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Gestational Pyelonephritis in Pregnancy

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Abstract: In this article studied the features of renal blood flow in patients with gestational age obstructive pyelonephritis. The features of the excretory function of the kidneys in gestational pyelonephritis and hydronephrosis before and after restoration of urodynamics of the upper urinary tract were determined. Particular attention is paid to the pathogenetic validity of the sanitation of the renal cavity system and their subsequent internal drainage in the complex treatment of gestational age obstructive pyelonephritis.

Keywords: Gestational pyelonephritis, hydronephrosis, urodynamics, anti-inflammatory therapy, complex treatment.

As is known, pyelonephritis is a nonspecific infectious and inflammatory process with primary damage to the interstitial tissue and renal pelvicalyceal system. Pyelonephritis that first appears during pregnancy is called gestational pyelonephritis and often complicates the course of pregnancy.

Acute pyelonephritis in the structure of kidney diseases occupies 14%, in 82.4% of cases it is secondary, every third patient develops a purulent form, 40% of patients have a decrease or absence of excretory function of the kidney, in 10.3% clinical bacteriotoxicity develops. shock, in 6.4% - toxic hepatitis. For purulent forms of pyelonephritis, nephrectomy is performed in every second case, and in 28.4%, death occurs. Acute pyelonephritis is detected in 2.5% of pregnant women and is the most common complication.

There has been an increase in the frequency of purulent forms of pyelonephritis, leading to spontaneous miscarriages, premature placental abruption, childbirth, and often the death of the pregnant woman and fetus. In chronic pyelonephritis, the risk of miscarriage is 16.7%, gestational anemia - 46.7%, intrauterine fetal hypoxia - 44.3%. The cause of termination of pregnancy in chronic pyelonephritis is severe forms of gestosis, the frequency of which with significant impairment of renal hemodynamics reaches 62 % - 87.5%.

For many years, urinary tract infection during pregnancy has been of interest to doctors of various specialties, as it remains a frequent complication of pregnancy and the postpartum period. However, many aspects of this problem are still controversial and not fully resolved. The possibility of bacteriuria in pregnant women influencing perinatal morbidity and mortality, including intrauterine growth retardation and a subsequent decrease in motor activity in children at an early age, cannot be ruled out.

Thus, it is obvious that the presence of a urogenital infection during pregnancy poses a real danger to both the mother and the fetus. At the same time, the likelihood of premature termination of pregnancy increases, the risk of antenatal and intrapartum infection, and the development of purulent-inflammatory complications in the postpartum period increases, since

the lower parts of the genital tract in such pregnant women are a reservoir of a large number of various potentially virulent microorganisms.

The successful resolution of many problems associated with vulvovaginitis, bacterial carriage in the vagina, as well as bacteriuria in pregnant women, directly depends on the implementation of rational etiotropic therapy, which represents another aspect of the real prevention of possible complications caused by urogenital infection. As is known, to this day there are discussions regarding the use of certain methods of treatment for vulvovaginitis and bacteriuria during pregnancy; the optimal and acceptable treatment regimens for these diseases in pregnant women have not been finally determined.

Gestational pyelonephritis, especially against the background of hydronephrosis, is sometimes difficult to respond to conventional drug therapy. This requires catheterization of the ureter, and sometimes open surgical interventions. These treatment methods are aggressive and pose a certain risk to the life of the mother and fetus. In case of gestational pyelonephritis with impaired urine outflow, when conventional anti-inflammatory therapy is ineffective, it is customary to establish internal kidney drainage. Kidney stenting is considered less invasive, and in the complex treatment of gestational pyelonephritis it is a pathogenetically substantiated and effective method.

Research in recent decades has convincingly shown that the blood supply to the kidneys changes significantly during pregnancy. No direct connection with changes in general hemodynamics was found. Already in the early stages of pregnancy, even before the development of placental circulation, plasma volume increases significantly. Changes occurring in general hemodynamics have minor shifts, which allows them to be regarded as physiological. A feature of renal blood circulation during pregnancy is its increase in the 1st trimester (by 30-50% compared to non-pregnant women) and its gradual decrease in the future. In late pregnancy, with the development of eclampsia and preeclampsia, the sensitivity of the kidneys to ischemia increases.

There is a decrease in circulating blood volume and renal blood flow and an increase in vascular sensitivity to endogenous substances that have a vasoconstrictor effect. With the development of gestosis, the deficiency of diuresis is 40%, the levels of residual nitrogen and creatinine in the blood are closer to the upper limit of normal, sometimes moderate hypercreatininemia. Changes in filtration and concentration ability are detected in 25-30% of women.

Some authors consider pyelonephritis in the group of urinary tract infections, others - in the group of interstitial kidney lesions. As a nonspecific infectious-inflammatory process, pyelonephritis affects simultaneously or sequentially the interstitial tissue, tubules, parenchyma and renal pelvis. As the process progresses and spreads to the blood vessels and glomeruli, pyelonephritis is a bacterial form of interstitial nephritis. During pregnancy, the appearance or exacerbation of pyelonephritis most often occurs at 22-28 weeks of gestation, when a sharp increase in sex and corticosteroid hormones occurs.

It is these periods that are critical for pregnant women suffering from pyelonephritis. Pregnant women with pyelonephritis often experience anemia, gestosis, premature rupture of amniotic fluid, and the threat of miscarriage. Miscarriage in this category of women is observed in 30% of cases due to premature birth. It should be noted that not only pyelonephritis aggravates the course of pregnancy, but pregnancy also negatively affects the course of the inflammatory process in the kidneys.

The main role in the development of pyelonephritis is always played by an infectious agent, most often located in the urinary tract, as well as the close location of the genitourinary system to the gastrointestinal tract.

Acute pyelonephritis is an acute exudative inflammation of the kidney and pelvis tissue. Acute pyelonephritis is characterized by features of an acute infectious process. Acute pyelonephritis

has three stages: serous inflammation, acute purulent inflammation and necrosis of the renal papillae.

The term “Urinary tract infections” covers a wide range of conditions - from asymptomatic bacteriuria on the one hand to acute pyelonephritis and septicemia on the other, united on the basis of a common feature: a positive result of bacteriological examination of urine.

At the same time, the term urinary tract infection is used in cases where infection is certainly present, but there are no clear signs of direct kidney damage. The term “bacteriuria” is used to indicate that bacteria are not only constantly present in the urinary tract, but are actively multiplying.

A prerequisite for the upward spread of microorganisms is sexual activity. In a woman's urinary tract infection, the husband's asymptomatic bacteriospermia is of great importance. In sexual partners suffering from a genitourinary tract infection, many bacteria are cultured from the semen.

This explains the Saturday or Sunday morning cystitis that occurs in women a week after sexual intercourse with a partner suffering from asymptomatic bacteriospermia. Treatment of the sexual partner and the use of a condom reduces the number of recurrences of urinary tract infections in women .

The source of infection of the urinary tract is also inflammatory processes in the female genital organs and surrounding pelvic tissue, where bacteria can remain in a “dormant” state for a long time. With vulvitis and bacterial vaginitis, the ascending spread of microorganisms during pregnancy occurs especially often. During pregnancy, the anatomical and functional state of the urinary tract changes, manifested by expansion of the renal collecting system and insufficiency of the sphincter mechanism of the bladder.

The development of bacteriuria is facilitated by factors arising from the effect of progesterone on the muscle tone of the ureters and their mechanical obstruction by the growing uterus. These include: a slowdown in the rate of urine passage due to a decrease in the tone and peristalsis of the ureters, dilation of the renal pelvis and upper ureters with the formation of physiological hydronephrosis of pregnant women, a decrease in the tone of the bladder, an increase in the amount of residual urine, promoting vesicoureteral reflux and upward migration of bacteria into upper urinary tract. Existing hypotension and enlargement of the kidneys are detected by ultrasound and excretory urography.

As pregnancy progresses, dilation of the pelvis and ureters occurs relatively quickly, persisting up to 40 weeks, which is explained by the growth of the pregnant uterus and its pressure on the ureters above the level of the pelvic ring. Additional factors that contribute to the mechanical pressure of the uterus on the ureters of a pregnant woman include polyhydramnios, multiple pregnancies, a narrow pelvis, and a large fetus. Other reasons predisposing to urodynamic disorders of the upper urinary tract during pregnancy include congenital malformations (6-18%) of the kidneys and urinary tract, kidney and ureteral stones (6.1%), vesicoureteral reflux with cystitis and cystocele, nephroptosis, features of the structure of the organs of the genitourinary tract.

Asymptomatic bacteriuria during pregnancy is a high risk factor for preterm birth, low birth weight babies, and intrauterine infection, especially for women with low socioeconomic status. Latent pyelonephritis poses a risk of developing late gestosis, a purulent-inflammatory infection in the mother and newborn .

The inclusion of routine bacteriological examination of urine and gravidogram in the dynamics of pregnancy in the complex of diagnostic measures at the level of primary health care institutions contributes to the timely prevention of the birth of low birth weight children.

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