Epididymo-orchitis secondary to colovesical fistula

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\section*{A B S T R A C T}

Epididymo-orchitis is a common urological condition that can be caused by a variety of etiologies, including retrograde extension of a urinary tract infection. Colovesical fistulas are frequent sequelae of diverticulitis that allow for communication between the colon and urinary bladder. Such fistulas facilitate the spread of enteric bacteria into the urinary bladder, with possible subsequent spread throughout the rest of the genitourinary system. Retrograde extension into the epididymis and testis is very rare, however. We present the case of a 38 year old man with epididymo-orchitis secondary to a colovesical fistula.

\section*{1. Introduction}

Epididymo-orchitis (EO) is an infection of the epididymis and testis. It is a common urological condition that is often associated with sexually transmitted diseases or coliform infections.\textsuperscript{1,2} Colovesical fistulas (CVF) are pathological conduits between the colon and urinary bladder. Over half of CVFs are associated with underlying diverticulitis, a very common condition responsible for over 2.9 million outpatient visits and hospital admissions annually.\textsuperscript{3} Approximately 2\% of patients with diverticulitis will develop a CVF.\textsuperscript{4} Although both EO and CVF are both very common, EO secondary to CVF is extremely rare, with only a few such cases reported.\textsuperscript{1,4}

\section*{2. Case presentation}

A 38 year old male presented to the Emergency Department for left testicular pain over the preceding week and low back pain over prior two days. The patient also reported a two month history of pneumaturia. The patient’s pertinent prior medical history included type II diabetes, obesity and multiple prior incidences of diverticulitis.

Vitals were: HR 110, BP 115/73, respiratory rate 18 and temperature of 37.3 C. Review of systems demonstrated fever, congestion and cough. He had diarrhea but no abdominal pain, nausea or vomiting. On physical exam, abdomen was soft to palpation with no tenderness, and bowel sounds were normal. Genitourinary exam demonstrated left scrotal swelling. All other physical exam findings were within normal limits.

Abnormal lab values included: leukocytosis at 27.9, neutrophilia and left shift. Urinalysis demonstrated glucose 2+, positive nitrite, esterase 1+, WBC too numerous to count, and bacteria many. Subsequent urine culture greater than 100,000 colonies/mL of \textit{E. coli}.

Subsequent scrotal ultrasound demonstrated an enlarged, edematous, hyperemic testicle and epididymis with a moderate sized, septated hydrocele compatible with epididymo-orchitis (Fig. 1).

CT abdomen and pelvis revealed thickening of the wall of the sigmoid colon and adjacent urinary bladder with a fistula connecting the two structures (Fig. 2). Air was demonstrated within the urinary bladder. Small retroperitoneal periaortic, pelvic and inguinal lymph nodes were demonstrated.

Both urology and colorectal surgery were consulted and confirmed diagnosis. The patient was discharged home with amoxicillin and plans of future elective sigmoidectomy with takedown of colovesical fistula.

Cytoscopy performed a few weeks later demonstrated a pinpoint fistula in the left posterior wall of the urinary bladder (Fig. 3). The fistula appeared as a small linear soft tissue density extending from the bladder wall to the adjacent sigmoid colon. Gas was present within the bladder, and mucus like debris was visualized throughout.

The patient underwent robotic sigmoidectomy with primary anastomosis and takedown of the colovesical fistula was performed four days later.

\section*{3. Discussion}

Epididymo-orchitis (EO) is inflammation of both the epididymis (epididymitis) and testis (orchitis). Epididymitis occurs secondary to retrograde spread of cystitis, urethritis or prostatitis through the ejaculatory ducts and vas deferens.\textsuperscript{1} Orchitis may occur as a result of direct viral infection or, more commonly, following retrograde extension of existing epididymitis.\textsuperscript{1} EO may be caused by various etiologies,
including infection, genitourinary malformations, trauma, bladder outlet obstructions, or iatrogenic causes. In patients under the age of 35, EO is most often caused by *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in sexually transmitted infection (STI), while coliforms are the most common cause of EO in patients over the age of 35.

Colovesical fistulas (CVF) are pathological connections between the colon and urinary bladder. Diverticulitis is the most common cause of CVF and is responsible for 50–60% of CVFs. Most diverticula affect the sigmoid colon; as such, most CVFs occurring with diverticulitis arise in the sigmoid colon. Males suffer CVF secondary to diverticulosis at approximately four times the rate as women, due to the uterus acting as a barrier between the sigmoid colon and bladder. Besides diverticulitis, CVFs can be caused by other inflammatory conditions, malignancy, iatrogenic etiologies and congenital malformations. Likewise, CVF is not the only gastrointestinal-genitourinary fistula capable of inducing EO; similar fistulas have been reported to cause EO, including seminal-vesical fistulas.

Although both EO and CVF are very common, EO secondary to CVF is extremely rare. Only a few such cases have been reported. EO typically presents with scrotal pain, scrotal swelling, urinary problems and fevers. EO is classically diagnosed by ultrasonography (US) which adequately demonstrates the structure of the epididymis and testicle and shows any associated inflammation, abscesses, or hydroceles. Color doppler should be performed to rule out testicular torsion, a major differential of EO.

CVF presents with suprapubic pain, irritative voiding symptoms, fecaluria in 36–90.1% of patients and pneumaturia in 40–90% of patients. CVF can reliably be diagnosed on computed tomographic (CT) imaging, which can detect 90% of CVFs. Cystoscopy, colonoscopy and barium enema can be used if CT fails to identify a CVF. EO is typically treated with antibiotics, analgesics and, if necessary, surgery. EO secondary to CVF will lead to recurrent infections through the patent fistula. Thus, surgery must be performed to repair the CVF. The surgical approach to treating CVF is variable, depending on the indication and patient. Primary resection with anastomosis is the preferred surgical approach for CVF. Multi stage surgeries (primary anastomosis with colostomy/ileostomy or Hartmann’s procedure) are alternative treatment strategies and are particularly useful for patients with considerable inflammation or in emergency settings. Bladder repair is not usually indicated; direct bladder wall repair with suture is indicated for large fistulas or conspicuous bladder wall disruption.

4. Conclusion

In our case, a patient with known diverticulitis presented with signs and symptoms of EO, including pneumaturia and testicular pain. US demonstrated a hydrocele and ruled out testicular torsion; CT demonstrated a CVF. Urine culture revealed *E. coli*, and neutrophilia was demonstrated on CBC. A diagnosis of CVF secondary to diverticulitis leading to cystitis with retrograde extension causing EO was made.
following radiological imaging and subsequent cystoscopy. The patient later underwent a one stage robotic sigmoidectomy with primary anastomosis and takedown of the colovesical fistula. Although EO and CVF are both common, it is extremely uncommon for CVF to cause EO through retrograde infection from the urinary bladder to the epididymis to the testicle.

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