



Radiodiagnosis

DEEP PELVIC ENDOMETRIOSIS WITH URINARY BLADDER AND OVARIAN INVOLVEMENT: ORIGINAL CASE REPORT AND REVIEW OF LITERATURE.

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ABSTRACT Bladder Endometriosis is considered as a rare cause of Infiltrating pelvic endometriosis presenting as a localized mass lesion along the urinary bladder wall with detrusor muscle involvement and ovarian endometrioma. We report a rare case of a deep pelvic endometriosis invading urinary bladder and ovary, presenting with primary infertility and urinary complaints. Imaging plays a crucial role and helps clinician in early diagnosis and evaluation of extent of endometriosis contributing to the preoperative planning and timely management.

KEYWORDS : Endometriosis, Ultrasonography, Magnetic Resonance Imaging.

CLINICAL HISTORY:

A 29 year old female patient presented to the department of radiodiagnosis for evaluation of primary infertility. She presented with history of irregular menstrual cycles associated with dysmenorrhea and abdominal discomfort especially during urination since 6 months and increased frequency of urination. No previous history of surgeries. On physical examination, vitals are stable. Gynaecological examination demonstrated normal sized uterus with tender fornices.

IMAGING FINDINGS:

Patient was subjected to transvaginal ultrasound after taking the consent, revealed an irregular hypoechoic mass lesion of 29 x 17 mm seen along anterior wall of uterus invaginating the posterior wall of urinary bladder with minimal internal vascularity on color Doppler. Left ovary was abnormally located posterior to the uterus and is seen adherent to it. (Fig 1, 2 & 3).



Fig 1a & 1b: Transvaginal ultrasonography sagittal view showing an ill defined hypoechoic nodular lesion along the posterior bladder wall and anterior wall of uterus with internal vascularity causing obliteration on vesicouterine space.



Fig 2: Transvaginal ultrasonography coronal view showing a hypoechoic lesion causing loss of bladder-uterine interface.



Fig 3: Transvaginal Ultrasonography showing left ovary adherent to uterus with a hypoechoic lesion suggesting endometrioma.

MRI pelvis demonstrated a T1 hypointense and T2 heterogeneously hypointense with few cystic areas and showing minimal enhancement is noted in vesico-uterine pouch with asymmetric focal thickening of posterior wall of urinary bladder and showing haemorrhagic foci on Gradient recovery sequence. Left ovary is seen adherent to the uterus with endometrioma, suggesting infiltrating endometriosis with peritoneal adhesions. Thickening of round and broad ligaments are noted on right side. On MRI screening of whole abdomen, no gross lesions were noted in peritoneal cavity. (Fig 4,5,6 & 7).

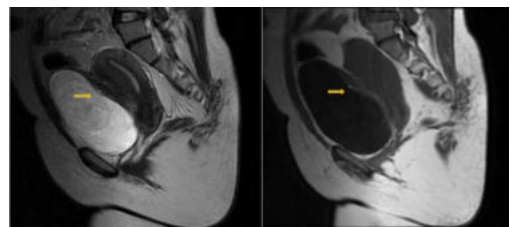


Fig 4a & 4b: Sagittal T2W and T1W images showing an ill defined heterogeneous lesion with few tiny T1/T2 hyperintense areas along the posterior wall of urinary bladder with infiltration of vesicouterine space.

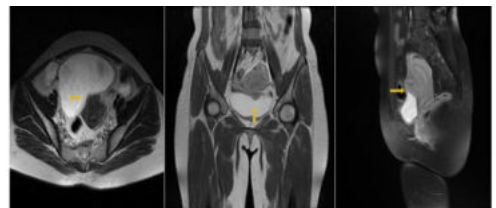


Fig 5a & 5b: Axial T2W, Coronal T1W and Sagittal Post contrast fat suppressed images showing a heterogeneously mass lesion along the posterior wall of urinary bladder showing enhancement on post contrast study.

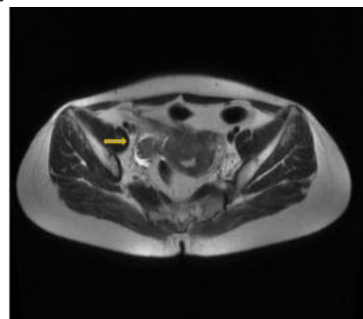


Fig 6: Axial T2W image showing thickening of round and broad ligaments on right side with minimal fluid collection around right ovary.

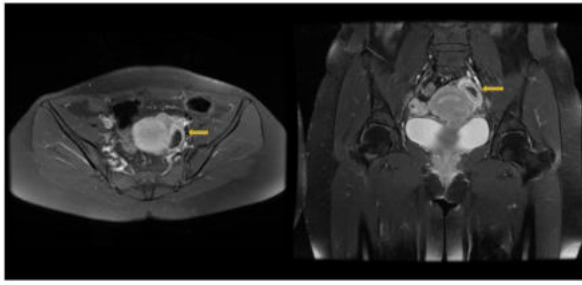


Fig 7a & 7b: Post contrast Axial and coronal fat suppressed images showing left ovarian endometrioma. Another small endometrioma is seen in right ovary as well.

Patient underwent laparoscopic evaluation subsequently and was treated with left sided oophorectomy. Gross specimen with histopathology showed multiple endometriotic deposits in pelvic cavity with obliteration of vesico-uterine space and dense adhesions involving left adnexal region with a chocolate cyst.

DISCUSSION:

Endometriosis is characterized by the abnormal location of functional endometrial tissue outside the uterine cavity with a prevalence of 10% in reproductive age group, commonly seen between 30 -45 years of age. Patients usually complain of dysmenorrhea, dyspareunia, infertility.

Most commonly present as ovarian endometriomas, peritoneal implants leading to adhesions and deep pelvic endometriosis, which is considered as an aggressive form of infiltrating endometriosis that can cause obliteration of anatomical compartments within the pelvis by involving uterine ligaments like round and uterosacral ligaments, cul-de-sac and pelvic peritoneum, fallopian tubes and recto-sigmoid regions [1].

Extrapelvic involvement is very rare and can be demonstrated as superficial implants with previous history of gynaecological surgery presenting as scar endometriotic deposits and also can show intrathoracic presentation, sciatic nerve involvement.

Main etiopathogenesis of infiltrating endometriosis depends on depth of invasion and duration of the disease. The ectopic located endometrium causes cyclical haemorrhage due to hormonal stimulation that results in fibrosis and inflammation [2].

Ultrasonography is considered as an initial imaging modality in assessing pelvic endometriosis. It is radiation safe, easily accessible, time saving, relatively low cost and helps in real time visualization of pathology. Transabdominal and transvaginal ultrasound can demonstrate endometriosis. Ultrasonography also helps in evaluating adenomyosis, ovarian endometriomas, hydrosalpinx and hematosalpinx. It can detect deep pelvic endometriosis as hypoechoic nodular infiltrates along the anterior and posterior uterine serosal surfaces, demonstrates focal probe tenderness and dynamic assessment of organ mobility with obliteration of vesicouterine space by eliciting sliding sign, as restricted movements can occur due to adhesions. On colour Doppler, lesions may show minimal or absent vascularity [10,12].

Magnetic resonance imaging helps in accurate diagnosis thus guiding the clinician in presurgical work up and timely management. T2W sequence helps in detecting infiltrating endometriosis. T1W imaging is used to diagnose endometriotic cysts as T1 hyperintense lesions. However, a variable degree of T1 and T2 shortening is demonstrated in endometriomas depending on the protein content and viscosity within the lesion. Frequently, low signal intensity within endometrioma shows "T2 shading sign". Contrast enhanced MRI is indicated in diagnosing and characterizing endometriosis. Endometriotic lesions demonstrate intense contrast enhancement further helps in localizing, staging and prognosis of infiltrating endometriosis.

Diffusion weighted MRI helps to differentiate endometrioma and haemorrhagic cyst, as restricted diffusion with lower ADC value is seen with endometriomas. Susceptibility weighted MRI can demonstrate areas of haemorrhage as signal void and helps to diagnose extrapelvic endometriosis and endometriomas. Frequently endometriosis is associated with dilated fallopian tube leading to pyosalpinx or haematosalpinx. Uterosacral ligament involvement can

be seen as irregular fibrotic or nodular thickening appearing T1/T2 hypointense with areas of haemorrhagic foci showing variable signal intensity. Around 2 -3 % of patients with endometriosis are at higher risk of developing epithelial ovarian cancers like clear cell and endometrioid types suggested by rapid increase in size with T2 hyperintensity and presence of enhancing mural nodules within the endometriomas. Urinary bladder and rectosigmoid involvement can be demonstrated as ill-defined infiltrative or nodular lesions with T2 hypointensity showing internal foci of variable T1 signal and T2 hyperintensity [3,4]. Thoracic endometriosis can involve tracheobronchial tree, pleural surface, pericardium, lung parenchyma and endometrial implants manifesting as nodular lesions, occasionally leading to pneumothorax [5]. Round ligament involvement presents as palpable painful swelling inguinal mass most commonly at the level of canal of neck, results in shortening, kinking and nodular thickening usually more than 1 cm. Presence of free fluid around the round ligaments in antideclive position is considered as an indirect sign of intrapelvic portion of round ligament [6,7]. Vaginal involvement of endometriosis is seen as nodular posterior parietal thickening showing T2 hypointensity with obliteration of retrouterine recess and haemorrhagic foci within.

Urinary tract is an infrequent site of endometriosis and is estimated that only 0.2 – 2.5 % of patients suffering from this disease have lesions involving urinary system. Urinary bladder involvement is seen in 50-75% of urinary tract endometriosis, rarely affect ureters, urethra and kidneys. Patients usually present with dysuria, cyclical urinary symptoms, frequent urination and haematuria [7].

Abdominal wall involvement is most commonly seen in endometriosis associated with prior gynaecological surgeries causing implantation of endometrial tissue along the previous scar, abdominal subcutaneous tissues and rectus. Thus, MRI helps in evaluating the location, extent and characteristics of the lesion [8].

Deep infiltrating endometriosis is defined as endometriotic tissue invasion of pelvic structures for a depth of more than 5 mm causing fibrosis and adhesions resulting in obliteration of anatomical compartments [9].

Endometriosis affecting vesicouterine space causes its obliteration and demonstrates hypointense nodular lesions leading to dense adhesions with loss of normal interface. Bladder involvement can be seen as serosal or detrusor muscle involvement and presents as multiple hyperintense foci showing heterogeneous enhancement on post contrast study.

Ureteral involvement can be manifested as infiltration of muscularis propria, lamina propria or luminal extension. On MR imaging, ureteral infiltration is seen as multiple nodular hypointense nodular lesions on T2 imaging. Occasionally, periureteral adhesions can be demonstrated [10].

Two types of bladder endometriosis are seen. First type of endometriosis usually develops in patients with previous gynaecological surgeries causing implantation of endometrial tissue in ectopic location. Second type is seen in patients with deep infiltrating endometriosis who have no history of previous surgeries. Differential diagnosis includes tumours of urinary bladder [11].

CONCLUSION:

Extrapelvic presentation of endometriosis is rare which includes urinary bladder, superficial implants and adhesions as a result of prior gynaecological surgery and intrathoracic involvement.

Imaging modalities currently used to diagnose pelvic endometriosis include Ultrasound and Magnetic Resonance Imaging. Transvaginal ultrasonography is considered as initial imaging modality however MRI is more specific in evaluating deep pelvic endometriosis and peritoneal implants which helps in preoperative staging, treatment planning and further management.

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CONFLICT OF INTEREST: None

INFORMED CONSENT FROM THE PATIENT: Yes

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