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Male Genital Tuberculosis

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Abstract

Genitourinary system is the most common extrapulmonary site after lymph node involvement affected by tuberculosis (TB). TB can affect whole male genital organs; epididymis, testis, prostate, seminal vesicle, vas deferens, scrotal skin, bulbourethral glands and penis. Although male genital TB (MGTB) is reported rarely in the literature, most of the cases are overlooked. It is not always very easy to diagnose MGTB because there is no pathognomonic sign. Sometimes, it can be difficult to differentiate TB orchitis from testicular cancer. If laboratory and radiological findings are not enough for diagnosis then biopsy and surgical procedures such as epididymo-orchiectomy may be required.

Keywords: Tuberculosis; Diagnosis; Genitourinary; Male genital tuberculosis

Introduction

Tuberculosis (TB) remains a major global health problem. According to the World Health Organization (WHO) report 2013, there were 8.6 million new TB cases in 2012 and 1.3 million TB deaths (just under 1.0 million among HIV-negative people and 0.3 million HIV-associated TB deaths). Tuberculosis may affect the whole male urinary and genital tract. Genitourinary TB (GUTB) is the second most common form of extrapulmonary TB (EPTB) in countries with severe epidemic situation of TB and the third most common form in regions with low incidence of TB [1]. In clinical studies, the incidence of male genital TB (MGTB) is relatively low because the true diagnosis is not easy. However in postmortem studies, 70% of men who died from TB had prostate TB that had mostly undiagnosed during their life time [2]. Pulmonary TB is more dangerous and life-threatening, but EPTB is also contagious and potentially lethal [1]. MGTB is an important issue because if it is not diagnosed then it may lead to infertility. Besides isolated TB epididymo-orchitis may mimic testicular cancer. Also it should be kept in mind that, TB epididymo-orchitis is a rare complication of intravesical Bacillus Calmette-Guérin (BCG) therapy for urothelial cancer of the bladder.

MGTB usually is associated with renal TB in 60% to 65% cases or with pulmonary TB in around 34% cases [3]. The most common sites for MGTB are the epididymis and the prostate, followed by the seminal vesicles and the testicles [4,5]. Infection of the male genitalia is believed to originate from renal foci. Haematogenous spread to these sites is also possible in cases of miliary infection. Reports of pelvic tuberculosis in the sexual partner of patients with TB epididymo-orchitis suggest the possibility of woman to man sexual transmission [6]. Several mechanisms account for epididymal infection. Cases of tuberculosis epididymitis account for most reports of MGTB. The spread of tuberculosis to the epididymis is thought to occur hematogenously or by retrocanalicular descent of organisms from the hematogenously infected prostate [7]. However, isolated tuberculous epididymitis probably is a result of hematogenous spread without urinary tract involvement. Another usually recognized mechanism is dissemination from the prostate or seminal vesicles, with retrograde involvement through the vas deferens [8]. Testicular involvement usually is the result of direct extension from the epididymis and scrotal involvement suggests local extratesticular extension of the disease process [9]. In prostate TB, hematogenic spread is more frequent than through the urinary system [10]. Testicular involvement is less common and usually is the result of direct extension from the epididymis. Isolated TB orchitis without epididymal involvement is very rare [11]. Involvement of scrotal wall suggests local extratesticular extension of disease process. If the epididymal infection is extensive and an abscess formation occurs, it can rupture through the scrotal skin, thus establishing a permanent sinus.

Clinical Presentation

Infection of the epididymis and testicles usually starts from the globus minor, as it has a richer vascularity. Acute infection presents as painful scrotal mass, which initially cannot be distinguished clinically from epididymo-orchitis. Sometimes, it can be difficult to differentiate TB orchitis and the testicular swelling from other mass lesions of the testes [12]. Physical examination will reveal a bulky, hard, painful mass, with difficulty in distinguishing the testis from the epididymis Acute infection usually disappears within 2-4 weeks, and the condition will evolve toward reabsorption (i.e. a hard, non-painful nodule at the epididymis tail) [8]. Examination shows an enlarged, irregular, nodular epididymis. If TB epididymo-orchitis is left untreated, granulomas with caseation can cause fistulas, sinuses or caseous abscesses. Recurrent hematospermia is rare, but should raise suspicion of TB epididymo-orchitis [13]. Also infertility may occur due to epididymal and/or vasal obstruction. Nodular beading of the vas is a characteristic physical finding. TB epididymo-orchitis has considerable effects on fertility, as sperm count and motility may be reduced by blockage of the vas and/or secondary atrophy [9]. Prostate tuberculosis is usually asymptomatic and sometimes, the diagnosis is made after histopathological examination (HPE) of transurethral prostatectomy (TURP) chips [14,15]. It may present with symptoms such as, dysuria, frequency, hematuria, and hemospermia. Digital

rectal examination (DRE) may reveal firm, irregular enlargement, nodularity, or soft areas of necrosis. The nodularity of prostate may mimic. Very rarely, fulminating prostatic involvement can cause abscess formation and subsequent perineal fistulization [15]. In MGTB, prostate TB is found with concomitant TB epididymorchitis in 43.4% [2]. TB of the penis is very rare and accounts for <1% of all GUTB cases in men. TB of the penis can be sexually transmitted from a female with GUTB and the skin, glans and/or cavernous bodies can all be affected [16]. It can present as a papulonecrotic tuberculid or as an ulcer at the glans [17].

Intravesical bacillus Calmette-Guérin (BCG) is used widely in patients with superficial bladder cancer as it reduces the risk of progression. Hence although rare BCG-induced TB epididymo-orchitis or TB prostatitis can be seen as granulomatous infections caused by Bacillus Calmette-Guérin therapy.

Laboratory and Imaging

MGTB presents with nonspecific symptoms and laboratory findings, except for positive Mycobacterium tuberculosis (MBT) culture. A positive culture or histological analysis of biopsy specimens, possibly combined with PCR, is required for a definitive diagnosis of GUTB.

The presence of sterile pyuria is a useful sign of tuberculous epididymitis. MTB can be identified in urine in 64% of UGTB patients by urine acid-fast bacteria (AFB) cultures, AFB smears, or nucleic acid amplification tests (NAATs) [18]. If scrotal purulent exudate is present, auramine staining, genomic amplification, and culture should be performed [8]. The widespread use of fluoroquinolones decreased bacteriological verification of MTB. All patients should be screened for the presence of pulmonary and renal lesions.

Leukospermia may be an early symptom of tuberculosis related infertility [19]. The prostatic secretion and ejaculate have to be investigated microscopically and by culture for MBT. Prostatic secretion and ejaculate should also be investigated with PCR. Confirmation of the diagnosis may be made by detection of acid fast bacilli or positive cultures from pus or biopsy specimens or by biopsy histology.

MGTB is associated with renal TB in 2/3 cases or with pulmonary TB in 1/3 cases so plain chest radiography and ultrasonography (US) of the urinary tract should be performed on every patient. Plain abdominal radiography can sometimes show calcification in affected organs or lymph nodes. US have been traditionally the diagnostic method of choice for investigation of TB epididymo-orchitis [13,20]. Although scrotal US is helpful in the assessment of scrotal tumors, the appearance of epididymal tuberculosis on US is not distinct from that of bacterial epididymo-orchitis.

TB epididymo-orchitis present as difusely enlarged lesions, which may be homogeneous or heterogeneous and can also present as nodular enlarged heterogeneously hypoechoic lesions [20]. It is important to be aware that high proportions (50%-75%) of men with genital TB have radiological abnormalities in the urinary tract. The urinary tract of all such patients with primary location of tuberculous infection on the epididymis should be investigated [21]. Garcia GI et al. reported that intravenous pyelography must be a routine examination in TB epididymo-orchitis [8]. Transrectal US finding of prostatic disease is irregular hypoechoic lesions in the peripheral zone [22].

On contrast-enhanced CT scan, TB of the prostate or seminal vesicles can be seen as low density or cavitation lesions due to necrosis and caseation with or without calcification [23]. Magnetic Resonance Imaging (MRI) of the prostate shows diffuse radiating streaky low-signal intensity lesion (watermelon skin sign) on T2- weighted images may be specific for tuberculosis of the prostate [24]. TB epididymoorchitis present as low signal intensity on T2WI sequence, and high signal intensity on T1WI sequence in most cases [11].

Treatment

Treatment is generally with conventional courses of tuberculosis chemotherapy. In TB epididymo-orchitis after chemotherapy, if the lesion becomes nodular, firm, and painless, epididymo-orchiectomy is mandatory without delay. Surgery may be required to deal with abscesses, obstructive symptoms, or failures of chemotherapy.

Conclusion

The incidence of male genital tuberculosis is not high, but diagnosis is difficult. Sometimes it is impossible to differentiate TB epididymo-orchitis from testicular malignancy because genital TB has no pathognomonic signs. Especially in urology clinics if the infections of the male genital organs do not improve by antibiotic treatment then MGTB should always be kept in mind.

References

1. Kulchavenya E (2010) Some aspects of urogenital tuberculosis. Int J Nephrol Urol 2: 351-360.
2. Kulchavenya E, Kim CS, Bulanova O, Zhukova I (2012) Male genital tuberculosis: epidemiology and diagnostic. World J Urol 30: 15-21.
3. Rajpal S, Dhingra Vk, Malik M, Kumar R (2002) Tuberculous epididymoorchitis treated with intermittent therapy: A case report. Indian J Allergy Asthma Immunol 16: 51-54.
4. Medlar EM, Spain DM, Holliday RW (1949) Post-mortem compared with clinical diagnosis of genito-urinary tuberculosis in adult males. J Urol 61: 1078-1088.
5. Madeb R, Marshall J, Nativ O, Erturk E (2005) Epididymal tuberculosis: case report and review of the literature. Urology 65: 798.
6. Wolf JS Jr, McAninch JW (1991) Tuberculous epididymo-orchitis: diagnosis by fine needle aspiration. J Urol 145: 836-838.
7. Lakmichi MA, Kamaoui I, Eddafali B, Sellam AI, Dahami Z, et al. (2011) An unusual presentation of primary male genital tuberculosis. Rev Urol 13: 176-178.
8. Gómez García I, Gómez Mampaso E, Burgos Revilla J, Molina MR, Sampietro Crespo A, et al. (2010) Tuberculous orchiepididymitis during 1978-2003 period: review of 34 cases and role of 16S rRNA amplification. Urology 76: 776-781.
9. Das P, Ahuja A, Gupta SD (2008) Incidence, etiopathogenesis and pathological aspects of genitourinary tuberculosis in India: A journey revisited. Indian J Urol 24: 356-361.
10. Sporer A, Auerbach O (1978) Tuberculosis of prostate. Urology 11: 362-365.
11. Michaelides M, Sotiriadis C, Konstantinou D, Pervana S, Tsitouridis I (2010) Tuberculous orchitis US and MRI findings. Correlation with histopathological findings. Hippokratia 14: 297-299.
12. Sole-Balcells F, Jimenez-Cruz F, de Cabezon JS, Rosello AS (1977) Tuberculosis and infertility in men. Eur Urol 3: 129-131.
13. Türkvatan A, Kelahmet E, Yazgan C, Olçer T (2004) Sonographic findings in tuberculous epididymo-orchitis. J Clin Ultrasound 32: 302-305.

14. Richens J (2004) Genital manifestations of tropical diseases. Sex Transm Infect 80: 12-17.
15. Kapoor R, Ansari MS, Mandhani A, Gulia A (2008) Clinical presentation and diagnostic approach in cases of genitourinary tuberculosis. Indian J Urol 24: 401-405.
16. Angus BJ, Yates M, Conlon C, Byren I (2001) Cutaneous tuberculosis of the penis and sexual transmission of tuberculosis confirmed by molecular typing. Clin Infect Dis 33: E132-134.
17. Morrison JG, Fourie ED (1974) The papulonecrotic tuberculide. From Arthus reaction to lupus vulgaris. Br J Dermatol 91: 263-270.
18. Figueiredo AA, Lucon AM, Junior RF, Srougi M (2008) Epidemiology of urogenital tuberculosis worldwide. Int J Urol 15: 827-832.
19. Lübbe J, Ruef C, Spirig W, Dubs M, Sigg C (1996) Infertility as the first symptom of male genitourinary tuberculosis. Urol Int 56: 204-206.
20. Muttarak M, Peh WC, Lojanapiwat B, Chaiwun B (2001) Tuberculous epididymitis and epididymo-orchitis: sonographic appearances. AJR Am J Roentgenol 176: 1459-1466.
21. Lenk S, Schroeder J (2001) Genitourinary tuberculosis. Curr Opin Urol 11: 93-98.
22. Engin G, Acuna B, Acuna G, Tunaci M (2000) Imaging of extrapulmonary tuberculosis. Radiographics 20: 471-488.
23. Wang LJ, Wong YC, Chen CJ, Lim KE (1997) CT features of genitourinary tuberculosis. J Comput Assist Tomogr 21: 254-258.
24. Wang JH, Sheu MH, Lee RC (1997) Tuberculosis of the prostate: MR appearance. J Comput Assist Tomogr 21: 639-640.