WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.074
Volume 7, Issue 18, 242-249. Case Report ISSN 2277– 7105

MRI IN THE DIAGNOSIS OF CONGENITAL UTERINE MALFORMATIONS: A CASE REPORT AND LITERATURE REVIEW

Ahmed Rashid*, Nedham Aysha, Alfadhel Hani, Bunashi Mooza

Bahrain Defence Force Hospital.

Article Received on
08 Sept. 2018,
Revised on 29 Sept. 2018,
Accepted on 20 Oct. 2018
DOI: 10.20959/wjpr201818-13570

***Corresponding Author**
Ahmed Rashid
Bahrain Defence Force Hospital.

ABSTRACT

Background: Congenital uterine abnormalities comprise a diverse and complex group of conditions which challenge the radiologist not only in obtaining optimal imaging but also in their interpretation. Uterine congenital anomalies are clinically relevant because these are associated with increased incidences of infertility and menstrual disorder. These are frequently not diagnosed at birth. These anomalies usually diagnosed at child®bearing age when reproductive malfunction arise. When normal mullerian duct development interrupted at any stage, it results in mullerian abnormality. It may present with infertility, spontaneous abortion, premature delivery, and fetal malposition. All that makes it very challenging to diagnose. Ultrasonography is the primary investigation; however, MRI is an excellent noninvasive investigation for accurate evaluation of uterine congenital anomalies. MRI is a very good modality to evaluate the vaginal malformation, which usually difficult to evaluate by ultrasound. It helps physicians and radiologists in the diagnosis of female genito-urinary malformations, especially of complex cases, the embryology of the female genital tract, the basis for Müllerian development anomalies. **Case:** We report a case of an 18 years old single female lady who is known to have multiple congenital anomalies and underwent earlier an artificial vagina reconstruction in Jordan (made from bowel). She has a history of solitary pelvic kidney (congenital) multiple images done earlier for her including ultrasound, CT renal with and without contrast. Patient presented with a 3-day history of severe abdomino-pelvic pain, along with nausea and vomiting. MRI abdomen was done and revealed bicorneate uterine and blood collection in uterine cavity so underwent EUA and dilatation. **Conclusion:** MRI is an excellent noninvasive investigation to accurate estimation of morphology of uterus, cervix, and vagina in the congenital anomalies, which is very important in the

treatment planning.

KEYWORDS: Mullarian Duct Agenesis, Malformation.

INTRODUCTION

Congenital uterine abnormalities comprise a diverse and complex group of conditions which challenge the radiologist not only in obtaining optimal imaging but also in their interpretation. Magnetic resonance imaging (MRI) is the most accurate technique for the study of the anatomy of the female pelvis and the method of choice for evaluation of congenital uterine malformations.[1]

There is a varied amount of uterine congenital anomalies. Most of them are underdiagnosed due to the lack of symptoms during childhood but start to show after menarche.[2] Symptoms in the case of young women range from forms of dysmenorrhea, miscarriages or premature deliveries, but uterine anomalies might be also present in 2 to 3 percent of fertile women with normal reproductive outcomes So patients who are asymptomatic might realize they have a congenital anomaly after a routine exam is performed or through an ultrasound during pregnancy. In the study of these anomalies, hysteroscopy or hysterosalpingography (HSG) may be carried out to examine the uterus cavity, as well as 3D-ultrasound, magnetic resonance imaging (MRI) or a diagnostic laparoscopy to examine the external surface.[3]

The prevalence of female genital tract anomalies is 4%–7% in general population and up to 8%–10% in women who have recurrent pregnancy loss.[4-5] Incidence of mullerian duct anomaly is approximately 1% in general population and it is approximately 3% in patients with infertility.

Congenital vaginal or uterine outflow obstruction may occur at different levels with different clinical presentations.[6] In hematocolpos there is accumulation of menstrual blood in the vaginal cavity. Its occur due to obstruction in vaginal outflow tract. Vaginal outflow obstruction is commonly associated with imperforate hymen, transverse vaginal septum, vaginal atresia, hemi-vaginal atresia (Herlyn Werner Wunderlich syndrome), cervico -vaginal atresia, the incidence of these anomalies is reported between 3.8 and 0.1%.[7]

Majority of patients with vaginal outflow obstruction may experience sexual difficulty,

menstrual irregularities and infertility.[8]

There is a high degree of concordance between three dimensional ultrasound (3D-US) and magnetic resonance imaging (MRI) in the diagnosis of uterine malformations, We have show that 3D-US, if complemented by careful clinical examination, is comparable to MRI in identifying anomalies in the cervix.[9,10]

CASE REPORT

An 18-years-old female known to have multiple congenital anomalies, operated for cleft palate earlier in her life presented with a history of severe abdomino-pelvic pain, along with nausea and vomiting since 4 days, This was her first attack of a similar complain. However, there was no abnormal vaginal bleeding, nausea, vomiting, or diarrhoea.

The girl had multiple congenital abnormalities with gross dismorfic facial feature. Her gynecological history has been complicated since the year 2013 when she underwent a diagnostic laparoscopy when she was 13 years of age after following for a chronic severe cyclical pain along with dysmenorrhea and haemoperitoneum on pelvic sonography of which she diagnosed to have bicornuate uterus with blind end and a left pelvic kidney was seen. Three years later in jordan she was diagnosed to have vaginal ageneses and underwent surgical creation of functional vagina from a part of bowel used to create the new vagina. One month later again had severe abdominal pain and ultrasound revealed multiloculated cytic collection of left adnexa so underwent laparotomy + left adenxal mass excision in 2016 in bdf, size of masses excised were 7x3x3cm and 6x3x1.5cm. Histopathology results according to appearances are acute salpingitis with pyosalpinx. No malignancy is seen.

On examination, she had a rigid abdomen, multiple operation scar, tenderness. External genitalia looks normal, patent vagina, no signs of infection. A bimanual physical examination indicated a small pinpoint structure felt high up on the right side does not feel like cervix and tender pelvic mass, movable, and mildly tender to palpation. ultrasound scan (**Figure 1**) showed a globular shaped structure, looks like uterus by anatomy 3 cm fluid collection in the cavity, solitary ectopic pelvic kidney showing normal in size and echogenicity. No hydronephrosis and no renal calculi are seen. Bulky size uterus. Bicorneate with No uterine masses. The endometrium is heterogeneous and thickened measuring 18mm. The LT ovary is normal and RT ovary could not be seen.

No free fluid in POD. No appendicitis. No cholecystitis. CT scan (**Figure 2**) showed inflammatory multilobulated collection on the right side of pelvis not related to the bowel, the sigmoid colon was present on the right side with left ovarian complicated cyst. Magnetic resonance imaging (MRI) was performed in order to evaluate the possible genito-urinary anomaly (**Figure 3 and 4**). MRI showed evidence of pelvic kidney which has normal morphology seen setting on the uterine fundus however no significant mass effect us seen in the uterus. The uterus is deformed and appear to be bicornuate with fluid-fluid level seen within its cavity mainly the Lt.cornu which measured 3cm in thickness. No uterine or cervical mass lesion. No fluid is seen within the cervix. No free fluid in the pelvis. No adnexal mass lesion. No enlarged pelvic lymph nodes.

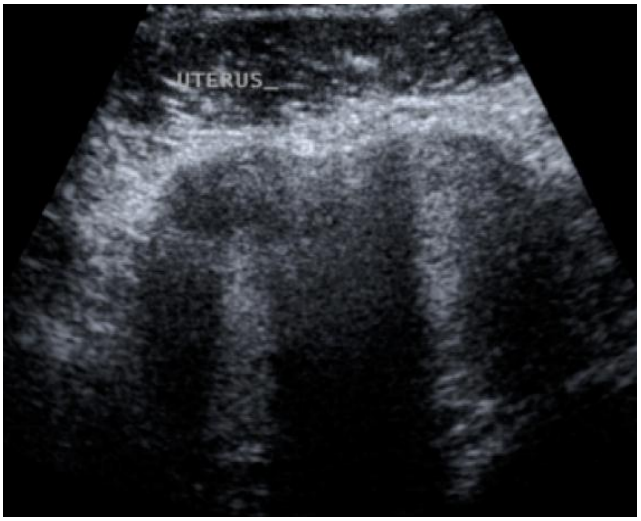

Figure 1: Ultrasound showing bulky bicorneate Uterus.

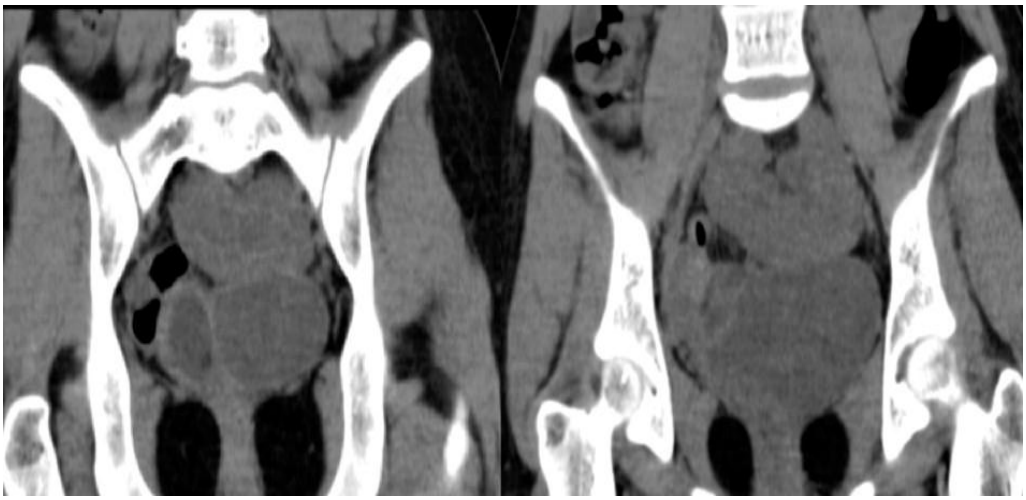

Figure 2: CT scan showing bulky bicorneate Uterus with fluid accumulated inside the endometrial cavity and solitary pelvic kidney.

Urine showed UTI and culture was positive for citrobacter Koseri +3. pain persisted so CT renal without contrast was done and showed, pelvic kidney is noted which also malrotated. No hydronephrosis or stone is seen within it. Note is made of air within the urinary bladder.

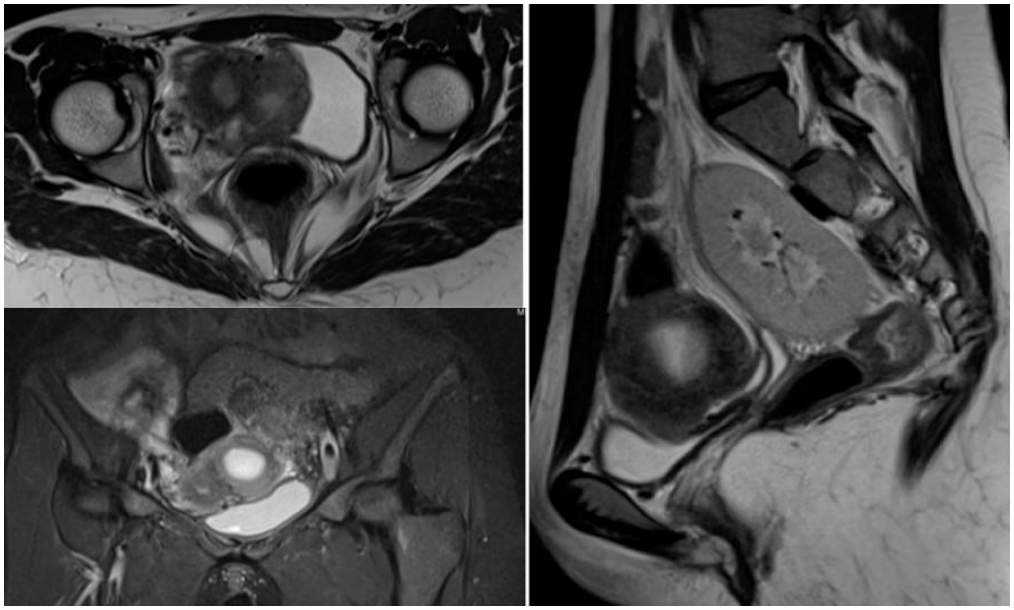

Figure 3: MRI showing pelvic kidney setting on the uterine fundus but with no significant mass effect seen in the uterus. The uterus is deformed and appear to be bicornuate with fluid- fluid level seen within its cavity mainly the Lt.cornu which measured 3cm in thickness. No uterine or cervical mass lesion. No fluid is seen within the cervix. No free fluid in the pelvis. No adnexal mass lesion. No enlarged pelvic lymph nodes.

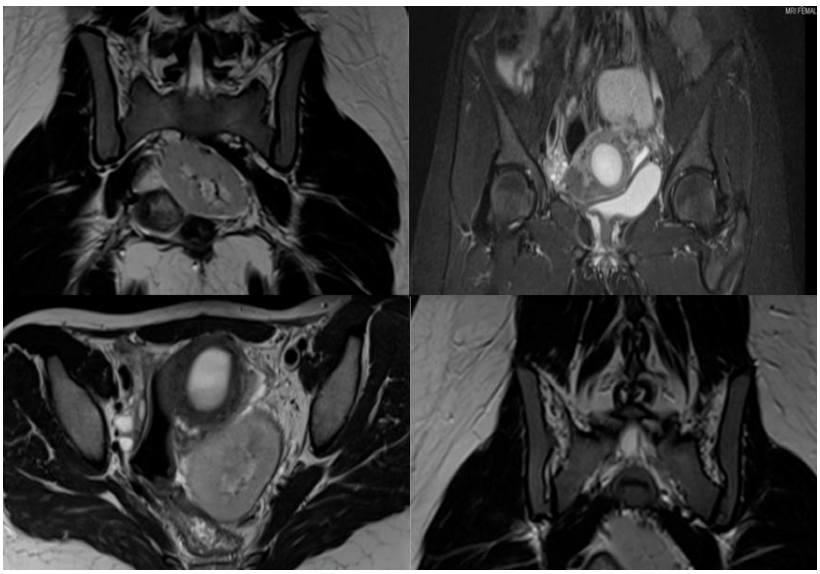

Figure 4: MRI female pelvis.

So underwent examination under anaesthesia and dilatation, that revealed a Normal vulva, Vagina looks patent Per speculum --- Cervix not able to locate Bimanula examination --- Small pinpoint structure felt high up on the right side does not feel like cervix so US scan again intraop revealed Globular shaped structure, looks like uterus by anatomy 3 cm fluid collection in the cavity slit cervix kidney seen very close to the uterus Not able to manipulate from the vagina. Patient kept on IV antibiotics with analgesia. She had uneventful post operative recovery and was discharged home in stable conditions.

DISCUSSION

Magnetic resonance imaging (MRI), due to its optimal delineation of anatomy, has become the mainstay in imaging for diagnosing Müllerian duct anomalies (MDA). Pelvic MRI is requested for various conditions such as primary amenorrhoea, infertility or poor obstetric history with regard to MDA, as identifying the exact aetiology for these conditions is vital. Knowledge regarding the classification of MDA is important, as the treatment varies with respect to the different classes.

The overall prevalence of these disorders may be as high as 3 to 6% and even higher in certain groups of women.[11-13] Today, there is increased detection caused by increased utility of imaging. The magnetic resonance image (MR) is the imaging standard of reference because it is non-invasive, does not involve ionising radiation, has multiplanar capability, allows excellent soft-tissue characterisation and permits a greater field of interrogation than ultrasound (US) (2D and 3D).[14-16] However, other authors[17] believe that US (3D) could replace MR as the new gold imaging standard in diagnosing Müllerian anomalies.

T1-weighted sequences of MRI are used to define any haemorrhagic component in the obstructed anomaly such as haematometra, adenomyosis, ovarian chocolate cyst and benign teratoma. It is also useful for uterine cysts with mucinous components and paravaginal Gartner's duct cysts.

Three-dimensional transvaginal ultrasound is almost as sensitive as magnetic resonance imaging (MRI) in diagnosing congenital uterine anomalies.[18] However, MRI is preferred, as the T2 sequences enable clear delineation of the uterine zonal anatomy, ovaries, follicles, vaginal continuity to the uterus and vaginal septum.[19]

Clinical, USG and MRI scan helps in establishing the different pattern of vaginal or uterine outflow tract obstructions like imperforate hymen, transverse vaginal septum, longitudinal vaginal septum and cervico‐vaginal atresia.[20]

CONCLUSION

MRI is an excellent noninvasive investigation to accurate estimation of morphology of uterus, cervix, and vagina in the congenital anomalies, which is very important in the treatment planning.

REFERENCES

1. Carrington BM, Hricak H, Nuruddin RN, Secaf E, Laros RK Jr, Hill EC. M¨ullerian duct anomalies: MR imaging evaluation. Radiology, 1990; 176: 715–20.
2. Console D, Tamburrini S, Barresi D, Notarangelo L, Bertucci B, Tamburrini O. The value of the MR imaging in the evaluation of M¨ullerian duct anomalies. Radiol Med., 2001; 102: 226–32.
3. Brown MA. MR imaging of benign uterine disease. Magn Reson Imaging Clin N Am, 2006; 14: 439–53. [http://dx.doi.org/10.1016/j.mric.2007.01.006].
4. Acién P. Incidence of Müllerian defects in fertile and infertile women. Hum Reprod, 1997; 12: 1372‐1376.
5. Acién P, Acién M. Diagnostic imaging and cataloguing of female genital malformations. Insights Imaging, 2016; 7: 713‐726.
6. Stray®Pedersen B, Stray®Pedersen S. Etiologic factors and subsequent reproductive performance in 195 couples with a prior history of habitual abortion. Am J Obstet Gynecol, 1984; 148: 140®6.
7. Raga F, Bauset C, Remohi J, Bonilla®Musoles F, Simón C, Pellicer A. Reproductive impact of Mullarian duct malformations, 2008.
8. Johal NS, Bogris S, Mushtaq I. Neonatal imperforate hymen causing obstruction of the urinary tract. Urology, 2009; 73: 750–1.
9. Laufer MR, Goldstein DP, Hendren WH. Structural anomalies of the female reproductive tract. In: Emans SJH, Laufer MR, Goldstein DP, editors. Pediatric.
10. Rock JA, Zacur HA, Dlugi AM, Rock JA, Zacur HA, Dlugi AM, et al. Pregnancy success following surgical correction of imperforate hymen and complete transverse vaginal septum. Obstet Gynecol, 1982; 59: 448.
11. Bermejo C, Cantarero R, D´ıaz D, Labrador E, Ruiz L. Threedimensional

ultrasonography in the diagnosis ofMu¨ llerian duct anomalies. Donald School Journal of Ultrasound in Obstetrics and Gynecology, 2009; 3: 21–30.

12. Bermejo C, Mart´ınez Ten P, Cantarero R, D´ıaz D, P´erez Pedregosa J, Barro´ n E, Labrador E, Ruiz Lo´pez L. Threedimensional ultrasound in the diagnosis of Mu¨ llerian duct anomalies and concordance with m.agnetic resonance imaging. Ultrasound Obstet Gynecol, 2010; 35: 593–601.
11. Saravelos SH, Cocksedge KA, Li TC Prevalence and diagnosis of congenital uterine anomalies in women with reproductive failure: a critical appraisal. Hum Reprod Update, 2008; 14: 415–429.
12. March CM (1990) Müllerian anomalies. Fertility news 24/1. Endocr Fert Forum 13:1.
13. Acién P. Incidence of Müllerian defects in fertile and infertile women. Hum Reprod., 1997; 12: 1372– 1376.
14. Pellerito JS, McCarthy SM, DoyleMB, GlickmanMG, DeCherney AH. Diagnosis of uterine anomalies: relative accuracy of MR imaging, endovaginal sonography, and hysterosalpingography. Radiology, 1992; 183: 795–800.
15. Saleem SN MR imaging diagnosis of uterovaginal anomalies. current state of the art. RadioGraphics, 2003; 23: e13.
16. Behr SC, Courtier JL, QayyumA. Imaging ofMüllerian duct anomalies. RadioGraphics, 2012; 32: E233– E250.
17. Berger A, Batzer F, Lev‐Toaff A, Berry‐Roberts C. Diagnostic imaging modalities for Müllerian anomalies: the case for a new gold standard. J Minim Invasive Gynecol., 2014; 21: 335–345.
18. Graupera B, Pascual MA, Hereter L, et al. Accuracy of three‐dimensional ultrasound compared with magnetic resonance imaging in diagnosis of Mullerian duct anomalies using ESHRE‐ESGE consensus on the classification of congenital anomalies of the female genital tract. Ultrasound Obstet Gynecol. 2015; 46(5): 616–622. https://doi.org/10.1002/uog.14825
19. Troiano RN, McCarthy SM. Mullerian duct anomalies: Imaging and clinical issues. Radiology. 2004; 233(1): 19–34.https://doi.org/10.1148/radiol.2331020777
20. Caloia DV, Morris H, Rahmani MR. Congenital transverse vaginal septum: vaginal hydrosonographic diagnosis. J Ultrasound Med 1998; 17: 261–4.