Prostatic abscesses. A case report and review of the literature on current treatment approaches

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Prostatic abscess (PA) is a rare clinical entity due to a variety of causative organisms including gram-negative bacilli, anaerobic and fungal agents. We report on a 55-year-old, HIV+ patient presenting with a 2-week history of urethral discharge and a large PA. He was successfully treated with a combination of radiological-guided transperineal drainage plus antibiotics. Treatment decisions in patients with PA are multifactorial and should be made with all diagnostic information available from the most current modes of medical imaging. In the case of PA several factors should be assessed, including size of the prostate, size, location and frequency of abscesses, previous pelvic surgery, relevant co-morbidities and risk factors, and patient preference.

CASE PRESENTATION

A 55-year-old, HIV+ male patient presented with a 2-week history of urethral discharge, urinary frequency, hesitancy, poor stream, nocturia and straining. Rectal examination revealed a smooth albeit tender prostate gland. Investigations on admission showed elevated inflammatory markers with deranged kidney function markers.

The patient’s medical history included type 2 diabetes mellitus and chronic pancreatitis. He also had a complex urological history involving atazanavir-related chronic kidney disease, renal stones, perinephric abscess, and previous nephrostomy and stent of the left kidney. An ultrasound scan of the kidneys, ureters and bladder soon after admission revealed no abnormalities.

The patient was initially treated with carbapenem antibiotics, until analysis of midstream urine samples revealed Escherichia coli and Proteus mirabilis, both of which were sensitive to ciprofloxacin. This was therefore commenced 2 days after admission. The patient’s persistent discomfort prompted a clinical suspicion of PA, which was then confirmed by pelvic MRI (Figure 1). The scans showed a large prostatic collection approximately 5.6 cm in greatest cranio-caudal length and approximately 5.6 cm in greatest axial diameter, although the prostatic-rectal plane appeared well preserved. Reported fluctuation around the left upper thigh required an ultrasound of the buttocks which demonstrated an extensive hypoechoic collection, measuring approximately 3.5 cm in maximal depth and some extension to the anal verge. Intravenous amikacin was added to the patient’s treatment plan and a transperineal drain was placed using ultrasound guidance. Frank pus continued to drain for a few days, and a pelvic scan was repeated once drainage appeared to have stopped. This showed an increase in the size of the abscess, now measuring 6.6 cm. The abscess

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appeared multiloculated (Figure 2), indicating pos-
terior tracking around the anus and levator muscles,
as well as involvement of the urethra anteriorly.
Options of both transurethral and transrectal
drainage were considered to tackle the abscess, al-
though the potential risk of either urethro-prostat-
ic or recto-prostatic fistula led consultants of both
specialties to find their corresponding approaches
very risky.
Symptoms gradually improved and an MRI
23 days after admission (Figure 3) revealed almost
complete resolution. The patient was discharged
with a urethral catheter in situ, which was removed
16 days later. He was sent home with intravenous
ertapenem administered once a day by district
nurses for 4 weeks, followed by oral ciprofloxacin
for 6 weeks.

DISCUSSION

The widespread use of antibiotics has led to a sub-
stantial decrease in the incidence of PA. Cases cur-
rently observed often occur in immunocompromised
patients or are caused by atypical microorganisms
[1, 2]. PA symptoms of dysuria, perineal pain and acute
urinary retention are non-specific, but diagnosis has
been greatly aided by developments in medical im-
ing. Transrectal ultrasound (TRUS) can be useful
not only in diagnosis but can also provide possibilities
for treatment of PA [3]. Various treatment interven-
tions for PA exist and can be divided into urethral,
perineal and rectal approaches. Surgical drain-
age appears to be the most recommended method
for treatment of PA, but the best approach to drainage
remains somewhat controversial [4]. No gold stan-
dard has been defined and there is a lack of detailed
guidelines to delineate the best consecutive steps
in the treatment of PA. This results in the treat-
ment offered rarely being based on agreed evidence
but rather following surgeons’ discretions. Despite its
rarity in the antibiotic era, PA can lead to spontane-
ous rupture into adjacent organs, severe septicaemia
and can be fatal if not treated appropriately.
PA often affects patients who have underlying co-
morbidities that can facilitate infection and bacte-
rial overgrowth. This is the case in diabetes melli-
tus and HIV [5]. Therefore, the first approach to PA
is to assess the patients for conditions that can lead
to increased risk of infection. Once identified, medi-
cal issues should be corrected as soon as possible,
e.g. controlling diabetes or ensuring that the patient
is immunocompetent. Any history of antibiotic treat-
ment should be carefully collected to assess the risk
of induced resistance due to inappropriate/prolonged/
recurrent use of antibiotics. This is also important
in guiding the management of these patients.
Imaging assessment is mandatory in these patients,
and should include ultrasound scans and CT or MRI.
These must be integrated with the clinical findings
and they should be considered complementary in the
management of PA. Recently, a new classification

Figure 1. Large prostatic collection approximately 5.6 cm
in greatest craniocaudal length and approximately 5.6 cm
in greatest axial diameter.

Figure 2. Interval increase in size of the large prostatic abscess
which now is extending posteriorly around the anus tracking
inferiorly to the perineum.
of PA has been proposed based on ultrasound findings, which could be very useful in choosing the appropriate management [6]. However, it needs to be prospectively validated in a clinical setting. MRI or CT are needed in adjunct to TRUS to exclude lesions that might mimic a PA. In addition, TRUS may not be tolerated by the patients, or it could be contraindicated [6, 7, 8].

Patients with PA should receive treatment with antibiotics and be closely monitored. In case of sepsis onset or persistence/worsening, a surgical approach should be considered. Vyas et al. suggested that patients with PA larger than 2 cm with severe lower urinary tract symptoms and/or leukocytosis should receive drainage immediately [9]. Draining a PA should be always considered in patients at risk of severe complications associated with the PA. It also allows for a sample to be obtained for diagnosis and sensitivity testing.

Several approaches have been proposed to drain a PA, each with specific advantages and drawbacks. These can be classified based on the route used to reach the PA into A) trans-perineal, B) trans-urethral and C) trans-rectal. We have summarized the findings in Table 1, but this should be interpreted with caution as studies and patients are heterogeneous and the study quality is poor.

### Table 1. Summary of described studies

| Author             | n   | Treatment                  | Success rates     |
|--------------------|-----|----------------------------|-------------------|
| El-Shazly et al. [11] | 7   | Transurethral drainage     | 100%              |
| Truzzi et al. [13]  | 7   | Transurethral unroofing + antibiotics HIV+ | 100%              |
| Elshal et al. [14]  | 30  | Transurethral unroofing    | 83% but several complications |
| Gögus et al. [16]   | 6   | Transrectal drainage       | 83.3%             |
| Collado et al. [17] | 23  | Transrectal drainage       | 83.3%             |
| Vyas et al. [9]     | 48  | Transrectal drainage       | 85.4%             |

### A. Trans-perineal approach

Traditionally, percutaneous puncture using a transperineal approach has been favoured as it is considered easier, less invasive and more successful than transurethral or transrectal intervention [10]. Many advocate the use of this method as a way of avoiding fistulating disease and subsequent contamination of the cavity. Nevertheless, this access is not without fault. Perineal incision may be more painful for the patient; it can result in impotence due to nerve damage and can still lead to recurrence. Also, damages can be inadvertently caused to the perineal tract of the urethra.

### B. Trans-urethral approach

El-Shazly et al. [11] demonstrated a 100% success rate in men with PA treated by transurethral drainage. Transurethral resection of prostate (TURP) is another known treatment which has proved successful [12] as well as transurethral unroofing (TU). Trauzzi et al. [13] published a series of seven HIV patients, three of whom underwent only TU alongside empiric antibiotics, with 100% success in this group. Elshal et al. also performed TU on 30 patients and, although they reported an 83% success rate, they observed some challenging complications needing further treatment, such as septic shock, epididymo-orchitis, urethral diverticulum and urethral stricture [14]. Other known complications of the transurethral approach include retrograde ejaculation, urinary incontinence and the systemic spread of organisms via communicating venous drainage [15].

### C. Trans-rectal Approach

Some of the above reported studies used transrectal methods for members of their cohorts in whom the PA were predominantly posteriorly located. Gögus et al. conducted a study of six patients in whom transrectal drainage (TD) was successfully used in 83.3% of cases; recurrence occurred after three weeks.
in one patient [16]. Collado et al. [17] managed 31 PA patients, 23 of whom underwent TD. They too reported an 83.3% success rate, with only two patients requiring a second procedure. This method is more comfortable for the patient than the perineal approach and, because the probe and prostate are in closer contact, the needle’s trajectory is shorter. Transrectal aspiration has shown similar rates of success in published studies (73%, 85.7%) and is thought to mimic the well-known technique of transrectal prostate biopsies, hence, thought to be easier and faster than other methods. The drainage can be performed with TRUS, and the procedure can be repeated [9]. However, the risk of creating a rectourethral fistula should be considered, as these iatrogenic fistulas may require very complex approaches to achieve healing [18].

Literature on PA is sparse and often focuses on one or few treatment interventions rather than comparing or defining many. It is clearly not yet possible to determine the best approach to treatment, and more work is certainly needed. Based on our experience and available data, we propose an algorithm to manage these patients (Figure 4). The importance of recognising and effectively managing PA should not be underestimated, despite its modern infrequency; fatal cases still occur with conservative treatment. Treatment decisions are evidently multifactorial and should be made with all diagnostic information available from the most current methods of medical imaging. In the case of PA this includes, but is not limited to: size of prostate, size and frequency of abscesses, location of each abscess within the organ, previous pelvic intervention, relevant co-morbidities and risk factors, and patient preference.

CONFLICTS OF INTEREST
The authors declare no conflicts of interest.

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