**Emphysematous Prostatic Abscess Due to Candidiasis: A Case Report**

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Prostatic abscess is an uncommon condition and clinical diagnosis is difficult. The classical symptoms and signs of prostatic abscess are variable and nonspecific. Here, we report a rare case of emphysematous prostatic abscess due to candidiasis in a 68-year-old man with diabetes and liver cirrhosis. The diagnosis was confirmed by pelvic computed tomography (CT) and successfully treated by antibiotics and CT-guided percutaneous abscess drainage. This case highlights the importance of early and accurate diagnosis of emphysematous prostatic abscess followed by appropriate treatment.

Key Words: abscess, candidiasis, emphysematous, prostate

Prostatic abscess is a rare condition and clinical diagnosis is difficult. Based on patient history and physical examination, it is difficult to confirm the diagnosis. Imaging modalities such as pelvic computed tomography (CT) and transrectal ultrasonography (TRUS) are widely accepted techniques for detecting prostatic abscesses [1]. Emphysematous prostatic abscess is characterized by localized collection of gas and purulent exudates in the prostate gland. Only a few cases of emphysematous prostatic abscess have been previously reported [2–5]. Here, we report an uncommon case of emphysematous prostatic abscess due to candidiasis in a patient with diabetes and liver cirrhosis. The diagnosis was confirmed by pelvic CT and he was successfully treated with antibiotics and CT-guided percutaneous drainage of the abscess.

**CASE PRESENTATION**

A 68-year-old man was admitted to hospital because of dysuria, a burning sensation during urination and fever lasting for 2 days. He had a history of over 5 years of diabetes mellitus without regular treatment and hepatitis C infection with liver cirrhosis. On admission to the emergency room, his blood pressure was 98/58 mmHg, pulse rate was 132/minute, body temperature was 39.2°C and respiratory rate was 56/minute. Digital rectal examination revealed a mild, soft protruding prostate, with no local tenderness or local heat noted. A complete blood count revealed a white blood cell count of $1.78 \times 10^4/\mu L$ with 88.2% neutrophils, hemoglobin 8.1 g/dL and platelets 53,000/\mu L. Serum biochemical studies showed fasting glucose 219 mg/dL, aspartate aminotransferase 286 U/dL, alkaline phosphatase 169 U/dL and total bilirubin 6.27 mg/dL. Urinalysis showed pyuria with more than 100 white blood cells/high-power field, and hematuria with 10–25 red blood cells/high-power field; yeasts were also present.

Because the initial clinical diagnosis was urinary tract infection with septic shock, initial management...
consisted of Foley catheterization, saline fluid challenge, insulin for the strict control of blood sugar and intravenous administration of one vial of Augmentin (amoxicillin 500 mg plus clavulanic potassium 100 mg) every 8 hours, plus fluconazole (100 mg) every 12 hours. Abdominal ultrasonography (US) performed on day 3 of admission showed liver cirrhosis, bilateral renal cysts and mild right hydronephrosis. On day 7, fever persisted in spite of antibiotics and liver function declined progressively.

CT of the abdomen and pelvis was performed based on a suspicion of an acute abdominal surgical condition. The CT scan revealed intramural gas formation in the prostate gland and around the periurethral space (Figure 1). Under the diagnosis of emphysematous prostatic abscess, CT-guided transperineal abscess drainage was performed. Ten mL of chocolate-like pus and gas were aspirated initially, and then a pigtail catheter was kept in place for adequate drainage with a daily drainage of about 10–15 mL. Pus cultures and urine cultures yielded Candida albicans.

Pelvic CT scan was rechecked on day 11 after percutaneous drainage. It showed a great improvement in the size of the abscess cavity within the prostate gland (Figure 2). The drainage catheter was removed on the same day. The patient was discharged 2 weeks later with a Foley catheter in place, and was kept on the oral antibiotic ciprofloxacin (500 mg/d). The Foley catheter was removed 2 weeks later in the outpatient clinic and his recovery concluded uneventfully.

**DISCUSSION**

Prostatic abscess is a rare clinical condition and is diagnosed in about 0.5% of patients with prostatic symptoms [6]. Emphysematous prostatic abscess is a particularly rare form of prostatic abscess, which is characterized by localized collection of gas and purulent exudates in the prostate gland. This rare condition is generally secondary to urinary tract obstruction in patients with diabetes mellitus. We determined that the present case of emphysematous prostatic abscess was due to *C. albicans* infection. The diagnosis was confirmed by pelvic CT, which allows differentiation of this condition from other acute non-abscess prostatitis.

Prostatic abscess shows similar symptoms to acute prostatitis. The classical symptoms and signs of prostatic abscess include dysuria, fever, increased frequency and urgency to urinate, urinary retention and perineal tenderness [6]. If the abscess ruptures to the urinary tract, the patient may present with urethral secretion; however, all of these symptoms and signs are variable and nonspecific. In this case, dysuria, a burning sensation during urination, and fever were the major complaints during admission. Rectal examination characteristically reveals an enlarged, fluctuant mass and tenderness over the prostatic region. However, in this case, only a mild enlarged prostate was palpated by digital rectal examination, without obvious tenderness or a palpable fluctuant mass. Before the introduction of US and CT, it was very difficult to confirm the diagnosis solely by physical examination and clinical history. Confirmation of the presence of gas in the prostate gland by plain radiography is also very difficult because of the small
amount of gas formation and air in the adjacent bowel.

Prostatic abscess may develop secondary to reflux of infected urine into the prostate or from hematogenous dissemination [7,8]. Most prostatic abscesses are in the peripheral zone because the ducts in this area lay more horizontal, and this facilitates urine reflux into the prostate. The risk factors for prostatic abscess formation include bladder outlet obstruction, urethral manipulation and systemic disease such as diabetes mellitus, liver cirrhosis, prostate cancer and other immune-compromising conditions [9]. In this case, the patient had liver cirrhosis and diabetes, enhancing the possibility of prostatic abscess formation.

Gas formation in cases of emphysematous prostatic abscess is believed to result from bacterial fermentation of either glucose or protein to carbon dioxide [10,11]. Diabetes mellitus and liver cirrhosis in this case may be important risk factors that contributed to emphysematous abscess formation. In the past, Neisseria gonorrhea was the primary causative pathogen of prostatic abscess. In the recent antibiotic era, the most commonly reported organism is Escherichia coli, while other pathogens have included Staphylococcus aureus, Klebsiella pneumoniae, Candida sp. and Clostridium perfringens [3,12,13].

The treatment of choice is prompt abscess drainage with early antibiotic therapy. Abscess drainage may be performed by transurethral incision or resection of the prostate, open perineal incision or TRUS-guided transperineal needle aspiration [7]. Because US waves are reflected by gas, TRUS may not guide the aspiration of emphysematous prostatic abscess precisely. Therefore, we suggest CT-guided transperineal abscess drainage for emphysematous prostatic abscess. This patient recovered soon after appropriate antibiotic administration and percutaneous drainage. Complications of emphysematous prostatic abscess include spontaneous rupture of the abscess into the urethra, bladder, perineum or rectum, and the development of septic shock, with the reported mortality rate varying from 1% to 6% [6]. Chronic prostatitis and infertility may also occur due to late diagnosis or inadequate drainage of the abscess [6].

In conclusion, emphysematous prostatic abscess is a very rare infectious disease that occurs in immunocompromised patients with diabetes mellitus. When suspicion is high, CT or TRUS should be used to confirm the diagnosis. Appropriate drainage and prolonged antibiotic therapy to achieve a favorable outcome is required.

REFERENCES
因念珠球菌造成的產氣性攝護腺膿腫 — 病例報告

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攝護腺膿腫是一種不常見的疾病，而臨床上的正確診斷也相當困難。典型的攝護腺膿腫症狀相當多變且不具特異性。我們在此報告一位 68 歲患有糖尿病以及肝硬化男性，罹患氣腫性攝護腺膿腫的病例。本病例的確定診斷主要依靠骨盆腔電腦斷層，最後利用抗生素以及電腦斷層指引下膿腫引流成功的治療患者。由這位患者的病例可以指出早期且正確的診斷，並應以適當治療的重要性。

關鍵詞：膿腫，念珠球菌，氣腫性，攝護腺

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