

Primary Prostatic Tuberculosis: A Rare Entity

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Abstract

Objectives: To clarify the clinical, histological and therapeutic features of prostatic tuberculosis. **Methods:** We conducted a single-centre retrospective descriptive study of all patients presenting with prostatic tuberculosis between January 2002 and December 2020. Patients who were lost to follow-up, could not be reached by telephone or whose records were not usable were excluded from this study. **Results:** 240 patients were treated for urogenital tuberculosis, including 13 for isolated prostatic tuberculosis. The average age of the patients was 75 years. None of our patients had a history of tuberculosis. The average of international prostate symptom score (IPSS) was 27. Lower urinary tract symptoms in the filling phase were predominant. The digital rectal examination was suspicious in only one patient. The mean preoperative PSA was 9.24 ng/ml. 46.15% of patients underwent transurethral resection of the prostate and 53.85% underwent ultrasound-guided prostate biopsy. Histological examination showed epithelioid gigantocellular granuloma with isolated caseous necrosis in 61.53% of patients and associated adenomyomatous hyperplasia in 38.47% of patients. Antituberculosis treatment was given for 6 months. The average of follow up was 15 months. All patients reported an improvement in clinical signs with a mean post operative IPSS score of 17 and a normalisation of PSA levels. **Conclusion:** Isolated prostatic tuberculosis is a rare entity, it can simulate a cancer. In front of the symptoms of the lower urinary tract, the clinicians must think of it especially in the developing countries where tuberculosis still prevails in an endemic state.

Keywords

Prostatic Tuberculosis, Epithelioid Gigantocellular Granuloma,

1. Introduction

Tuberculosis remains a priority public health issue for the World Health Organization (WHO). It is a real public health problem in our country and all in developing countries. Globally, no country has ever been able to eradicate TB. Urogenital tuberculosis accounts for 30% - 40% of extra-pulmonary localisations [1]. Prostate involvement is still rare and is usually diagnosed by histopathological analysis of prostate resection or biopsy specimens [2]. Few studies have been found in the literature with 5 cases as the longest series. The aim of our study was to clarify the clinical, histological and therapeutic features of isolated prostatic tuberculosis in 13 cases diagnosed and treated in our department.

2. Patients and Methods

We conducted a single-centre retrospective descriptive study of all patients with prostatic tuberculosis managed in our institution: Urology department of Rabta Hospital, Tunis, Tunisia, between January 2002 and December 2020. To be included, patients should be at least 14 years old at the time of diagnosis. Patients who were lost to follow-up, could not be reached by telephone or whose records were not usable were excluded from this study. All data were collected from the clinical records using a standardised data collection form. This included data on the history, clinical examination, routine biological examinations, necessary radiological investigations, treatment modalities as well as the evolution. The clinical and para-clinical data were entered into an Excel table (Microsoft Excel® 2008). The means used for continuous variables and the percentage for qualitative variables were determined using the calculation functions of Excel® 2008.

3. Results

Two hundred and forty patients were treated for urogenital tuberculosis, including 13 for isolated prostatic tuberculosis. The average age of the patients was 75 years (57 - 86 years). None of our patients had a history of tuberculosis. The vaccination status of our patients was considered correct in all patients. The average of IPSS was 27. Lower urinary tract symptoms were present in all patients, with a predominance of irritative signs. The digital rectal examination was suspicious in only one patient with a nodular consistency. Renal and vesicoprostatic ultrasound revealed an enlarged prostate with significant post-void residual in 61.54% of cases (Figure 1).

The mean prostate size was 52 mL (40 - 80 mL). The mean preoperative PSA was 9.24 ng/mL (0.78 - 50 ng/mL). 6 patients (46.15%) underwent transurethral resection of the prostate for failure of medical treatment of benign prostatic hypertrophy and 7 (53.85%) underwent ultrasound-guided prostate biopsy for



Figure 1. Homogeneous prostate hypertrophy with significant post-void residual.

suspected prostate cancer. The histological examination showed epithelioid gigantocellular granuloma with isolated caseous necrosis in 61.53% of patients and associated adenomyomatous hyperplasia in 38.47% of patients (**Figure 2** and **Figure 3**).

All patients tested negative for Koch's bacillus (BK) in urine and sputum. Intravenous urography (IVU), performed in all patients, found no evidence of urinary TB lesions. Antituberculosis treatment was indicated in all cases combining two major (rifampicin, isoniazid) and two minor (pyrazinamide and ethambutol) antituberculosis drugs taken once daily for 2 months, followed by a combination of two major antituberculosis drugs (rifampicin, isoniazid) for 4 months with good clinical and biological tolerance. (**Table 1** summarises all patients.)

The average follow-up time was 15 months. All patients reported improvement in lower urinary tract signs. The mean postoperative IPSS was 17. Three patients still had urinary urgency treated with anticholinergics with good clinical response. The PSA level normalized after 4 months of treatment.

4. Discussion

Urogenital tuberculosis accounts for 10% - 14% of all extra-pulmonary localisations of tuberculosis [3]. Isolated prostate tuberculosis is still rare. It was first described in 1882 by Jasmin [4]. The incidence of isolated prostatic localization has been estimated at 6.6% [3]. Primary prostatic involvement remains exceptional, particularly in immunocompetent subjects [5], and is often discovered incidentally following trans-urethral resection of the prostate or following prostate biopsies [6]. The routes of transmission are downward following an upper urinary tract infection, the haematogenous route, the lymphatic route and more rarely following endo-vesical instillation of Bacillus Calmette-Guerin or by sexual transmission [7]. Clinically, patients are often asymptomatic or present with a non-specific symptomatology consisting of urinary disorders during the filling or emptying phase. However, persistent haemospermia should alert the clinician [8]. In advanced cases, destruction of the prostatic parenchyma leads to a reduction

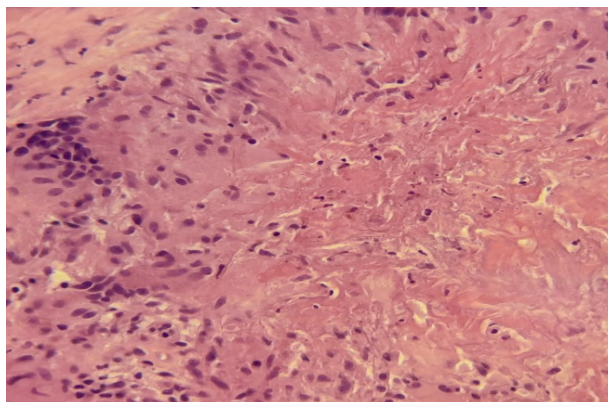


Figure 2. Epithelioid and giant cell granuloma centred by caseous necrosis. (HE ×40).

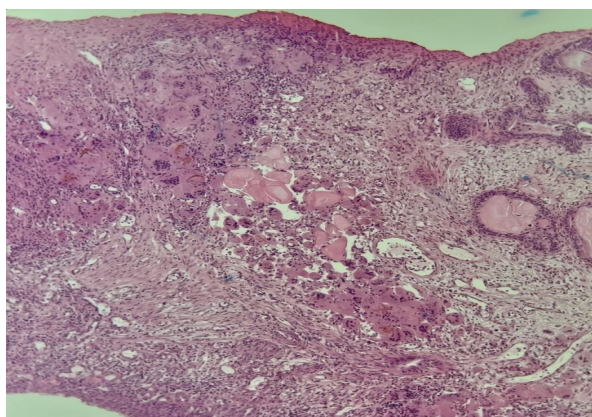


Figure 3. Granulomatous inflammatory changes in the prostatic parenchyma (HE ×10).

Table 1. Summary of all patients.

patients	Age	History of pulmonary TB	Clinical feature	IPSS	Digital rectal examination	Serum PSA	Urine for AFB stain, and urine culture for TB	Renal and vesicoprostatic ultrasonography with RPM	Chest x-ray/IVU	Histopathological examination	Treatment anti TB and follow up
1	77	No	LUTS with predominantly irritative voiding symptoms	26	Enlarged prostate	7.36	Negative	only prostatic hypertrophy 450 cc	NAD	PTB + BPH	Combined form Recovered
2	57	No	LUTS with predominantly irritative voiding symptoms	32	Enlarged prostate	10.26	negative	only prostatic hypertrophy 250 cc	NAD	PTB	Combined form Recovered
3	73	No	Irritative voiding symptoms and dysuria	30	Enlarged prostate and elastic consistency	2.26	negative	only prostatic hypertrophy 50 cc	NAD	PTB	Combined form Recovered
4	86	No	Irritative voiding symptoms and dysuria	25	Enlarged prostate	11.73	negative	only prostatic hypertrophy 160 cc	NAD	PTB	Combined form Recovered
5	77	No	LUTS with predominantly irritative voiding symptoms	30	Enlarged prostate and elastic consistency	10	negative	only prostatic hypertrophy 200 cc	NAD	PTB	Combined form Recovered

Continued

6	68	No	Irritative voiding symptoms and dysuria	29	Enlarged prostate An elastic consistency	12	negative	only prostatic hypertrophy 150 cc	NAD	PTB	Combined form Recovered
7	80	No	LUTS with predominantly irritative voiding symptoms	26	Enlarged prostate	2.36	Negative	only prostatic hypertrophy 360 cc	NAD	PTB + BPH	Combined form Recovered
8	77	No	Irritative voiding symptoms and dysuria	30	Enlarged prostate	1.39	Negative	only prostatic hypertrophy 50 cc	NAD	PTB	Combined form Recovered
9	78	No	LUTS with predominantly irritative voiding symptoms	28	Enlarged Prostate with nodular consistency	50	Negative	Hypoechoic nodule calcification 210 cc	NAD	PTB	Combined form Recovered
10	69	no	LUTS with predominantly irritative voiding symptoms	26	Enlarged prostate	0.78	negative	only prostatic hypertrophy 30 cc	NAD	PTB + BPH	Combined form Recovered
11	83	no	Irritative voiding symptoms and dysuria	24	Enlarged prostate	8	Negative	Prostatic hypertrophy 50 cc	NAD	PTB + BPH	Combined form Recovered
12	67	No	Luts with dysuria and irritative symptoms	26	Enlarged prostate	2	Negative	Prostatic hypertrophy 150 cc	NAD	PTB + BPH	Combined form Recovered
13	83		LUTS with predominantly irritative voiding symptoms	22	Enlarge prostate	2	negative	Prostatic hypertrophy 60 cc	NAD	PTB	Combined Form Recovered

PSA: Prostate-specific antigen, AFB: Acid-fast bacilli, PTB: Prostatic Tuberculosis, LUTS: Lower urinary tract symptom, ATT: Antituberculosis treatment, NAD: Not associated with disease, IPSS: international prostate symptom score, RPM: post void residue, BPH: Benign Prostatic Hypertrophy.

in semen volume [9]. Perineal fistulisation may also be observed. On rectal examination the prostate is often firm or nodular [9]. The search for BK in urine and sputum with Ziehl-Neelsen staining can help in the diagnosis but their contribution remains low with a sensitivity of 52.7% [10]. Several molecular biology techniques on urine, based on PCR, are available with excellent sensitivity (95.59%) and specificity (98.12%), depending on the bacillary richness of the sample and the presence of amplification inhibitors (present in about 10% of samples) [10]. Diagnosis is confirmed by pathological examination of the resection shavings or prostate biopsy specimens. The lesion found is epithelioid and gigantocellular granuloma with or without central breakage necrosis. These lesions are not confined to the periductal area as can be seen in non-specific granulomatous prostatitis [7]. Endorectal ultrasound can show hypoechoic lesions or calcifications mainly in the peripheral part of the gland [10]. Computer tomography scan can also show these lesions more specifically. Magnetic resonance imaging is also helpful in the diagnosis, showing nodular or diffuse lesions mainly in the peripheral zone [11]. The first-line treatment is medical, identical to that for pulmonary tuberculosis. It consists of an initial four-drug regimen of

isoniazid (4 - 5 mg/kg/d), rifampicin (10 mg/kg/d), ethambutol (15 - 20 mg/kg/d) and pyrazinamide (20 - 25 mg/kg/d) for two months, followed by dual therapy with rifampicin and isoniazid for four months [12]. Surgical treatment is only indicated for cases that do not respond to well-managed medical treatment [13]. It consists of removal of the lesions, with or without endoscopic or open drainage. Medical treatment usually results in a favourable outcome. Our study being retrospective and only based on the clinical records of the patients could taint the added value of the study.

5. Conclusion

Isolated prostatic tuberculosis is rare. It may simulate prostate cancer or be associated with benign prostatic hypertrophy. Histological examination is essential for diagnostic confirmation. The simple and classic anti-tuberculosis treatment is very effective. More than the treatment, it is the early diagnosis of the infection that remains to be improved. Clinicians must have a high index of suspicion of tuberculosis, in particular in patients with lower urinary tract symptoms from endemic zones.

Consent

Written informed consent was obtained from the patients for publication of this series and accompanying images.

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Registration of Research Studies

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Author Contribution for-Profit Sectors

All authors have contributed to this work and have read and approved the final version of the manuscript.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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