



## URINARY TRACT INFECTION IN CHILDREN WITH SURGICAL PATHOLOGY

Shukrulloev F.Z.

Bukhara State Medical Institute. Uzbekistan

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**Annotation.** In this article, the author provides an analysis of pathogenic flora in patients with surgical pathologies of the urinary tract, sensitivity to antibiotics and early empirical antibiotic therapy in children.

**Keywords.** antibiotic therapy, children, urinary tract infection.

**Introduction.** Urinary tract infections (UTIs) are the most common diseases among the pediatric population. Numerous studies show that urinary tract infections are consistently the second most common bacterial infection. Every year, approximately 150 million cases of UTI are reported worldwide in men and women of all ages [2,5]. In the first 6–12 months after the first episode of UTI, the risk of recurrence of the disease in children is 12–30% [1,18]. Recurrent infection in children and adults can lead to urinary tract obstruction and the development of chronic renal failure [3,19].

The most common causative agent of UTI in children of all age groups is *Escherichia coli*. When a urinary tract infection is first detected, *Escherichia coli* is detected in 60–92% of cases. Other most common causative pathogens are *Staphylococcus saprophyticus*, *Klebsiella*, *Proteus*, *Enterococcus*, *Enterobacter* [2,4,9,17].

Infection of the urinary tract occurs through an ascending route or translocation of uropathogens from the original biotope (intestines, tonsils, teeth, etc.) to the kidneys. Colonization by uropathogens is characterized by microorganisms overcoming the immunobiological barriers of the host and their establishment in the tissue of the urinary tract, including the tubular and pyelocaliceal uroepithelium [8].

**Purpose of the study.** Analysis of the spectrum of pathogenic bacterial flora taking into account sensitivity to antibiotics in sick children with urinary tract infections.

**Material and methods.** We analyzed the results of treatment and examination of 174 sick children with various pathologies of the urinary tract with obstructive uropathy, aged from 1 month to 14 years, who were hospitalized in the department of pediatric surgery and urology of the Bukhara Regional Multidisciplinary Children's Medical Center (BOMMC), which is clinical base of the Department of Pediatric Surgery of the Bukhara State Medical Institute for the period 2019 – 2022.

Of all those examined, 91 (52.3%) were boys, 83 (47.7%) were girls. When analyzing patients depending on age, various forms of urinary tract obstruction were most often diagnosed in 83 cases (47.7%) in children under 1 year of age, in 59 cases (33.9%) in children from 1 to 4 years of age. x years, in the remaining 42 cases (18.4%) this pathology was diagnosed in older children. When analyzing the data obtained on nosology, the following was revealed: congenital hydronephrosis was detected in 64 patients (36.8%), ureterohydronephrosis was detected in 28 patients (16.1%), vesicoureteral reflux was

diagnosed in 66 sick children (37.9). PMR) and in 16 sick children (9.2%) with bladder outlet obstruction (IVO) - strictures and valves of the posterior urethra.

Clinical signs of UTI in children are classically organized by intoxication, pain, dysuria and urinary syndromes, the manifestation of which depends on the age of the child, the severity and level of damage to the urinary system. Urinary syndrome is characterized by a predominance of bacteriuria and leukocyturia over erythrocyturia on microscopic examination of urine sediment. The diagnostic level of bacteriuria is the presence of more than 10<sup>3</sup>-5 colony-forming units (CFU) per 1 ml in two consecutive portions of freshly passed urine. Currently, acute and chronic forms of UTI are distinguished (cystitis, pyelonephritis, urinary tract infections without a specific topic). Considering that UTI in children can occur both with severe symptoms and subclinically, urine testing is recommended for all infectious and inflammatory diseases, fevers and other unclear clinical conditions [4,7,19]. For early diagnosis of UTI, it is recommended to use screening test reagents that can determine the presence of leukocyte esterase, nitrites and protein in the urine.

The leukocyte esterase activity test is the most sensitive, and the nitrite test is considered the most specific method for the rapid diagnosis of UTI. A negative result of the leukocyte esterase activity test virtually eliminates the possibility of a UTI diagnosis [9,10]. Various combinations of clinical signs can be used as diagnostic criteria for the early diagnosis of UTIs, in particular cystitis. Various imaging techniques are used for topical diagnosis of UTI. Instrumental examination is recommended to be carried out during the period of remission of the infectious-inflammatory process.

The range of methods for examining patients with UTI is quite wide - these include ultrasound examination of the kidneys, cystoscopy, voiding cystography, excretory urography, radioisotope renography, nephroscintigraphy and others, the need for which is determined by the clinical situation [15,17]. Children under 3 months of age who are diagnosed with a UTI accompanied by severe intoxication or urinary syndrome should be hospitalized.

The main medical treatment for UTI is antibacterial therapy [6,11,13]. The ongoing change in the sensitivity of uropathogenic flora to various antibacterial agents and its acquisition of antibiotic resistance requires constant adjustment when choosing antibiotics for the treatment of UTIs. In particular, it has been established that modern uropathogenic strains of *Escherichia coli* have acquired resistance to beta-lactam antibiotics of the penicillin group (37.7%) and trimethoprim-sulfamethoxazole (21.3%) [10, 11]. At the same time, uropathogenic strains of *Escherichia coli* largely retain sensitivity to third-generation cephalosporins (ceftriaxone, cefixime), aminoglycosides and nitrofurantoin [13,16]. Third generation cephalosporins are the most important antibacterial agents used in the treatment of UTIs. A prominent representative of this generation of cephalosporins is ceftriaxone, which has a wide spectrum of antimicrobial action. The use of ceftriaxone in conjunction with a  $\beta$ -lactamase inhibitor, in particular sulbactam, which is used in the drug Sulbactomax, significantly increases the activity of its antibacterial action [4,7,12]. It has now been established that 17.9% of *Escherichia coli* strains are producers of extended spectrum  $\beta$ -lactamases, which requires the use of antimicrobial drugs that contain  $\beta$ -lactamase inhibitors [14,17].

The final choice of antibiotic for recurrent forms of UTI should be based on identification of the pathogen and its sensitivity to the antibacterial agent. When carrying out antibacterial therapy for UTI in children, it is possible to use both oral and parenteral

methods of drug administration, but preference should be given to the oral method of drug administration.

**Conclusion.** Thus, early diagnosis of urinary tract infections in children is a rather difficult task, which pediatricians and family doctors often face. The use of screening tests and diagnostic algorithms allows for a timely diagnosis of urinary tract infections even in asymptomatic clinical situations. An increase in the proportion of uropathogenic bacterial strains in the etiological structure of urinary tract infections in children that are resistant to antibacterial therapy necessitates the use of antibacterial drugs that contain  $\beta$ -lactamase inhibitors.

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