Minimally invasive treatment of prostatic abscess – percutaneous transvesical drainage

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KEY WORDS

prostatic abscess ◗ drainage

ABSTRACT

We currently treat prostatic abscess with minimally invasive methods, most frequently with transurethral (TURP) or transrectal drainage under visual control with TRUS. We present an example of prostatic abscess drainage by percutaneous and transvesical means under the control of ultrasonography (USG). With a 9F single-stage drainage kit, the prostatic abscess was punctured through the abdominal skin and bladder in one step. We found this method to be straightforward for urology and safe for the patient.

INTRODUCTION

Prostatic abscess is a disorder that rarely occurs and is difficult to diagnose because its symptoms are similar to other disorders of the lower urinary tract in men [1, 2]. It should be noted that rapid diagnostics and correct treatment are very important, because prostatic abscess can be the initial presentation of urosepsis with its most serious consequences including: septic shock, multiple organ failure, and death.

The most common pathogen causing prostatic abscess several decades ago was *Neisseria gonorrhea*. Currently, 70% of the bacteria cultured from the cavity of an abscess are *Escherichia coli* [1]. The standard treatment of prostatic abscess in most cases involves percutaneous or transrectal incision and drainage. In our work we present a patient with a large prostatic abscess treated with percutaneous transvesical drainage. We did not find such a method of draining prostatic abscess in the literature.

CASE REPORT

The patient, aged 74 years, was admitted to the urology department with irritative symptoms of the lower urinary tract (LUTS), accompanying low-grade fever, and the suspicion of prostatic cysts. The suspicion of prostatic cysts was based on an ambulatory USG examination. The physical examination included a digital rectal examination (DRE), which revealed a large, firm, and painful prostate. Results of biochemical tests: urinalysis revealed pyuria, urine culture was sterile, and PSA level was at 3.63 ng/ml. The remaining biochemical parameters were normal. Transrectal ultrasound (TRUS) revealed a prostate volume of 72 ml and in the left lobe of the prostate, near its base and invaginated into the bladder, a cystic change was observed with a distinct cyst boasting a diameter of 47 mm and an echogenic core (Fig. 1). Transabdominal ultrasound (TAUS) revealed kidneys without neither stagnant urine, calculi, nor focal lesions in the pelvicalyceal system. However, the urinary bladder contained a hypo-echogenic focal lesion with a diameter of 49 x 49 mm invaginating to the bladder from the base of the prostate (Fig. 2).

Treatment was commenced and included a broad-spectrum IV antibiotic and the creation of a cystostomy via suprapubic puncture. The patient was qualified to transurethral incision and drainage of the abscess. According to the anesthesiologist's assessment, the presence of numerous internal factors (e.g. unstable ischemic heart disease) elevated the risk of administering anesthesia for the TURP procedure. In light of the large abscess dimensions and localization at the base of the prostate with invagination into the bladder we decided to perform percutaneous transvesical catheterization under USG control for drainage of the abscess. With a 9F single-stage drainage kit (Balton Sp. z o.o. – Warszawa, RP), the prostatic abscess was punctured through the abdominal skin and bladder in one step. The puncture yielded 50ml of thick pus and the J catheter was left in the abscess cavity for drainage. Local anesthesia sufficed the patient to endure the procedure without any complaints. The bacterial culture of the pus revealed a strain of *E. coli* sensitive to most antibiotics. The J catheter was left in the cavity of the abscess for five days – and yielded another 100 mL of pus. Before removal of the J catheter from the cavity of the abscess, TRUS was carried out and revealed a prostate volume of 50mL, but without pathological fluid vesicles. In the cavity of the abscess near the left lobe, the J catheter was visible (Fig. 3). Hospitalization of the patient was discontinued 10-days post-op.

After twenty days, the initial cystostomy catheter was removed. At that time urine was passed appropriately – the patient was being treated with alpha-blockers. In December of 2011, the patient underwent a follow-up examination, which revealed some deviations from the norm: a small increase in PSA was observed – 5.84 ng/ml; and bacteriological examination of the urine cultured an *E. coli* strain susceptible to most antibiotics. The remaining tests were within norms. TRUS revealed a prostatic zone structure that was difficult to visualize, with a volume of 39 ml, and without pathological focal changes (Fig. 4). See Figure 5 for TAUS image after treatment. Currently the patient is without complaints of the urinary tract, takes alpha-blockers, and is committed to regular ambulatory follow-up.

DISCUSSION

The pathogenesis of prostatic abscess formation is most often associated with retrograde flow of infected urine into the prostate during urination. Other authors suggest that abscess formation is the focal exit of bacterial inflammation of the prostate – most often acute [1]. The most common pathogen being the cause of abscess formation is *E.coli,* but other gram negative rods have also been implicated [3]. Less often the pus aspirated from the cavity of the abscess cultures *Staphylococcus aureus*, which can be indicative of a blood born infection [1]. A rarity is an abscess formed subsequent to a fungal infection [3].

The occurrence of a blood born infection of the prostate from inflammatory foci in other organs (pneumonia, diverticulitis, puru-

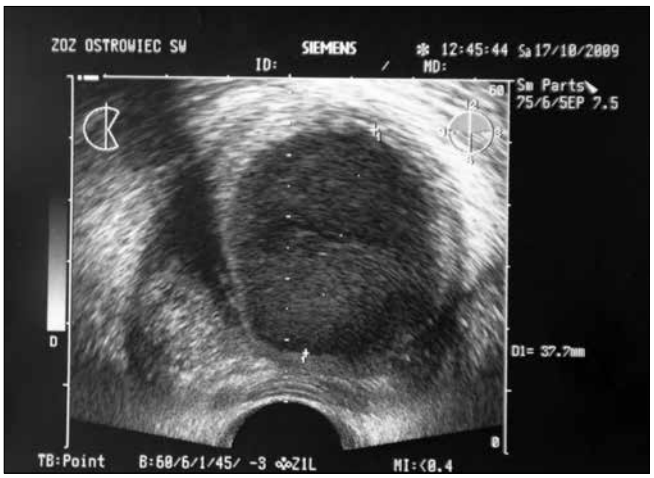

Fig. 1. Cross-section of prostatic abscess (TRUS).

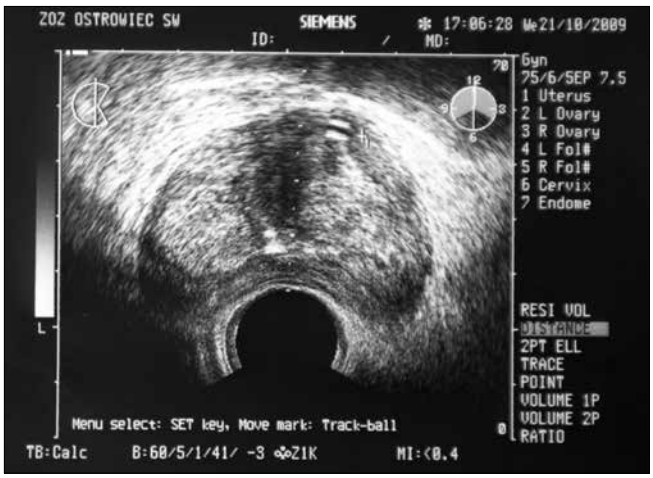

Fig. 3. J-catheter in the abscess (TRUS – X1).

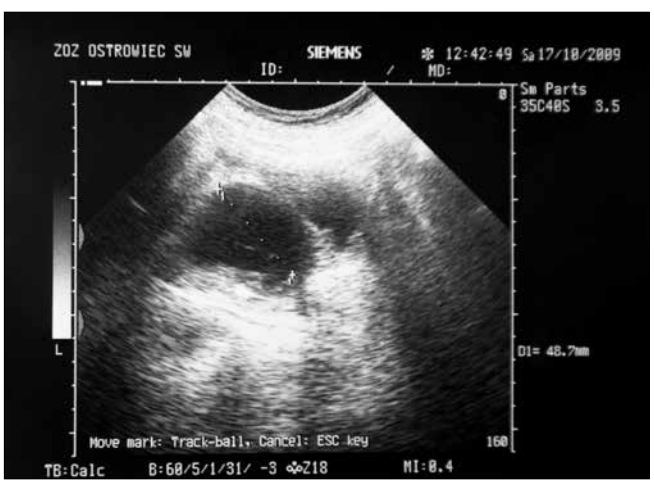

Fig. 2. Sagital-section of prostatic abscess (TAUS).

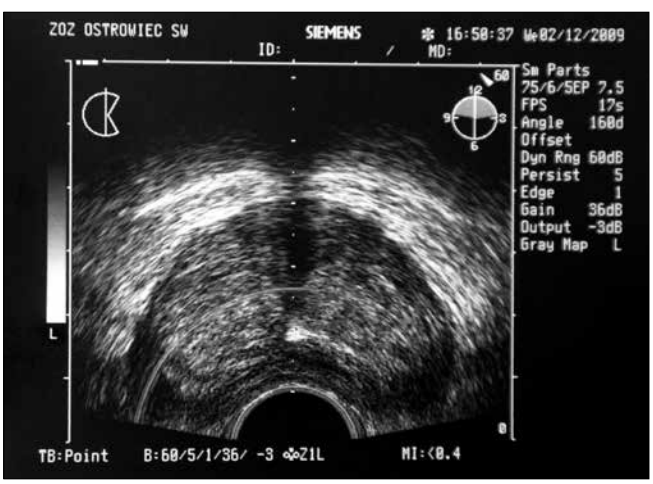

Fig. 4. The prostate after treatment (TRUS).

Fig. 5. The prostate after treatment (TAUS).

lent skin changes, and abscesses in other organs) has been reported as prostatic abscess. Often, these patients have lowered immunity (diabetes, AIDS, renal failure, or hematological diseases) [4]. Two occurrences of the development of prostatic abscess secondary to intramuscular injection that culminated in subcutaneous abscess formation were also reported [1]. Occasionally, prostatic abscess occurred in young boys in the course of infection with *S.aureus* or tuberculosis.

The symptoms of the disease are very non-specific and include: dysuria, frequency, urgency, fever in 30% of cases, and urinary retention in 33% of cases. During DRE, the abscess is a painful and palpable fluctuant mass. The interview usually spans the course of several days, and the general state of the patient is usually severe (we did not observe these symptoms in our patient). In diagnostics, for the treatment and monitoring of the patient, the most important tool is TRUS [1] (Fig 1). Untreated or inappropriately treated prostatic abscess can develop into urosepsis and death of the patient [1]. The available literature contains many works describing the treatment and management of prostatic abscess [5], but there is no standardized method of accurate diagnostics and treatment of this rare urological disease [1].

The method of treating a prostatic abscess depends on its size. A small abscess with a diameter up to 1 cm can be treated conservatively (IV antibiotics), while monitoring the effectiveness of treatment using TRUS [4]. Abscesses with a diameter above 1 cm should be evacuated. The classical method for the surgical treatment of prostatic abscess is catheterization to open the cavity of the abscess and remove the puss-filled vesicle with a resectoscope [2]. This classical method is subject to certain limitations: high-risk anesthesia in suceptible patients, the possibility of inducing bacteremia or sepsis, incomplete drainage, and retrograde ejaculation after the perurethral procedure [7]. In the case that imaging confirms the penetration of the abscess beyond the prostatic capsule or through the levator ani then the best therapeutic option is transperineal drainage under TRUS guidance [7].

In case of high-risk anesthesia or multifocal disease, prostatic abscess can be punctured and drained under TRUS guidance via the transrectal route. This method is minimally invasive, does not require neither spinal nor general anesthesia1 and allows the possibility of repeating the procedure in case of ineffective treatment [8]. We minimize the risk of bacterial spread and the possibility for retrograde ejaculation to occur, which by the way is very significant for many patients. The J catheter is left in the cavity until the pus has ceased to appear in the collection bag. After obtaining the results of bacterial culture of the pus, the antibiotic treatment is corrected according to the antibiogram. Open transperineal drainage of an abscess has also been reported [1]. Today's preferred methods, however, are minimally invasive ones requiring only local anesthesia or sedation.

In our patient we drained a large prostatic abscess with a minimally invasive method, which used an abdominal percutaneous transvesical approach. We did not encounter such a method of evacuating a prostatic abscess in our review of the available literature. According to our assessment of the selected patients, which included those not qualifying for transurethral decompression due to contraindications to anesthesia and cases of large abscess at the base of the prostate, this procedure is very straightforward and safe, requiring only local anesthesia. We believe that this access route to the abscess is safer for the patients than the transrectal route. In case of transrectal access, we puncture the wall of the healthy rectum. However, this concomitantly predisposes to the potential for subsequent infection of the periprostatic tissues with fecal bacteria, the risk of damaging the urethra, or the possibility of recto-vesicular fistula formation because of the long time needed to keep the drain in the cavity of the abscess.

After the procedure, samples should be collected for microbiological examination, such as: blood, pus, urine, and prostate fragments for histopathological examination. This will allow for a targeted antibiotic therapy that will shorten the healing time of the cavity. The drain should be continued until no pus is collected, while the antibiotic treatment is continued for at least three weeks.

CONCLUSIONS

1. Nowadays, minimally invasive methods are used to treat prostatic abscess.

2. The method we described for prostatic abscess drainage by percutaneous and transvesical means is safe and effective.

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