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Case Report

Uterine arteriovenous malformation complicating a scar ectopic pregnancy ☆,☆☆

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ABSTRACT

Uterine arterio-venous malformation is characterized by abnormal direct arteriovenous communication without normal intervening capillary network. Acquired uterine arteriovenous malformation in post cesarean scar pregnancy is a rare entity. Classically the patients present with lower abdominal pain and per vaginal bleeding. Pelvic examination may reveal a pulsatile mass. Herein, we present a case of multiparous woman undergoing conservative treatment for caesarian scar pregnancy who presented with vaginal bleeding despite declining beta HCG levels. Review and update of recent literature regarding the diagnostic imaging of this entity are described.

Introduction

Uterine arterio-venous malformation (UAVM) is a rare entity characterized by abnormal direct arteriovenous communication without normal intervening capillary network. It can be congenital or acquired. Congenital AVM is rare while acquired could be secondary to interventions, pelvic trauma or infection [1].

Classically the patients present with lower abdominal pain, per vaginal bleeding, dyspareunia, and anemia. Pelvic examination may reveal a pulsatile mass [2,3]. Traditionally diagnosis was made at laparotomy followed by angiography as the gold standard method. Currently, transvaginal color Doppler examination is the most widely employed method diagnostic modality with angiography used for therapeutic embolization or cases considered for surgical resection [3]. Although ultrasound is a useful initial tool for diagnosis, MRI is an excellent noninvasive tool to determine the extent of the lesion [4]. Herein, we present a case of multiparous woman undergoing conservative treatment for caesarian scar pregnancy who presented with per vaginal bleeding despite declining beta HCG levels.

Case report

A 36 years old woman, Gravida 3, Para 2 + 0, already diagnosed case of caesarian scar pregnancy on conservative methotrexate treatment presented with per vaginal bleeding despite declining beta HCG levels. She has past history of 2 caesarian sections. Vitally she was stable and physical examination was unremarkable.

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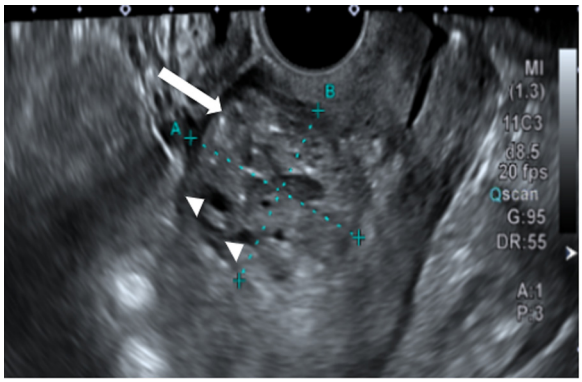

Fig. 1 – Gray scale transvaginal ultrasound image showing a heterogeneous area (arrow) at scar site with multiple anechoic structures within it and at its periphery (arrow).

Transvaginal ultrasound of pelvis showed a bulky uterus with an ill-defined heterogeneous mass measuring 51 × 52 mm at the scar site surrounded by serpiginous tubular anechoic structures (Fig. 1). These structures give turbulent flow on color Doppler imaging. Low resistance high-velocity flow pattern is noted on spectral wave form (Fig. 2A and 2B).

MRI pelvis with contrast (Fig. 3A and B) redemonstrated the heterogeneous mass with central T1 hypointense signals, heterogeneous T2 signals, and no enhancement on post contrast imaging suggesting chronic hemorrhage. It was surrounded with multiple serpentine flow-related signal voids on T2 weighted images showing rapidly intense enhancement on post contrast imaging. Adjacent myometrial thinning was also noted with prominent parametrial vessels.

CT Angiogram (Fig. 4) showed tortuous vascular channels within uterus with arterial feeders mainly from right uterine artery.

Angiography (Figs. 5A and B) showed supply from the branches of both uterine arteries, more marked on right side.

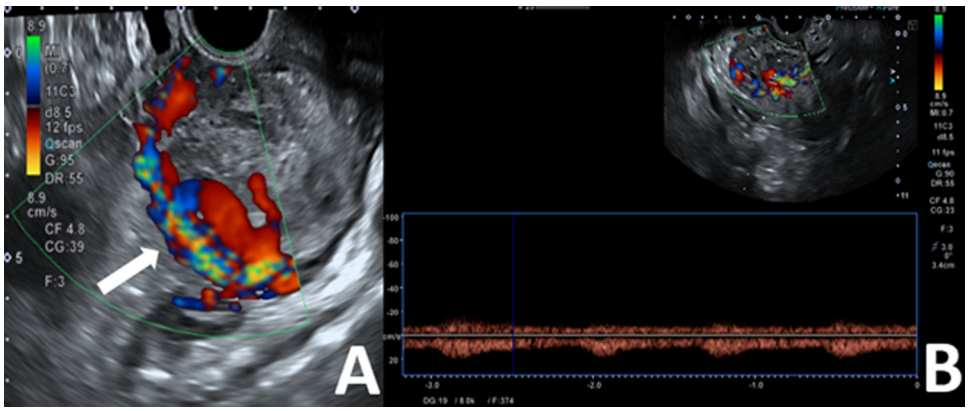

Fig. 2 – Transvaginal ultrasound image with Color Doppler (A) and spectral wave form (B) showing turbulent flow at the periphery of the lesion also extending within the.

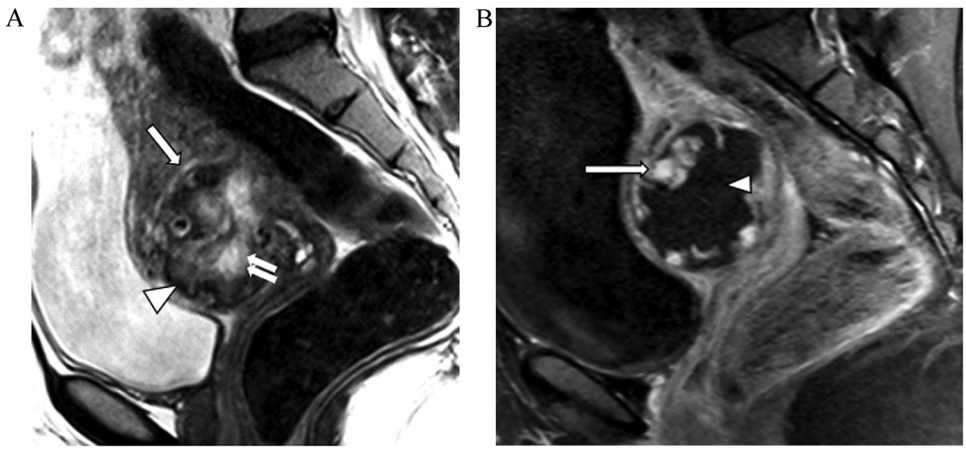

Fig. 3(A) – T2 weighted sagittal MRI shows heterogeneous mass at scar site (arrow). The center of the lesion appears. (B) T1 Fat Suppression post contrast sagittal MRI shows heterogeneous mass at scar site. The center of the lesion appears hypointense without enhancement.

Fig. 4 – 3D maximum intensity projection CT angiography images of abdomen and pelvis showing tortuous vascular.

Venous drainage was seen via dilated tortious vein into the uterine veins. Post embolization angiogram revealed no residual arteriovenous malformation.

Discussion

Uterine arteriovenous malformation (UAVM) secondary to caesarean scar pregnancy is likely due to erosive trophoblastic tissue deriving vascular supply within defective fibrous tissue at the caesarian site [5]. Acquired AVMs are mostly symptomatic and usually occur in multiparous women of childbearing age. It is unlikely to find an acquired AVM in nulliparous women without any history of gynecologic intervention. Abnormal uterine bleeding is the most common presenting symptom of an acquired AVM [6].

Ultrasound features of uterine AVM includes heterogeneous. ill-defined mass with tubular anechoic oy hypoechoic structures of variable sizes. Low resistance-high velocity flow on color Doppler examination is identified demonstrating an arteriovenous shunt. Spectral analysis may be useful for further characterization of the lesion [7].

Doppler ultrasound can strongly suggest the presence of UAVM but its ability to precisely identify the extent of the lesion in the pelvis may be limited. MRI is an excellent non–invasive modality to determine the disease extent and aid to confirm the diagnosis. MRI imaging findings are non–specific. The findings include bulky, voluminous uterus, ill-defined mass, tubular hypoechoic vascular spaces, interrupted junctional zone, and prominent parametrial vessels [2].

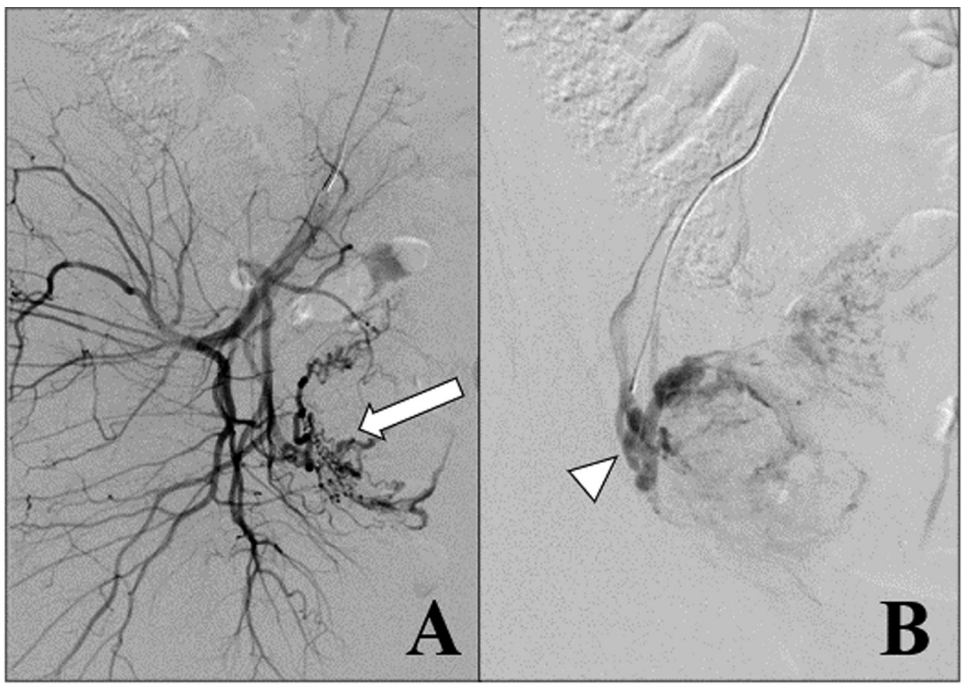

Fig. 5 – (A and B) Invasive angiogram of right internal iliac artery showing bunch of vessels representing arterio-venous malformation (arrow) with supply from the.

CT angiography is another excellent tool for determining of the extent of the lesion, ruling out extrauterine involvement, and delineating the feeders. It may additionally be helpful for anatomic characterization for those planned for surgery [8,9].

Treatment options are several; broadly classified as medical, and surgical. Medical treatment is less effective. Additionally, fertility sparing procedures may include uterine artery embolization or hysteroscopic resection. Hysterectomy may be reserved for cases presenting with severe bleeding, those whose reproductive desires are fulfilled or after failure of fertility sparing procedures [10,11].

In our case a combined approach of management is undertaken with selective uterine embolization done prior to being considered for fertility sparing hysteroscopic resection.

Conclusion

Acquired uterine AVM post cesarean scar pregnancy is a rare entity which should be considered in a patient presenting with per vaginal bleeding specially those on conservative management. Initial diagnosis can easily be made with transvaginal ultrasound using color Doppler examination followed by CT angiography or MRI as indicated to delineate the extent of the lesion. Early diagnosis and management are necessary to prevent potentially life-threatening hemorrhage or uterine perforation requiring hysterectomy.

Patient consent

Written informed consent from the patient for publication has been obtained.

REFERENCES

[1] Kim D, Moon NR, Lee SR, Won YD, Lee HJ, Park TC, et al. Acquired uterine arteriovenous malformation in a cesarean scar pregnancy. Taiwan J Obstet Gynecol 2013;52(4):590–2. doi:10.1016/j.tjog.2013.10.026.

[2] Cura M, Martinez N, Cura A, Dalsaso TJ, Elmerhi F. Arteriovenous malformations of the uterus. Acta Radiol 2009;50(7):823–9. doi:10.1080/02841850903008792.

[3] Timmerman D, Wauters J, Van Calenbergh S, Van Schoubroeck D, Maleux G, Van Den Bosch T, et al. Color doppler imaging is a valuable tool for the diagnosis and management of uterine vascular malformations. Ultrasound Obstet Gynecol 2003;21(6):570–7. doi:10.1002/uog.159.

[4] Huang MW, Muradali D, Thurston WA, Burns PN, Wilson SR. Uterine arteriovenous malformations: gray-scale and Doppler US features with MR imaging correlation. Radiology 1998;206(1):115–23. doi:10.1148/radiology.206.1.9423660.

[5] Rampersad F, Narine S, Rampersad D, Diljohn J, Ali R. Uterine arteriovenous malformation mimicking retained products of conception - treated with embolization. Radiol Case Rep. 2020;15(11):2076-2079. doi:10.1016/j.radcr.2020.08.048.

[6] Visvalingam G, Lee RWK, Tan TY, Tan HH. An unusual case of acquired uterine arteriovenous malformation with persistent scar ectopic pregnancy successfully managed with uterine artery embolization. J Med Cases 2016;7:143–7.

[7] O'Brien P, Neyastani A, Buckley AR, Chang SD, Legiehn GM. Uterine arteriovenous malformations: from diagnosis to treatment. J Ultrasound Med 2006;25(11):1387–92. doi:10.7863/jum.2006.25.11.1387.

[8] Wani NA, Shaheen F, Kousar T, Gojwari T. Uterine arteriovenous malformation diagnosed with multislice computed tomography: a case report. J Reprod Med 2010;55(3-4):166–70.

[9] Umezu T, Iwase A, Ota T, Suzuki K, Nakagawa A, Nakahara T, et al. Three-dimensional CT angiography is useful for diagnosis of postabortion uterine hemorrhage: 3 case reports and review of the literature. J Minim Invasive Gynecol 2010;17(2):246–51. doi:10.1016/j.jmig.2009.11.012.

[10] Nonaka T, Yahata T, Kashima K, Tanaka K. Resolution of uterine arteriovenous malformation and successful pregnancy after treatment with a gonadotropin-releasing hormone agonist. Obstet Gynecol 2011;117(2):452–5 2 Pt. doi:10.1097/AOG.0b013e3181f7381f.

[11] Calzolari S, Cozzolino M, Castellacci E, Dubini V, Farruggia A, Sisti G. Hysteroscopic management of uterine arteriovenous malformation. JSLS 2017;21(2) e2016.00109. doi:10.4293/JSLS.2016.00109.