Prostatic Abscess: Case Report and Review of Literature

Corresponding Author:
Dr. Anthony Kodzo - Grey Venyo,
Urologist, Urology Department. North Manchester General Hospital, North Manchester General Hospital,
Department of Urology, ManchesterM8 5RB, United Kingdom, M8 5RB - United Kingdom

Submitting Author:
Dr. Anthony Kodzo - Grey Venyo,
Urologist, Urology Department. North Manchester General Hospital, North Manchester General Hospital,
Department of Urology, ManchesterM8 5RB, United Kingdom, M8 5RB - United Kingdom

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Author(s): Venyo A

Abstract

Background: Prostatic abscess is rare and quite often its diagnosis is delayed in view of the fact that it mimics symptoms of a number of lower urinary tract diseases hence a high index of suspicion is required in its diagnosis.

Aims: To report a case of prostatic abscess
To review the literature on prostatic abscess

Case Report: A 45-years-old man was admitted as emergency in view of his worsening lower urinary tract symptoms. He had been taking antibiotics for 3 months with a presumed diagnosis of persistent / recurrent urinary tract infection. He was diagnosed on admission as having insipient retention of urine due to prostatitis. He was catheterised and received Gentamycin injection as well as oral antibiotics and analgesia but despite this his symptoms worsened. He had trans-rectal ultrasound scan of prostate which confirmed prostatic abscess and 10 mls of pus aspirated through the guidance of trans-rectal ultrasound scan and entonox to control pain. His prostatic abscess recurred and he underwent further aspiration of his recurrent abscess under general anaesthesia and trans-rectal ultrasound scan guidance. He also subsequently underwent trans-urethral resection of prostate to de-roof the abscess cavity in order to avoid subsequent recurrence of abscess and to allow any residual pus to drain into the urethra to be voided out within the urine or as urethral discharge. Repeat trans-rectal-ultrasound scan revealed complete resolution of the abscess. His urine and pus from the abscess grew E coli and he was also treated by means of appropriate antibiotics based upon the sensitivity pattern. He also took tamsulosin medication to improve the flow of his urine.

Conclusions: The experience gained in the management of this patient and from reviewing the literature would point to the following concluding statements.

* Prostatic abscess usually presents with non specific symptoms that mimic other lower urinary tract diseases.
* If a patient despite being on antibiotics for some time continues to be symptomatic then prostatic abscess should be suspected.
* In some cases digital rectal examination may reveal fluctuation in the prostate but quite often there is only tenderness over the prostate in that case imaging by means of (a) trans-rectal ultrasound scan, (b) CT scan or (c) MRI scan would confirm the diagnosis
* Differential diagnoses of prostatic abscess include: prostatic cysts; neoplasm
* Treatment of prostatic abscess should include: (a) appropriate antibiotic treatment which should ultimately be based upon the sensitivity pattern of the causative organism and (b) drainage of the abscess
* Some of the approaches to drainage of prostatic abscesses that have been used include (a) trans-rectal ultrasound guided aspiration; (b) digital-guided puncture / drainage by perineal route; (c) Trans urethral resection of prostate (TURP) to lay open the abscess cavity; (d) open perineal drainage.
* Recurrence of prostatic abscess could occur pursuant to the initial treatment therefore follow-up trans-rectal ultrasound scan or CT scan or MRI scan is required to confirm complete resolution of the abscess. Increasingly trans-rectal ultrasound is being used for this purpose.

Introduction

Prostatic abscess is a rare infection which can be treated by antibiotic administration and drainage [1]. The mortality rate of prostatic abscess is reported to be between 3% and 16% [1], [2]. Because of its rarity and because of the fact that the symptoms of prostatic abscess are non specific quite often the diagnosis is delayed. A case of prostatic abscess is reported in this paper with a review of the literature.

Case Report

A 45-years-old man was admitted as emergency with a history of dysuria, supra-pubic pain, urinary frequency and poor flow of his urine associated with a stinging sensation and pain in his back passage. For about three months prior to his admission he had been taking antibiotics prescribed by his general practitioner for a presumed diagnosis of recurrent urinary tract infection.
He was seen in the urology outpatient's clinic a week prior to his admission with similar symptoms and his prostate gland was found on digital rectal examination to be tender and a diagnosis of prostatitis was made. He was put on ciprofloxacin 500 mg orally twice a day for four weeks in addition to Tamsulosin 400 micrograms orally daily to help improve the flow of his urine. Despite taking his medications his symptoms persisted.

About 3 months prior to his admission he was treated for a presumed right sided pyelonephritis and he had had ultrasound scan of renal tract which revealed no abnormality apart from a simple cyst in his right kidney. He had been treated in the past for chronic prostatitis.

His medications included: Oxycontin, pregabalin, omeprazole, amitryptiline, creon, tamsulosin and ciprofloxacin.

His general examination was unremarkable; there was evidence of suprapubic tenderness on abdominal examination but the rest of his abdomen was soft, non tender and he had good bowel sounds. On rectal examination he was noted to have a slightly enlarged smooth benign feeling tender prostate.

A clinical diagnosis of worsening lower urinary tract symptoms (prostatism) due to prostatitis was made. He was catheterised and clear urine was drained. He started on Trimethoprim initially but upon the advice of the microbiologist he was given a start dose of Gentamycin 480 mg intravenously as well as ciprofloxacin 500 mg orally twice a day and his further daily Gentamycin injections were based upon his serum Gentamycin levels. The trimethoprim was stopped. In view of the fact that he had earlier on been on ciprofloxacin without improvement the ciprofloxacin was stopped and he was put on ofloxacin 200 mg orally twice a day.

**His initial investigations included:**

Full blood count, serum urea and electrolytes, liver function test, and serum amylase which were all normal. There was no growth in his urine culture; and his urine cell count determined by flow cytometry revealed: white blood cells 4 / uL (normal range 0-40), Red blood cells 219 uL (normal range 0-35), epithelial cells normal.

He continued to have supra-pubic pain after being on antibiotics for 3 days therefore trans-rectal ultrasound scan of prostate was done which revealed a large prostatic abscess (see illustration 1). Trans rectal ultrasound guided aspiration of the prostatic abscess was done with the use of entonox to control pain / discomfort. Aspiration of 10 mls of thick pus was done at the end of which there was ultrasound scan evidence of minimal pus left (see illustration 2), however, the patient found the aspiration of pus a bit uncomfortable and did not want to undergo further aspiration of the tiny residual abscess (see illustrations 2). The pus was sent for culture and sensitivity which yielded a heavy growth of mixed organisms therefore sensitivity tests were not done.

On the first day pursuant to aspiration of the prostatic abscess he was feeling better and was happy. He was discharged home on oral ofloxacin for four weeks with the promise that the antibiotics may be changed depending upon the sensitivity results from the microbiology department.

Nine days after his discharge from hospital he was readmitted with recrudescence of his dysuria and rectal pain. He also noticed some blood in his urine. On examination his prostate again was noted to be tender. He was given the options of (a) another trans-rectal ultrasound scan of prostate and aspiration of any re-accumulated prostatic abscess or (b) cystoscopy and deroofing of prostatic abscess (both procedures under general anaesthesia). During this admission his urine culture grew Escherichia Coli sensitive to Nitrofurantoin and Meropenem. He was therefore put on Nitrofurantoin. He opted for trans-rectal ultrasound guided aspiration of any recurrent/residual abscess under general anaesthesia.

Trans-rectal ultrasound scan done under general anaesthesia revealed re-accumulation of large amount of pus in the transition zone area of the prostate and 8 mls of thick pus was aspirated and sent for culture and sensitivity.

His symptoms improved and he was discharged home on Nitrofurantoin. After his discharge from hospital, the microbiologists reported that the aspirated pus from the prostatic abscess had grown Escherichia Coli which was sensitive only to Meropenem and resistant to Nitrofurantoin, Gentamicin, Amoxycillin, ciprofloxacin, co-amoxiclav, and trimethoprim. He was therefore re-admitted immediately and given a week's course of intravenous Meropenem. He also underwent cystoscopy which revealed no abnormality within the urinary bladder; trans-urethral resection of the middle lobe of the prostate (TURP) was done which de-roofed the abscess cavity allowing the abscess cavity to be seen and this contained minimal residual pus.

His recovery was unremarkable and he was discharged home and advised to continue taking tamsulosin.

He had another trans-rectal ultrasound scan two weeks after his discharge from hospital which revealed that the abscess had resolved with no evidence of residual or recurrent abscess. At follow-up 2 months later he reported that his lower urinary tract symptoms...
had improved and he was voiding reasonably well; his pain had also subsided. He was advised to continue taking tamsulosin until his next follow-up appointment in a few weeks with the hope that when the inflammation in the prostate is fully settled he would then be able to stop taking tamsulosin.

Discussion

Prostatic abscess is an uncommon disease which has been reported to have an incidence rate as low as 0.5% [3]. The most common symptoms of the disease include: dysuria, frequency, perineal pain, fever, chills, and low back pain [4],[5].

Prostatic abscess is reported to occur mostly in the 5th and 6th decades of life and the most common organism found in some earlier reports was staphylococcus [1],[2],[6].

The availability of trans-rectal ultrasonography in the developed world has made it possible for trans-rectal ultrasound scan to become the most common method of diagnosing prostatic abscess and it is a good guide for aspiration, per-cutaneous drainage and assessment of response to treatment [4],[7],[8],[9].

The diagnosis of prostatic abscess is difficult in view of the fact that at the onset of symptoms, it may mimic several other diseases of the lower urinary tract. It is uncommon, is rarely diagnosed, a great shift in its mortality lately has been experienced, and since the discovery and use of penicillin changes in its aetiologic agents have been experienced [10].

In the nineteen forties, mortality from prostatic abscess ranged from 6% to 30%. Neisseria gonorrhoea was the major microorganism. Subsequent data reported a mortality rate ranging from 3% to 16% [2], and enterobacter as the most common causative agent. Among these, Escherichia Coli has been reported to have the highest prevalence, in about 70% of cases [6].

Prostatic abscess may progress to sepsis and death if it is not adequately treated. Most of the previously published data on prostatic abscess are case reports which lack standardization of the diagnostic and therapeutic routine. A variety of factors have influenced the shift of epidemiological profile of prostatic abscess, such as routine and widespread use of broad-spectrum antibiotics to patients with lower urinary tract symptoms, without the required investigations [11]; better control of chronic diseases which allow an increase in population longevity, therapeutic advances such as hemodialysis, organ transplants, chemotherapy, and immunosuppressive drugs, promoting longer survival, but also exposure to risks of immunosuppression [3],[9],[11],[12].

The finding of peritonitis [13] and spontaneous perforation of the abscess to the urethra [11],[13] is sporadic these days.

A number of postulates exist regarding the causation of prostatic abscess and some these include:

1. The retrograde flow of contaminated urine within the prostate during micturition is the most prevalent pathogenic factor [14].
2. Prostatic abscess is a complication of bacterial prostatitis, acute or chronic, but the actual incidence and frequency is not known [15].
3. Bacterial haematogenous spread from distant foci (was also described) such as from respiratory tract (bronchitis, otitis), gastro-intestinal tract (appendicitis, diverticulitis, peri-anal abscess), urinary tract, and skin (furuncles, abrasions). In these cases germs like Staphylococcus Aureus, Mycobacterium Tuberculosis, Escherichia Coli, and Candida Sp may be found [16].

With regard to presentation, the disease manifests as dysuria, urinary urgency and frequency in 96% of cases [10], fever in 30% to 72% [2], [3], [10] and urinary retention in a third of patients [2], [3]. There are reports of prostatic abscess in children at necropsy and 2 cases that did not present with any symptoms in a series of 69 cases [2].

The most common typical sign of prostatic abscess is fluctuant areas in the prostate by digital examination, although the results vary between 16% [2] and 88% [10]. The patient had tenderness over the prostate on digital rectal examination without any evidence of fluctuation over the prostate.

A number of techniques have been used to diagnose prostatic abscess which include: CT scan, MRI scan, and trans-rectal ultrasound scan. However, it has been suggested that the diagnostic study of choice to assist the treatment and follow-up of patients with prostatic abscess is trans-rectal ultrasonography of the prostate.

The most common finding of prostatic abscess on trans-rectal ultrasound scan of prostate is presence of one or more hypo-echoic areas, of several sizes, containing thick liquid, primarily in the transition zone and in the central zone of the prostate, permeated by hyper-echogenic areas and distortion of the anatomy of the gland [3].

The differential diagnosis of prostatic abscess based upon trans-rectal ultrasound scan include: prostatic cysts and neoplasia [15],[17].

It has been stated that computed tomography adds few benefits to trans-rectal ultrasonography for the diagnosis of prostatic abscess, especially when there are extraprostatic collections [18],[19].

The treatment of prostatic abscess includes: antibiotic administration and drainage of the abscess. This may
be carried out by trans-rectal puncture [20] or trans-perineal ultrasound guided, digital-guided puncture / drainage by perineal route, trans-urethral incision of the prostate, trans-urethral resection of prostate (TURP) or open perineal drainage [5],[21],[22],[23],[24].

All the aforementioned modalities of prostatic abscess drainage have safety and efficiency reports [5],[6],[9],[10],[14],[21],[22],[23]. However, there is a preference for minimally invasive procedures that may be performed under local anaesthesia or sedation and repeated if necessary [16]. In order to identify the causative agent of the prostatic abscess, it has been stated that it is important to send material for culture and sensitivity (pus, urine, blood and / or prostatic fragment) taking into consideration that they usually present uncommon pathogens/germs [24],[25].

It has been observed that there is a lack of uniformity in antibiotic prescription in the management of prostatic abscess due to the rarity of the disease [16]. It has also been suggested that the diagnosis of prostatic abscess should be considered in patients presenting with fever, persistent irritative voiding symptoms despite antimicrobial use, for diabetics with protracted symptoms, for those with lower urinary tract symptoms and fever progressing to urinary retention, and after the performance of prostate biopsy [16].

Trans abdominal ultrasonography of the prostate may show a hypoechoic mass with debris in a prostate in a case of prostatic abscess and a CT scan may reveal a homogenous mass with a low density in the prostate [26].

It has been stated that prostatic abscess is uncommon with an incidence of 0.5% [3]. Some authors have stated that prostatic abscess occurs in the 5th and 6th decades of life and the most common organism they observed was staphylococcus aureus [1],[2],[6].

A number of authors are of the opinion that trans-rectal ultrasonography is the most common diagnostic method for prostatic abscess and is a good guide for the aspiration, percutaneous drainage, and assessment of the response to treatment [1],[7],[8],[9].

Granados and associates [2] reported a study on 9 patients with prostatic abscess who had undergone perineal drainage and catheter insertion to remove the discharge without irrigation, two out of the 9 patients developed recurrence of the abscess in 1 month follow-up and underwent antibiotic therapy and drainage again.

Collado and associates [7] reported a study of 6 patients with prostatic abscess who underwent perineal aspiration using trans-rectal ultrasound (TRUSS): one out of the six patients developed recurrence of the abscess, and underwent trans-urethral resection of prostate.

Basiri and associates [26] reported a patient with prostatic abscess who underwent drainage of the abscess trans-perineally under local anaesthesia with the guide of trans-rectal ultrasound scan (TRUS) using a stent for 5 days and washing with normal saline and antibiotics. They also reported that in a 3-year follow-up with CT scan and TRUS, no recurrence was observed. They recommended that this method for the treatment should be proposed as a less invasive and less morbid method for the treatment of prostatic abscess however, further studies are required in this regard.

Conclusions

Prostatic abscess usually presents with non specific symptoms that mimic other lower urinary tract diseases.

If a patient despite being on antibiotics for some time continues to be symptomatic then prostatic abscess should be suspected.

In some cases digital rectal examination may reveal fluctuation in the prostate but quite often there is only tenderness over the prostate in that case imaging by means of (a) trans-rectal ultrasound scan, (b) CT scan or (c) MRI scan would confirm the diagnosis

Differential diagnoses of prostatic abscess include: prostatic cysts; neoplasm

Treatment of prostatic abscess should include: (a) appropriate antibiotic treatment which should ultimately be based upon the sensitivity pattern of the causative organism and (b) drainage of the abscess

Some of the approaches to drainage of prostatic abscesses that have been used include (a) trans-rectal ultrasound guided aspiration; (b) digital-guided puncture / drainage by perineal route; (c) Trans urethral resection of prostate (TURP) to lay open the abscess cavity; (d) open perineal drainage. Recurrence of prostatic abscess could occur pursuant to the initial treatment therefore follow-up trans-rectal ultrasound scan or CT scan or MRI scan is required to confirm complete resolution of the abscess. Increasingly trans-rectal ultrasound scan is being used for this purpose.

References

Illustrations

Illustration 1

Trans-rectal ultra-sound-scan showing prostatic abscess just before its aspiration

Illustration 2

Trans-rectal ultra-sound-scan showing minimal residual prostatic abscess at the point patient could not tolerate further aspiration (at the end of the aspiration)
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