Tuberculosis of the Urinary Tract in Southern Thailand

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Background: *The urinary system is one of the common sites of involvement of extrapulmonary tuberculosis (TB). The accurate diagnosis and treatment of extrapulmonary TB is complex and difficult.*
Objective: *To address the epidemiology and drug susceptibility of urinary tract TB in southern Thailand.*
Material and Method: *A retrospective analysis of data collected at the time of diagnosis of urinary tract TB cases, during a 10-year period from1998 to 2007. Data collection included demography, presenting symptoms, laboratory investigations, and imaging studies of the urinary system.*
Results: *During a 10-year period of the present study, 35 new cases of urinary tract TB were diagnosed, with a male/female ratio of 1.3:1 and a common age group of 31-40 years. 34.3% of the patients were farmers. The most presenting symptoms were polyuria, dysuria and acidic urinary pH with pyuria. 80% of the patients had abnormal imaging studies of the urinary system, with hydronephrosis being the most frequently found condition. Fifty seven point one percent had positive urine cultures for Mycobacterium and 0.05% of them had streptomycin resistance, while none of them had an HIV coinfection.*
Conclusion: *The urinary tract TB was more common in male with a common age group of 31-40 years. The common presenting symptoms were long-standing urinary symptoms as frequency in urination, dysuria, hematuria and acidic urinary pH associated with pyuria. In the present study, there was only 0.05% of streptomycin resistance, however, no patients with HIV infection.*

Keywords: *Urinary tract TB, HIV coinfection, Drug resistance*

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Tuberculosis (TB) is reported in every country of the world, but the majority of TB cases are concentrated in developing countries, particularly those in Asia and Africa[1]. The genitourinary system is one of the common sites of involvement of extrapulmonary TB, accounting for 15-20% of infections outside the lungs and it is more strongly HIV-related than pulmonary TB[2]. Because patients with HIV-related extrapulmonary TB often have disseminated diseases, an extrapulmonary TB infection results in a high risk of rapid clinical deterioration and death[3]. In the present study, the authors purposed to address the presenting symptoms, abnormal investigations and to study the prevalence of HIV and drug-resistant TB in urinary tract TB patients.

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Material and Method

Patients

From January 1998 to December 2007, thirty-five patients who were diagnosed with urinary tract TB were recorded. Their demographic data and clinical features of TB were obtained, and the laboratory data collected at the time of presentation were; urinalysis, urine AFB stain and culture for aerobic bacteria and tuberculosis with drug susceptibility, serum for serological study, chest X-ray, intravenous urography or ultrasonographic studies for evaluation of anatomical abnormalities of the urinary tract and the authors performed endoscopic evaluation; ureterorenoscopy or urethrocystoscopy in some cases indicated.

Diagnosis of TB

TB was diagnosis by demonstration of acid-fast bacilli in urine smear or growth reported from urine culture for TB or histopathological reported of tissue biopsy revealed acid-fast bacilli or granulomatous inflammation.

Multi-drug resistant tuberculosis (MDR-TB) is defined as TB that is resistant at least to isoniazid (INH) and rifampicin (RMP), the two most powerful first-line anti-TB drugs[4].

Antituberculous therapy

All patients planned to have standard "short" course treatment for TB, with isoniazid, rifampicin, pyrazinamide, and ethambutol for two months, then isoniazid and rifampicin for a further four months, but in some cases the surgeons prolonged the treatment to 9-12 months individually. Patients were considered cured when urine TB culture had no growth for 3 consecutive days and performed reconstructive surgery in some patients who had indication for resumed kidney function or improve quality of life.

Statistical analysis

The statistical analysis was performed using descriptive analysis.

Results

Demographic data

During the 10-year period, a total of 35 new cases of the urinary tract TB were diagnosed, there were 15 female and 20 male, with a male/female ratio of 1.3:1. The age of the patients ranged between 10 and 76 years, and the common age group was 31-40 (Fig. 1). The occupations of the patients were farming (34.3%), housewives (20.0%), business person (14.3%), government service (14.3%), blue-collar worker (14.3%) and student (2.9%).

The most common presenting symptoms of the patients were voiding dysfunction; frequency of urination (48.6%), dysuria (42.9%), urethral pain (20.0%) and sense of incomplete voiding (14.3%). The other symptoms were hematuria (31.4%), abdominal pain/ass (25.7%), cutaneous fistula (14.3%), renal failure (5.7%) and infection of the kidneys (2.8%). Most of the patients had duration of symptoms less than 6 months (65.7%), followed by 6-12 months (17.1%), more than 1 year (8.6%), while 8.6% had uncertained data.

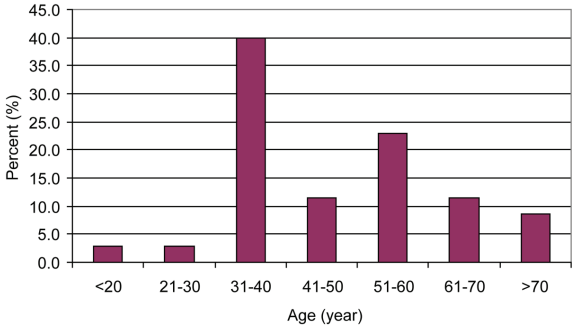

Fig. 1 The age distribution of urinary tract tuberculosis patients by percentage

In the present study, the authors found twelve patients (34.3%) diagnosed with pulmonary tuberculosis and urinary tract tuberculosis; in 75% of which, both conditions were diagnosed simultaneously and 12.5% had pulmonary tuberculosis 1 year prior and 12.5% more than 5 years prior to urinary tract tuberculosis.

Diagnosis of TB

The diagnosis of urinary tract TB which related to imaging studies and/or endoscopic studies revealed 22 patients (62.9%) had single organ involvement; 7 patients had kidneys involvement (3 bilateral, 3 left, and 1 right) and 7 for ureteral involvement (3 bilateral, 1 left, and 3 right), 4 patients had urinary bladder involvement, 1 patient had urethral involvement and 3 patients had testicular involement (1 left, and 2 right). Thirteen patients (37.1%) had multiple organs involvement; 2 patients had infection of the kidneys down to urethra, 7 patients had kidney-ureter-bladder, 2 patients had kidney-bladder, 1 patient had ureter-bladder, and 1 patient had bladder-urethra involvement.

Regarding urinalysis, 80% of the patients had acidic urinary pH associated with pyuria. Twenty six patients (74.3%) had abnormal findings of the intravenous pyelograpy or ultrasonography and the most common abnormalities were hydronephrosis and/or hydroureter (71.4%) (Table 1).

The results of the urine bacteria study, yielded a positive urine AFB stain in only 2 specimens (5.7%), while the urine culture for tuberculosis was positive in 20 specimens (57.1%), unfortunately, the authors did not have TB-polymerase chain reaction in the present study. The specimens which had positive urine culture were tested for drug susceptibility; streptomycin, isoniazid, rifampicin and ethambutol, and resulted as one specimen (0.05%) had resistance to streptomycin, while there was no resistance to other drugs.

All of the presented patients had a negative serological test for HIV and there was also no multi-drug-resistant tuberculosis (MDR-TB) found in the present study.

Table 1. Abnormal findings of Image studies of the urinary tract tuberculosis patients

Intravenous pyelogram/ultrasound	Patients (n = 26)	Percent
Abnormal finding		
Upper urinary tract		
Hydronephrosis and/or hydroureter	25	71.4
Non-functioning kidney	8	22.9
Distortion of calyces	5	14.3
Enlarged medullary sinus	1	2.9
Stricture of the ureter	1	2.9
Lower urinary tract		
Contracted bladder	3	8.6

More than one lesion in each patient

Outcome of treatment

All of the patients had antituberculosis drug treatment but varied in duration; 5 patients had 1 year treatment, 8 patients had 9 months treatment, 16 patients had 6 months treatment, 6 patients had 2-3 months treatment (1 patient died from miliary TB and 5 patients were lost to follow-up).

Nine patients (25.7%) needed reconstructive surgery after complete drug treatment and confirmed with negative urine culture for TB. Three patients had bladder augmentation, 3 patients had ureteral neocystostomy, 2 patients had bilateral cutaneous ureterostomy, 1 perineal urethrostomy and 1 orchiectomy. No patient had surgical complications or recurrence of TB infection during 1-3 years follow-up.

Discussion

The genitourinary system is one of the common sites of extrapulmonary TB involvement, is usually caused by spreading of organisms through the blood stream during the initial infection, in the present study, the authors found 34.3% of patients with genitourinary TB had a known history of prior pulmonary TB, higher than other studies which reported 20-30%[5-8], may be due to higher TB infection in the presented population. The longest latency between pulmonary manifestation and urinary tract TB in the present study was 5 years and 75% of the presented patients were diagnosed simultaneously, that was different from other reports that the latency was enormous and as long as 20-30 years[5-8]. For sex distribution, Figueiredo A et al[9] reported that urinary TB was common in male compared to female at a ratio of 2.3:1, higher than the present study reported 1.3:1, however both studies showed that GU TB was more common in male.

Most patients presented with abnormal voiding symptoms and hematuria the same as other reports[5-9]. Eighty percent of the patients had acidic urinary pH associated with pyuria, while Lenk S et al[6] reported as high as 97%. Radiological fidings of urinary tract TB in the present study was hydronephrosis as the result of stricture of parts of the urinary tract, compared to other reports[9,10] which revealed various patterns such as abnormal calcification of renal parenchyma, small contracted renal pelvis, stricture infundibulum, multiple stricture of ureters or contracted urinary bladder. The present study did not perform the tuberculin test, despite a negative result does not exclude an extra-pulmonary manifestation[6].

Sensitivity of urine AFB and culture for TB were 53.1% for microscopy, and 81.5% for culture[11]. The difference between the presented urine bacteria study results were astounding, the authors got a positive urine AFB stain in only 5.7%, while the urine culture for tuberculosis resulted positive in 57.1% of the cases, may be due to the fact that the authors did not have TB-polymerase chain reaction in the present study. For drug susceptibility test, there was only one patient who had streptomycin resistance, and it was surprising that none of the presented patients were HIV positive.

Conclusion

The urinary tract TB was more common in male with a common age group of 31-40 years. The common presenting symptoms were long-standing urinary symptoms as frequency in urination, dysuria, hematuria and acidic urinary pH associated with pyuria. In the present study, there was only 0.05% of streptomycin resistance, however, no patients had HIV infection.

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วัณโรคระบบทางเดินปัสสาวะในภาคใต้ของประเทศไทย

มณฑิรา ตัณฑนุช, วาทิต กาญจนวนิชกุล, ชูศักดิ์ ปริพัฒนานนท์

ภูมิหลัง: *วัณโรคระบบทางเดินปัสสาวะและอวัยวะสืบพันธุ์ เป็นภาวะติดเชื้อวัณโรคของอวัยวะอื่นนอกปอดที่พบบ่อย การวินิจฉัยมีความซับซ้อนและยุ่งยาก*

วัตถุประสงค์: *เพื่อศึกษาระบาดวิทยาของวัณโรคระบบทางเดินปัสสาวะ และภาวะดื้อยาของเชื้อวัณโรค ซึ่งจะใช้เป็นแนวทางในการวินิจฉัยสำหรับแพทย์ทั่วไป*

วัสดุและวิธีการ: *บันทึกข้อมูลลักษณะพื้นฐาน อาการนำ ผลการตรวจทางห้องปฏิบัติการ และผลการตรวจทางรังสีวิทยา จากเวชระเบียนผู้ป่วยที่ได้รับการวินิจฉัยเป็นวัณโรคระบบทางเดินปัสสาวะ ที่เข้ารับการตรวจรักษาในโรงพยาบาลสงขลานครินทร์ระหว่างปี พ.ศ. 2541-2550*

ผลการศึกษา: *ในระยะเวลา 10 ปี มีผู้ป่วยที่ได้รับการวินิจฉัยเป็นวัณโรคระบบทางเดินปัสสาวะจำนวน 35 ราย โดยมีสัดส่วนเพศชายต่อหญิง 1.3:1 และช่วงอายุที่พบบ่อยคือ 31-40 ปี โดยผู้ป่วยส่วนใหญ่มีอาชีพกสิกร อาการนำที่พบบ่อยคือ ปัสสาวะบ่อย และแสบขณะปัสสาวะ การตรวจทางห้องปฏิบัติการที่พบบ่อยคือ มีเม็ดเลือดแดงและเม็ดเลือดขาวในภาวะปัสสาวะเป็นกรด และร้อยละ 80 ของผู้ป่วยมีความผิดปกติของการตรวจทางรังสีวิทยา คือ hydronephrosis และร้อยละ 57.1 มีผลเพาะเชื้อวัณโรคจากปัสสาวะ และร้อยละ 0.05 มีการดื้อต่อยา streptomycin ในการศึกษานี้ไม่พบผู้ป่วยที่มี HIV infection*

สรุป: *วัณโรคระบบทางเดินปัสสาวะพบในเพศชายมากกว่าหญิง ในกลุ่มอายุ 31-40 ปี โดยอาการนำที่พบบ่อย คือ ปัสสาวะบ่อย แสบขณะปัสสาวะ มีเม็ดเลือดแดงและเม็ดเลือดขาวในปัสสาวะ ร่วมกับภาวะปัสสาวะเป็นกรด โดยผู้ป่วยมีอาการเป็นเวลานานก่อนได้รับการวินิจฉัย ในการศึกษานี้พบเชื้อวัณโรคดื้อยา streptomycin ร้อยละ 0.05 อย่างไรก็ตามไม่พบผู้ป่วยที่มีการติดเชื้อ HIV*