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Case Report

CASE REPORT

Methicillin-resistant *Staphylococcus aureus* prostatic abscess after traumatic rectal injury

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Abstract

Methicillin-resistant *Staphylococcus aureus* (MRSA) commonly causes infection of the skin, soft tissue, bones and heart. MRSA is a rarely reported organism of prostatic abscess (PA). We present a case of an intravenous drug user who presented with dyspareunia, dysuria and dyschezia after a traumatic injury to the rectum. He was diagnosed with PA, which was treated with transurethral resection of the prostate drainage and intravenous antibiotics. MRSA PA carries a low case fatality rate on early diagnosis and treatment with proper antibiotics with or without drainage of the abscess.

INTRODUCTION

Prostatic abscess (PA) is an uncommon infection that is most commonly secondary to *Escherichia coli* and other Enterobacteriaceae [1]. From January 1946 through January 2017, only 40 cases of *staphylococcal* PA were reported, of which 26 cases were caused by Methicillin-resistant *Staphylococcus aureus* (MRSA) [2]. PA typically presents with dysuria, urinary frequency, fever, chills, and perineal and low back pain. The risk factors associated with MRSA PA are diabetes mellitus, recent instrumentation, immunosuppression, intravenous drug use (IVDU) and hepatitis C [2]. There is significant mortality associated with MRSA PA [3]. For early diagnosis and treatment, clinicians should be attentive to MRSA PA in patients with risk factors.

CASE REPORT

A 34-year-old male with past medical history of IVDU and tobacco abuse presented with complaints of dyspareunia, dysuria, painful ejaculation and dyschezia of 4 days' duration. The patient reported that a week prior to presentation he was stopped by the police while driving and he hid a bag of heroin through traumatic anal insertion. The patient had a temperature of 37.8°C with as-needed acetaminophen, with all other vitals within normal limits. Physical examination showed normal vital signs with regular rhythm and no extra heart sounds or murmurs. The patient had been sexually active with one female partner for the last 6 months. He does not use condoms. He had no previous history of sexually transmitted diseases.

Laboratory investigations showed leukocytosis with a white blood cell (WBC) count of 19 000 K/UL (reference range: 4000–11 000 K/UL) and elevated C-reactive protein (CRP) of 9.2 mg/dl (reference range: <0.3 mg/dl). Chlamydia and gonorrhea were negative. Human immunodeficiency virus (HIV) rapid testing was negative. Urinalysis showed pyuria with WBC count of 40–60 (reference range: 0–5) and +3 leukocyte esterase (reference range: 0); the urine culture grew MRSA. The bacteria was sensitive to daptomycin, gentamycin, levofloxacin, linezolid, moxifloxacin, rifampin, trimethoprim sulfamethoxazole (TMP-SMX), tetracycline and vancomycin. It was resistant to

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erythromycin, oxacillin and penicillin G. Bacteria was identified as non-multidrug resistant MRSA. Two sets of blood cultures taken prior to antibiotics were negative. Computed tomography (CT) scan of the abdomen and pelvis showed a defined prostatic fluid collection of 2.7 × 2.8 cm^2 suggestive of abscess collection (Fig. 1).

The patient was initially started on IV ciprofloxacin and was switched to IV vancomycin based on the urine culture. The patient underwent surgical intervention of cystoscopy with transurethral resection of the prostate abscess with placement of a 22-Fr two-way urinary catheter. The procedure choice was per surgeon experience. The patient was continued on IV vancomycin and received oral methadone for potential withdrawal. The aerobic culture from the abscess grew MRSA that was compatible with the urine culture.

Unfortunately, the patient left against medical advice after 4 days of inpatient stay. The patient was prescribed TMP-SMX for 14 days. This was based on the side effect profile and sensitivity. A follow-up phone call indicated that the patient did not take the full course of antibiotic and was symptom-free.

DISCUSSION

Accumulation of pus in the prostate leads to PA. Pathogenesis of PA includes ascending urethral infection, reflux of infected urine into the prostate, instrumentation and damage to the prostatic urethra; even hematogenous spread of infection has been postulated [1]. In 0.5–2.5% of patients presenting with acute bacterial prostatitis, PA has been described as a rare complication [2]. The causative agents of PA have changed over the past 50 years. Since the advent of antibiotics, gonococcal PA has become rare while *E. coli* and other gram-negative bacteria have become the major isolated pathogens [1]. Although MRSA is a rare etiology for PA, an increase in MRSA PA cases has been reported [1, 4].

Only 26 cases of MRSA PA have been reported in the literature. Risk factors for MRSA PA in reported cases include diabetes mellitus, recent urological instrumentation, immunosuppression, urinary retention, IVDU and hepatitis C [2]. Two cases of MRSA PA possibly secondary to rectal manipulation have been reported [4, 5].

MRSA PA presents with perineal pain, fever, dysuria, urinary retention and difficulty in micturition [2]. The clinical picture in immunocompromised patients will not be obvious for PA [2]. They present with lower abdominal pain, dysuria, suprapubic pain, bacteremia and bacteriuria [2, 6]. Hence, MRSA PA should be considered as a differential in those patients with MRSA bacteremia and MRSA bacteriuria [3, 7]. Even in immunocompetent individuals MRSA PA can cause bacteremia and sepsis [6]. All single-growth (non-contaminated) urine cultures were reviewed in 2007 and <0.8% of the bacteriuria samples grew MRSA. MRSA bacteriuria cases rose from 0.3% in 1997 to 0.8% in 2007, a statistically significant increase ($P < 0.001$) [8].

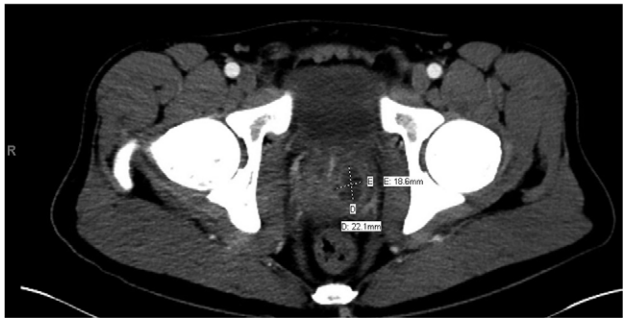

Figure 1: Computed tomography (CT) scan of the abdomen and pelvis showing defined prostatic fluid collection suggestive of abscess collection.

Diagnostic imaging for PA includes CT of the abdomen and pelvis and transrectal ultrasound (TRUS). PA can be treated conservatively with antibiotics or surgical drainage combined with antibiotic therapy [6]. Surgical drainage can be transrectal, transurethral or transperineal. There are no clear guidelines regarding management of PA [6]. In a retrospective study, antibiotic therapy for 2 weeks was suggested for patients with a PA <2 cm in size, minimal symptoms and no leukocytosis [9]. Transperineal aspiration was recommended if the above criteria were not met and if there was a persistent abscess [9]. Out of 26 MRSA PA cases 22 cases were treated by drainage and antibiotic therapy and only 4 cases were treated by antibiotic therapy alone [2].

PA is an under-diagnosed pathology and one due to MRSA is exceedingly rare. Due to increasing use of empiric antibiotics, resistant organisms like MRSA are emerging as significant causes of morbidity. As cases of MRSA bacteremia increase, physicians need to consider the prostate as a site of primary or persistent infection. An aggressive approach in management by early diagnosis, culture-guided antibiotic therapy and prompt surgical drainage (TURP/TRUS) will reduce morbidity and mortality. A high index of suspicion of MRSA prostate infection should increase the likelihood that these treatments are administered promptly.

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CONFLICT OF INTEREST STATEMENT

None declared.

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ETHICAL APPROVAL

The patient provided consent to write his case. No identifiers are used.

CONSENT

Obtained.

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