Introduction

Fistulas of the genitourinary system can be classified as those involving the upper urinary tract (kidneys, ureter), lower urinary tract (bladder, urethra), or the female reproductive tract (vagina, uterus). They can form abnormal communications within the urinary tract or involve gastrointestinal tract, vascular system, lymphatic system, and skin.

Out of those involving the alimentary system, ureterocolic fistulae are very uncommon and are diagnosed using intravenous urography (IVU), computed tomography (CT), or retrograde pyelography.

At the time of publication of this report, very few cases of ureterocolic fistulae have been reported in the online literature to the best of authors’ knowledge; none of which have been diagnosed on a renogram. We present a case of iatrogenically-induced ureterocolic fistula, diagnosed on renogram and direct radionuclide cystography. This case showcases the possibility of using a renogram study as a diagnostic tool for a suspected ureterocolic fistula. A renogram study also enables to assess the renal function, which is essential in deciding the management.

Case Report

A 35-year-old lady, presented to the urology department with a 10-month history of pain in the left flank. This was associated with fever, chills, and diarrhea. She had undergone a Shirodkar sling operation in 2001 for uterine prolapse. On enquiry, the patient revealed history of pneumaturia and watery diarrhea since the sling surgery. Physical examination revealed a poorly nourished woman with mild tenderness in the left flank and no other apparent abnormality. Urinalysis showed high white blood cell counts. The urine contained Gram-negative rods, but no acid-fast bacilli. An ultrasound examination of the left kidney showed mild fullness of the pelvicalyceal system (PCS) with non-visualization of the ureter. IVU showed delayed nephrogram and excretion of the left kidney with hydronephrosis, proximal hydroureter, and non-visualization of the distal ureter.

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Manglunia, et al.: Ureterocolic fistula on renogram and DRC

The study showed normal tracer concentration in the urinary bladder with no evidence of vesicoureteral reflux or any extra-vesical tracer accumulation [Figure 4]. This ruled out the possibility of colovesical fistula. By exclusion, the findings of the Tc-99m EC renogram thus suggested the presence of a ureterocolic fistula. This was consistent with the history of the patient, suggesting iatrogenic injury being the cause of ureterocolic fistula.

Exploratory surgery was then carried out and it showed a left ureter severely adherent to the descending colon [Figure 5]. Successful repair was carried out.

Diuretic renogram and DRC study thus demonstrated the presence of a left ureterocolic fistula, which was not diagnosed on both USG and IVU. The EG renogram and DRC together were helpful in determining the location of the fistula and in planning surgical management.

Figure 1: Tc-99m EC dynamic renal scintigraphy showing differential renal function and extra-urinary tracer activity inferolateral to the left kidney marked by red arrow
Causes of ureterocolic fistula include urinary tract calculi, iatrogenic trauma, diverticulitis, radiation therapy, transitional cell carcinoma, and tuberculosis. A ureteric calculus often complicated by obstruction and pyelonephritis is the most common cause. A fistulous tract can develop in any area affected by chronic inflammation, necrosis, or ischemia. Patients with uretero-alimentary tract fistulas can present with varied symptoms depending on the etiology. Complaints include flank pain, hematuria, recurrent urinary tract infections, pneumaturia, and diarrhea. Reflux of colonic contents through the fistula results in chronic urinary tract infection. In cases of obstructing ureteral calculus, pneumaturia and fecaluria are uncommon. Passage of urine per rectum is rare because higher colonic pressures lead to predominantly unidirectional flow across the fistula.

Ureterocolic fistulae may be diagnosed using either urological or gastrointestinal imaging. Often, more than one investigation is needed to confirm the findings. Excretory urography, retrograde pyelography, and contrast-enhanced CT are frequently used procedures in a suspected case. An intravenous pyelogram may identify the fistula, although a poorly functioning kidney will make this less useful. A retrograde pyelogram can be used to determine the exact location of the fistula. An antegrade or retrograde...
ureterogram are the most sensitive imaging modalities available for the detection and characterization of the fistulous tract.⁶

Quantification of renal function on the affected site is important to plan the definitive surgery. Management may involve percutaneous nephrostomy and stent placement for urinary drainage with possible surgical resection. If there is persistent poor renal function, a nephroureterectomy, fistulectomy, segmental colonic resection, and primary colonic re-anastomosis are the possible definitive surgical treatment options. A temporary ureteral stent across the fistulous connection may be of benefit before definitive surgery by reducing the amount of periureteral inflammation. In non-surgical candidates, placement of a ureteral stent is the treatment of choice.

Although visualization of fistula is also possible by anatomical imaging, dynamic imaging provides more information such as the size and precise location. Moreover, diuretic renogram also aids in quantifying the renal function, which aids in management and treatment planning.

As per the author’s knowledge, this is the first report in literature of such a fistula being diagnosed by a renogram. This case brings to light the possibility of incorporation of dynamic renal scintigraphy in evaluation of patients with suspected urinary tract fistulas.

Declaration of patient consent
The authors certify that appropriate patient consent was obtained.

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Conflicts of interest
There are no conflicts of interest.

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