



URINARY TRACT INFECTIONS IN YOUNG WOMEN



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FINNISH STUDENT HEALTH SERVICE

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Töölönkatu 37 A
00260 Helsinki
Orders: julkaisutilaukset@yths.fi

Author: Kristina Kunttu
2nd revised English version (revision: Integra Oy)

Layout: Terttu Vanonen
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Urinary tract infection is a frequent disease, particularly in women. Up to one half of women get infected at some phase of their lives. In men, urinary tract infections are rare. Already in childhood, girls show more bacterial infections than boys; these infections are often associated with congenital defects. Also, the incidence of urinary tract infections is higher in the elderly.

PATHOGENESIS

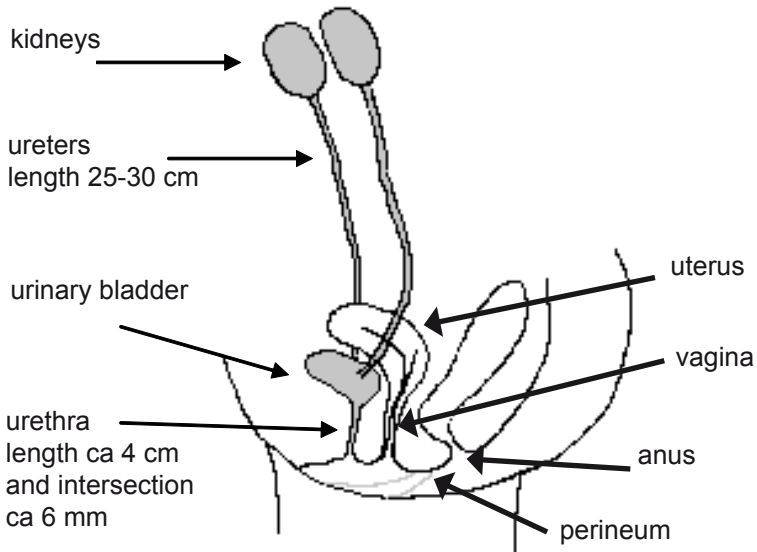
In most cases, bacteria intrude into the urinary tract ascending from the urethral orifice. Normally, a certain amount of intestinal flora prevails in the area of perineum, around the urethral orifice and even inside the urethra. These bacteria may be easily carried through the urethra to the urinary bladder and cause an infection.

Women have a shorter urethra than men which makes it easier for bacteria to reach the urinary bladder. In men, the longer urethra and the antibacterial prostate secretion provide protection against infections. From the urinary bladder the bacteria can spread via the ureters up to the kidneys.

Urine is, in itself, an antibacterial substance, and the cells of the urinary bladder also have the potential to resist infections. The failure of these defense mechanisms exposes the area to infections, as does also the presence of certain types of bacteria. Factors reducing the resistance include, for example, exposure to cold temperatures, or lowered general condition due to a flu or other infection. Additionally, sexual intercourse or infrequent emptying of the bladder may provoke an infection. Congenital structural defects increase the susceptibility to infections in adulthood as well.

Bacteria that most often cause urinary tract infections include *E.coli*, which causes 70-80% of infections, and *Staphylococcus saprophyticus*, which is very common especially in young women.

URINARY TRACT ANATOMY AND TERMINOLOGY



Urinary tract infections are divided into two groups by the infected area:

- The lower urinary tract consists of the urethra and the urinary bladder, and their infection is called cystitis, or inflammation of urinary bladder.
- The upper urinary tract consists of ureters and kidneys, and their infection is called pyelonephritis, or inflammation of the kidney or renal pelvis.

The inflammation of the urinary bladder is clearly the more frequent type of infection.

RECURRENCE

Urinary tract infections tend to recur. Relapses during the first weeks are usually caused by the same bacterial strain. The majority of recurrences, however, take place within 1-2 months, and then it is a matter of caused by another bacterial strain.

Most often the recurrence is due to local immunological suppression in the urinary bladder. After an infection, it actually takes quite a long time for the mucous membrane to fully recover.

Sexual intercourse is clearly connected with recurrent urinary tract infections, because mechanic stimulation and the intrusion of bacteria into the urinary bladder expose the area to infections.

SYMPTOMS

Cystitis

The most usual symptoms of an inflammation in the urinary bladder or urethra include frequent need to urinate and a stinging sensation during urination. Urine may smell bad or be bloody, and a rise of temperature is possible. Pain in the areas of lower abdomen, back or sides is common. The symptoms can ease by themselves within a few days. Relieved symptoms may indicate spontaneous recovery, but on the other hand, the infection may continue or recur with insignificant or no symptoms.

Pyelonephritis

High fever, side or back pain, and general symptoms such as a bad headache or nausea suggest an infection at the level of the kidneys (pyelonephritis).

EXAMINATION

Diagnosis of a urinary bladder infection is primarily based on symptoms. Treatment can be initiated without laboratory assessments, if the symptoms are typical and the patient has had similar infections before, she is not pregnant and has no contraindicating disease or illness.

When sampling urine for analysis, it should be ensured that the urine has been in the bladder for at least four hours. If the symptoms are extremely strong, it may be impossible to follow this instruction.



Even if the symptoms are typical, the test does not necessarily show the presence of an infection, for example, in cases where it is restricted to the lower part of the urethra.

In case of an ordinary urinary bladder infection, there is usually no need for control sampling after the treatment. However, during pregnancy and in case of pyelonephritis, a control laboratory assessment is highly recommended.

Normally, it is not necessary to use any imaging methods (e.g. ultrasound examination) to examine the urinary tract. Imaging is only needed in special cases, for instance, in recurring pyelonephritis.

TREATMENT

Cystitis

For cystitis, the most frequently used drugs include trimethoprim, nitrofurantoin, pivmecillinam. The duration of the treatment is usually 3-7 days. In selected cases, a single-dose treatment is possible.



Recurrent cystitis

Preventive medication can be used in cases with high susceptibility to recurrent infections (three times a year):

- Long-term preventive medication over a period of 3-6 months protects the patient from new infections, allowing the mucous membrane to heal properly and the natural defense mechanisms to recover. The drug should be

taken in the evening for an overnight action (e.g., 100 mg of trimethoprim or 50-75 mg of nitrofurantoin).

- Preventive medication, when required. Taken after a sexual intercourse or swimming or getting cold, the drug reduces the risk of infection provoked by these situations (e.g., 100-300 mg of trimethoprim or 50-75 mg of nitrofurantoin). Preventive medication can also be used during a (sports) holiday or a journey.
- In recurrent infections, the doctor may prescribe medication and advise the patient to start taking it herself as soon as any symptoms appear. Thus, the prescription will be at hand when needed and there is no delay in starting the treatment. It is even advisable to buy the medicine in advance when planning a journey abroad or a cottage holiday.

Excessive drinking results in large volumes of urine and subsequent frequent emptying of the bladder. This rinses the urinary tracts and prevents infection from breaking out. Studies indicate that drinking juices made of berries (e.g., cranberry, lingonberry) containing a flavonoid called catechin may prevent infections from recurring.

Pyelonephritis

In pyelonephritis fluoroquinolones are normally used as medication. The duration of the treatment is usually 10-14 days. Hospital care is needed in case the patient has high fever or is pregnant. Preventive (prophylactic) medication is recommended through the remaining weeks of pregnancy.

OTHER CAUSES behind urinary problems

Chlamydia

Quite often the underlying cause behind the symptoms is a venereal disease called chlamydia. Chlamydia can cause infections of the reproductive organs and the urinary tract. Chlamydia is suspected especially in cases where medication (started on the basis of the symptoms) is not effective, or if the urine sample contains leucocytes, but no bacteria.

Yeast infection

Vaginal yeast infection (candidiasis) may cause symptoms that are similar to those of urinary tract infection, such as a burning or stinging sensation during urination.

Irritated mucous membrane

For instance, following a treated urinary tract infection, the mucous membrane may still be inflamed and irritated although the bacteria are successfully evicted. Different kinds of physical and chemical stimuli, e.g. cold, menstrual blood, sanitary towel, genital hygiene, and various chemical substances in bathwater may trigger symptoms of a urinary tract infection.

Psychological factors

Psychological factors should not be forgotten. For example, stress often causes frequent need of urination.

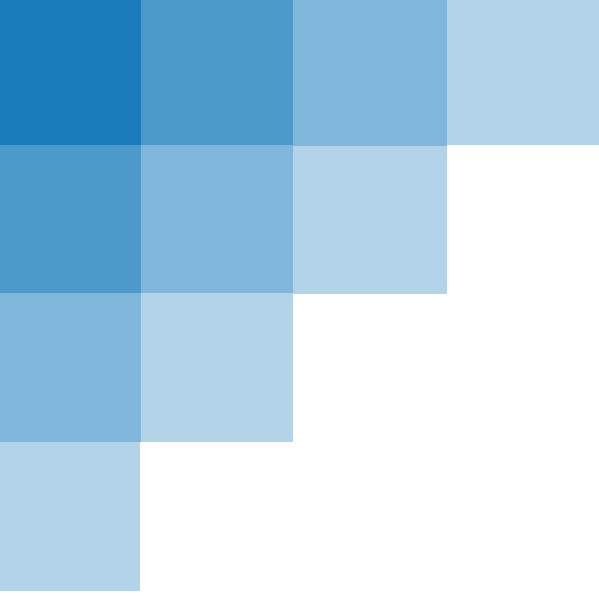
SYMPTOMLESS BACTERIURIA

Sometimes bacteria are found in the urine sample, but there are no other signs of urinary tract infection. This condition is called symptomless bacteriuria, and it occurs in approximately 3% of women aged 15-24 years. During pregnancy some 5-10% of women have symptomless bacteriuria.

There is no need to treat symptomless bacteriuria, except during pregnancy. In pregnant women a symptomless bacteriuria must always be treated, since it increases the risk of preterm birth and pyelonephritis.

SUMMARY

For the patient, a urinary tract infection is often embarrassing and inconvenient because of its abundant symptoms and tendency to recur. However, in most cases it is a matter of a benign disorder that usually relieves quite easily and rarely leads to any serious harm.



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