

UTI



Centurion
UNIVERSITY

Shaping Lives...
Empowering Communities...

By

Ms. RUPALI RUPASMITA ROUT
ASSISTANT PROFESSOR

INTRODUCTION:

A urinary tract infection (UTI) is an infection that occurs in any part of the urinary system, including the kidneys, bladder, ureters, and urethra. UTIs are more common in women than in men, and they can cause discomfort and pain.

ETIOLOGY/CAUSES:

Bacterial infection: The most common cause of UTIs is the invasion of bacteria into the urinary system. Bacteria typically enter the urethra and travel upwards, infecting the bladder (cystitis) or other parts of the urinary tract. The bacteria may originate from the person's own intestinal flora or be introduced from external sources.

Sexual activity: Sexual intercourse can introduce bacteria into the urethra, increasing the risk of a UTI. This type of infection is sometimes referred to as "honeymoon cystitis."

Poor hygiene: Insufficient personal hygiene, such as not wiping properly after using the toilet or not cleaning the genital area adequately, can contribute to the development of UTIs.

Urinary tract abnormalities: Structural abnormalities or malformations in the urinary tract can make it easier for bacteria to colonize and cause infections. Conditions like urinary tract stones, kidney abnormalities, or urinary tract strictures can increase the risk of UTIs.

Urinary catheters: Individuals who require urinary catheters, such as those with urinary retention or hospitalized patients, have an increased risk of developing UTIs. Catheters provide a pathway for bacteria to enter the urinary system.

Weakened immune system: A compromised immune system due to conditions like diabetes, HIV/AIDS, or certain medications can make individuals more susceptible to UTIs.

Hormonal changes: Changes in hormonal levels, such as during pregnancy or menopause, can affect the urinary tract and increase the likelihood of UTIs.

Use of certain contraceptives: Diaphragms, spermicides, and certain types of birth control methods may contribute to UTIs by altering the natural balance of bacteria in the urinary system.

PATHOPHYSIOLOGY:

- E. coli goes to the urinary tract through the urethra, which is the tube that carries urine from the bladder to the outside of the body. In women, the urethra is relatively short and located closer to the anus, making it easier for bacteria to reach the urinary tract. However, in men, the longer urethra and other factors make UTIs less common.
- Upon entering the urinary tract, E. coli bacteria possess adhesins—specialized structures—that allow them to stick to the cells lining of the urinary tract walls. This adherence helps the bacteria establish a foothold and prevent them from being easily flushed out during urination.
- Most UTIs result from an ascending infection, where bacteria from the urethra travel upward into the bladder. In the bladder, E. coli can multiply rapidly and cause inflammation, leading to the typical symptoms of a lower urinary tract infection, such as frequent urination, pain or burning during urination, and a strong urge to urinate.
- If left untreated, E. coli can continue to ascend from the bladder up into the upper urinary tract, including the ureters and kidneys. This can lead to more severe infections.

CLINICAL MANIFESTATION:

Pain or a burning sensation during urination (dysuria): This is one of the most common symptoms of a UTI. It may feel like a stinging or burning sensation when you pass urine.

Increased frequency of urination: You may feel the need to urinate more often than usual. Even if only small amounts of urine are passed, the urge to urinate may be frequent.

Urgency: Along with increased frequency, you may feel a strong and sudden urge to urinate.

Lower abdominal pain or discomfort: Some people experience mild to moderate pain or pressure in the lower abdomen or pelvic region. This pain is often felt around the pubic bone area.

Cloudy or strong-smelling urine: The appearance and odor of urine can change during a UTI. It may appear cloudy, have a strong and unpleasant odor, or even have a pinkish tinge due to the presence of blood in the urine.

Blood in the urine (hematuria): In some cases, UTIs can cause blood to appear in the urine. It may range from a few red blood cells that can only be detected under a microscope to visible blood that gives the urine a pink or reddish color.

Fatigue or general malaise: UTIs can sometimes cause overall feelings of tiredness, weakness, or a general sense of not feeling well.

DIAGNOSIS:

- **Family history & Medical history**
- **Physical Examination**
- **Urinalysis:** This is one of the initial tests performed to diagnose a UTI. A urine sample is analyzed to look for the presence of bacteria, white blood cells (indicating inflammation or infection), red blood cells (which may indicate bleeding in the urinary tract), and other substances. Additionally, the urine pH and appearance can provide valuable information.
- **Urine culture:** If the urinalysis indicates the presence of bacteria, a urine culture may be performed to identify the specific bacteria causing the infection and determine the most effective antibiotic treatment. In this test, a sample of urine is cultured in a laboratory, and the resulting bacterial growth is identified and tested for susceptibility to different antibiotics.
- **Antibiotic sensitivity testing:** In cases where a urine culture confirms the presence of bacteria, antibiotic sensitivity testing may be conducted. This

test determines which antibiotics are most effective in treating the specific bacteria causing the infection.

- **Imaging tests:** In some cases, imaging tests may be ordered to evaluate the urinary tract and identify any structural abnormalities or conditions that may contribute to UTIs. Common imaging tests include ultrasound, CT scan, or MRI.

PHARMACOLOGICAL MANAGERMENTS:

- **Trimethoprim/sulfamethoxazole (Bactrim, Septra):** This combination antibiotic is often used as a first-line treatment for uncomplicated UTIs. It works by inhibiting the growth of bacteria in the urinary tract.
- **Nitrofurantoin (Macrobid, Macrodantin):** Nitrofurantoin is frequently prescribed for UTIs, particularly for uncomplicated infections. It is effective against many strains of bacteria commonly responsible for UTIs.
- **Ciprofloxacin (Cipro):** Ciprofloxacin belongs to the fluoroquinolone class of antibiotics and is commonly used for more severe or complicated UTIs. It is effective against a wide range of bacteria, including some strains that may be resistant to other antibiotics.
- **Levofloxacin (Levaquin):** Levofloxacin is another fluoroquinolone antibiotic that is sometimes used for complicated UTIs or when other antibiotics have not been effective. It has a broad spectrum of activity against various bacteria.
- **Ceftriaxone (Rocephin):** Ceftriaxone is a third-generation cephalosporin antibiotic that may be used for UTIs, particularly in cases where there is a concern for more resistant bacteria or in hospitalized patients.

- **Amoxicillin/clavulanate (Augmentin):** This combination antibiotic contains amoxicillin, a penicillin-like drug, and clavulanate, which helps to overcome bacterial resistance mechanisms. It may be used in certain cases of UTIs caused by specific bacteria.

NON PHARMACOLOGICAL MANAGERMENTS:

- **Stay hydrated:** Drink plenty of water throughout the day to promote regular urination. This helps flush bacteria out of the urinary tract.
- **Practice good hygiene:** Proper hygiene can help prevent the spread of bacteria. Clean the genital area before and after sexual activity, and wipe from front to back after using the toilet to prevent bacteria from the anus from reaching the urethra.
- **Urinate frequently:** Don't hold urine for prolonged periods, as it allows bacteria to multiply in the urinary tract. Urinate when you feel the urge, and make sure to empty your bladder completely.
- **Empty the bladder after sexual activity:** Urinating after sexual intercourse can help flush out any bacteria that may have entered the urethra during sexual activity.
- **Avoid irritating feminine products:** Certain feminine hygiene products, such as douches, powders, and strong soaps, can irritate the urethra and increase the risk of UTIs. Opt for gentle, unscented products instead.
- **Wear breathable underwear:** Choose cotton underwear that allows air circulation, as it helps keep the genital area dry and prevents the growth of bacteria.

- **Avoid irritating substances:** Minimize or avoid the use of potentially irritating substances in the genital area, such as spermicides, bubble baths, and harsh detergents.
- **Take cranberry supplements or drink cranberry juice:** Some studies suggest that cranberry products may help prevent UTIs by inhibiting bacteria from adhering to the urinary tract walls. However, evidence is mixed, and cranberry products should not be used as a substitute for appropriate medical treatment.
- **Consider probiotics:** Probiotics, particularly those containing lactobacillus, may help promote a healthy balance of bacteria in the urinary tract. Consult a healthcare professional about suitable probiotic options.
- **Avoid or limit bladder irritants:** Certain substances, such as caffeine, alcohol, spicy foods, and acidic beverages, can irritate the bladder and potentially contribute to UTIs. Limiting or avoiding these substances may be helpful.