HYDRONEPHROSIS: ITS SYMPTOMS, DIAGNOSIS AND TREATMENT

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Abstract: *the article analyzes hydronephrosis as a condition that puts pressure on the kidneys and can lead to their damage. The article also studies that something inside or outside the urinary tract that blocks urine outflow from the kidneys causes hydronephrosis. The goal of treating hydronephrosis is considered, and it is revealed that the goal of treating hydronephrosis is to restore free flow of urine from the kidneys and reduce the swelling and pressure that builds up and reduces kidney function. It is also given with what the diagnosis begin and what kind of questions the health care practitioner will ask that will direct whether further tests need to be ordered.*
Keywords: *hydronephrosis, kidneys, bladder, cause, treatment, diagnosis, symptom, urine, urethra.*

ГИДРОНЕФРОЗ: ЕГО СИМПТОМЫ, ДИАГНОСТИКА И ЛЕЧЕНИЕ

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Аннотация: *в статье анализируется гидронефроз как состояние, которое оказывает давление на почки и может привести к их повреждению. Статья также изучает, что что-то внутри или снаружи мочевыводящих путей, которое блокирует отток мочи из почек, вызывает гидронефроз. Рассмотрена цель лечения гидронефроза и выявлено, что целью лечения гидронефроза является возобновление свободного оттока мочи из почек и уменьшение отека и давления, которое накапливается и снижает функцию почек. Также указывается, с чего начинается диагноз и какие вопросы задаст практикующий врач, что будет указывать, нужно ли заказывать дополнительные анализы.*
Ключевые слова: *гидронефроз, почки, мочевой пузырь, причина, лечение, диагностика, симптом, моча, уретра.*

Hydronephrosis describes the situation where the urine collecting system of the kidney is dilated. This may be a normal variant or it may be due to an underlying illness or medical condition.

Normally, the kidney filters waste products from blood and disposes of it in the urine. The urine drains into individual calyces (single=calyx) that form the renal pelvis. This empties into the ureter, a tube that connects the kidney to the bladder. The urethra is the tube that empties the bladder.

Blockages in the urinary tract that can lead to hydronephrosis include kidney stones or an enlarged prostate. A problem with the muscle where the urethra and bladder connect and that makes urine back up into the kidneys can also cause the condition. The bladder, kidneys, and linking tubes are known as the urinary system. When working correctly, the kidneys filter blood to remove waste products from the body. The kidneys create urine, which carries the waste products down tubes to the bladder. Urine then passes through a tube called the urethra and can be expelled [1, c. 27].

Hydronephrosis can develop when there is a problem with the urinary system. It can happen to a person of any age. It usually affects only one kidney but, occasionally, both are involved.

Symptoms. In adults, hydronephrosis may not cause any symptoms, depending on what is the cause. When they do occur, symptoms may include:

- urinating less often or not as strongly;
- blood in the urine;
- pain in the back, abdomen, or side of the body;
- any symptoms of a urinary tract infection (UTI), such as painful urination, cloudy urine, and a strong urge to urinate;
- nausea and vomiting.

When hydronephrosis occurs in babies, they mostly have no symptoms. When they do, symptoms may include:

- multiple UTIs, when the only sign may be an unexplained fever;
- pain in the abdomen or side;
- blood in the urine;
- fever;
- not feeding well;

- lack of energy;
- irritability.

One of two main problems causes hydronephrosis.

One of these is called vesicoureteral reflux (VUR). In this condition, the muscular valve where the urethra connects to the bladder does not work correctly. This forces urine to reflux or flow backward into the kidney.

The other problem is an obstruction anywhere in the bladder, kidney, or linking tubes that prevents urine from leaving the kidney. This could be a blockage inside or pressure from something outside the urinary system.

In adults, many things can cause an obstruction, but it is usually due to an underlying medical condition, such as:

- Pregnancy causing the womb to push against and block the tubes connecting the bladder and kidneys. Hydronephrosis during pregnancy is not unusual.
- Kidney stones moving out of the kidney where they first formed. If a stone moves into a tube in the urinary system, it can cause a blockage.
- An enlarged prostate gland wrapping around the urethra between the bladder and penis, which can happen as a person ages. This can compress and obstruct the urethra.
- Certain cancers affecting the urinary system. These include kidney, prostate, bladder, cervical, or ovarian cancer. If a tumor is pressing against part of the urinary system, it can obstruct the flow of urine from the kidneys.
- The tubes connecting the bladder and kidneys becoming blocked or narrowed. This may happen because of an injury or infection.
- Nerves around the bladder being damaged, which can affect how well this organ works [2, c. 210-250].

In babies, the obstruction is usually created when a part of the urinary system develops incorrectly before birth.

Diagnosis. The diagnosis begins with taking a history of the symptoms that the patient experiences. The health care practitioner will ask questions that will direct whether further tests need to be ordered. Reviewing the patient's past medical history and family history may be helpful. Depending upon the situation and whether there is acute onset of symptoms, physical examination may reveal tenderness in the flank or where the kidneys are located. The bladder may be found to be distended when the abdomen is examined. In women a pelvic examination may be performed to evaluate the uterus and ovaries [2, c. 53-60].

Doctors use an ultrasound to diagnose hydronephrosis. This type of scan uses sound waves to see the organs inside the body, allowing a doctor to see whether a person's kidneys are swollen.

Most people will have an ultrasound scan during pregnancy to check the health of the developing fetus. This gives a picture of the fetus and their internal organs. If the kidneys appear swollen, further ultrasound tests will need to be given throughout the pregnancy. Once the baby is born, ultrasound of the kidneys can be done as in adults.

If the kidneys appear swollen on an ultrasound picture, more tests may be needed. These tests can help to find the underlying cause of hydronephrosis.

Tests can include:

- urine tests to check for infection or blood;
- blood tests to check for an infection;
- an X-ray of the kidneys to see how urine is moving through the body;
- a CT scan to give a 3-D picture of the organs and urinary system.

CT scan of the abdomen can be performed to evaluate the kidney anatomy and make the diagnosis of hydronephrosis. It also may allow the health care practitioner to look for the underlying cause including kidney stones or structures that are compressing the urinary collecting system. Depending upon the situation and the health care practitioner's concerns, the CT may be done with or without contrast dye injected into a vein, and with or without oral contrast (that the patient drinks) to outline the intestine. Most commonly, for kidney stones, neither oral nor intravenous contrast is needed.

Avoiding cystourethrogram is a special X-ray that shows if reflux or obstruction is present. The doctor adds a dye to the urine in the bladder so the path of its flow can be followed on the X-ray. This test is used to diagnose VUR in adults, and babies after birth.

The goal of treatment for hydronephrosis is to restart the free flow of urine from the kidney and decrease the swelling and pressure that builds up and decreases kidney function [1, c. 51-57].

The initial care for the patient is aimed at minimizing pain and preventing urinary tract infections. Otherwise, surgical intervention may be required. The timing of the procedure depends upon the underlying cause of hydronephrosis and hydroureter and the associated medical conditions that may be present. For example, patients with a kidney stone may be allowed 1-2 weeks to pass the stone with only supportive pain control if urine flow is not completely blocked by the stone.

Shock wave lithotripsy (SWL or extracorporeal shock wave lithotripsy) is the most common treatment for kidney stones in the U.S. Shock waves from outside the body are targeted at a kidney stone fragmenting the stone into tiny pieces that are able to be passed out of the urinary tract in the urine.

When a stent cannot be placed, an alternative is inserting a percutaneous nephrostomy tube. A urologist or interventional radiologist uses fluoroscopy to insert a tube through the flank directly into the kidney to allow urine to drain. Some conditions, for example retroperitoneal fibrosis or tumors, may require steroid therapy, a formal operation or laparoscopy to relieve the hydronephrosis or hydroureter while oral alkalinization therapy may be used to dissolve uric acid kidney stones.

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