PRIMARY PROSTATIC TUBERCULOSIS. CASE REPORT AND BIBLIOGRAPHIC REVIEW

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Summary.- OBJECTIVE: Primary prostatic tuberculosis is a very rare form of presentation of the tuberculous infection, which is generally caused by the M. tuberculosis, and which has shown an increase in incidence and prevalence, due to an increase of immunocompromised patients and the pandemic of the Syndrome of Acquired Immune Deficiency (AIDS).

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Resumen.- OBJETIVO: La tuberculosis prostática primaria es una forma de presentación de la infección tuberculosa muy poco frecuente, es ocasionada generalmente por el M. Tuberculosis, la cual ha mostrado un aumento en su incidencia y prevalencia, debido al aumento de pacientes inmunodeficientes y la pandemia del Síndrome de Inmunodeficiencia Adquirida (SIDA).

Describing a case of tuberculosis prostática primaria attended in the Hospital Universitario de Santander, Colombia, and performing a discussion around this topic.

MÉTODO/RESULTADO: Hombre de 65 años de edad quien consultó por polaquiuria, disuria y hesitancia. Con pérdida de 10 Kg de peso en los últimos 6 meses, sin sintomatología pulmonar y prueba de ELISA negativa para VIH. En el examen físico se documentó la presencia de una próstata aumentada de volumen, irregular y dura. Por lo cual se realizó ecografía Doppler prostática que mostró un volumen prostático de 39 cm³, sin características indicadoras de malignidad. La biopsia por punción de la glándula mostró múltiples granulomas y la tinción de Ziel-Nielsen fue positiva para micobacterias. Con los anteriores hallazgos se realizó el diagnóstico de tuberculosis prostática primaria, la cual fue tratada y actualmente el paciente se encuentra asintomático sin evidencia de enfermedad tuberculosa activa.

CONCLUSIONES: La tuberculosis prostática primaria sin historia de compromiso del sistema inmune, es una enfermedad muy poco frecuente, a pesar de lo anterior su conocimiento es de particular importancia debido al aumento progresivo de su presentación y a la posibilidad de realizar un tratamiento curativo a los pacientes afectados.


INTRODUCTION

Tuberculosis is an infectious disease caused by bacilli of the Mycobacterium complex, of which the most involved in its genesis is the M. tuberculosis, known as Koch’s bacilli, in honor of its discoverer Robert Koch, other mycobacterium, more rare and heterogeneous are also involved in its origin such as the M. africanum, M. canetti y M Bovis (1). This disease can affect any organ of the human body, but in some of them its presentation is rare, these include the thyroid gland, myocardium, adrenal gland and prostate gland.

The prostate commitment by tuberculosis is the least frequent at genitourinary level, which can be developed more frequently secondary to a primary pulmonary tuberculosis or more rarely by the settling product of the sexual transmission of the mycobacterium (2,3). This disease has increased in frequency due to the pandemic of acquired immunodeficiency syndrome (AIDS) (2). In addition, the co-infection with HIV-AIDS brings forward atypical clinical presentations, which impede the diagnosis on simulating other genitourinary alterations such as the bacterial infection of the urinary tract or the benign prostate hyperplasia.

More over, these patients bring with them unusual clinical presentations of prostatic tuberculosis that are characterized by the presence of paucibacilar populations, which diminishes the sensibility of the conventional methods of diagnosis (2,3). Continuing there will be described a case of primary prostate tuberculosis attended in the University Hospital of Santander and there will be realized a constructed discussion about this topic.

MATERIALS AND METHODS

Clinical Case

A 65 year-old man presented with symptoms of frequency, dysuria and hesitancy. Additionally the patient informed the loss of 10 kg of weight in the last 6 months, without other symptoms. This patient had history of father with prostate carcinoma, additionally no history
of immunodeficiency and ELISA’s test for HIV negative in two opportunities. The physical examination revealed the presence of a prostate increased of volume, irregular and hard, without other alterations. It was realized, Prostate Specific Antigen (PSA) (7.17 ng/ml), creatinine (0.83 mg/dl), and urinalysis which reported over 10 erythrocytes/HPF. The prostate Doppler ultrasound scan showed slight increase of size, with a volume of 39 cm³ and an estimated weight of 34 grams, suitable contrast being observed between the peripheral and transitional zone, with homogeneous echogenicity and normal capsular edges, without abnormal zones of vascularization. Given the previous findings a sextant puncture biopsy was conducted, which revealed numerous granulomas consisting of epithelioid histiocytes, surrounded by a collar of lymphocytes and accompanied by Langhans type giant multinucleated cells; in some of them with caseificatory necrosis (Figures 1, 2). The Ziel-Nielsen staining was positive for mycobacterium. Alterations were not observed at the chest x-ray and thorax CT and microbiological evidence of mycobacterium at the sputum smear was not found, nor in the study of the bronco alveolar wash. With the previous finding there a diagnosis of primary prostate tuberculosis was realized and the patient was started on anti-tuberculous treatment with Rifampicin, Isoniazid and Streptomycin. After six weeks, the patient presented improvement of the symptomatology with only an episode of urinary obstruction at the beginning of the treatment. Nowadays the patient is asymptomatic without evidence of active tubercular disease.

**Literature search strategy**

A refining literature search was performed, using the MedLine database, across its Web portal PubMed, from January 1915 until April 2008, using initially the terms “Prostate tuberculosis” obtaining 153 original articles. Later it was added the term “Primary” to the previous terms, which showed 15 additional articles, for a whole of 168 articles, of which there were selected those considered relevant publications by the authors for the discussion of the topic. In addition, literature was taken from books and other publications.

**DISCUSSION**

Prostatic tuberculosis, is one of the most infrequent forms of the tuberculous disease, which diagnosis needs the microbiological checking of the Mycobacterium tuberculosis, that is realized generally by an invasive procedure, which has a high possibility of presenting a negative result, since it happens in any other type of extrapulmonary commitment, leading it to being a subdiagnosed and subtreated pathology. This disease affects principally individuals with some type of liability in the immune system as children, elders and immunosuppressed (1,2,3).

The tuberculosis is one of the most common infectious diseases, it is estimated that one third of the world’s population are infected with Mycobacterium Tuberculosis, the active form of this disease appears in about 8.8 million persons every year, and it causes near 1.6 million annual deaths, which located the tuberculosis as the second cause of death for infectious diseases in the world after the AIDS (4,5). 95 % of the cases occur in developing countries as Colombia, with an annual incidence of 23 per 100,000 population(4). In addition, the co-infection of AIDS and tuberculosis is widely seen, it presents with some clinical and pathological characteristics that cau-

![FIGURE 1](image1.jpg)

**FIGURE 1.** Segment of the prostate gland taken by puncture biopsy which showed a granuloma consisting of epithelioid histiocytes, intermingled with lymphocytes and accompanied by Langhans type multinucleated giant cells (HE 20x).

![FIGURE 2](image2.jpg)

**FIGURE 2.** Histochemical study with Ziel-Nielsen staining positive for mycobacteria (ZN x100).
ses a particular behavior (2,6). The number of patients with tuberculosis of uncommon organs such as prostatic gland has been increasing in recent years, it is related to the increasing number of the immunosuppressed patients and to the creation of better programs for detection of tuberculosis (1,2,6).

Genitourinary tuberculosis has been documented among 8.7 and 15.5% of the cases of extrapulmonary tuberculosis (1,6), and the commitment of the prostate gland constitutes about 2.6% of genitourinary forms. Respiratory compromise in patients with genitourinary tuberculosis was only successfully documented in 37% of the patients (6), which is due to the difficulty in detecting quiescent and cured forms of the disease. The only study made in Colombia found that in the 102 patients studied with extrapulmonary tuberculosis, the genitourinary tuberculosis was the sixth presentation form of extrapulmonary compromise, with only 4 cases (3.84%), one of them with involvement of the prostate gland (4).

The prostate can develop tuberculosis in two ways, the first is the secondary commitment of a primary infection in another organ, and the other form of is as a primary tuberculosis, which first reported case was made by Irvin S. Koll in the year 1915 (7), and which corresponds to the Mycobacterium’s prostate infection without involvement of other organs, to date has documented some 42 cases of this type of disease, thus constituting a form of presentation very unusual (1,2,3,6,7). The secondary commitment from a primary focus of infection may occur and infection is transmitted to the prostate either by the downward spread from urinary tract or through hematogenous or lymphatic spread (1,7,8).

The primary presentation is produced by the mycobacterial infection through the urethra, it has been reported cases of infection by treatment with Bacillus Calmette Guerin (BCG) for superficial bladder cancer and other less frequent cases of sexual transmission (2.9), the patient reported in this article had no history of treatment with intravesical BCG, and it is assumed that the mode of infection was through sexual transmission.

It should be borne in mind that tuberculous prostatitis is not the only inflammatory granulomatous disease that affects the prostate (8). There are other causes of granulomatous inflammation (Table 1), within which are the adenomatous prostatic hyperplasia, which is in the nature of foreign body granulomatous reaction due to damage of acini or ducts by intraluminal concretions or stones, and fungal infections such as South American blastomycosis, cryptococcosis, and coccidioidomycosis (8). The differentiation between different types of granulomatous prostatitis is of peculiar importance because it allows to establish the most appropriate form of treatment. Thus, the nonspecific granulomatous prostatitis resolves spontaneously by fibrosis, while the infectious granulomatous prostatitis requires specific antibiotic treatment (8).

The clinical findings in prostatic tuberculosis are often non-specific and generally demonstrate the local commitment; the symptoms most commonly found are the lower genitourinary tract obstruction and hematuria without pain (2.6). It can also be revealed signs of frequency and nocturia, which were present in the patient. As extra-prostatic manifestations can be observed weight loss, fever, anorexia, asthenia and perianal abscess, which

<table>
<thead>
<tr>
<th>Type of Prostatitis</th>
<th>Etiology</th>
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<tbody>
<tr>
<td>Infectious</td>
<td>Tuberculous</td>
</tr>
<tr>
<td>Mycosis</td>
<td>BCG</td>
</tr>
<tr>
<td>Blastomycosis</td>
<td>Coccidioidomycosis</td>
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<tr>
<td>Cryptococcosis</td>
<td>Mycobacterium</td>
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<td></td>
<td>Autoimmune</td>
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<tr>
<td>Post-biopsy</td>
<td>Churg-Strauss syndrome</td>
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<tr>
<td>Systemic</td>
<td>Wegener Granulomatous disease</td>
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as a form of presentation often suffers bacterial over-

infection (9).

The findings on digital rectal examination are not speci-

fie or diagnos the disease, it has simiar characteristics
to other diseases such as benign prostatic hyperplasia
and prostate cancer, the finding or indurated mass with
firm and nodular irregular edge have been described
(1,2,6,10), and is well correlated with the case. Simi-
larly, imaging studies are not sensitive and do not easily
distiguished with the carcinoma, especially when the
urine tests have shown negative results to tuberculosis
bacilli (6).

Doppler ultrasound, which is an unusual feature, genera-

ly shows increase of the prostate with irregular borders
diffuse hypoechoic lesions within the peripheral
zone of the prostate, with occasional calcification and
increased vascularity, especially during inflammatory
prostatitis (6,11,12), which was not evident in the
patient described here. Studies with CT show multiple
lesions inside the prostate with irregular borders and low
density (13). On making MRI large cystic masses are

seen towards the periphery, with low-intensity radiated
fields known as the “watermelon skin”, which could be
one of the few specific signs for prostatitis due to tuber-

culosis (6,12,13).

Serum PSA, have not shown considerable value in diffe-

rentiating the prostate carcinoma and tuberculosis as the
latter may cause the elevation of the same, and clinically
mimicking cancer (6). However, studies have shown that
this increase in the PSA is transient and decreases with
the resolution of inflammation (6). Other laboratory tests
useful in the definitive diagnosis of this condition and
the discrimination of the possible differential diagnoses
include urine analysis which is expected to be normal,
although occasionally there is piuria without bacteriuria,
this being more common when there is renal compre-

ise, and a negative urine culture for other bacteria (13).
Positive cultures for pyogenic organisms may lead to
diagnostic errors (6).

Tuberculin skin test diagnosis is not considered due to the
high prevalence of tuberculosis infection in our envi-

ronment. Similar methods can be used as the amplifica-
tion by polymerase chain reaction PCR, which showed
a specificity of 98% and a sensitivity of 95%, plus the
ability for rapid detection of mycobacteria in a sample
of urine (14).

The diagnosis is usually made incidentally such as an
histological finding after transurethral prostatectomy or
in a punction prostatic biopsy (6,8,13). The demonstra-
tion of the presence of microorganisms in urine cultures
or compromised tissue is needed for definitive diagnosis
of genitourinary tuberculosis, but its diagnosis is often
difficult because this type of spreading is a rare form of
presentation, there is a difficult access to the sites of en-
gagement as the prostate and the paucibacillary nature
of the infection when it spreads beyond the lungs, which
reduces the sensitivity and specificity of the tests, making
difficult to detect acid-alcohol resistant bacilli by Ziel-

Nielsen stain (8). In these cases it is necessary to keep
the suspect when the histopathological study reveals
prostatitis with epithelioid granulomas, Langhans type
giant cells and caseification necrosis, and then make the
final diagnosis depending on the response of the patient
to the tuberculosis treatment (6,8).

Once diagnosed, the prostatic tuberculosis, is treated
with the regimens for extrapulmonary tuberculosis with
isoniazid, rifampin, pyrazinamide and streptomycin, a
period of 6 months has proved to be sufficient because
the adequate perfusion of these vascular tissues, the shor-
tage of microorganisms at the site of infection, the high
concentration of drugs in urine and its good penetration
to the cavities formed in the infectious process, but there
are those who prefer complete cycles of 9 months (15).

Shortened supervised treatment cures 95% of cases whic
which prevents new infections and resistance in other pa-
tients, and is one of the more cost-effective (10 to $ 15
per patient) health interventions (5,15). Corticosteroid
therapy has been recommended if there are restrictions
or obstructions in the urinary tract and ureteral reimplan-
tation is recommended if the blockage is not resolved
after corticosteroid therapy (2).

In patients with genitourinary tuberculosis, surgery may
be a treatment modality, especially given the suspicion
of malignancy, refractory to antibiotic therapy, and in
complicated cases with local tissue destruction, obstruc-
tion, abscesses, urinary tract infection or nephrolithiasis
and pyelonephritis secondary, but it is important to cla-

rify that this practice is becoming less important and the
medical management is the first option (6).

The presentation of prostatic tuberculosis usually pre-

sents with a good prognosis, however, cause significant
morbidit in affected patients. The most frequently seen
complication is the development of infertility due to the
many obstructions in the ejaculatory duct. Another of the
complications, but less frequent, is the prostatic abscess,
which is more commonly seen in patients with conditions
of immunosuppression (1,2).

In conclusion it was presented and discussed a case
of primary prostatic tuberculosis with no history or evi-
dence of compromise of the immune system, a disease
which despite being uncommon knowledge is of parti-

cular importance due to the progressive increase in its
presentation and the possibility of a curative treatment
to patients.
REFERENCES AND RECOMMENDED READINGS
(*of special interest, **of outstanding interest)