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"RARE CASE PRESENTATION OF UTERINE ARTERIOVENOUS MALFORMATION : A SPECTRAL DOPPLER STUDY"

Radiodiagnosis

Dr Rahul Sharma* Resident doctor, Department of Radiodiagnosis& Imaging, New civil hospital, Surat, Gujarat (India) *corresponding author

Dr Mahesh Vadel Professor & Head of department, Department of Radiodiagnosis& Imaging, New civil hospital, Surat, Gujarat (India)

DrPurvi Desai Associate professor, Department of Radiodiagnosis& Imaging, New civil hospital, Surat, Gujarat (India)

Dr Nikhil Shah Consultant doctor, Spectrum CT scan & Radiology centre, Surat, Gujarat (India)

ABSTRACT

Uterine arteriovenous vascular malformations (UAVM) are uncommon vascular diseases, occurring during reproductive age and may cause life-threatening abnormal genital bleeding and recurrent pregnancy loss in women at childbearing age. Doppler ultrasonography is a widely available, noninvasive and excellent diagnostic method. Treatment can be surgical (hysterectomy or surgical removal of AVM), or with selective uterine arterial embolization. We report a case of UAMV, from its clinical signs to diagnostic confirmation. This case report describes a 28-year-old woman who presented with menorrhagia and previous 2 episodes of abortions. Ultrasonography (USG) of the pelvis showed increased vascularity with multidirectional flow of the uterus and a prominent vessel, located on the anterior wall and fundus of uterus.

KEYWORDS

Uterine Arterio-venous malformation, Transvaginal Ultrasonography, Spectral doppler sonography, Menorrhagia

INTRODUCTION :

Uterine arteriovenous vascular malformations (UAVM) are uncommon vascular diseasewith fewer than 100 cases reported[1], which usually occur during reproductive age. Uterine arteriovenous malformation (AVM) is a rare vascular condition due to dilatation of the intervillous space deep inside the myometrium, allowing a direct flow from the arterial system towards the venous system. It is a potentially life-threatening condition, as patients may present with profuse bleeding. Colour Doppler ultrasonography (USG) provides a non invasive method for initially diagnosing this rare condition and confirmation can be made using diagnostic angiography.

This case report highlights our experience with a patient having this rare gynaecological condition in our medical center.

CASE REPORT :

A 33-year-old woman was seen at our facility who presented with complaint of abnormal genital bleeding since 5-6 months. Patient has history of two episodes of 1st trimester pregnancy losses followed dilatation and curettage performed twice for the same. Thereafter patient was having menorrhagia and recently having heavy bleeding per vaginum.

Upon examination, she was afebrile and hemodynamically stable with a hemoglobin (Hb) level of 8.4 g/dL. Vaginal examination showed a small amount of blood at the external orifice of the uterus, but no active bleed was observed. In addition, her human chorionic gonadotropin (hCG) level was less than 2 mIU/mL.

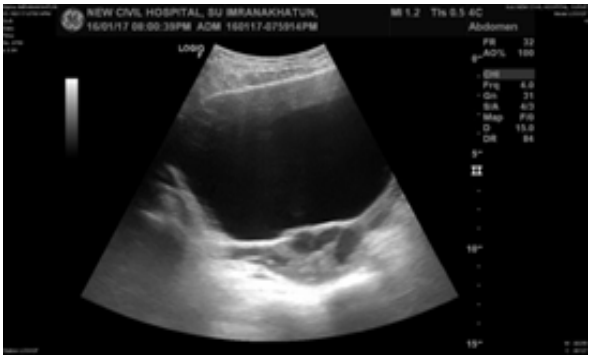

Fig. 1 : *Transabdominal USG showing multiple tubular anechoic channels within predominantly anterior myometrial wall*

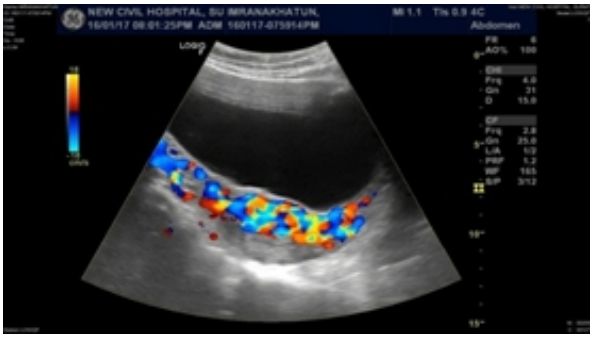

Fig. 2 : *Transabdomial USG on CFM mode shows intense color filling of anechoic channels suggesting vascular channels*

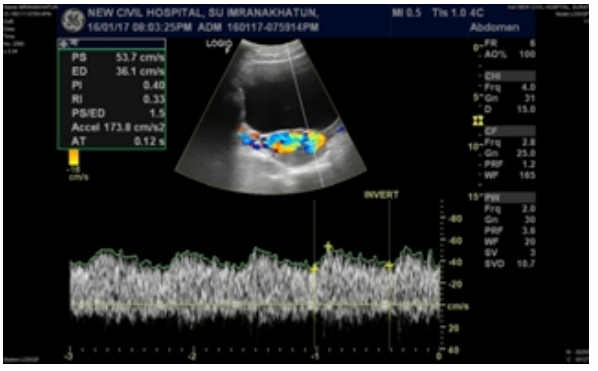

Fig 3. *Spectral Doppler US of vascular channels showing pulsatile low resistance high velocity wave form pattern*

Transabdominal Ultrasonography (USG) of the pelvis showed a bulky uterus measuring 8.9 cm (SI) × 5.8 cm (AP) × 5.0 cm (Transverse) with an endometrial thickness of 1.3 cm. There was increased vascularity of the uterus with myometrial tubular anechoic channels which appeared to be vascular channels involving anterior wall and fundus of the uterus, which likely originated from the left uterine artery (Fig. 1). Color filling mode shows mixed intense color filling hence proving vascular channels (Fig. 2).Spectral Doppler US showed a peak systolic velocity (PSV) of 53.7 cm/s and resistive index (RI) of 0.33 and pulsatility index (PI) of 0.40 (Figure 3).Color Transvaginal-US was performed showing a uterine mass bulking the anterior and fundic part

of the myometrium with nonpulsatile high flow vessels within the lesion (Fig. 4). A diagnosis of an Arteriovenous malformation was considered.

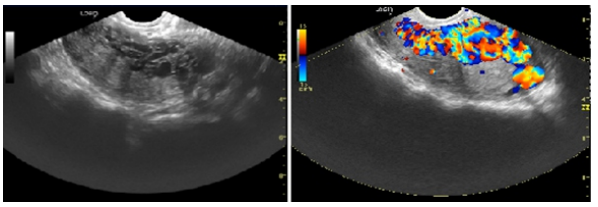

Fig. 4: *Transvaginal US (TVS) showing anechoic channels with mixed color filling confirming vascular channels*

CT Angiography was performed confirming vascular malformation in uterine myometrium with predominant arterial supply from iliac artery and part of it directly from IVC. (Fig. 5)

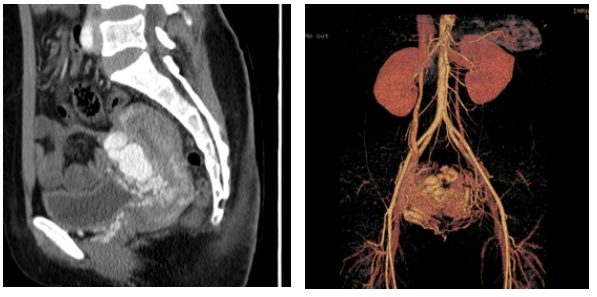

Fig. 5: *(Left) Post contrast Arterial phase sagittal CT image & (Right) Volume Rendering Reconstruction - dilated vascular channels filled with contrast material with predominant blood supply from iliac artery.*

DISCUSSION :

Uterine arteriovenous malformations (UAVM) are an uncommon vascular disease and represent 2 % of all genital and intraperitoneal haemorrhages[2], UAMV can be congenital or acquired. Acquired uterine AVMs are abnormal communications between intramural branches of the uterine artery and the myometrial venous plexus, deep inside the myometrium and endometrium. Congenital UAVMs tend to have multiple vascular connections and to invade the surrounding structures, while acquired UAVMs are confined within the myometrium and/or the endometrium showing direct communication between the intramural branches of the uterine artery and the myometrial veins[3] .

Causes of acquired uterine AVM include curettage and GTD, and rare causes as endometrial adenocarcinoma, maternal diethylstilbestrol exposure, miscarriage, uterine infections, myomas, endometriosis, intrauterine devices and trophoblastic disease.

Generally, such lesions occur in women at childbearing age, with either acute or chronic symptoms. The most common symptom is menorrhagia or menometrorrhagia. Other symptoms include recurrent spontaneous miscarriages, low abdominal pain, dyspareunia and anemia secondary to blood loss. Pelvic assessment can demonstrate a pulsatile mass.

Currently, transvaginal Doppler US is the most utilized method, and angiography is reserved for patients submitted to surgical treatment or therapeutic embolization. US findings include heterogeneous, ill-defined mass, with multiple, hypoechoic cystic or tubuliform structures varying in size and focal or asymmetrical endometrial and myometrial thickening. Doppler US demonstrates arteriovenous shunt with low-resistance and high-velocity flow. A normal myometrial signal will show a PSV of 9–44 cm/s and RI of 0.6–0.8. In addition, uterine AVM will exhibit intensely vascular and multidirectional flow [4]. Spectral Doppler US will show high velocity and low resistance (mean RI: 0.3) flow, low pulsatility of the arterial waveform, and pulsatile high-velocity venous waveform[5]. Spectral analysis may predict the degree of the vascular lesion arterializations and aid in the definition of the treatment.

MRI is an excellent noninvasive method to determine the disease extent and aid to confirm the diagnosis[6]. Typical MR findings are a bulky uterus with absence of a defined mass and the presence of serpiginous and dilated vessels within myometrium or parametrium. MR-angiography demonstrates a nidus of high-flow vessels in the uterus fed by uterine arteries and draining into parauterine veins. Digital subtraction angiography (DSA) remains the gold standard for the diagnosis of AVM but reserved when a patient requires surgical intervention due to invasiveness. Findings with DSA include bilateral hypertrophy of uterine arteries that feed a tortuous, hypertrophic arterial mass with large accessory feeding vessels, and early drainage into enlarged hypertrophic veins.

Treatment can be surgical (Hysterectomy or surgical removal of AVM), or with selective uterine arterial embolization (UAE) (Most preferred)[7]. Surgery should be reserved for those cases in which UAE is not feasible or is contraindicated. Medical treatment with combined oral contraceptive pill has been reported in literature.

Conflicts of interest : No conflits
Total no of pages : 6

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