Acute bacterial prostatitis in an adolescent patient following blunt trauma

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ABSTRACT

Acute bacterial prostatitis is a common disease among adults. Acute bacterial prostatitis in the pediatric population is rare with only a few case reports in the literature. This case highlights an unusual presentation of prostatitis in a 16-year-old who presented with suprapubic pain and hematuria following blunt trauma to the lower abdomen.

KEYWORDS Bacterial prostatitis; blunt trauma; pyelonephritis

Prostatitis is a common disease in adults, with a prevalence of up to 16%.^{1,2} Prostatitis is divided into four categories by the National Institutes of Health.³ These include acute bacterial prostatitis, chronic bacterial prostatitis, chronic prostatitis/chronic pelvic pain syndrome, and asymptomatic inflammatory prostatitis. Acute bacterial prostatitis typically presents as a urinary tract infection. In the pediatric population, this has been associated with septicemic seeding, abnormal bladder dysfunction, congenital abnormalities of the ureter, and sexual abuse. This report highlights a not previously reported cause of acute bacterial prostatitis in a child after blunt trauma to the lower abdomen.

CASE DESCRIPTION

A 16-year-old white male presented with suprapubic pain, difficulty urinating, hematuria, and fever 4 days after trauma to the lower abdomen. While working on his family farm, the patient was hit in the suprapubic region by a pipe attached to a piece of farming equipment. He had some discomfort in the suprapubic region that seemed to be improving. Two days after the incident, the patient developed fever and nausea with vomiting. He also described genitourinary symptoms of dysuria and difficulty voiding with blood in his urine.

The patient denied any previous medical history, sexual history, surgical history, or allergies. The family had no reported past medical history of genitourinary disease or anomalies. There was no history of alcohol, tobacco, or drug use. A rectal exam showed a mildly enlarged smooth prostate with mild tenderness to palpation of right base and right lateral aspect. There was also a small area of ecchymosis in the suprapubic region.

At presentation to the hospital, the patient had a temperature of 101.3°F, an elevated heart rate, and some hypotension. He had a Foley catheter placed at an outside hospital with over 600 mL of urine in the bladder. A computed tomography (CT) cystogram was performed initially to rule out potential bladder perforation. This study demonstrated normal distention of the urinary bladder with no evidence of extravasation of contrast. There was minimal fat stranding surrounding the urinary bladder base and prostate. Subsequently, a postcontrast CT of the abdomen and pelvis was performed to evaluate the fat stranding in the pelvis. This study demonstrated an enlarged prostate gland with heterogeneous enhancement and extensive surrounding inflammation (*Figure 1* and *Figure 2*). This was concerning for prostatitis with early abscess formation. There was also heterogeneous enhancement of the left kidney, concerning for pyelonephritis.

A complete blood count showed a white blood cell count of 18.67 K/ μ L with absolute neutrophil count of 15.9 K/ μ L. The patient's serum prostate-specific antigen level was elevated at 15.2 ng/mL. Urinalysis revealed 12 red blood cells and 14 white blood cells per high-powered field but no bacteria. Blood bacterial cultures revealed oxacillin-resistant *Staphylococcus aureus* via polymerase chain reaction.

Due to elevated temperature, leukocytosis, and CT findings, the patient was admitted to the hospital. The Foley catheter that was placed in the outside hospital was continued. The patient was given intravenous piperacillin/tazobactam for treatment of prostatitis and pyelonephritis. On the second day of the hospital stay, oral tamsulosin 0.4 mg daily was added in an attempt to relieve urinary retention. The patient remained in the hospital for 3 nights and 2 days after initial admission. On

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Figure 1. Axial postcontrast CT shows enlarged prostate gland with hypodense areas within it.

discharge, the patient was unable to pass a voiding trial and was discharged with the Foley catheter, instructions, and an outpatient 2-week follow-up visit scheduled. Take-home medications included oral tamsulosin 0.4 mg daily for 14 days and oral trimethoprim-sulfamethoxazole for 10 days.

The patient presented to the 2-week follow-up visit without complaints. At follow-up, the Foley catheter was removed and the patient successfully passed a voiding trial. The patient has subsequently not presented to the hospital with any additional infections or complications with voiding since the initial event.

DISCUSSION

Acute bacterial prostatitis in the pediatric population is extremely uncommon. There are a few reported cases secondary to septicemic seeding and following sexual abuse.^{4,5} Our case highlights blunt trauma to the lower abdomen as a potential etiology in a child with no other risk factors. The etiology of acute bacterial prostatitis in this case likely includes ascending urethral injury and intraprostatic reflux.^{1,6} The pyelonephritis in our patient was likely related to retrograde spread of infection. Common causes of acute bacterial prostatitis in adults include urinary catheters, sexual intercourse, and prostatic hyperplasia-induced stasis. In children, potential causes include abnormal anatomy, voiding disorders, and urinary tract instrumentation.⁶ Urinary retention is due to swelling of the prostate or spasm of the bladder neck due to inflammation.¹ The most common organism is *Escherichia coli*.⁶ Other organisms include *Proteus mirabilis*, *Pseudomonas aeruginosa*, *Klebsiella* spp., and *Neisseria gonorrhoeae*.¹ The diagnosis is typically made clinically and confirmed with laboratory tests, including blood and urine cultures. Imaging studies are typically not performed. In our patient, CT scan was initially ordered to rule out bladder injury, given a history of trauma. However, CT plays a role in evaluating for the presence of a prostatic abscess. Treatment typically involves cephalosporins and the duration

Figure 2. Coronal reformat of postcontrast CT shows enlarged prostate gland with heterogeneous enhancement. There is also a focal area of hypodensity in the superior pole of left kidney, worrisome for pyelonephritis.

of treatment should be a minimum of 2 weeks. If there is a large prostatic abscess, drainage may need to be performed.¹ Our patient responded to conservative management without any complications.

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