INTRODUCTION

Endometriosis is regarded as presence of functional endometrial tissue in an ectopic site. Although it is usually observed in ovarian tissue, uterosacral ligaments and rectouterine pouch; endometriosis has been reported to be detected almost in every part of body in literature (1). Its estimated prevalence in the general population is 10% and is most prevalent in the second decade of life (2). Bladder is the most common urinary site for endometriosis (3). However, ureter, urethra and renal pelvis might also be involved (3). Urinary endometriosis occurs mostly in reproductive age but postmenopausal urinary endometriosis was also reported (4). Herein, we report a challenging case of ureteral endometriosis that causes recurrent obstruction.

CASE REPORT

A 46-year old female patient admitted to our department with right loin pain and vomiting. She had history of myomectomy performed 6 years ago and has had hypertension regulated by medical treatment. She has been smoking cigarette for 17 years (1 package/day). Right costovertebral angle tenderness was observed in physical examination. Intravenous urography (IVU) showed a normal left kidney and urinary tract but no pyelography phase occurrence on the right side. In addition, right ureter was not visualized throughout the study. Urine test showed 2 erythrocytes and 32 leukocytes per high power field. Right ureterorenoscopy was carried out and no stone was identified in right ureter. Ureteral mucosa appeared normal. However, a narrowed ureteral segment was observed in the mid ureter. A double pigtail ureteral stent was placed into the right ureter. After six weeks time, ureteral stent was removed with cystoscopy. The patient admitted to our clinic with same symptoms after one month again. IVU once again revealed a complete ureteral obstruction at the level of mid ureter on the right side (Figure 1). Right ureterorenoscopy was carried out again and a hyperemic soft tissue lesion at the level of the ureteral mucosa was observed in mid ureter leading to ureteral obstruction. A punch biopsy was taken from the lesion. A double pigtail ureteral stent was placed into the ureter. Histopathological examination of the biopsy revealed endometriosis (Figure 2-4). GnRH analogue therapy was given by the department of gynecology. The patient had no loin pain after double pigtail stent is removed after six months and has been symptom free in third year follow-up. Additionally, radiologic imaging showed complete resolution of the hydrenephrosis (Figure 5). However, she had preferred surgical therapy in case of possible recurrence of the disease and concurrent leiomyoma of uterus and undergone total abdominal hysterectomy during follow-up.

DISCUSSION

Although ureteral stone disease is a frequent cause of acute ureteral obstruction, other conditions including abdominal aortic aneurysms, intrinsic or extrinsic mass lesions, abscess causing extrinsic obstruction, retroperitoneal fibrosis, pelvic lipomatosis,
endometriosis, iliac artery aneurysms, circumcaval ureter, testicular vein thrombophlebitis, puerperal ovarian vein thrombophlebitis have been reported to be other causes (5). Ureteropelvic junction obstruction is another condition that might lead to ureteral obstruction. Symptoms include acute colic loin pain and hematuria. Additionally, vomiting, fever and constitutional symptoms might also occur. Complete blood count, blood chemistry and dipstick urine test are usually first line laboratory tests. Urinary ultrasound and kidney-ureter-bladder (KUB) x-ray are the most common initial radiological studies in acute settings. Intravenous urography (IVU) or non-contrast computerized tomography (CT) is mostly required for definite diagnosis. In rare conditions, contrast enhanced CT/MRI or CT/MR urography would be necessary. Even in some cases the definitive diagnosis would be challenging and only would be possible with endoscopic intervention and biopsy.

Endometriosis is a common gynecologic condition usually affecting women of childbearing age (2). Symptoms depend on the anatomic site of the endometriosis. Bladder is the most commonly involved urinary organ however ureter is also involved in 15-20% of the cases (3). Urethra and renal pelvis endometriosis are also rare conditions. Both intrinsic and extrinsic ureteral involvements were described in literature and extrinsic distal ureteral involvement is seen more commonly (6). Even bilateral involvement was reported and left side involvement has been reported to be more common (7). In our case urinary obstruction was a result of right ureteral intrinsic endometriosis. Some patients may present with chronic obstruction which may result loss of unilateral kidney function (3,7). Cyclic flank pain, hematuria, dysuria and cyclic lower urinary symptoms were reported in previous publications (1,8). Initial presenting symptoms of our patient included right flank pain and vomiting. IVU revealed acute urinary obstruction with no pyelography phase in the right urinary system. Right ureterorenoscopy revealed ureteral obstruction due to severe soft tissue edema and a double pigtail ureteral
stent was inserted in the right ureter that was taken out after two months. Thereafter, patient’s symptoms recurred and IVU revealed acute right urinary obstruction with no pyelography phase again.

Considering the asymptomatic clinical course and loss of kidney function, patients with documented pelvic endometriosis should also be examined for the presence of urinary endometriosis in female patients (6,7). USG, IVU and cross sectional imaging with either CT or MRI are diagnostic radiological modalities. Nuclear renal scan is capable of documenting the functional obstruction. Cystoscopy and ureteroscopy with biopsy are endoscopic interventions leading to definitive diagnosis (3). In our case although there was no lesion identified apart from severe edema in ureter during initial ureterorenoscopy, definitive diagnosis of endometriosis was only possible with punch biopsy that was taken during the second ureterorenoscopy. Therefore, we suggest taking biopsy during initial ureterorenoscopy that might have led to correct diagnosis and prevent delay of correct treatment.

Treatment should be individualized. Patients’ age, fertility status, function of the affected kidney and symptoms are all have an impact on decision making. Nephrectomy and ureterectomy might be performed in non-functioning kidneys (7). Hormonal ovarian ablation with GnRH agonists is a treatment choice in patients with normal renal function and normal nuclear renal scan (8). LHRH analogues could also be used in post-menopausal women. Patients with significant hydronephrosis and periureteral involvement should be considered for surgical treatment. Total hysterectomy with bilateral salpingooopherectomy was suggested as an option for women who are not desiring fertility in future (5). Women desiring fertility in future could be managed with ureterolysis with segmental

ureterectomy or distal ureterectomy for extrinsic disease and ureteroscopic ablation for intrinsic disease. Minimal invasive approaches including robotic assisted laparoscopic approaches were also described and reported to be feasible in literature for all surgical interventions discussed above (7,8,9,10). Ultrasonographic surveillance for hydronephrosis is advised following treatment. In our case, conservative hormonal medical therapy as first line treatment lead to complete resolution of the disease and symptoms without any radiological recurrence. However, the definitive treatment modality was open surgical treatment due to patient’s preference which is successful.

**Figure 4:** Positive staining of stromal cells with CD10.

**Figure 5:** Coronal section image of abdominal MRI of 4th year follow-up.

**TAKE HOME MESSAGES**

Ureteral endometriosis is a rare cause of urinary tract obstruction that should be considered in female patients’ differential diagnosis. Urinary tract radiologic imaging should be carried out in patients with known pelvic endometriosis even in asymptomatic ones. Medical therapy with hormones might lead to complete resolution of the disease in the urinary tract including symptoms, signs and obstruction. Total hysterectomy with bilateral salpingooopherectomy has a very high success rates and should be discussed with the patient as an option.
CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES