

## CAUSES, SYMPTOMS, DIAGNOSIS AND TREATMENT OF KIDNEY STONES (UROLITHIASIS)

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**Annotatsiya.** *Kidney stones are a pathology that a person cannot notice until the first symptoms of the disease appear (for example, back pain or kidney colic). What causes urolithiasis and how is it treated?*

**Keywords:** *urolithiasis, symptoms, examinations for kidney stones, treatment of kidney stones.*

## ПРИЧИНЫ, СИМПТОМЫ, ДИАГНОСТИКА И ЛЕЧЕНИЕ КАМНЕЙ В ПОЧКАХ (МОЧЕПЕНОЧНАЯ БОЛЕЗНЬ)

**Аннотация.** *Камни в почках – это патология, которую человек не может заметить до появления первых симптомов болезни (например, боли в спине или почечной колики). Что вызывает мочекаменную болезнь и как ее лечить?*

**Ключевые слова:** *мочекаменная болезнь, симптомы, обследования на камни в почках, лечение камней в почках.*

### UROLITHIAS

Urinary stone disease (urolithiasis) is a chronic, relapsing metabolic disease characterized by the presence of stones (concrements) in the urinary system, that is, in the kidney, bladder and urinary tract. Sometimes the terms urolithiasis and nephrolithiasis are used as synonyms, but nephrolithiasis can be called only the presence of stones in the kidney (not in other parts of the urinary system).

The main reason for the onset and development of urolithiasis is a metabolic disorder, which leads to the formation of insoluble salts that form stones. The number of stones and their location can be very different. Urinary stone disease accounts for 30-40 percent of the reasons for hospitalization in the urological department of hospitals.

Poor water or uniform diet, climatic features of the area where a person lives, for example, a very hot climate, taking certain medications, abnormalities of the urinary system and urethral stricture, hyperparathyroidism, deficiency of vitamins A and D, urinary system disorders chronic inflammatory diseases (pyelonephritis, cystitis), as well as genetic factors can lead to the development of urolithiasis.

Depending on the reasons for the formation of stones and their composition, they are divided into several types:

- calcium - up to 70%;
- uric acid — up to 12%;
- infected - up to 15%;
- with cystine - up to 2-3%.

### SYMPTOMS

Depending on the location of the stone, the patient may have different symptoms, the main symptoms of this disease are as follows:

Paroxysmal pains. Kidney stones and stones in the upper part of the bladder are usually characterized by pain from the back or side under the ribs. The pain can be strong and transient, its intensity can change periodically for 20-60 minutes. Often, the onset of pain is triggered by physical stress, drinking a large amount of liquid or taking diuretic drugs. As the stone moves along the urinary tract, the location of the pain changes, the pain moves from the lower back to the abdomen, between the thighs, to the groin area. These symptoms are accompanied by frequent urges to urinate. It is important not to confuse renal colic with acute surgical diseases, for example, acute appendicitis, acute cholecystitis, acute pancreatitis, intestinal obstruction, hernia stricture, ectopic pregnancy, gastric ulcer perforation, duodenum wound

Therefore, when these symptoms are present, it is necessary to immediately consult a doctor and determine the cause of the disease as soon as possible.

Blood in the urine. In urolithiasis, renal colic is observed before blood in the urine. Cloudy or foul-smelling urine with sediment may also indicate a stone's passage.

Worsening of the general condition, especially nausea, vomiting. These symptoms are especially typical for pyelonephritis, the beginning of inflammation.

Effusion of sand or stones - when an effusion of stones occurs, malaria and high fever may occur.

## EXAMINATIONS FOR KIDNEY STONES

In the case of the above-mentioned complaints, it is necessary to consult a urologist-doctor who, if necessary, will prescribe additional examinations and decide on further treatment.

A basic examination includes:

Collection of anamnesis, examination of the patient;

General clinical analysis of blood and urine;

Ultrasound examination of the urinary system. This non-invasive, safe and painless examination method can be used several times for dynamic control during treatment;

Inspection and excretory urography.

Additional tests may include:

Multispiral computer tomography: it allows to see the stone, to calculate its density and size, to see the architecture of the urinary system, the condition of the surrounding tissues. If necessary, 3D reconstruction can be performed.

Dynamic and static nephroscintigraphy, which allows to study the function of kidneys and the degree of its deterioration.

Urine culture with sensitivity to antibiotics can determine the level of infection and inflammation in the urinary tract.

## KIDNEY STONE TREATMENT

After receiving the results of the examination, the urologist determines the treatment tactics for a specific clinical condition. Today, urologists have a variety of treatment methods in their arsenal, including:

Medicines aimed at independent removal of stones;

Medicinal treatment aimed at dissolving stones;

Open surgical interventions;

Remote pulse-wave lithotripsy;

Endoscopic contact lithotripsy;

Percutaneous nephrolithotripsy;

Endoscopic surgical interventions.

Until recently, open surgical procedures were considered the leading method in the treatment of urolithiasis, but due to the development of medical equipment, they became secondary and are now used only when there are strict indications. Minimally invasive methods such as remote pulse-wave lithotripsy, endoscopic methods (contact lithotripsy), and percutaneous nephrolithotripsy are being given more importance.

The "gold standard" for the treatment of urolithiasis is distance pulse-wave lithotripsy, which allows to remove 90% of stones in the urinary system of any localization. When performing remote shock wave lithotripsy, the shock wave passes through the tissues and breaks the stone into small fragments without damaging them, which then gradually begin to be excreted in the urine. All treatment methods complement each other, and individual treatment methods are selected for each patient based on specific localization, size, volume, density of the stone, known anatomy of the urinary system.

The choice of the method of medical care (observation, conservative treatment, surgical intervention) should be decided by qualified urologists equipped with modern equipment for the diagnosis and treatment of all types of urolithiasis.

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