

# The Role of the Universal Urological Questionnaire in the Screening of Urological Pathology in Patients with Tuberculosis

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**Abstract** In the world, in recent years, special attention has been paid to the consequences of the negative impact of urological diseases on the health of the population. Determining the true prevalence of urological diseases requires an evaluation of hidden urological morbidity. For solving this problem, a targeted survey of the population is more informative, rather than an analysis of data on its use of medical care. This is due to the fact that appealability depends on many factors, such as the development of infrastructure and medical care, its availability, general and medical culture, habits, customs and mentality of the population, which affect its medical activity.

**Keywords** Urolithiasis, Osteoarticular tuberculosis, Lymph node tuberculosis, Gen Xpert method

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## 1. Introduction

The climate of the arid zone of Uzbekistan is characterized by a very hot, dry and long summer and extreme instability of weather in the spring and winter seasons, which undoubtedly affects the adaptive reactions of a healthy and especially sick person. In the summer months, the amount of incoming heat reaches 20-22 thousand calories per 1 sq. m. territory. The temperature of the upper soil layer in summer reaches 50 - 60 degrees Celsius, and the air above it reaches 40 - 45 degrees Celsius.

Bukhara region occupies one of the leading places in terms of urological morbidity, in particular, urolithiasis (Urolithiasis) due to the prevailing climatic and environmental conditions. The incidence of ICD in the Bukhara region in 2016-2017 amounted to 147 - 155 cases per 100 thousand population per year, with a republican value of 60 cases per 100 thousand population. Due to the study of the prevalence of urological diseases and its nature, especially in patients with tuberculosis in some regions, such as Bukhara region, it should be taken into consideration Bukhara is located in the arid zone. Improvement of existing, search for new, effective forms and methods of treatment and prevention of urological diseases, including in patients with tuberculosis, is of particular importance due to the need to improve the quality of life and reduce disability.

The aim of this study was to study the incidence and structure of urological pathology in patients with tuberculosis in an arid zone.

## 2. Material and Methods

To achieve this goal, 936 patients with various forms of tuberculosis were examined. There were 447 men (47.8%), women - 489 (52.2%), the patients' age ranged from 17 to 96 years. Various forms of pulmonary tuberculosis occurred in 504 (53.8%), osteoarticular tuberculosis - in 196 (20.9%), MMT - in 124 (13.4%), intrathoracic lymph node tuberculosis - in 59 (6.3%), tuberculosis pleurisy in 35 (3.7%), tuberculosis of peripheral lymph nodes - in 14 (1.5%), tuberculosis of the skin - in 1 (0.1%), abdominal tuberculosis - in 2 (0.2%), eye tuberculosis in -1 (0.1%) patients. We used a universal urological questionnaire developed by the Department of Urology of the Tashkent Medical Academy. The questionnaire included questions regarding the symptoms of the lower urinary tract, urinary tract infection, urinary incontinence, pathology of the male genital area. Pilot testing of the universal questionnaire was previously conducted among patients who applied to the treatment and diagnostic department of the Republican Specialized Scientific and Practical Medical Center of Urology (RSNPMTSU), which showed its high information content.

The information obtained was documented using specially developed examination cards, which included the data of an objective examination, the results of ultrasound scanning (USS) and data from urine analyzes. All the data obtained were entered into a specially developed computer program for subsequent statistical processing and accounting.

The procedure for conducting the survey was as follows: after completing the survey and filling out the questionnaire, they proceeded to an external examination, paying attention to the condition of the skin, the presence of skin scars, which could indicate previous injuries and operations. For the screening of urolithiasis, presages of the disease were identified, allowing to obtain reliable data on its prevalence. These presages include:

- history data, taking into account operations or other interventions undertaken to remove stones or their spontaneous passage;
- stones of the kidneys, ureters and bladder, diagnosed by USS;
- crystals of salts in the cavities of the kidney, detected by ultrasound, found in the urine sediment by microscopy, which is considered a prognostication of pre- or microlithiasis.

When analyzing the USS data of the urinary system, attention was drawn to morphological changes in the calyx-pelvic system and renal parenchyma (hydronephrosis, hydrocalicosis, cystic formations, tumors, etc.), presages of stones and conglomerates of salts in the renal cavities were noted.

When examining urine, special attention was paid to microscopic indices, pH. The latter indicator was singled out especially when assessing the conditions for the formation of crystals, and when determining preventive measures.

Microscopy of urine sediment was necessary to detect urinary crystals, determine their mineral identity and quantity. The diagnosis of crystalluria was justified when <3 crystals in 1 µl of urine were found in the counting chamber, which corresponded to 104-105 or more in 1 ml.

The following criteria served as the basis for the diagnosis of urinary tract infection (BMI):

- the presence of symptoms of BMI, determined by the universal questionnaire;
- leukocyturia and bacteriuria, detected by urine microscopy.

Clinical, radiological and microbiological data on *Mycobacterium tuberculosis* (microscopy of urine and pathological material according to Ziehl-Nielsen, inoculation on solid and liquid media, as well as by the Gen Xpert method) served as the basis for the establishment of urinary tuberculosis (UTI).

### 3. Research Results

As a result of the examination of 936 patients with various

forms of tuberculosis, urological pathology was revealed in 332 patients, which amounted to 35.5% of the examined patients. As the analysis of the structure of the identified urological pathology showed, 88 (26.5%) patients had benign prostatic hyperplasia (BPH), 47 (14.1%) had uncomplicated BMI, 18 (5.5%) had urolithiasis, 34 (10.2%) - various forms of urinary incontinence, in 7 (2.1%) - erectile dysfunction (ED), in 5 (1.5%) - nephroptosis, in 5 (1.5%) - hydronephrosis (ureterohydronephrosis) and 124 (37.3%) - various forms of genitourinary tuberculosis. The structure of urological pathology is presented in Table 1.

It should be noted that we specifically included MMT in the examination of patients in order to identify unaccounted patient complaints and to determine concomitant urological pathology.

As can be seen from the table, urological pathology was detected in almost all clinical forms of pulmonary tuberculosis and extrapulmonary localizations, but more often in infiltrative forms - up to 28.1%.

It should also be noted the high frequency of BPH in patients with tuberculosis - up to 26.5% in the structure of urological pathology, which is associated with the older age composition of men. ICD identified 18 (1.9%) patients out of 936 patients with tuberculosis. These data indicate a high frequency and correlate with the incidence of ICD in the population living in the Bukhara region (arid zone).

34 patients underwent surgical treatment, which made up 10.2% of the identified patients with urological pathology (Table 2). Of the surgical interventions performed, organ-carrying operations were performed in 9 (26.5%) patients, in 11 (32.4%) - minimally invasive and in 9 (26.5%) - reconstructive and restorative. In 14 patients, planned surgical interventions were performed against the background of clarifying the activity of the tuberculous process.

**Table 1.** Types of surgical interventions in patients with tuberculosis (% is indicated in brackets)

Operation type	Number of operations
Nefruretectomy	5 (14.7)
Epididymectomy	2 (5.9)
Orchiectomy	2 (5.9)
Ureterolithotomy	3 (8.8)
Nephropexy	2 (5.9)
Epicystostomy	2 (5.9)
Percutaneous nephrostomy	(PCNS) 4 (11.8)
Percutaneous cystostomy	5 (14.7)
Ureteral stent	2 (5.9)
Urethral plastic surgery	1 (2.9)
Varicocele	3 (8.8)
Surgery for urinary incontinence in women	3 (8.8)
Total	34 (100%)

**Table 2.** The structure of the revealed urological pathology in patients with tuberculosis

Urological pathology	Clinical forms of tuberculosis									
	Infiltrative	Focal	Disseminated	Fibrous-cavernous	Cirrhotic pulmonary tuberculosis	Tuberculous pleurisy	Osteoarticular	T PLU	MPT	
BMI, n = 47	14 (29,8)	6 (12,7)	8 (17,1)	2 (4,2)	2 (4,2)	3 (6,4)	9 (19,2)	3 (6,4)	-	
BPH, n = 88	45 (51,1)	-	4 (4,6)	2 (2,3)	2 (2,3)	4(4,6)	23 (26,1)	1 (1,1)	7 (7,9)	
ICD, n = 18	5 (27,8)	2 (11,1)	1 (5,5)	3 (16,7)	1 (5,5)	1 (5,6)	2 (11,1)	-	3 (16,7)	
Urinary incontinence, n = 34	18 (52,9)	2 (5,9)	-	1 (2,9)	6 (17,7)	1 (2,9)	4 (11,8)	-	2 (5,9)	
ED, n = 7	3 (42,8)	-	-	2 (28,6)	1 (14,3)	-	1 (14,3)	-	-	
Varicocele, n = 3	-	3 (100)	-	-	-	-	-	-	-	
Nephroptosis, n = 5	2 (40)	-	-	1 (20)	-	-	-	-	2 (40)	
Hydronephrosis										
Ureterohydronephrosis, n = 5	1 (20)	-	-	-	1 (20)	1 (20)	1 (20)	1 (20)	-	
Urethral stricture, n = 1	-	-	-	-	-	-	-	-	1 (100)	
MPT, n = 124	5 (4,0)	2 (1,6)	5 (4,0)	3 (2,4)	-	-	5 (4,0)	-	104 (83,9)	
Total, n = 332	93 (28,1)	15 (4,5)	18 (5,4)	14 (4,2)	13 (3,9)	10 (3,0)	45 (13,6)	5 (1,5)	119 (36,7)	

\*Note: n is the number of observations; % is indicated in brackets

## 4. Conclusions

The clinic of tuberculosis and the effectiveness of its treatment, including pulmonary tuberculosis, is largely determined by the presence of intercurrent diseases that aggravate a specific process and complicate its treatment. The incidence of concomitant pathology in patients with pulmonary tuberculosis ranges from 80% to 100% [1,2,3].

The indications for surgical treatment in the studied patients do not differ from those in the absence of tuberculosis. Absence or insufficient duration of anti-tuberculosis chemotherapy is an absolute contraindication on the part of a specific process [4].

Thus, the use of the universal urological questionnaire made it possible to carry out screening for the detection of urological pathology and showed its high information content among patients with tuberculosis. The data obtained indicate a high proportion of concomitant urological pathology - up to 35.5% in this category of patients, which undoubtedly requires special treatment tactics.

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