Low Abdominal Pain

CHIN-KAI YEN, WEI-JING LEE

A 92-year-old woman with hypertension and diabetes mellitus, presented to the emergency department due to dysuria and frequency for the past 3 days. Her surgical history included an ureterorenoscopic stone manipulation and an extracorporeal shock wave lithotripsy for left ureteral stone 4 years ago. Physical examination revealed distended abdomen with suprapubic pain. Laboratory tests showed blood glucose level of 538 mg/dL, blood osmolarity of 309 mOsm/kg, negative ketone body, C-reactive protein level of 4.9 mg/L, blood urea nitrogen level of 10 mg/dL, and a creatinine level of 0.81 mg/dL. The blood cell count showed leukocytosis of $11.5 \times 10^9/\mu L$ ($11.5 \times 10^9/L$). Urinalysis showed RBC 80 to 100 /HPF and WBC 2-4/HPF. A plain radiographic film of the abdomen was obtained and revealed emphysematous cystitis with a vesical diverticulum (Fig. 1). A computed tomography of abdomen confirmed the diagnosis (Fig. 2).

![Fig. 1 Plain abdominal radiography showing emphysematous cystitis with a vesical diverticulum (bold arrow)](image-url)
complete recovery of symptoms was achieved after conservative treatment with antibiotics and foley drainage. Urine culture showed mixed flora and blood culture was negative of bacterial growth, maybe due to prior antibiotics treatment.

**Discussion**

Emphysematous cystitis is associated with gas-forming microbes including E. coli and K. pneumoniae. Diabetes mellitus is a risk factor for these infections. We reported a case of emphysematous cystitis associated with vesical diverticulum which was noted in plain abdominal radiography. Vesical diverticulum is characterized as a herniation of the urothelium through the muscular wall of the bladder, usually related to congenital disease, neurogenic bladder, and bladder outlet obstruction\(^{(1)}\). Congenital vesical diverticula are rare and single in most cases\(^{(4)}\). Ehlers-Danlos Syndrome, for example, is a spectrum of conditions resulting from a genetic defect in the synthesis of collagen\(^{(5,6)}\). Acquired vesical diverticula often result from elevated intravesical pressure due to bladder outlet obstruction or neurogenic bladder dysfunction\(^{(4)}\). Various complications associated with vesical diverticulum are recurrent urinary tract infection, defecation disturbance, urinary tract obstruction, stone formation, and development of carcinoma\(^{(3,4,7)}\). Initial diagnostic evaluation should include blood and urine tests as well as ultrasound, intravenous urography (IVU), micturating cystourethrography (MCU) and cystoscopy\(^{(1)}\). Cystoscopy is one of the gold standards for the diagnosis of vesical diverticulum and associated complications\(^{(1)}\). However, it is sometimes difficult to perform due to the tight orifice of the diverticulum. Computed tomography (CT), multidetector-row computed tomography (MD-CT) and magnetic resonance imaging (MRI) may also play significant role in diagnosis, better delineation of the pathology and surgical planning\(^{(1)}\). Vesical

![Fig. 2 A computed tomography of abdomen disclosed intramural gas along the urinary bladder wall, including a large outpouch from the left wall (bold arrow)](image-url)
diverticulectomy may be considered in cases with large diverticula, stone formation, recurrent urinary tract infections, spontaneous rupture, vesico-ureteral reflux, or development of carcinoma(8).

References