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Ways to Improve the Surgical Treatment of Obstructive Ureterohydronephrosis in Children

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Abstract Hydronephrosis and ureterohydronephrosis. A pathological condition associated with the transformation of the kidney, the expansion of the ureter and the development of malnutrition or atrophy of the parenchyma of the kidney against the background of a violation of the outflow of urine and its blood supply. According to statistics, ureterohydronephrosis is quite common. In childhood, it is recorded mainly in boys, more often on the left - a bilateral lesion is diagnosed in 15% of cases.

Keywords Ureterohydronephrosis, Kidney, Ureter, Bilateral lesion, Symptoms, Causes of disease

1. Introduction

First of all, let's pay attention to the spelling of the diagnosis: Internet sources often confuse (or even use as synonyms) the concepts of "urethra" and "ureter". Leaving this on the conscience of the authors, nevertheless, we will clarify: the urethra is the final (distal, remote) section of the urinary tract, the urethra itself. The ureter is the ureter, a thin "hose" of connective tissue through which the fluid (urine) used after filtering the blood flows from the kidney to the bladder. Since the right kidney is located slightly lower than the left, the right ureter is also normally a few centimeters shorter; in addition, due to anatomical differences, the ureters are shorter in women. In general, their length in adults varies between 22-30 cm, while the thickness in different areas is different and amounts to 3-10 mm.

And between the ages of 20 and 40, the disease occurs in 1% of people. Women suffer twice as often as men, which is associated with pregnancy and the prevalence of tumor gynecological pathology.

Further, hydronephrosis, or hydronephrotic transformation, is a pathological condition of the kidney, in which its cavities are mechanically expanded from the inside by excess fluid pressure on the walls. This pathology is considered to be quite common, although there are apparently no exact statistical data in terms of the proportion of the healthy population: the spread of published estimates is too large. It is known, however, that in the volume of all officially diagnosed nephropathologist, the proportion of hydronephrosis is approximately 5%, and among the causes of hospitalization in nephrological and urological hospitals - about 2%.

It is important to note that hydronephrosis is not a harmless anatomical anomaly: chronically elevated pressure of excess fluid not only stretches the pelvicalyceal system of the kidney, but also inevitably disrupts its performance. Under such conditions, nephrons (single cells of the renal parenchyma - functional, filtering tissue) receive insufficient nutrition, their dystrophy begins and progresses, and then atrophy - complete functional failure of specialized cells, massive "failure" and death, reduction of parenchymal tissue in volume. The quantitative proportion between functioning and atrophied nephrons largely determines the clinical picture, prognosis, and therapeutic strategy for hydronephrosis. The cause of ureterohydronephrosis is a violation of the laying in the embryonic period of the organs of the urinary system at the level of the ureter-bladder.

A sharp violation of urodynamics in ureterohydronephrosis that occurs in the prenatal period rapidly leads to impaired kidney function, and in a bilateral process, in the absence of a timely and high-quality operation, leads to renal failure. Early diagnosis and treatment according to indications is the key to success in this type of pathology.

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Finally, the prefix "uretero-" to this diagnosis means that under the influence of the pathological distribution of pressures, not only the renal structures proper, but also the corresponding ureter expand. It is easy to see that this situation is more complex and severe compared to "simple" hydronephrosis, often requiring more radical intervention.

Ureterohydronephrosis is a pathological expansion of the pelvis and calyces of the kidneys, as well as the ureter. It develops in violation of the natural outflow of urine. Pathology is dangerous because it leads to the death of kidney cells and causes acute renal failure. Therefore, it is very important to consult a doctor in a timely manner for the diagnosis and treatment of ureterohydronephrosis.

In pediatric practice, megaureter is one of the diseases that lead to impaired renal function, moreover, in a bilateral process, up to renal failure. With the expansion of the ureter, its transport function suffers and it becomes impossible to quickly move urine into the bladder and remove the microbial flora penetrating the urinary tract, causing chronic inflammation of the kidneys (pyelonephritis). Another dangerous consequence of the stagnation of urine in the ureter is an increase in pressure in the renal pelvis and calyces, which causes impaired renal circulation. The outcome of chronic inflammation and impaired renal circulation is scarring of the renal tissue (parenchyma) with loss of function (secondary wrinkling of the kidney, nephrosclerosis).

What are the causes of megaureter? There are several reasons for the formation of a megaureter. The main reason is increased pressure inside the ureter with difficulty in the outflow of urine. And sometimes the pressure is normalized, and the expansion of the ureter remains. There is also congenital insufficiency of the muscular membrane of the ureter. In this case, the normal muscle layer of the ureter is replaced by scar inelastic tissue. The ureter is so weak that it is unable to effectively push urine into the bladder. Another cause of a megaureter is a narrowing of the ureter at its junction with the bladder. High-grade vesicoureteral reflux (VUR - reflux of urine from the bladder into the ureter and kidney) can also be the cause of the development of a megaureter. Bilateral megaureter is more often the result of a violation of the outflow of urine through the urethra, due to the presence of a congenital valve in the urethra or persistent spasm of the urethral sphincter, which occurs in neurological disorders. Such a megaureter is called secondary.

How is megaureter manifested? Megaureter is usually diagnosed by fetal ultrasound. After birth, in the absence of pathology of the bladder and urethra, the megaureter usually does not manifest itself clinically. In the future, if the diagnosis was not made in utero, the disease may manifest itself as an unexpected attack of pyelonephritis. Older children sometimes complain of pain in the abdomen or in the lumbar region, an admixture of blood in the urine, There are 2 main forms of the disease - acute and chronic.

Acute symptoms are:

- pain in the lower abdomen;
- frequent urge to urinate (mainly at night);
- high blood pressure;
- renal colic.

The patient may notice reddening of the urine due to the appearance of blood impurities in it. Also, patients complain of weakness and general malaise, as well as lack of appetite. In the chronic form, it may be asymptomatic for several years.

Diagnosing ureterohydronephrosis is quite difficult because of the pronounced symptoms that are characteristic of this particular disease.

The first time the presence of a megaureter is usually reported by a specialist in ultrasound diagnostics. If a megaureter is found in a child with ultrasound, it is necessary to prepare for a complete urological examination to determine the cause, prognosis and treatment tactics.

Intravenous (excretory) urography allows you to see the anatomical structure of the ureters, to determine how well the kidneys produce urine and are released from it. On urograms, the diameter of the ureters can be seen, which, with a megaureter, is more than 7-10 mm.

Voiding cystourethrography (VCUG) is performed if vesicoureteral reflux is suspected (reflux of urine from the bladder into the ureter), to determine the patency of the urethra, exclude vesicoureteral reflux, and indirectly assess bladder function.

Radioisotope examination of the kidneys (static or dynamic nephroscintigraphy) - is performed to assess the function of the kidneys and the degree of violation of the outflow of urine through the affected ureter.

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Children operated on by the method of urethrocystone anastomosis, in the immediate postoperative period, complained of an intermittent stream of urine, discomfort at the end of urination, pain at the end of urination, a feeling of urge to urinate after the act of micturition, as well as pain during urination. These clinic was associated with the condition after the operation of ureterocystone anastomosis (bladder injury, urethral catheterization, urinary infection and exacerbation of chronic cystitis); after appropriate treatment, the above symptoms ceased.

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