Urinary Tract Infection

**Definition:** Urinary tract infection is a clinical condition that can affect the lower urinary system (urethra and bladder), or the upper urinary system (ureter, pelvis, calyces, and kidney parenchyma). The peak prevalence of UTI in children without anatomical abnormalities is between 2-6 years old. Except for infancy, it is 10-30 times higher in girls than in boys.

**Etiology:**

The most common cause of UTI is Escherichia coli (80%) and other gram-negative intestinal organisms that are present in the anal and perineal areas, including Proteus Pseudomonas, Staphylococcus aureus, Klebsiella, Haemophilus, and Staphylococcus coagulase-negative.

Factors influencing the development and spread of UTI include physical and anatomical structures such as the short length of the urethra in girls, incomplete emptying of the bladder or (stasis) due to reflux, and changes in the chemical properties of urine and bladder. Constipation in children is an external cause of UTI recurrence.

**Classification of urinary tract infections**

- **Bacteriuria:** The presence of bacteria in the urine
- **Cystitis:** Inflammation of the bladder
- **Urethritis:** Inflammation of the urethra
- **Pyelonephritis:** Inflammation of the upper urinary tract and kidneys

**Pathophysiology:**

Following the invasion of bacteria, the first line of defense in the lower urinary system is the complete emptying of urine. Half an hour after the invasion of the bacterium, the bladder and its wall become inflamed and begin their activity within two hours. Complete emptying of the bladder and urination not only clears the urine of bacteria and toxins, but also destroys the bacteria attached to the bladder wall.

**Clinical symptoms:**

Clinical symptoms of UTI depend on the age of the child. In infants. In children under two years old, it is often similar to gastrointestinal disorders such as stunted growth, nutritional disorders, vomiting, diarrhea, jaundice, and abdominal pain and sometimes fever. In children over two years old, symptoms include enuresis, daily urinary incontinence, fever, severe bad smell of urine, pain, and urgency to urinate. Occasionally vomiting and persistent urination, effort during urination, and decreased urine flow are also seen.

UTI in the upper urinary system, in addition to the mentioned symptoms, is accompanied by fever and chills, side pain.
Diagnostic evaluation:

UTI diagnosis is based on history, physical examination, and U/C, U/A testing. Possible diagnosis despite bacteria in U/A- (WBC 8 = 5) and definitive diagnosis with U/C answer. Contamination of the sample by organisms other than the source of urine is the most common cause of false positive results.

The best sample is the middle of the first morning urine and the most accurate methods are (suprapubic aspiration) in children under 2 years old and (bladder catheterization) in children over 2 years old.

For best results, the genital area should be thoroughly washed with soap and water before sampling. If you use the Urine Bag, children should not have the bag in the genital area for more than 1 hour.

If no urine sample is taken, rinse again and replace the bag.

Ultrasound, ureteral catheterization, bladder lavage, evacuation cystouvertrography (VCUG), intravenous pyelography (IVP), or DSMA scan are sometimes needed to determine the exact location of the infection. The scan must be done after the infection is completely gone.

Goals of treatment:

- Eliminating the infection
- Identifying predisposing factors
- Preventing Sepsis
- Maintaining kidney function

Treatment:

Based on the results of urine culture, treatment is started. The most common antibiotics are penicillins, sulfonamides and cephalosporins. Children with suspected pyelonephritis and fever should receive intravenous therapy for at least 48 hours. Urine culture should be negative at discharge.

U/C, U/A testing should be done monthly for up to 3 months and every 3 months to 6 months. A kidney scan is necessary after the first UTI.

Nursing measures:

- Training parents
- Training how to take a urine sample correctly
- Washing the genital area properly (from front to back)
- Explaining the use of the correct dose of the drug and its time (at night) at home
- Avoiding the use of tight and nylon underwear
- Increase fiber in food to prevent constipation
- Avoid holding urine and encouraging the baby to urinate frequently and completely
- Encouraging the children to take plenty of fluids
If you have any questions or ambiguities, call the following number:
023-33460077, Pediatric ward of Amir-al-Momenin Hospital