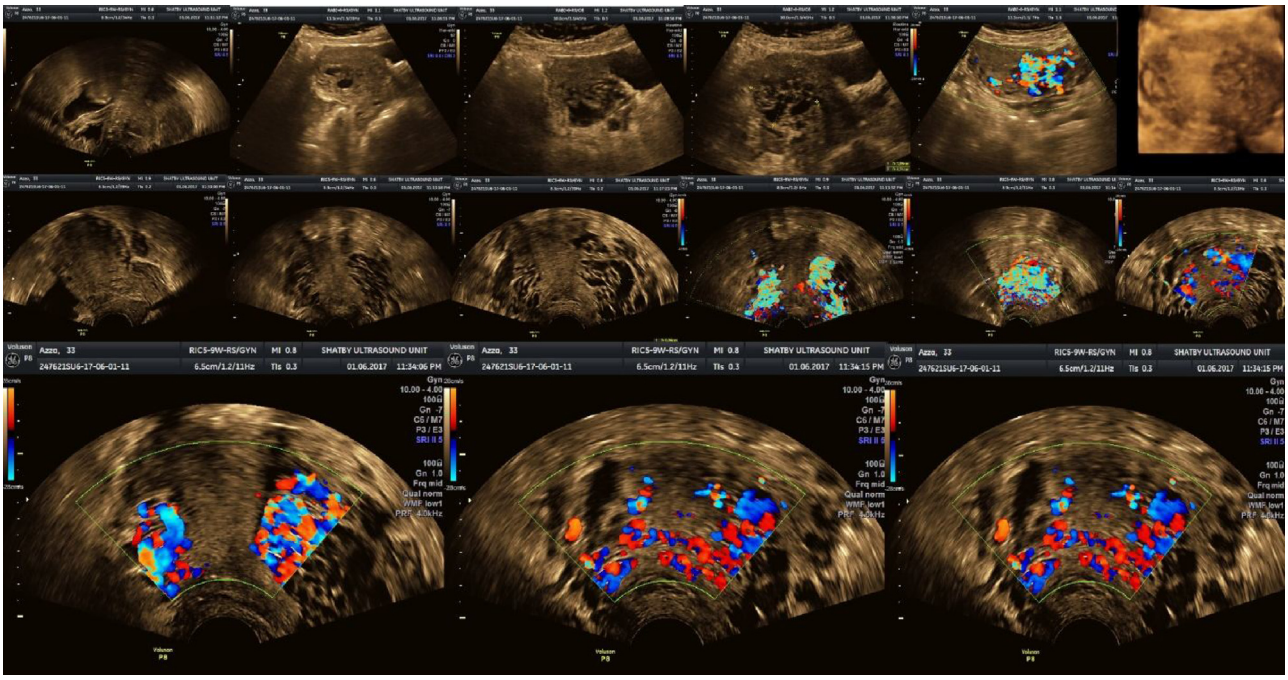

Fig. 2. trans abdominal and trans vaginal ultrasound scan revealing dilated anechoic blood vessels involving most of the myometrium with dilated parametrial one. Color Doppler revealed intense and rich vascularity with high signal throughout the myometrium.

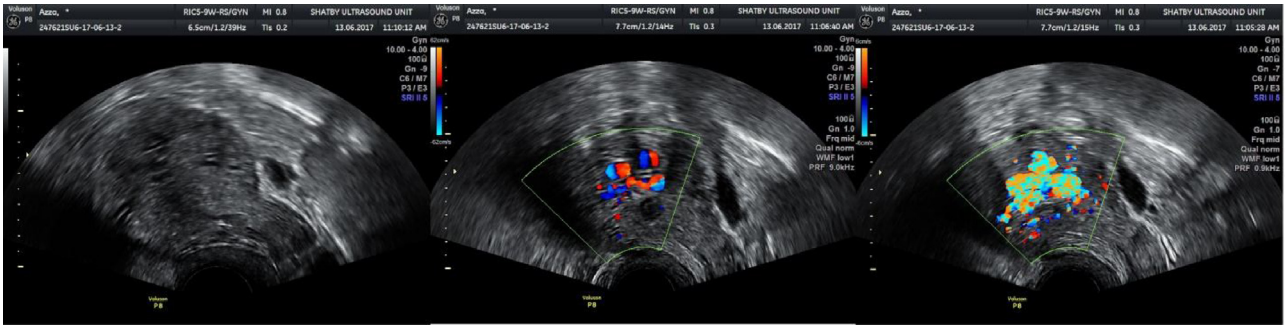

Fig. 3. ultrasound two weeks postoperative revealed less dilated vessels intrauterine with low vascularity and intensity on Doppler scan.

Comment

Uterine AVMs are important due to risk of massive bleeding that could be life threatening. Acquired ones may be due to previous uterine trauma, pregnancy-related, infections, and the treatment of gestational trophoblastic disease. Congenital ones arise from arrested vascular development [4]. The present case developed uterine AVM that could not be related to any trauma except recurrent caesarean section. AVM is easily diagnosed now using color Doppler ultrasonography [5]. The differential diagnosis included retained products of conception (RPOC) and gestational trophoblastic diseases (GTD) that should be kept in mind as they have hypervascular appearance with turbulent flow and are excluded by B-hcg and presence of remnants. They are reported as AVM mimics and AVM is used for no other uterine pathology beside the AVM. [6] If the diagnosis is still not certain; MR angiography is a useful diagnostic tool [1]. The treatment depends on the age, desire for future fertility, localization, and size of the lesion. The mainstay for management has been hysterectomy or the embolization of uterine arteries. Uterine artery embolization (UAE) is the first choice in women at reproductive age [7]. Whether this procedure is safe for women desiring future fertility is controversial. Women who become pregnant after UAE are at risk of malpresentation, caesarean delivery, preterm birth, and postpartum hemorrhage [8]. Some studies have suggested conservative approach in asymptomatic patients as methylergonovine maleate, gonadotropin releasing hormone analogues, and danazol in the treatment of patients with mild hemorrhage [9–13]. There is currently no clear agreement on the treatment of asymptomatic uterine AVMs.