Cryptococcal Prostatic Abscess in an Immunocompromised Patient: A Case Report and Review of the Literature

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Abstract

A case of cryptococcal prostatic abscess in a 65-year-old Chinese man with immunosuppression from treatment of myasthenia gravis is presented. The patient was diagnosed to have cryptococcaemia when he presented with fever and urinary symptoms. Further investigations confirmed cryptococcal meningitis and imaging studies showed a hypodense lesion in the prostate. This proved to be an abscess and it was deroofed transurethrally. Histology of the prostatic tissue revealed the presence of Cryptococcus. The prostate can be a site of persistent cryptococcal infection and may take the form of an abscess. It should be drained transurethrally to prevent relapse.

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Key words: Cryptococcosis, Immunosuppression, Persistent focus, Prostate

Introduction

Cryptococcosis is a well-recognised infection in immunocompromised patients, although its prevalence varies with the type of immune defect.[1] We report a patient with myasthenia gravis (MG) on steroid therapy and non-insulin dependent diabetes mellitus (NIDDM) who developed cryptococcal meningitis and in whom a search for a persistent focus by means of transrectal ultrasonography and computerized tomographic scanning revealed a prostatic abscess that was drained successfully by transurethral resection. A literature search was made using the keywords prostate or prostatic; cryptococcal, cryptococcus or cryptococcosis; and English in language, in the Medline for all years and the original articles were reviewed.

Case Report

WKY, a 71-year-old gentleman with a 5-year history of generalized MG on immunosuppressive therapy (including prednisolone 15 mg QD and azathioprine 50 mg BID) and NIDDM was admitted with complaints of frequency, dysuria and fever for 3 days. His general condition was satisfactory. His temperature was 39.5°C. Neurologically, he had mild proximal weakness (motor power was grade 4 ± 5). The rest of the physical examination was unremarkable. His initial laboratory results showed a total white cell count of 5 x 10^9 / dL, platelet count of 85 x 10^9 / dL and erythrocyte sedimentation rate of 55 mm / h. Urine microscopy showed 12 to 15 white blood cells (WBC) per high-powered field but urinary culture was negative. Blood cultures were obtained and intravenous ceftriaxone 1 g QD was commenced. The fever subsided promptly. However, the blood culture grew *Cryptococcus neoformans*.

A lumbar puncture was performed after an unremarkable computer scanning of the brain. The cerebrospinal fluid (CSF) showed 12 WBC / mm^3, glucose level of 3.3 mmol / L, and protein level of 0.9 g / L (normal 0.1 to 0.4). An Indian ink smear of the CSF was positive for Cryptococcus. The CSF quantitative cryptococcal antigen assay as well as the serum cryptococcal antigen assay were both positive (>1 / 512). Subsequently, the CSF culture also grew *Cryptococcus neoformans*. He was thus treated for cryptococcus meningitis with fungaemia using intra-

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venous amphotericin at doses of 0.6 mg/kg/day and oral fluconazole 400 mg a day.

Further urine sampling showed the presence of blastoconidia with pseudohyphae formation. A transrectal ultrasound of the prostate showed features suggestive of prostatitis as well as early abscess formation. Computer scanning of the pelvis showed a 4 cm diameter cystic lesion on the right lobe of prostate (Fig.1). Transurethral resection of the right lobe of the prostate was performed. The abscess cavity was deroofed, and copious amount of necrotic material was removed. The tissue histology showed presence of fibrous stroma without viable epithelium. There was diffuse infiltrate of histiocytes and lymphocytes. The histiocytes showed engulfed cyst-like bodies showing mucin positive capsule consistent with Cryptococcus (Fig.2). He made an uneventful recovery from the operation and continued his course of anti-fungal therapy (fluconazole 400 mg/day for 4 months, 200 mg/day for 4 months, and 100 mg/day thereafter). There was no neurological deficit in relation to the cryptococcal meningitis at latest follow up one year after the initial event.

Discussion

Marked changes in the epidemiological pattern, clinical presentation, diagnosis and microbiological characteristics of prostatic abscesses have occurred since the advent of antibiotic therapy and new diagnostic techniques.[2-6] Regardless of the route of infection, prostatic abscesses currently tend to occur in hosts with either a local deficiency of prostatic defenses, due to obstruction or bladder instrumentation; or hosts with systemic immunodeficiency. The risk factors in our patient included immunosuppression therapy and diabetes.

Cryptococcus infection is acquired through the respiratory route. In most hosts who encountered *Cryptococcus neoformans* the infection is contained or eliminated, without evidence of the disease. Immunocompromised patients are at risk of systemic disease and dissemination.

The clinical presentation of Cryptococcosis varies depending on the site and the host, but the dominant involved organs are the lungs and the central nervous system. Early reports dated back to the 60s and 70s,[7-11] subsequently prostatic involvements were reported in patients immunocompromised by steroids,[12,13] organ transplantation,[14,15] human immunodeficiency syndrome (HIV) infection[16-19] and Hodgkin's lymphoma.[20] It had also been described in apparently immunocompetent hosts[21-24] (Table I).

The prostate gland has also emerged as a potential site of relapse of cryptococcosis after apparently successful initial therapy of cryptococcal meningitis.[25-27] In this setting, cryptococcal infection of the prostate gland occurs as part of a disseminated process. The prostate then serves as a site of persistent, hard-to-eradicate infection, from which systemic relapse may occur.[25-27] The penetration into the prostate by the available agents for treatment of Cryptococcosis is uncertain. Bailly et al[28] used high doses of fluconazole and successfully sterilised the CSF but not the prostate and felt that there was insufficient diffusion into the prostate.

However, Bozzette and associates[26] in a placebo-controlled trial of maintenance therapy with fluconazole (100 mg/day in the first phase; 200 mg/day in the second phase) after treatment of cryptococcal meningitis in acquired immunodeficiency syndrome (AIDS) patients noted that 10 of 27 assigned to placebo (37%) and 1 of 34 assigned to fluconazole (3%) had a recurrence of cryptococcal infection at any site. They concluded that in patients with AIDS, maintenance therapy with fluconazole is highly effective in preventing recurrent cryptococcal infection. In another study by the same group, the dose-related response of fluconazole was

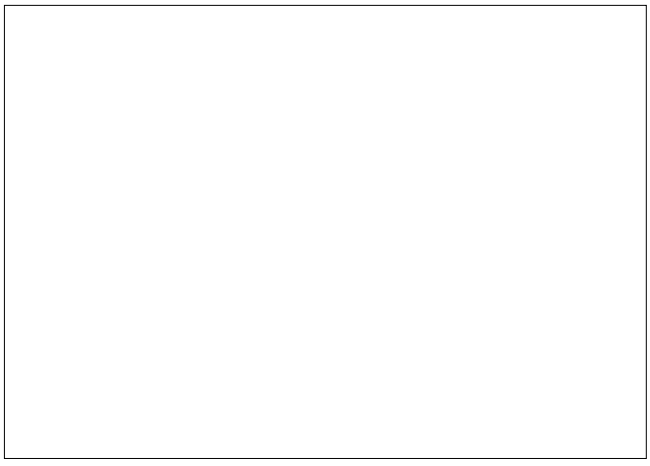

Fig. 1. Computer scan of pelvis showing cystic lesion of right lobe of prostate suggestive of abscess formation. (arrows)

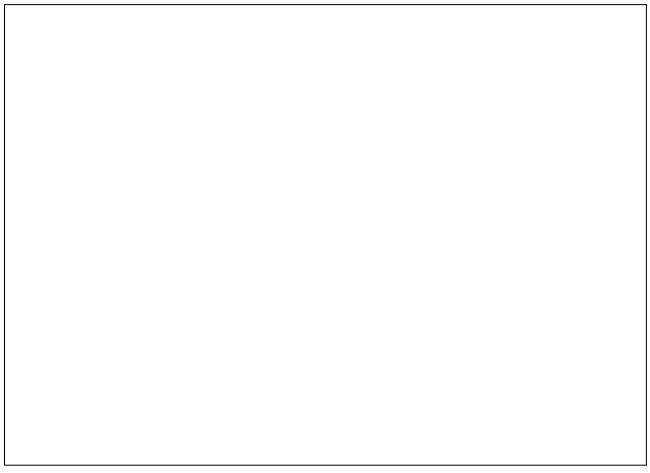

Fig. 2. Histological examination of prostatic chip showing positively stained capsule compatible with Cryptococcal infection. (arrows)

TABLE I: CASE REPORTS OF CRYPTOCOCCAL PROSTATITIS AND ABSCESS FORMATION

Author	Year	Age	Presentation	Histology obtained	Underlying disease	Treatment	Outcome
Fuse[13]	1995	55	Urinary retention	Needle biopsy: cryptococcal granuloma, microabscesses	Behcet's disease on immunosuppression	Fluconazole 200 mg for 1 year	Well at 32 months
Scully[15]	1994	55	Urinary tract infection	TURP chips: prostatic abscess, cryptococcus present	Cardiac transplant	Fluconazole	Died day 43 due to bronchiolitis and alveolitis
Ndimbie[19]	1994	39	Cryptococcal meningitis	Autopsy: cryptococcal prostatitis	AIDS	Amphotericin B, 5-flucytosine	Well for 2 years, died of AIDS. Autopsy incidentally detected cryptococcal prostatitis
Mamo[17]	1992	28	Fever, obstructive voiding symptom	Transperineal aspiration of prostatic abscesses: cryptococcus present	AIDS	Amphotericin B 40 mg/day, fluconazole 400 mg/day	Persistent abscess, refused TURP. Died of sepsis 2 months later.
Adams[18]	1992	55	Prostatism, prostate nodule	TRUS (P) and biopsy: presence of cryptococcus	AIDS	Fluconazole	Well
King[20]	1990	48	Urinary retention, prostatic nodule 1 month after cryptococcal meningitis	Needle biopsy: presence of yeast	Hodgkin's lymphoma	Amphotericin B, fluconazole 200 mg/day for 6 months	Well
Milchgrub[24]	1990	59	Urinary retention	TURP chips: granulomatous prostatitis and presence of cryptococcus	Healthy	Ketoconazole 400 mg daily for 1 week	Well at 22 months
Lief[16]	1986	36	Dysuria, urinary obstruction	Prostate biopsy: cryptococcus	AIDS	Amphotericin B, 5-fluorocytosine for 6 weeks	Well at 2 months
Allen[22]	1982	63	Urinary retention, disseminated cryptococcus 10 days post TURP	TURP chips: cryptococcal prostatitis	Healthy	Amphotericin B, flucytosine	Well at 12 months
Huynh[23]	1982	68	Dysuria, poor stream	TURP chips: granuloma, presence of cryptococcus	DM, cryptococcal meningitis 2 years ago	No treatment	Repeat TURP 8 years later showed cryptococcal granuloma
Hinchey[21]	1981	63	Prostatism	TURP chips: granulomatous prostatitis and presence of cryptococcus	DM, TB, chronic active hepatitis	Amphotericin B	Well at 9 months
Plunkett[14]	1981	52	Post catheterisation and post TURP septicaemia	Blood culture: cryptococcus TURP chips: no cryptococcus	Renal transplant	Amphotericin B, 5-fluorocytosine	Well
Braman[12]	1981	63	Prostatic obstruction	TURP chips: granulomatous prostatitis, microabscesses and presence of cryptococcus	TB, chronic active hepatitis on steroid	Refused treatment	Well

TURP: transurethral resection of prostate; AIDS: acquired immunodeficiency syndrome; DM: diabetes mellitus; TB: tuberculosis; TRUS (P): transrectal ultrasound of prostate

studied, and a higher response rate was noted with higher doses. They recommended that fluconazole at a dose of 200 to 600 mg daily should be used to treat persistent *Cryptococcus neoformans* infection of the prostate.[27]

Of note is that most authors were referring to persistent cryptococcal prostatic tract infection. These were usually infiltrative and granulomatous prostatitis.[12,18-27] Genuine cryptococcal prostatic abscess was extremely rare.[15,17,27]

We feel that a persistent prostatic focus of infection needs to be scrutinized vigilantly. In this regard, transrectal ultrasonography may be performed as a screening modality to be supplemented by computer scanning of the pelvis.[3,5]

Prostatic abscess often needs to be drained surgically. Various methods of drainage have been described.[3,4] With the advent of ultrasound techniques, there were reports of transrectal ultrasound guided drainage.[6] Yet transurethral resection (deroofing) of the abscess wall remains the preferred surgical option, especially in loculated and chronic abscesses where transrectal aspiration alone might be inadequate.[15-17] While Bozette reported one case of successful treatment of multiple large prostatic abscesses using fluconazole 600 mg / day alone,[27] Mamo[17] reported another case whereby initial ultrasound guided aspiration without formal transurethral resection of prostate led to a subsequent mortality. We took into consideration that the abscess was readily accessible through the transurethral route based on the CT scan findings. We believed that in patients with immunodeficiency, adequate and complete drainage of the septic focus is of utmost importance to minimize the chance of persistent infection. As demonstrated in this case, combined surgical drainage and medical therapy led to favourable outcome in this rare yet severe condition.

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