Colo-vesical Fistula Presenting as Urinary Tract Infection

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Abstract
We report a 59 years male who presented with urinary tract infection due to a colovesical fistula secondary to colonic diverticuli.

INTRODUCTION

Normally, the urinary system is completely separated from the alimentary canal. However, connections can occur between the two systems as a result of infection, inflammatory conditions, cancer, injury, iatrogenic complications, or more uncommonly as a result of incomplete separation of the two systems during embryonic development. A case of colovesical fistula secondary to colonic diverticuli is reported here.

CASE REPORT

A 59 years male presented to us with a 15-day history of pyuria and fever with chills. He was a case of membranoproliferative glomerulonephritis diagnosed four years back, treated with short-term steroid and antihypertensives. He had a history of left tuberculous pleural effusion 6 years back, which was adequately treated.

On admission to the hospital he was afebrile with a heart rate of 92 beats per minute, BP of 100/60 mm Hg, and had pedal edema. Rest of the examination did not reveal any abnormality. A urine analysis done prior to hospitalization revealed 200 WBCs/hpf and 100 RBCs/hpf with 100 mg/dl of proteins. There were few bacteria and nitrite was negative. There was a leucocytosis of 16000/cumm with a neutrophilic predominance. A urine culture had a significant growth of Klebsiella pneumoniae with a wide sensitivity pattern. His serum creatinine was stable at 2.1 mg/dl. He was started on ciprofloxacin. On the third day of hospitalization the patient complained of pneumaturia. Our provisional diagnosis at this stage was an enterovesical fistula.

Though most reports say that a CT scan is the investigation of choice for diagnosing this entity, we were hesitant about performing a CT scan in view of his baseline impaired renal function. So a micturating cystourethrogram (MCU) was done which showed a spillover of the dye from the bladder (Fig. 1). The patient was immediately subjected to limited CT cuts of the pelvis which showed evidence of contrast in the sigmoid colon and air in the bladder, suggestive of a fistulous communication between the sigmoid colon and the left wall of the bladder (Fig. 2). Multiple diverticuli were seen in the sigmoid colon with mild wall thickening.

The patient underwent repair of the fistula along with resection of the affected bowel segment. There were no intra or postoperative complications. Histopathological examination revealed colonic diverticuli. Four months after the surgery, the patient is doing well with stable renal functions and normal bowel and bladder functions.

DISCUSSION

Rufus of Ephesus described fistulous connections between the bowel and the bladder as early as the second century AD.

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Enterovesical fistula is a relatively uncommon complication of colorectal and pelvic malignancies, diverticulitis, inflammatory bowel disease, radiotherapy and trauma.

Approximately 10-15% of patients requiring surgery for diverticulitis have a fistulous connection extending into the bladder. Historically the common culprits of acquired fistulae were infections like typhoid, syphilis, amoebiasis and tuberculosis; but the causes have now shifted to the fore mentioned ones, probably due to better treatment available for infections.

Enterovesical fistulae may be anatomically categorized into colovesical, rectovesical, ileovesical and appendicovesical. Diverticular disease is the most common cause of colovesical fistula wherein there is a connection between the sigmoid colon and the dome of the bladder. Diverticulosis of the colon occurs in 40% of persons above the age of 60 years and is more common in the Western countries, often attributed to the low fiber diet among westerners. It is less common in Japan and other Asian countries. Young-Fadok et al reported that fistulas occurred in 2% of patients with diverticular disease; however among those requiring surgery for diverticular disease, 20% have fistulas, 65% of which are colovesical.

Trauma and malignancies account for the common causes of rectovesical fistulae. Ileovesical and appendicovesical fistulae can occur secondary to Crohn’s disease and appendicitis respectively. Of the inflammatory causes, diverticulitis accounts for 50-70%, Crohn’s disease for 10% and other rare causes like Meckel’s diverticulum, genitourinary coccidiodomycosis, pelvic actinomycosis and Fabry’s disease account for the remaining. Malignancies account for 20% of the causes of fistulae. The most notorious malignancy is colorectal carcinoma, though other malignancies like those of the bladder, cervix, prostate, ovary and small bowel lymphoma have also been reported to cause the same. Iatrogenically, a fistulous tract may develop as a result of surgical misadventures like prostatectomy, resection of rectal lesions or laparoscopic hernia repair. Radiation to the intestine may cause this complication, years after exposure. Even foreign bodies like swallowed toothpicks and ingested chicken bones have been reported to cause enterovesical fistulae.

Sigmoid colon being the commonest site for diverticulitis and also carcinoma, most of the fistulas originate at this site. The male to female ratio is 4.1:1. It has been suggested that the uterus affords protection against the development of colovesical fistulas in females. This condition is more common in the sixth and seventh decades of life. Sixty three percent of patients present with pneumaturia and / or fecaluria. Fecaluria is more pathognomonic as other gas producing organisms in the bladder like Clostridium or yeast may also cause pneumaturia. Urologic symptoms are commoner than rectal micturition; probably the higher pressure in the colon explains this.

Establishing a diagnosis involves clinical suspicion complimented by investigations. Urine cultures are often positive for bowel organisms. The urine should also be examined for cellulose fibers and for evidence for any material administered during testing (e.g. Charcoal, methylene blue, or contrast material from a barium enema study) (Bourne test). A CT scan, barium enema and cystoscopy can independently confirm the diagnosis. A CT scan of the abdomen may demonstrate the fistula when there is air or oral contrast in the bladder. It has a sensitivity and specificity of 90-100% and is superior to barium studies or cystoscopy. Other diagnostic modalities are sigmoidoscopy and colonoscopy, which, however, are not routinely done for establishing a diagnosis.

Treatment is essentially surgical involving primary resection of the colon with anastomosis performed as a 1-stage procedure, involving either simple closure, use of an omental flap, or resection and closure of the bladder defect. Repair of the fistula should be done simultaneously, otherwise any urine leaking from the colon and rectum can cause a lot of discomfort. Colovesical fistulas have also been repaired laparoscopically which offers the advantages of a shorter hospital stay, superior cosmesis and lesser ileus. However, this requires more expertise. Medical treatment is not popular nor as effective though there are reports of patients being managed conservatively with intermittent use of antibiotics. This option is mainly reserved for patients with comorbidities who are poor surgical risks. Alternative medical therapies have yet to be fully explored.

The purpose of reporting this case is to emphasize that we deferred the use of systemic contrast (using MCU
for documentation), in order to avoid radiocontrast induced nephropathy in a patient with pre-existing chronic kidney disease.

**REFERENCES**


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