CASE REPORT

Prostatic abscess as a delayed complication following cryosurgery for primary prostate cancer

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CHEN SH, MOURAVIEV V, MAYES JM, POLASCIK TJ. Prostatic abscess as a delayed complication following cryosurgery for primary prostate cancer. The Canadian Journal of Urology. 2007;14(4):3646-3648.

Prostatic abscess is a rare and potentially life-threatening disease when left untreated. We report the first case of a man who developed a prostatic abscess as a long-term complication of cryoablation for primary prostate cancer. Timely diagnosis with non-contrast computed tomography (CT) scan, retrograde CT cystogram to ensure no bladder involvement, percutaneous drainage under CT-guidance, and antibiotic treatment sensitive to the causative organism were crucial for prompt recovery.

Key Words: cryosurgery, prostatic neoplasm, complication, prostatic abscess

Introduction

Cryosurgery is a minimally invasive outpatient procedure utilized more frequently to treat primary prostate cancer. The majority of side effects following cryosurgery develop in the short term. Amongst them, urinary tract infections (UTIs) occurred more frequently, up to 39%,[1] using first and second generation cryotechnology. The high rate of UTI reported in the early literature was mostly related to the temporary banning of the urethral warming catheter by the FDA, resulting in urethral sloughing and deeper penetration of bacteria inside the prostate. To our knowledge, there are only two cases reported in the literature with early development of prostate abscess in the immediate postoperative period: one case after primary cryoablation[2] and one after salvage cryoablation for locally recurrent prostate cancer.[3] With implementation of third generation cryotechnology and routine use of the urethral warming catheter, long term effects, with the exception of impotence, are rare. We present an unusual late complication of a prostatic abscess developing in a man 18 months following prostate cryosurgery.

Accepted for publication June 2007

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Case report

A 73-year old man with multiple medical problems including alcoholism was initially diagnosed with prostate cancer in 2004, with a PSA level of 4.8 ng/ml and a prostate biopsy Gleason Score 3 + 3 = 6 cancer in the left base. Two months after this diagnosis, he underwent uneventful prostate cryoablation therapy. Third generation cryotechnology (Galil Medical Inc., Plymouth Meeting, PA) using an argon/helium system and 17-G ultra-thin cryoneedles were used. The whole prostate was aggressively ablated with a double freeze-thaw cycle. Two thermocouplers were inserted into the external urinary sphincter and Denonvilliers' fascia, respectively, to monitor temperatures. The critical level for tumor cryoablation below -40ºC was achieved during two cycles of freezing. The freezing process was stopped when the advancing edge of the iceball abutted the anterior rectal wall on ultrasound. The first thaw was performed actively using helium gas, and the second thaw was done passively. The probes were removed and the patient was discharged on the same day. At his 3-month follow-up, his PSA became undetectable, and the patient had no complaints.

Eighteen months after cryosurgery, he presented to his primary care physician with complaints of watery diarrhea for 5 days. The abdominal cramping that accompanied it left him fecally incontinent, light-headed, and dizzy.

Digital rectal examination revealed a diffusely firm and tender prostate. A tender suprapubic area also raised concern for possible urinary retention. He was subsequently sent to the emergency room for further management.

Figure 1. Transverse non-contrast CT of the pelvis shows a diffusely enlarged prostate filled with fluid density and periprostatic stranding (white arrows).

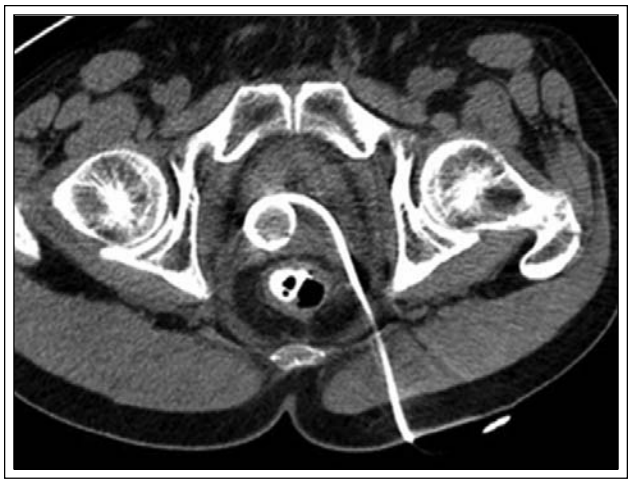

Figure 2. Percutaneous drainage of the prostate abscess under CT-guidance.

A Foley catheter was placed and returned only 50 mL of urine. A non-contrast CT scan of his abdomen and pelvis revealed an enlarged prostate, measuring 51.2 mm x 54.5 mm, of fluid density with peri-prostatic stranding, suggesting a prostatic abscess, Figure 1. A retrograde CT cystogram confirmed the fluid collection was not contiguous with the bladder and that a fistula was not present.

The patient underwent percutaneous transperineal drainage of the abscess under CT-guidance, Figure 2. Eighty cc of purulent fluid was removed and confirmed to contain *Escherichia coli*; the same organism was found in the urine. The patient was treated with antibiotics and became well. His PSA was measured and remained undetectable.

The most recent visit was at 18 months following drainage of the abscess. The patient felt well with no complaints or voiding symptoms. CT scan of the pelvis was performed and was unremarkable.

Discussion

Complications following targeted cryoablation using contemporary technologies, with the exception of impotence, are rare. A recent review article[4] examining the literature over the past decade summarized the following complications after primary cryosurgery: incontinence – 0.4 to 15%; fistula – 0 to 2%; urethral stricture – 3.4%; urethral slough – 2 to 23%; perineal pain – 0.4 to 12%; obstruction/retention – 3 to 23%; and UTI/sepsis – 0.7 to 3%. New technologies continue to further reduce the side effects

of this therapy, making it an attractive option for prostate cancer.

Abscess is a particularly rare complication following cryosurgery. Unlike prostate biopsy in which the needles are introduced through the rectal wall, potentially introducing rectal bacteria into the prostate, cryosurgery entails placing the needles through the sterilely prepared perineum. There are two reported cases of prostatic abscess[2,3] occurring in the perioperative period using older cryotechnology. This is the first reported case of a prostatic abscess 18 months post-cryoablation. The explanation for this observation remains elusive. The patient is a nursing home resident of low socioeconomic status, significant psychiatric history including bipolar disease and schizophrenia, and is on multiple medications for these and other concomitant medical diseases. Furthermore, the patient's known long history of severe alcohol abuse complicated by liver cirrhosis and chronic kidney disease may have compromised his immune system that could have predisposed him to developing a local infectious process such as an abscess.[5] However he has not had a formal immunology evaluation that we are aware of as he does not seek regular or preventative health care.

The clinical presentation of prostatic abscess is often non-specific. It is usually diagnosed with imaging modalities such as transrectal ultrasound (TRUS) or pelvic CT. Treatment with antimicrobials alone for 4-6 weeks is successful when the abscess is less than 1 cc.[6] If larger, drainage may also be necessary, as in this case. Special consideration may need to be taken for prostatic abscess as a complication of cryosurgery. If diagnosed early in the first 6 months after cryosurgery, unroofing of the abscess with transurethral resection may be problematic and associated with urethral slough.[3] However, if diagnosed several months after the scarring process has been completed, it may also be reasonable to unroof the abscess transurethrally in our opinion. However no case studies of transurethral unroofing of a delayed prostatic abscess following cryosurgery appear in the literature to date.

Conclusion

Prostatic abscess is a rare complication of cryosurgery, particularly in the long term. One needs to be aware that this can occur especially in patients with concomitant chronic diseases associated with immune deficiency. Timely diagnosis (with CT or TRUS) and management (including drainage and antimicrobial treatment) are crucial for prompt recovery. □

References

1. Long JP, Fallick ML, LaRock DR et al. Preliminary outcomes following cryosurgical ablation of the prostate in patients with clinically localized prostate carcinoma. *J Urol* 1998;159:477-484.
2. Cohen JK, Miller RJ, Rooker GM et al. Cryosurgical ablation of the prostate: two-year prostate-specific antigen and biopsy results. *Urology* 1996;47:395-401.
3. Dinney CPN, Pisters L, vonEschenbach AC. Cryablation for prostate cancer. in Vogelzang MD, Scardino MD, Shiply MD, Coffey MD (Ed): Comprehensive Textbook of Genitourinary Oncology. Baltimore-Philadelphia-HongKong- London-Munich-Sydney-Toronto, Williams&Wilkins: pp 828-837, 1996.
4. Mouraviev V, Polascik T. Update on cryosurgery of prostate in 2006. *Cur Opin Urol* 2006;16:152-156.
5. Liu KH, Lee HC, Chuang YC et al. Prostatic abscess in southern Taiwan: another invasive infection caused predominantly by Klebsiella Pneumoniae. *J Microbiol Immunol Infect* 2003;36:31-36.
6. Ludwig M, Schroeder-Printzen I, Schiefer HG et al. Diagnosis and management of 18 patients with prostatic abscess. *Urology* 1999;53:340-345.