CASE REPORT

Successful use of transcatheter embolisation in an emergent life-threatening situation of bleeding from uterine arteriovenous malformation

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SUMMARY

A 27-year-old G3P1 presented to the gynaecology emergency department with heavy vaginal bleeding for 16 days. Transvaginal ultrasound showed vascular cystic spaces in the myometrium raising a suspicion of choriocarcinoma. However, β -human chorionic gonadotrophin (β -hCG) was negative in both the urine and serum. Angiography confirmed the rarer diagnosis of uterine arteriovenous malformation (AVM). Successful abolition of the AVM was achieved by transcatheter embolisation with sequential use of polyvinyl alcohol particles, gel foam pledgets and platinum coils.

Doppler, all cysts showed a low resistance flow suggesting a vascular mass.

DIFFERENTIAL DIAGNOSIS

Choriocarcinoma was considered as the first differential diagnosis. However, the urine pregnancy test was negative and the serum β -hCG was less than 5 mIU/ml. Thus, a provisional diagnosis of uterine AVM was made and the patient was planned for angiography with intention to embolise if the diagnosis was confirmed. The patient was counselled and an informed consent taken prior to the procedure.

BACKGROUND

Arteriovenous malformations (AVMs) are abnormal communications between arteries and veins. Uterine AVM is a rare but potentially life-threatening condition where the patient presents with abnormal uterine bleeding. This must be considered as a differential diagnosis in patients with intractable vaginal bleeding not responding to conventional management. Prompt diagnosis and treatment are required in this condition.

CASE PRESENTATION

A 27-year-old lady was admitted to the gynaecology emergency department with a complaint of continuous, heavy vaginal bleeding for 16 days. She had a history of menorrhagia with heavy bleeding with clots for 10 days during a menstrual cycle of 26 days. In her obstetric history, she had undergone suction and evacuation (S&E) for gestational trophoblastic disease 8 years previously. One year after S&E, she had a spontaneous miscarriage at 10 weeks' gestation for which she again underwent a dilation and curettage (D&C). Her last delivery by lower segment caesarean section was 18 months prior to current presentation. She had no history suggestive of bleeding disorders.

INVESTIGATIONS

At presentation, the patient's haemoglobin was 7 g %. Her pulse rate was 96 bpm and her blood pressure was 90/70 mm Hg. She was given intravenous fluids for resuscitation along with 3 units of packed cells. Her coagulation profile was normal. Transvaginal ultrasound showed a bulky uterus measuring 10.8×8×4 cm with an endometrial thickness of 5 mm. The myometrium showed multiple cystic areas especially in the right lateral aspect, the largest measuring 2 cm. On colour

TREATMENT

Angiography confirmed the presence of AVM fed by both the uterine arteries (figure 1). Immediate transcatheter embolisation of both the uterine arteries was done. The left internal iliac artery was selectively engaged with a Cobra catheter (Cook group Inc, USA), through which an SV-5 guidewire (Boston Scientific, USA) was passed and manoeuvred into the left uterine artery. Over this guidewire, the Cobra catheter was placed at the origin of the left uterine artery. Polyvinyl alcohol (PVA) particles (300–550 μ m, Boston Scientific, USA) were injected through the catheter. There was a reduction in the flow, but a significant flow still persisted. After this, gel foam pledgets were injected. Despite the injection of gel foam, there was still some residual flow from the left uterine artery. A platinum coil (0.018"; Cook, USA) was then placed in the left uterine artery after which the flow in the left uterine artery stopped completely. The patient required PVA particles and a platinum coil for successful embolisation of the right uterine artery as well. The postembolisation angiogram showed no flow in both the uterine arteries (figure 2). There was no intraprocedural complication.

OUTCOME AND FOLLOW-UP

Postprocedure Doppler ultrasound showed a marked reduction in colour flow in the cystic spaces. The patient recovered well and was discharged on postoperative day 3. At the end of 1 year follow-up, she is doing well and has normal menstrual cycles.

DISCUSSION

Uterine AVMs may be acquired or congenital. Their true incidence is not known, with less than 100 patients reported in the literature.¹ Acquired AVMs

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Figure 1 Angiogram showing diffuse arteriovenous malformations (arrows) involving both the uterine arteries.

are more common and may be associated with previous D&C, uterine surgery, gestational trophoblastic disease, cervical and endometrial malignancy and exposure to diethylstilbestrol.¹

The most common initially performed investigation is ultrasonography along with colour and spectral Doppler, which greatly increases its sensitivity.² The gold standard for diagnosing AVM is angiography.¹ There are reports of embolisation of uterine AVM in the literature.^{3–6} However, only a few have described embolisation in the emergency setting.^{5, 6} One of these patients was relieved of her symptoms initially but required hysterectomy 36 days later because of the recurrence of heavy vaginal bleeding and abdominal pain.⁵

Several agents like gelfoam, coils, PVA particles, glue and detachable balloons have been used for embolisation. The choice of agent is guided by the calibre of the vessel that needs to be embolised and by whether temporary or permanent occlusion is required.^{7, 8} Our patient required the additional use of gelfoam pledgets and platinum coil on both sides due to large-calibre arteriovenous malformations which could not be completely occluded with PVA particles. The alternative treatment for uterine AVM is ligation of the uterine and/or internal iliac arteries to arrest bleeding.¹ Total abdominal hysterectomy may also be considered in cases of life-threatening haemorrhage when uterine artery embolisation (UAE) is not available.¹ Surgical management may eventually be required in cases where UAE has failed.⁵ In the present case, UAE was readily available

and was preferred considering the high risk of surgery in a haemodynamically unstable patient. This case thus highlights the successful use of a minimally invasive technique in life-threatening bleeding from uterine AVM.

Learning points

- ▶ Uterine arteriovenous malformations (AVM), although rare, must be kept as a differential diagnosis in patients with abnormal uterine bleeding not responding to conventional management.
- ▶ Any intrauterine intervention like dilation and curettage must be avoided till a diagnosis is made as it will aggravate bleeding in patients with AVM.
- ▶ Angiography is the gold standard for diagnosing uterine arteriovenous malformations.
- ▶ Uterine artery embolisation (UAE) is a highly effective, minimally invasive treatment option in symptomatic patients with uterine AVMs.

Contributors This is to certify that all four authors have contributed significantly to the preparation of this manuscript and are in agreement with the final draft being submitted.

Competing interests None.

Patient consent Obtained.

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Figure 2 Post-embolisation angiogram showing complete abolition of flow in the uterine arteries with platinum coils (arrows).

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